TENDER

Tender Notice Number 172/2025 for the ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.

BID NO.: 172/2025

VOLUME 1

(RETURNABLE DOCUMENT)

SERVICE PROVIDER		
TELEPHONE / FACSIMILE		
CLOSING DATE	**8 September 2025 at 12:00**	

KOUGA LOCAL MUNICIPALITY

Tender Notice Number 172/2025 for the ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.

GENERAL TENDER INFORMATION

TENDERS INVITED	:	8 August 2025
ESTIMATED CIDB CONTRACTOR GRADING	:	7EP or higher
CLARIFICATION MEETING	:	A compulsory Virtual clarification meeting will be held on Tuesday, 19th August 2025 @ 10:00.
VENUE FOR SITE VISIT / CLARIFICATION MEETING	:	Virtual on-line clarification meeting
CLOSING DATE	:	Monday, 8th September 2025
CLOSING TIME	:	12:00:00 PM
CLOSING VENUE	:	Tender Box at the Municipal Office, Room 122 16 Woltemade Street (front) / 21 St. Croix Street (back), Jeffreys Bay, 6330
VALIDITY PERIOD OF TENDER	:	90 days
TENDER BOX	:	The Tender Documents (which includes the Form of Offer and Acceptance) completed in all respects, plus any additional supporting documentation required, must be submitted in a sealed envelope with the name and address of the tenderer, the tender No. and title and the closing date indicated on the envelope. The sealed envelope must be inserted into the appropriate official tender box before closing time. The onus remains with the tenderer to ensure that the tender is placed in the correct tender box.

KOUGA LOCAL MUNICIPALITY

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BID NO.: 172/2025

PARTICULARS OF BIDDER

Name of Bidder	
Contact Person:	
Postal Address	
Street Address	
Telephone Number	Code: Number:
Cellphone Number	
Facsimile Number	Code: Number:
E-Mail Address	
CSD Supplier Number (National Treasury)	
CIDB CRS Number	
Vat Registration Number	

KOUGA LOCAL MUNICIPALITY

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BID NO.: 172/2025

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KOUGA LOCAL MUNICIPALITY

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BID NO.: 172/2025

PART 1: THE TENDER

The Tender (Part T)

KOUGA LOCAL MUNICIPALITY

Tender Notice Number 172/2025 for the ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.

BID NO.: 172/2025

Part T1: Tender Procedure

PART T1.1: TENDER NOTICE AND INVITATION TO TENDER

KOUGA LOCAL MUNICIPALITY (EC108)
DIRECTORATE: ELECTRO-MECHANICAL ENGINEERING
NOTICE NO: 172/2025
APPOINTMENT OF A SUITABLY QUALIFIED SERVICE PROVIDER FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION

Suitably qualified, capable and experienced Contractors are hereby invited to submit tenders for the Appointment of a suitably qualified Service Provider for the Supply, Delivery, Construction and Commissioning of an Integrated Energy Arbitrage & Peak Shaving 2.5 MW/5 MWH Battery Energy Storage System at the St Francis Load Centre One1 - 22/11kV Substation.

Tenders

An electronic copy of the tender document will be available on E-Tender portal www.etender.gov.za or the municipal website www.kouga.gov.za as from **Friday, 8 August 2025**. After downloading the tender document from the website each prospective bidder **MUST** ensure that all the pages of the tender document are printed.

A compulsory virtual clarification session will be arranged for **Tuesday, 19 August 2025 @10h00am. Prospective bidders can use the very same link below which is direct from this advert, it will link them directly to the meeting. Please take note that no attendee arriving 10 minutes late or more will be allowed to attend the clarification meeting.**

The link will also be available on the municipal website.

Join Teams Meeting
https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZDcwMjJhOWYtMTUzNC00YWQ3LTk5N2YtYzlkZjFjNmQ3ZDMx%40thread.v2/0?context=%7b%22Tid%22%3a%2226227dc1-4e2b-407e-9bee-81acf6fe8aa9%22%2c%22Oid%22%3a%220f003184-f74c-40a3-9b40-9fda5b3dfcff%22%7d

Meeting ID: 380 824 701 406

Passcode: io3Ar6yp

Please note:

- Telegraphic, telephonic, telex, facsimile, email or late tenders will not be accepted.

- This contract will be evaluated on the 90 (price)
- The specific goals would be for a maximum of 10 points. To claim for specific goals prospective bidders MUST submit proof/required documents.
- **An electronic copy of the completed tender document with returnable documents must be submitted with tender submission saved a in a flash drive or CD. Failure to submit AN ORIGINAL HARD COPY AND A COPY ON EITHER USB or CD will deem the bid non-responsive.**
- **An estimated contractor CIDB Grading of 7EP or higher is required.**
- **A minimum functional assessment score of 70% will apply to this contract.**
- **Audited financial Statements for the last 3 financial years must be submitted.**
- **Bidders must note that the Municipality will make use of additional vetting methods to further qualify capacity of bidders to eliminate delays during project implementation.**
- A valid Tax compliance Status pin must be submitted.
- Prospective Service Providers must register on Kouga Municipality's Supplier database as per the registration requirements.
- The National Treasury Central Supplier Database Summary report must be submitted.
- The Council reserves the right to accept any tender and, or part thereof, appoint more than one contractor, and does not bind itself to accept the lowest or any tender. The Council reserves the right to appoint any contractor.
- The validity period for submission will be 90 days from the closing date.
- Tenders that are deposited in the incorrect box or delivered to any other venue will not be considered.

Any inquiries relating to this tender must be submitted in writing via e-mail to tenders@kouga.gov.za and copied to nnongcaula@kouga.gov.za.

Completed documents in a sealed envelope endorsed "**NOTICE NO: 172/2025: "APPOINTMENT OF A SUITABLY QUALIFIED SERVICE PROVIDER FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION"** must be placed in the Tender Box at 16 Woltemade Street (front entrance), Jeffrey's Bay, Room 122 on or before **MONDAY, 8 SEPTEMBER 2025 at 12:00.**

C. DU PLESSIS
MUNICIPAL MANAGER

P.O.Box 21
JEFFREYS BAY
6330

For Placement: Herald/Municipal Website/ Municipal Notice Boards in all offices/areas – 8 August 2025

KOUGA LOCAL MUNICIPALITY

Tender Notice Number 172/2025 for the ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.

BID NO.: 172/2025

PART T1.2: TENDER DATA

The conditions of tender are the Standard Conditions of Tender as contained in Annex C of the Construction Industry Development Board (CIDB) Standard for Uniformity in Engineering and Construction Works Contracts as published in Department of Public Works Notice 423 of 2019 No. 42622 Government Gazette 8 August 2019. (See www.cidb.org.za).

The Standard Conditions of Tender make several references to the Tender Data for details that apply specifically to this tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the standard conditions of tender. Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.

The following variations, amendments and additions to the Standard Conditions of Tender as set out in the Tender Data below shall apply to this tender:

Clause number	The conditions of Tender are the **Standard Conditions of Tender** as contained in the Construction Industry Development Board (CIDB) Standard for Uniformity in Engineering and Construction Works Contracts, August 2019 (See www.cidb.org.za). The Standard Conditions of Tender for Procurements make several references to the Tender Data for details that apply specifically to this Tender. The Tender Data shall have precedence in the interpretation of any ambiguity or inconsistency between it and the standard conditions of Tender. Each item of data given below is cross-referenced to the clause in the Standard Conditions of Tender to which it mainly applies.
C.1	**General**
C.1.1	The Employer is Kouga Municipality
C.1.2	**Tender Documents**
	The documents issued by the employer for the purpose of a tender offer are listed in the tender data. **Part T1: Tender Procedure** Part T1.1 Tender notice and invitation to tender Part T1.2 Tender data **Part T2 Returnable Documents** Part T2.1 List of returnable documents Part T2.2 Other documents required for tender evaluation purposes Part T2.3 Returnable schedules that will be incorporated in the contract **Part C: The Contract**

	Part C1: Agreement and contract data Part C1.1 Form of offer and acceptance Part C1.2 Contract Data Part C1.3 Form of Performance Guarantee **Part C2: Pricing data** Part C2.1 Pricing instructions Part C2.2 Bill of Quantities (BoQ) **Part C3: Scope of Works** Part C3.1 Description of works Part C3.2 Project Specifications Part C3.3 Particular Specifications **Part C4: Health and Safety Specification** **Part C5: Site Information**
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 required for tender evaluation purposes, shall form part of any contract arising from the invitation to tender/quote.
C.1.3.3	For the purposes of these conditions of tender, the following definitions apply: a) **conflict of interest** means any situation in 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 tenderer is able 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 tenderer who employs that employee. b) **comparative offer** means the price after the factors of a non-firm price and all unconditional discounts it can be utilized 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.
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. The Employer's Agent is: Name: CVW Consulting Engineers (Pty)Ltd Address: 24 Bland Street, Mossel Bay, 6500 Tel: 044-6912074 Fax: 044-6912075 E-mail: jb.cvw@cvw-e.com Any inquiries relating to this tender must be submitted in writing via e-mail to tenders@kouga.gov.za.
C.1.5	**Cancellation and Re-Invitation of Tenders**
C.1.5.1	An employer may, prior to the award of the tender, cancel a tender if- a) due to changed circumstances, there is no longer a need for the engineering and construction works specified in the invitation; b) funds are no longer available to cover the total envisaged expenditure; or c) No acceptable tenders are received. d) There is a material irregularity in the tender process.
C.1.5.2	The decision to cancel a tender invitation must be published in the same manner in which the original tender invitation was advertised.
C.1.5.3	An employer may only, with the prior approval of the relevant treasury, cancel a tender invitation for the second time.
C.1.6	**Procurement procedures**
C.1.6.1	**General**
C.1.6.2	The Competitive Negotiation Procedure will not be followed.
C.1.6.3	The proposal procedure using the two-stage system will not be followed.
C.2	**Tenderer's obligations**

C.2.1	**Eligibility** Only those tenderers who satisfy the following criteria are eligible to submit tenders: 1. The tenderer must have experience of having successfully completed Design, Engineering, Procurement, Testing and Commissioning of Grid Connected Battery Energy Storage System (BESS) of at least 2 (Two) projects, each having an individual minimal capacity of ≥ 500kWh or above in South Africa. The tenderer shall provide Practical Completion Certificates or Certificate of Completion signed by the Client or their Agent. 2. The tenderer shall have designed, supplied, erected, supervised, and commissioned BESS system. The tendering company or joint venture must have the following key staff: Construction Manager with PMSA or equivalent PMI. The tendering company is allowed to sub-contract relevant works to local companies. 3. A Tenderer that is registered as an Electrical Contractor with the Department of Labour and which shall remain valid for the duration of the contract.
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 comply 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**
	An electronic copy of the tender document will be available on E-Tender portal www.etender.gov.za or the municipal website www.kouga.gov.za as from **Friday, 8 August 2025**. After downloading the tender document from the website each prospective bidder **MUST** ensure that all the pages of the tender document are printed. A compulsory virtual clarification session will be arranged for **Tuesday, 19 August 2025 @10h00am. Prospective bidders can use the very same link below which is direct from this advert, it will link them directly to the meeting. Please take note that no attendee arriving 10 minutes late or more will be allowed to attend the clarification meeting.** The link will also be available on the municipal website. **Join Teams Meeting** https://teams.microsoft.com/l/meetup-join/19%3ameeting_ZDcwMjJhOWYtMTUzNC00YWQ3LTk5N2YtYzlkZjFjNmQ3ZDMx%40thread.v2/0?context=%7b%22Tid%22%3a%2226227dc1-4e2b-407e-9bee-81acf6fe8aa9%22%2c%22Oid%22%3a%220f003184-f74c-40a3-9b40-9fda5b3dfcff%22%7d **Meeting ID: 380 824 701 406** **Passcode: io3Ar6yp** Bidders should be represented at the compulsory virtual session and compulsory site visit meeting by a **technical employee from the prospective bidder** who is suitably qualified and experienced to comprehend the implications of the work involved.
C.2.8	**Seek clarification**
	Request clarification of the tender documents, if necessary, by notifying the employer at least five (5) 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 fourteen (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 must 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 must only be considered if the main tender offer 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 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 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 with or without any conditions attached to such extension.

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. If the validity period stated in C.2.16 lapses before the employer evaluating tender, the contractor reserves the right to review the price based on Consumer Price Index (CPI).
C.2.16.4	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. If the validity period stated in C.2.16 lapses before the employer evaluating tender, the contractor reserves the right to review the price based on Consumer Price Index (CPI).
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, tests, 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 twenty-eight (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 (5) working days before the tender closing time stated in the Tender Data and notify all tenderers who collected tender 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 (3) working 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 then notify all tenderers who collected tender 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 Specific Goals; 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	Two envelope system will not be followed / is not applicable.
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 and Specific Goals. 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 responsive tenders for discrepancies between amounts in words and amounts in figures. Where there is a discrepancy between the amounts in figures and the amount in words, the amount in words shall govern.
C.3.9.2	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.3.9.3	Notify the tenderer of all errors or omissions that are identified in the tender offer and either confirm the tender offer as tendered or accept the corrected total of prices.
C.3.9.4	Where the tenderer elects to confirm the tender offer as tendered, correct the errors as follows: a) 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. b) 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.
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**

	The Standard Conditions of Tender standardize the procurement processes, methods and procedures from the time that tenders are invited to the time that a contract is awarded. They are generic in nature and are made project specific through choices that are made in developing the Tender Data associated with a specific project. Conditions of tender are by definition the document that establishes a tenderer's obligations in submitting a tender and the employer's undertakings in soliciting and evaluating tender offers. Such conditions establish the rules from the time a tender is advertised to the time that a contract is awarded and require employers to conduct the process of offer and acceptance in terms of a set of standard procedures. The CIDB Standard Conditions of Tender are bases on a procurement system that satisfies the following system requirements: **Requirement** — **Qualitative interpretation of goal** Fair — The process of offer and acceptance is conducted impartially without bias, providing simultaneous and timely access to participating parties to the same information. Equitable — Terms and conditions for performing the work do not unfairly prejudice the interests of the parties. Transparent — The only grounds for not awarding a contract to a tenderer who satisfies all requirements are restrictions from doing business with the employer, lack of capability or capacity, legal impediments and conflicts of interest. Competitive — The system provides for appropriate levels of competition to ensure cost effective and best value outcomes. Cost effective — The processes, procedures and methods are standardized with sufficient flexibility to attain best value outcomes in respect of quality, timing and price, and least resources to effectively manage and control procurement processes. The activities associated with evaluating tender offers are as follows: a) Open and record tender offers received b) Determine whether or not tender offers are complete c) Determine whether or not tender offers are responsive d) Evaluate tender offers e) Determine if there are any grounds for disqualification f) Determine acceptability of preferred tenderer g) Prepare a tender evaluation report h) Confirm the recommendation contained in the tender evaluation report
C.3.11.1	**General**
	Points will be awarded to Tenderers who are eligible for preferences in terms of the Preference Points Claim Form in terms of the Preferential Procurement Regulations, 2017, which is included in Part T2.2. The terms and conditions of the Preference Points Claim Form shall apply in all respects to the tender evaluation process and any subsequent contract.
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**
	Tender offers will only be accepted if: a) the tenderer submits a tax compliance status certificate issued by the South African Revenue Services or has made arrangements to meet outstanding tax obligations; b) the tenderer submits a letter of intent from an approved insurer undertaking to provide the Performance Bond to the format included in Part T2.2 of this procurement document c) the tenderer is registered with the Construction Industry Development Board in an appropriate contractor grading designation; d) the tenderer or any of its directors/shareholders 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; e) 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 written notice to this effect; f) 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; g) the tenderer is registered and in good standing with the compensation fund or with a licensed compensation insurer; h) the employer is reasonably satisfied that the tenderer has in terms of the Construction Regulations, 2014, issued in terms of the Occupational Health and Safety Act, 1993, the necessary competencies and resources to carry out the work safely. i) the Tenderer has not failed to perform on any previous contracts and has not been given written notice to the effect. j) the Tenderer is not in arrears for more than 30 days with municipal rates and taxes and service charges.
	The appointment of a Contractor will be subject to the availability of funding. The Employer reserves the right to accept a tender in whole or in parts with certain items being added, or in whole with the provision that certain items of work may be omitted at a later date.
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	**Registration of the award**
	An employer must, within twenty-one (21) working days from the date on which a contractor's offer to perform a construction works contract is accepted in writing by the employer, register and publish the award on the CIDB Register of Projects.
C.3.17	**Provide copies of the contracts**
	The number of paper copies of the signed contract to be provided by the employer is one (1).
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.

B-BBEE certificates submitted with the tender documents MUST be a VALID ORIGINAL B-BBEE CERTIFICATE or VALID CERTIFIED COPY OF THE B-BBEE CERTIFICATE.

In the case of a Trust, Consortium or Joint Venture, they will qualify for points for their B-BBEE status level as a legal entity, provided that the entity submits their B-BBEE status level certificate.

PART T2: RETURNABLE DOCUMENTS

(ALL Documents and Schedules MUST BE RETURNED for the TENDER to Qualify)

T2.1	List of Returnable Schedules Required for Tender Evaluation & Returnable Schedules
T2.2	Other Municipal Documents Required for Tender Evaluation Purposes
T2.3	Returnable Schedules that will be incorporated in the contract

NOTE:

Although the documents under Part T2 is headed “Returnable Documents” in line with the CIDB model, these are not the only documents to be returned together with the Tender. **All** the documents indicated on document T1 must be completed and signed where applicable and submitted as a **complete set of documents**.

KOUGA LOCAL MUNICIPALITY

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BID NO.: 172/2025

PART T2.1: LIST OF RETURNABLE SCHEDULES REQUIRED FOR TENDER EVALUATION PURPOSES (T2.1)

Form 2.1.1	General Information
Form 2.1.2	Authority for Signatory
Form 2.1.3	Tender Evaluation: Pre-Qualification
Form 2.1.4	Schedule Of Infrastructure and Resources
Form 2.1.5	Schedule Of Approach and Methodology/ Work Plan
Form 2.1.6	Schedule Of Sub-Contractors
Form 2.1.7	Financial References
Form 2.1.8	Proof Of Bank Rating Code

2.1.1 GENERAL INFORMATION

1. Name of tender entity: _____

2. Contact details

   Address: _____

   _____

   Tel no: (_____) _____

   Fax no: (_____) _____

   E-mail address: _____

3. Legal entity: Mark with an **X**.

Sole proprietor	
Partnership	
Close corporation	
Company (Pty) Ltd	
Joint venture	

In the case of a Joint venture, provide details on joint venture members:

Joint venture member	Type of entity (as defined above)

4. Income tax reference number:_____(in the case of a joint venture, provide for all joint venture members)

5. Regional services area where the enterprise is registered:_____(In the case of a joint venture, provide for all joint venture members)

6. Regional services levy registration number:_____ (In the case of a joint venture, provide for all joint venture members)

7. VAT registration number:_____ (In the case of a joint venture, provide for all joint venture members)

8. Company or closed corporation registration number:_____(In the case of a joint venture, provide for all joint venture members)

9. Details of proprietor, partners, closed corporation members, or company directors, indicating technical qualifications where applicable (Form on the next page).

10. For joint ventures the following must be attached (**COMPULSORY**):

- Written power of attorney for authorised signatory.
- **Pro-forma of the joint venture agreement.**
  *** If the Joint Venture Agreement is not attached, the tender will not be considered!**

DETAILS OF PROPRIETOR, PARTNERS, CLOSED CORPORATION MEMBERS OR COMPANY DIRECTORS

Name and Identity Number	Relevant qualifications and experience	Years of relevant experience

Name of Tendering Entity: _____

Signature: _____ **Date:** _____

2.1.2 AUTHORITY FOR SIGNATORY

Indicate the status of the tenderer by ticking the appropriate box hereunder. The tenderer must complete the certificate set out below for the relevant category.

A Company	B Partnership	C Joint Venture	D Sole Proprietor	E Close Corporation

A. Certificate for Company

I, ..., chairperson of the board of directors of ..... …, hereby confirm that by resolution of the board **(copy attached)** taken on ..... 20…, Mr/Ms ..... acting in the capacity of ....., was authorized to sign all documents in connection with this tender for contract ……. and any contract resulting from it on behalf of the company.

As witnesses :

1. ..... Chairman: .....

2. ..... Date: .....

Tenderers must attach a copy of the Resolution of the Board.

B. Certificate for Partnership

We, the undersigned, being the key partners in the business trading as .... hereby authorize Mr/Ms ... , ... acting in the capacity of .... to sign all documents in connection with the tender for Contract ..... and any contract resulting from it on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

NOTE : This certificate is to be completed and signed by all of the key partners upon whom rests the direction of the affairs of the Partnership as a whole

C. Certificate for Joint Venture

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

This authorization is evidenced by the attached power of attorney signed by legally authorized signatories of all the partners to the Joint Venture.

NAME OF FIRM (Start with Lead Partner particulars)	ADDRESS	AUTHORISING SIGNATURE, NAME & CAPACITY

D. Certificate for Sole Proprietor

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

As witnesses:

1. .....
2. .....

Signature Sole owner: .....

Date: .....

E. Certificate for Close Corporation

We, the undersigned, being the key members in the business trading as .... hereby authorize Mr/Ms ..... acting in the capacity of ....., to sign all documents in connection with the tender for Contract ..... and any contract resulting from it on our behalf.

NAME	ADDRESS	SIGNATURE	DATE

NOTE: This certificate is to be completed and signed by all of the key partners upon who rests the direction of the affairs of the Partnership as a whole.

2.1.3 TENDER FUNCTIONALITY / PRE-QUALIFICATION

Previous experience

- The reference projects must be for the supply, delivery, installation, testing and commissioning of ≥ 500 kWh BATTERY STORAGE SYSTEM (BESS) project or combination thereof.
- A Certificate of Practical Completion or Certificate of Completion signed by the Employer's Agent must be attached for the project referenced herein.
- Tenders will be pre-evaluated on the criteria as set out below. Bidders that score less than **70 percent (70%)** for this criterion will be regarded as non-responsive and will not be evaluated on price, B-BBEE Locality of supplier. Unclear, vague, fragmented or incomplete information provided will result in no points being allocated.
- Bidders must therefore ensure that relevant information is submitted. If information is not submitted or referred to as an attachment, no points will be awarded.
- The following criteria will be used to calculate points for the functionality of tenders and bidders should ensure that they submit all information in order to be pre-evaluated on the criteria mentioned below:

	CRITERIA	**MAXIMUM POINTS**	**BIDDER SCORE**
1	Company (or JV) Experience	**30**	
2	Key Site Staff & Personnel allocated/reserved for this Tender	**25**	
3	Plant, Equipment, Tools & Machinery allocated/reserved for this Tender	**30**	
TOTAL			

Functionality criteria are further divided as follows and points will be awarded as indicated below:

Criterion 1: Company (or JV) Experience

- A maximum of **30** points will be awarded to bidders who met the pre-evaluation qualification and tender functionality information provided. Please note that this section refers to the Company's and its legacy firms on relevant past experience and are not a duplication of Criterion of key staff and Personnel. Meaning this section takes into consideration that the company as an entity has gained relevant experience in the past in similar or relevant Scope of Works.
- Relevant experience is defined as the accumulation of knowledge or skill that results from direct participation in relevant/similar projects or activities and/or as determined by the Kouga Municipality and/or professional consulting engineer where applicable.

- Successfully completed ≥ 500 kWh BATTERY STORAGE SYSTEM (BESS) project.

Experience required:	**Maximum points**	**Bidder Score**
1 – 2 projects successfully completed.	**15**	
3 – 4 projects successfully completed.	**20**	
5 or more projects successfully completed.	**30**	
Total		

- In order to claim points for the above, bidders must submit sufficient information as well as documentary proof of projects.

- Points will only be awarded for relevant & completed experience obtained relevant to the Tender Scope of Works. To be able to gain points the Tenderer must submit proof that the company has obtained the relevant experience for this Tender's Scope of Works & Specifications, and not only parts thereof. If experience is listed, please ensure it is applicable and relevant to the whole of this Tender and not only to parts thereof, otherwise the Bidder will not be awarded the necessary points. Tenders to provide enough experience to score the total points as prescribed **(Attach Completion Certificate)**.

- If no information is provided below or referred to as an additional attachment and no completion certificates provided, **NO POINTS WILL BE AWARDED**.

Employer/Client	**Nature of work**	**Value of Work (incl. VAT)**	**Start and completion date (month and year)** **Duration**
			Start:……... Completion:……... Duration:……
			Start:……... Completion:……... Duration:……
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			Start:……... Completion:……... Duration:……

Criterion 2: Site Staff & Personnel allocated / reserved for this Tender.

- A maximum of **25** points will be awarded at the sole discretion of the Municipality's Bid Evaluation Committee based on the information provided and will be split as follows. Points will only be award once for each staff/personnel allocated to this Tender, no multiple scoring per person.

- In order to claim points for the above bidders must submit detailed Curriculum Vitae (CV) of each key personnel to be used/ allocated for this Tender. The staff or personnel listed above must currently be employed by the Bidder company, if not then a letter stating such intent to employ this person, including this person's signature of willingness & acceptance for the intended duration of the project.

- CV experience listed of key staff must be relevant, current and accompanied by certified qualifications and supporting documents. Points can only be allocated once, meaning one-person-one-score, no multiple scoring. Please note the staff allocated to this Tender must be on-site and used for this Tender. If the person is unavailable during time of execution he/she must be replaced with someone of equal of better value and experience and proof as per CV submitted.

NB: Relevant experience is defined as the accumulation of knowledge or skill that results from direct participation in relevant similar events or activities and/or as determined by the **Kouga Municipality** and/or professional consulting engineer where applicable.

Site Staff & Personnel Required:	Max points	Name of Staff member	Bidder Score
Contract Manager Qualifications: Degree or National Diploma in Electrical Engineering (NQF6 min) • Must be suitably skilled and have CV verifiable experience managing Electrical projects. Is overall responsible for the execution of the works and all associated project management • Must manage all Municipal instructions and ensure execution of Tender specifications. Must inspect and approve all works. manage Payment Certificates • Must be computer literate, compile admin reports, proficient in the use of Excel Spread Sheets, capture data and quantities, daily communication electronically via email etc.	1-5y = 2 points 6-10y = 6 points More than 10y =10 points		

Site Staff & Personnel Required:	Max points	Name of Staff member	Bidder Score
Foreman or Construction Manager & Supervisor **Qualifications:** Construction Manager with PMSA or equivalent PMI. • Must be suitably skilled and have CV verifiable experience as foreman on Electrical projects. • Must supervise the works full-time on site, the team / the workers and the correct use of all plant/machinery. • Must be able to work with local labour. • Must ensure all Codes & Standards specifications are met and carried out.	1-5y = 2 points 6-10y = 6 points More than 10y =10 points		
Skilled Artisan **Qualifications: Trade test (Red seal) and wireman's license (valid and up to date)** • Must be suitably skilled and have CV verifiable experience working on Electrical projects. • Must be able to work on MV and LV networks	1-5y = 1 point 6-10y = 3 points More than 10y =5 points		
TOTAL			**25**

2.1.4 SCHEDULE OF INFRASTRUCTURE AND RESOURCES

Criterion 3: Plant / Tools / Equipment

If the Bidder intends to use plant / tools / equipment other than those stipulated in the Tender Specifications the Bidder must qualify/declare this in their tender document, for the evaluation process. If nothing is qualified or declared, then those stipulated in the Tender Specifications are applicable to this Tender.
A maximum of **30** points will be awarded based on the information provided.

Equipment	Owned by Bidder	Intent to Rent / Hire	Bidder Score
1. LDV / Bakkie and a Trailer.	15	10	
2. Crane Truck 5 – 8 Ton (Tare 4535kg >)	15	10	
TOTAL	**30**	**20**	

The tenderer shall state below what plant / tools / equipment will be available specifically for this Contract. The tenderer shall differentiate, if applicable, between plant / tools / equipment immediately available plant / tools / equipment will be acquired or hired for the work should he be awarded the tender.

If no information is provided below or referred to an additional attachment **NO POINTS WILL BE AWARDED.**

If plant / tools / equipment, as stipulated above, will be rented, proof of the intention to lease it from the supplier or proof of ownership must be submitted with the tender document. **NO POINTS WILL BE AWARDED** if proof is not submitted.

Size of enterprise and current workload:

What was your turnover in the previous financial year? ----------

What is the estimated turnover for your current financial year? ----------

List your current contracts and obligations:

Description	Value ®	Start date	Duration	Expected completed date

Do you have the capacity to supply the goods and services described in this Tender, should the contract be awarded to you? **YES / NO**

Staffing Profile:

Provide information on the staff that you have available to execute this contract (attach a separate list if the space provided is insufficient)

Permanently employed staff: gender and race	**Number of staff**
Temporary staff to be employed for the project: gender and race	**Number of staff**

Name of Tendering Entity: _____

Signature: _____ **Date:** _____

2.1.5 SCHEDULE OF APPROACH AND METHODOLOGY/ WORK PLAN

Understanding the terms of reference / brief

1. Do you as the contractor understand what is required in terms of the project stated above?

Yes		No		(Tick Appropriate Block)

2. If you answered Yes to question 1 above, please explain briefly your understanding of the project in no more than 50 words.

3. Considering questions 1 and 2 above, please provide in summary details of your proposed approach and work plan to the successful completion of the above project.

4. Briefly state if you have any innovative approach for this particular project mentioned above, that you feel will be unique but also economically superior to the normal workable approach at presently undertaken as the norm.

Name of Tendering Entity: _____

Signature: _____ **Date:** _____

2.1.6 SCHEDULE OF SUB-CONTRACTORS

The Bidder shall list below the sub-contractors he/she proposes to employ for part(s) of the work.

Sub-Contractor's Name	Work Activities to be undertaken by the Sub-contractor	Work Recently Executed by Sub-contractor

2.1.7 FINANCIAL REFERENCES

FINANCIAL STATEMENTS

I/We agree, if required, to furnish an audited copy of the latest set of financial statements together with my/our Directors' and Auditors' report for consideration by the Employer.

DETAILS OF TENDERING ENTITY'S BANK

I/We hereby authorize the Employer/Engineer to approach all or any of the following banks for the purposes of obtaining a financial reference:

DESCRIPTION OF BANK DETAIL	BANK DETAILS APPLICABLE TO TENDERER'S HEAD OFFICE
Name of bank	
Branch name	
Branch code	
Street address	
Postal address	
Name of manager	
Telephone number	( )
Fax number	( )
Account number	

2.1.8 PROOF OF BANK RATING CODE

Bank Codes are alphabetical code ratings that express the bank's opinion on the proposed limits and terms as requested by a debtor during the vetting process. Bank Codes contribute to forming the basis of any business agreement, as the banker's opinion is the first step in the credit assessment.

Minimum bank code required: ≥ C

Code	Description	Explanation
A	Undoubted for the amount	A firm indication of undoubted financial standing for the amount stated.
B	Good for the amount	The subject has a good record of meeting their financial commitments, and the amount is well within the capacity of an ordinary business commitment.
C	Good for the amount quoted, if strictly in the way of business	The subject has a good record; the amount may appear high in relation to normal transactions on the account.
D	Fair risk for the amount	The financial position of the subject is modest or unknown, but where the account is satisfactorily conducted. The subject is considered okay for moderate business commitments.
E	Figures considered too high	The amount of enquiry is too high for the given subject and terms.
F	Financial position unknown	This code is given when there is insufficient information to assess the position of the subject. This code is also given when the conduct of the account is such that an opinion cannot be expressed.

The Tenderer is to affix to this page:

- Bank Rating Code Letter

Proof must be submitted with the closing date of tender. Failure to do so will deem your tender nonresponsive.

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BID NO.: 172/2025

PART T2.2: OTHER MUNICIPAL DOCUMENTS REQUIRED FOR TENDER EVALUATION PURPOSES (PART T2.2)

Form 2.2.1	Certificate of Tenderer's Attendance at the Compulsory Information Session / Site Meeting
Form 2.2.2	MBD 1
Form 2.2.3	MBD 4
Form 2.2.4	MBD 5
Form 2.2.5	MBD 6.1
Form 2.2.6	MBD 8
Form 2.2.7	MBD 9
Form 2.2.8	Certificate For Municipal Services
Form 2.2.9	Written Proof of Tenderers registration at the Construction Industry Development Board (CIDB)
Form 2.2.10	Letter of good standing from compensation commissioner (compulsory)
Form 2.2.11	Certificate of Tenderer's Attendance at the Compulsory Clarification Meeting

2.2.1 CERTIFICATE OF TENDERER'S ATTENDANCE AT THE COMPULSORY MEETING

This is to certify that I, ...,

Representative of (Tenderer)

of (address)

Telephone number

Fax number

attended Clarification Meeting on Tuesday, 19th August 2025 at 10:00 in the company of (Kouga Municipality / Employer's Representative)

PLEASE NOTE:

Tenderers are requested to submit the minutes received at above-mentioned compulsory information session/meeting with their Tender documents. (Non-submission of this information may lead to rejection of this Tender)

TENDERER 'S REPRESENTATIVE: .....

KOUGA MUNICIPALITY / EMPLOYER'S REPRESENTATIVE: .....

PART A
INVITATION TO BID

YOU ARE HEREBY INVITED TO BID FOR REQUIREMENTS OF THE KOUGA MUNICIPALITY					
BID NUMBER:	**172/2025**	CLOSING DATE:	**8 September 2025**	CLOSING TIME:	**12H00**
DESCRIPTION	FOR THE ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.				

BID RESPONSE DOCUMENTS **MUST** BE DEPOSITED IN THE BID BOX SITUATED AT

KOUGA MUNICIPALITY
16 WOLTEMADE STREET (front – room 122) OR 21 ST. CROIX STREET (back)
JEFFREYS BAY
The tender box is only accessible during normal office hours

SUPPLIER INFORMATION				
NAME OF BIDDER				
POSTAL ADDRESS				
STREET ADDRESS				
CONTACT PERSON				
TELEPHONE NUMBER	CODE		NUMBER	
CELLPHONE NUMBER				
FACSIMILE NUMBER	CODE		NUMBER	
E-MAIL ADDRESS				
VAT REGISTRATION NUMBER				
TAX COMPLIANCE STATUS	TCS PIN:		**OR** CSD No:	
B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE [TICK APPLICABLE BOX]	☐ Yes ☐ No		B-BBEE STATUS LEVEL SWORN AFFIDAVIT	☐ Yes ☐ No

[A B-BBEE STATUS LEVEL VERIFICATION CERTIFICATE/ SWORN AFFIDAVIT (FOR EMES & QSEs) MUST BE SUBMITTED IN ORDER TO QUALIFY FOR PREFERENCE POINTS FOR B-BBEE]

SIGNATURE OF BIDDER		DATE	
CAPACITY UNDER WHICH THIS BID IS SIGNED			

BIDDING PROCEDURE ENQUIRIES MAY BE DIRECTED TO:		**TECHNICAL INFORMATION MAY BE DIRECTED TO:**	
DEPARTMENT		CONTACT PERSON	JB SNYMAN
CONTACT PERSON	Mr T Madatt	TELEPHONE NUMBER	044 691 2074
TELEPHONE NUMBER	042 200 2200	E-MAIL ADDRESS	jb.cvw@cvw-e.com
E-MAIL ADDRESS	tmadatt@kouga.gov.za		

PART B
TERMS AND CONDITIONS FOR BIDDING

1. BID SUBMISSION:

1.1. BIDS MUST BE DELIVERED BY THE STIPULATED TIME TO THE CORRECT ADDRESS. LATE BIDS WILL NOT BE ACCEPTED FOR CONSIDERATION.

1.2. **ALL BIDS MUST BE SUBMITTED ON THE OFFICIAL FORMS PROVIDED–(NOT TO BE RE-TYPED) OR ONLINE**

1.3. THIS BID IS SUBJECT TO THE PREFERENTIAL PROCUREMENT POLICY FRAMEWORK ACT AND THE PREFERENTIAL PROCUREMENT REGULATIONS, 2022, THE GENERAL CONDITIONS OF CONTRACT (GCC) AND, IF APPLICABLE, ANY OTHER SPECIAL CONDITIONS OF CONTRACT.

2. TAX COMPLIANCE REQUIREMENTS

2.1 BIDDERS MUST ENSURE COMPLIANCE WITH THEIR TAX OBLIGATIONS.

2.2 BIDDERS ARE REQUIRED TO SUBMIT THEIR UNIQUE PERSONAL IDENTIFICATION NUMBER (PIN) ISSUED BY SARS TO ENABLE THE ORGAN OF STATE TO VIEW THE TAXPAYER'S PROFILE AND TAX STATUS.

2.3 APPLICATION FOR THE TAX COMPLIANCE STATUS (TCS) CERTIFICATE OR PIN MAY ALSO BE MADE VIA E-FILING. IN ORDER TO USE THIS PROVISION, TAXPAYERS WILL NEED TO REGISTER WITH SARS AS E-FILERS THROUGH THE WEBSITE WWW.SARS.GOV.ZA.

2.4 FOREIGN SUPPLIERS MUST COMPLETE THE PRE-AWARD QUESTIONNAIRE IN PART B:3.

2.5 BIDDERS MAY ALSO SUBMIT A PRINTED TCS CERTIFICATE TOGETHER WITH THE BID.

2.6 IN BIDS WHERE CONSORTIA / JOINT VENTURES / SUB-CONTRACTORS ARE INVOLVED, EACH PARTY MUST SUBMIT A SEPARATE TCS CERTIFICATE / PIN / CSD NUMBER.

2.7 WHERE NO TCS IS AVAILABLE BUT THE BIDDER IS REGISTERED ON THE CENTRAL SUPPLIER DATABASE (CSD), A CSD NUMBER MUST BE PROVIDED.

3. QUESTIONNAIRE TO BIDDING FOREIGN SUPPLIERS

3.1. IS THE ENTITY A RESIDENT OF THE REPUBLIC OF SOUTH AFRICA (RSA)?
☐ YES ☐ NO

3.2. DOES THE ENTITY HAVE A BRANCH IN THE RSA?
☐ YES ☐ NO

3.3. DOES THE ENTITY HAVE A PERMANENT ESTABLISHMENT IN THE RSA?
☐ YES ☐ NO

3.4. DOES THE ENTITY HAVE ANY SOURCE OF INCOME IN THE RSA?
☐ YES ☐ NO

3.5. IS THE ENTITY LIABLE IN THE RSA FOR ANY FORM OF TAXATION?
☐ YES ☐ NO

IF THE ANSWER IS "NO" TO ALL OF THE ABOVE, THEN IT IS NOT A REQUIREMENT TO REGISTER FOR A TAX COMPLIANCE STATUS SYSTEM PIN CODE FROM THE SOUTH AFRICAN REVENUE SERVICE (SARS) AND IF NOT REGISTER AS PER 2.3 ABOVE.

NB: FAILURE TO PROVIDE ANY OF THE ABOVE PARTICULARS MAY RENDER THE BID INVALID.

NO BIDS WILL BE CONSIDERED FROM PERSONS IN THE SERVICE OF THE STATE.

SIGNATURE OF BIDDER: ……

CAPACITY UNDER WHICH THIS BID IS SIGNED: ……

DATE: ……...

Protection of Personal Information Act, 2013 (Act no.4 of 2013) (POPIA)

All parties agree that they will comply with Protection of Personal Information Act, 2013 (Act no.4 of 2013) (POPIA) and process all the information and/or personal data in respect of the goods and/or services being rendered in accordance with the said act and only for the purpose of providing the goods and/or services set out in the agreement to provide such goods and/or services.

The contract between the municipality and the service provider must ensure compliance with the Protection of Personal Information Act, 2013 (Act no.4 of 2013) (POPIA), in that the service provider establishes and maintains security measures to safeguard personal information being processed on behalf of the municipality. The service provider must notify the municipality immediately in an event where there are reasonable grounds to believe personal information has been accessed by an unauthorized person.

The contract with a service provider must ensure confidentiality of personal information processed on behalf of the municipality. A supply contract with a service provider must include standard clauses outlining joint responsibility in terms of the protection of personal information.

……..	……..……..
Signature	Date
……..	……..……..
Capacity	Name of Bidder

REGISTRATION OF SUPPLIERS ON THE CENTRALISED SUPPLIER DATABASE

Recent development in terms of Municipal Supply Chain Management prescripts require that all prospective suppliers register on the National Treasury Centralized Supplier Database (CSD).

The CSD is a single database to serve as the source of all supplier information for all spheres of government. The purpose of centralising government's supplier database is to reduce duplication of effort and cost for both supplier and government.

The benefits to suppliers for registering on the CSD are:

- Supplier will only be required to register once when they do business with government
- A supplier will be able to ensure their data is up-to-date, complete and accurate;
- Standardised and electronic verification of supplier information leading to reduced fraud with paper copies and manual processes;
- Supplier will not be required to submit physical tax clearance and business registration certificate to organs of state; and
- Single source of supplier information to all organs of state

Registration on the CSD is via the following website: https://secure.csd.gov.za/.

- All suppliers are required to complete information on the CSD website and must ensure it is complete, accurate and comprehensive. The following would be amongst the required information:
- Supplier information i.e. supplier type, identification number, supplier name, trading name and country of origin;
- Supplier contact i.e. preferred contact person, preferred communication method, e-mail address, cell phone number, telephone number, etc. ;
- Supplier address i.e. country, province, municipality, city, suburb, ward and postal code;
- Bank account information;
- Supplier tax information;
- Ownership information, i.e. name and identification number of directors, members etc.;
- Association to any other suppliers i.e. branch, consortium members etc.; and
- Commodities the supplier can supply.

A valid email address, identity number, cell phone number and bank account details are mandatory in order to register on the CSD.
No proof of documentation is necessary as the CSD will electronically validate and authenticate all the information. Your entity will be issued with a unique CSD number (MAAA…….), which will be used as a reference and must be stated on all quotations and tenders as from 1 July 2016.

Failure to register may result in Kouga Municipality not being able to conduct business with your company/entity.

BIDDER CSD NUMBER: MAAA..... (MUST be provided)

2.2.3 MBD 4

DECLARATION OF INTEREST

1.	No bid will be accepted from persons in the service of the state*.	
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 the 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 / her representative: ……..	
3.2	Identity number: ……	
3.3	Position occupied in the Company (director, trustee, shareholder²): ……..	
3.4	Company Registration Number: ……	
3.5	Tax Reference Number: ……..	
3.6	VAT Registration Number: ……..…….	
3.7	The names of all directors / trustees / shareholders / members, their individual identity numbers and state employee numbers (where applicable) 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 the following particulars: Name of person / director / trustee / shareholder member: …….. Name of state institution at which you or the person connected to the bidder is employed: …….. Position occupied in the state institution: …….. Any other particulars: ……. ……..	
3.9	Have you been in the service of the state for the past twelve months?	**YES / NO**

3.9.1	If so, furnish particulars. …….. ……..	
3.10 3.10.1	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? If yes, furnish the following particulars: Name of person: ……. Name of state institution at which you or the person connected to the bidder is employed: …….. Position occupied in the state institution: …….. Any other particulars: ……. ……..	**YES / NO**
3.11 3.11.1	Are you aware of any relationship (family, friend, other) between the bidder and any person in the service of the state who may be involved with the evaluation and or adjudication of this bid? If yes, furnish the following particulars: Name of person: ……. Name of state institution at which you or the person connected to the bidder is employed: …….. Position occupied in the state institution: …… Any other particulars: ……. …….....	**YES / NO**
3.12 3.12.1	Are any of the company's directors, managers, principal shareholders or stakeholders in the service of the state? If yes, furnish the following particulars: Name of person / director / trustee / shareholder / member:	**YES / NO**

	…… Name of state institution at which you or the person connected to the bidder is employed: …….. Position occupied in the state institution: …… Any other particulars: ……. ……..……..	
3.13 3.13.1	Is any spouse, child or parent of the company's directors, trustees, managers, principle shareholders or stakeholders in the service of the state? If yes, furnish the following particulars: Name of person / director / trustee / shareholder / member: …… Name of state institution at which you or the person connected to the bidder is employed: …….. Position occupied in the state institution: …… Any other particulars: ……. …….……..	**YES / NO**
3.14 3.14.1	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? If yes, furnish particulars: …….. ……..	**YES / NO**

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

THE FOLLOWING INFORMATION IS COMPULSORY TO COMPLETE:

Full Name	Identity Number	Individual Tax Number for each Director	State Employee Number (where applicable)

5.	**The contract will be automatically cancelled if there is a conflict of interest which is not disclosed by the bidder.**

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 or 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 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 exercise control over the company.

…….. ……..

Signature **Date**

……. ……

Capacity **Name of Bidder (Company)**

2.2.4 MBD 5

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

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

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

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

……..…….

……

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

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

2.2 If yes, provide particulars.

……..…….

……

……..…….

……

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

3.1 If yes, provide particulars.

……..…….

……

……..…….

……

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

4.1 If yes, furnish particulars.

……..…….

……

……..…….

……

CERTIFICATION

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

……..	……..……..……..
Signature	Date
……	…….
Position	Name of Bidder

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

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

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

---

1. **GENERAL CONDITIONS**

1.1 The following preference point systems are applicable to invitations to tender:

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

1.2 **To be completed by the organ of state**

The applicable preference point system for this tender is the 80/20 preference point system.

1.3 Points for this tender (even in the case of a tender for income-generating contracts) shall be awarded for:

(a) Price;

(b) BBBEE; and

(c) Specific Goals.

1.4 **To be completed by the organ of state:**

The maximum points for this tender are allocated as follows:

	POINTS
PRICE	80/90
BBBEE	10/5
SPECIFIC GOALS	10/5
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 regarding 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 90 points is allocated for price on the following basis: 90/10

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

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

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

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 BBBEE AND 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:

4.1.1 Points awarded for B-BBEE Level of Contributor

In terms of the Specific Goals as per the Kouga Municipality Preferential Procurement Policy, preference points must be awarded to a tenderer for attaining the B-BBEE status level of contribution in accordance with the table below:

B-BBEE Status Level of Contributor	Number of Points for Preference (80/20)	Number of Points for Preference (90/10)
1	10	5
2	9	4.5
3	7	3
4	6	2.5
5	4	2
6	3	1.5
7	2	1
8	1	0.5
Non-compliant contributor	0	0

Bidder MUST submit a valid BBBEE certificate; failure to attach no points will be awarded for BBBEE points.

Bidder MUST submit proof of address (e.g., municipal account, rental/lease agreement, or affidavit) not older than three (3) months. Failure to attach proof will result in no points awarded for Specific Goals.

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.

BID DECLARATION

Tenderers who claim points in respect of BBBEE must complete the following:

B-BBEE STATUS LEVEL OF CONTRIBUTOR CLAIMED IN TERMS OF PARAGRAPHS 4.1 AND 4.1.1

4.3.	**Contribution to BBBEE: ..... = ...……(maximum of 5 or 10 points)**

(Points claimed in respect of paragraph 5.1 must be in accordance with the table reflected in paragraph 4.1.1 and **must be substantiated by relevant proof of B-BBEE status level of contributor.**)

LOCALITY OF TENDERERS OFFICE CLAIMED IN TERMS OF PARAGRAPHS 4.1 AND 4.1.2

4.4.	**Contribution to specific Goals: ..... =.....……(maximum of 5 or 10 points)**

(Points claimed in respect of paragraph 5.2 must be in accordance with the table reflected in paragraph 4.1.2 and **must be substantiated by relevant proof of address of a company office.)**

DECLARATION WITH REGARD TO COMPANY/FIRM

4.5. Name of company/firm…….

4.6. Company registration number: ……..

4.7. 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]

4.8. 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 5.1 and 5.2, 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: ……

……

DECLARATION OF BIDDER'S PAST SUPPLY CHAIN MANAGEMENT PRACTICES

1 This Municipal Bidding Document must form part of all bids invited.

2 It serves as a declaration to be used by municipalities and municipal entities in ensuring that when goods and services are being procured, all reasonable steps are taken to combat the abuse of the supply chain management system.

3 The bid of any bidder may be rejected if that bidder, or any of its directors have:

a. abused the municipality's / municipal entity's supply chain management system or committed any improper conduct in relation to such system;
b. been convicted for fraud or corruption during the past five years;
c. 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 (No 12 of 2004).

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

Item	Question	Yes	No
4.1	Is the bidder or any of its directors listed on the National Treasury's Database of Restricted Suppliers as companies or persons prohibited from doing business with the public sector? (Companies or persons who are listed on this Database were informed in writing of this restriction by the Accounting Officer/Authority of the institution that imposed the restriction after the *audi alteram partem* rule was applied). **The Database of Restricted Suppliers now resides on the National Treasury's website (www.treasury.gov.za) and can be accessed by clicking on its link at the bottom of the home page.**	Yes ☐	No ☐
4.1.1	If so, furnish particulars:		

4.2	Is the bidder or any of its directors listed on the Register for Tender Defaulters in terms of section 29 of the Prevention and Combating of Corrupt Activities Act (No 12 of 2004)? **The Register for Tender Defaulters can be accessed on the National Treasury's website (www.treasury.gov.za) by clicking on its link at the bottom of the home page.**	Yes ☐	No ☐
4.2.1	If so, furnish particulars:		
4.3	Was the bidder or any of its directors convicted by a court of law (including a court of law outside the Republic of South Africa) for fraud or corruption during the past five years?	Yes ☐	No ☐
4.3.1	If so, furnish particulars:		
4.4	Does the bidder or any of its directors owe any municipal rates and taxes or municipal charges to the municipality / municipal entity, or to any other municipality / municipal entity, that is in arrears for more than three months?	Yes ☐	No ☐
4.4.1	If so, furnish particulars:		
4.5	Was any contract between the bidder and the municipality / municipal entity or any other organ of state terminated during the past five years on account of failure to perform on or comply with the contract?	Yes ☐	No ☐
4.7.1	If so, furnish particulars:		

CERTIFICATION

I, THE UNDERSIGNED (FULL NAME) ……..……..……
CERTIFY THAT THE INFORMATION FURNISHED ON THIS DECLARATION FORM TRUE AND CORRECT.
I ACCEPT THAT, IN ADDITION TO CANCELLATION OF A CONTRACT, ACTION MAY BE TAKEN AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

……...	**……..**
Signature	**Date**
……	**……..**
Position	**Name of Bidder (Company)**

CERTIFICATE OF INDEPENDENT BID DETERMINATION

1. This Municipal Bidding Document (MBD) must form part of all bids[1] invited.

2. Section 4 (1) (b) (iii) of the Competition Act No. 89 of 1998, as amended, prohibits an agreement between, or concerted practice by, firms, or a decision by an association of firms, if it is between parties in a horizontal relationship and if it involves collusive bidding (or bid rigging).[2] Collusive bidding is a *pe se* prohibition meaning that it cannot be justified under any grounds.

3. Municipal Supply Regulation 38(1) prescribes that a supply chain management policy must provide measures for the combating of abuse of the supply chain management system, and must enable the accounting officer, among others, to:

   3.1 take all reasonable steps to prevent such abuse;
   3.2 reject the bid of any bidder if that bidder or any of its directors has abused the supply chain management system of the municipality or municipal entity or has committed any improper conduct in relation to such system; and
   3.3 cancel a contract awarded to a person if the person committed any corrupt or fraudulent act during the bidding process or the execution of the contract.

4. This MBD serves as a certificate of declaration that would be used by institutions to ensure that, when bids are considered, reasonable steps are taken to prevent any form of bid-rigging.

5. In order to give effect to the above, the attached Certificate of Bid Determination (MBD9) must be completed and submitted with the bid:

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

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

CERTIFICATE OF INDEPENDENT BID DETERMINATION

I, the undersigned, in submitting the accompanying bid:

_____

(Bid Number and Description)

in response to the invitation for the bid made by:

KOUGA MUNICIPALITY

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

I certify, on behalf of: _____ that:

(Name of Bidder)

6. I have read and I understand the contents of this Certificate;

7. I understand that the accompanying bid will be disqualified if this Certificate is found not to be true and complete in every respect;

8. I am authorized by the bidder to sign this Certificate, and to submit the accompanying bid, on behalf of the bidder;

9. Each person whose signature appears on the accompanying bid has been authorized by the bidder to determine the terms of, and to sign, the bid, on behalf of the bidder;

10. For the purposes of this Certificate and the accompanying bid, I understand that the word “competitor” shall include any individual or organization, other than the bidder, whether or not affiliated with the bidder, who:

    10.1 has been requested to submit a bid in response to this bid invitation;
    10.2 could potentially submit a bid in response to this bid invitation, based on their qualifications, abilities or experience; and
    10.3 Provides the same goods and services as the bidder and/or is in the same line of business as the bidder.

11 The bidder has arrived at the accompanying bid independently from, and without consultation, communication, agreement or arrangement with any competitor. However, communication between partners in a joint venture or consortium[3] will not be construed as collusive bidding.

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

12.1 prices;
12.2 geographical area where product or service will be rendered (market allocation);
12.3 methods, factors or formulas used to calculate prices;
12.4 the intention or decision to submit or not to submit, a bid;
12.5 the submission of a bid which does not meet the specifications and conditions of the bid; or bidding with the intention not to win the bid.

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

14. The terms of the accompanying bid have not been, and will not be, disclosed by the bidder, directly or indirectly, to any competitor, prior to the date and time of the official bid opening or of the awarding of the contract.

15. I am aware that, in addition and without prejudice to any other remedy provided to combat any restrictive practices related to bids and contracts, bids that are suspicious will be reported to the Competition Commission for investigation and possible imposition of administrative penalties in terms of section 59 of the Competition Act No. 89 of 1998 and or may be reported to the National Prosecuting Authority (NPA) for criminal investigation and or may be restricted from conducting business with the public sector for a period not exceeding ten (10) years in terms of the Prevention and Combating of Corrupt Activities Act No. 12 of 2004 or any other applicable legislation.

……	……
Signature	Date
…….	……
Position	Name of Bidder

[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.

2.2.8 CERTIFICATE FOR MUNICIPAL SERVICES (COMPULSORY TO COMPLETE)

Information required in terms of the Supply Chain Management Regulations, Regulation 28 (1) (c).

Tender Number: 172/2025

Name of the Bidder: _____

DETAILS OF THE BIDDER/S: Owner / Proprietor / Director(s) / Partner(s), etc:

Physical Business address of the Bidder	Municipal Account Number(s)

If there is not enough space for all the names, please attach the additional details to the Tender document.

Name of Director / Member / Partner	Identity Number	Physical **residential** address of Director / Member / Partner	Municipal Account number(s)

I, _____, the undersigned,
(full name in block letters)
certify that the information furnished on this declaration form is correct and that I/we have no undisputed commitments for municipal services towards a municipality or other service provider in respect of which payment if overdue for more than 30 days.

_____
Signature

THUS DONE AND SIGNED for and on behalf of the Bidder / Contractor

at _____ on the _____ day of _____ 2025.

PLEASE NOTE:

MUNICIPAL ACCOUNTS FOR ALL PROPERTIES OWNED BY BIDDER/S MUST BE ATTACHED TO THE TENDER DOCUMENT! Even if the requested information is not applicable to the Bidder, the table above should be endorsed NOT APPLICABLE with a reason and THIS DECLARATION MUST STILL BE COMPLETED AND SIGNED. In the event of leasing, a lease agreement MUST be attached to the tender document.

2.2.9 PROOF OF REGISTRATION AT THE CONSTRUCTION INDUSTRY DEVELOPMENT BOARD (CIDB) (COMPULSORY)

The Tenderer is to affix to this page:

- Written proof of Tenderers registration at the CIDB.

2.2.10 LETTER OF GOOD STANDING FROM COMPENSATION COMMISSIONER (COMPULSORY)

The Tenderer is to affix to this page:

- Letter of good Standing

  COMPENSATION FOR OCCUPATIONAL INJURIES AND DISEASES ACT 130 OF 1993 (AS AMENDED).

KOUGA LOCAL MUNICIPALITY

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Part T2.3: Returnable Schedules that will be Incorporated in the Contract

Form 2.3.1 Record of Addenda to Tender Documents

2.3.1 Record Of Addenda To Tender Documents

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

	Date	**Title or Details**
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Attach additional pages if more space is required.

Signed: ……..…….. Date: ……

Name: ……..… Position: ……..

SIGNED ON BEHALF OF TENDERER: .....

KOUGA LOCAL MUNICIPALITY

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Part C: The Contract

The Contract (Part C)

Part C1	Agreement and Contract Data
Part C2	Pricing Data
Part C3	Scope of Works

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Part C1: Agreement and Contract Data

Agreement And Contract Data (Part C1)

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Tender Notice Number 172/2025 for the ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.

BID NO.: 172/2025

Part C1.1: Form of Offer and Acceptance

(AGREEMENT) OFFER

The Employer, identified in the Acceptance signature block, has solicited offers to enter into a contract for the procurement of:

.....

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 Tender 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 apart of this Form of Offer and Acceptance, the Tenderer offers to perform all of the obligations and liabilities of the Service Provider 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:

.....

..... Rand (in words); R ..... (in figures),

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 Service Provider in the Conditions of Contract identified in the Contract Data.

Signature(s) _____

Name(s) _____

_____

Capacity

_____

(Name and address of organisation)

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 Service Provider 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 C1 Agreements and Contract Data
(which includes this Form of Offer and Acceptance)
Part C2 Pricing Data
Part C3 Scope of Work

and drawings and documents or parts thereof, which may be incorporated by reference into Parts C1 to C3 above.

The Tenderer shall within two weeks after receiving a completed copy of this Agreement, contact the Employer's representative (whose details are given in the Contract Data) to arrange the delivery of any bonds, 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 working 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.

Signature: _____

Name _____

Capacity _____

KOUGA MUNICIPALITY
33 DA GAMA STREET
JEFFREYS BAY

It is expressly agreed that no other matter whether in writing, 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 THE TENDERER:

Signature(s) _____

Name(s) _____

Capacity _____

_____
(Name and address of organisation)

FOR THE EMPLOYER:

Signature: _____

Name _____

Capacity _____

KOUGA MUNICIPALITY
33 DA GAMA STREET
JEFFREYS BAY

Part C1.2: Contract Data

C1.2 CONTRACT DATA

The General Conditions of Contract for Construction Works, Third Edition, 2015 published by the South African Institution of Civil Engineering, Private Bag X200, Halfway House, 1685, is applicable to this Contract and is obtainable from www.saice.org.za .

The Conditions of Contract are:

- the "General Conditions of Contract"

  as they appear in the commercially available publication "*General Conditions of Contract for Construction Works, Third Edition (2015)*", published by the South African Institution of Civil Engineering (SAICE) as the August 2015 print edition, hereinafter referred to as GCC 2015; and

- Specific data as contained in this Contract Data.

Each party to the Contract shall purchase its own copy of the GCC 2015, from a duly authorised commercial vendor or directly from the publisher:

South African Institution of Civil Engineering
Private Bag X200
Halfway House 1685
South Africa
Tel+27(0)11 8055947

PART 1: DATA PROVIDED BY THE EMPLOYER

The following contract specific data are applicable to this Contract:

Clause	Data
1.1.1.13	The Defects Liability Period is 12 months measured from the date of the Certificate of Completion.
1.1.1.14	The time for achieving Practical Completion includes the days referred to under Clause 5.3.2 and the non-working days but excludes the special non-working days (Clauses 5.1.1 and 5.8.1).
1.1.1.15	The name of the Employer is Kouga Municipality.
1.1.1.16	The name of the Employer's Agent is CVW Consulting Engineers. Also referred to as the "Engineer" elsewhere in this document.
1.1.1.26	The Pricing Strategy is a Re-measurement Contract.
1.2.1.2	The address of the Employer is: Address (physical): 33 Da Gama Street Address (postal): PO Box 21, Jeffreys Bay, 6330 Telephone: (042) 200 2200 E-mail: tmadatt@kouga.gov.za
1.2.1.2	The address of the Employer's Agent is: Address (physical: 24 Bland Street, Mossel Bay Address (postal): PO BOX 281, Hartenbos, 6520 Telephone: 044-691-2074 e-mail: jb.cvw@cvw-e.com
3.2.3	The Employer's Agent shall obtain the specific approval of the Employer before carrying out any of his functions or duties according to the following Clauses of the General Conditions of Contract: None.
5.1.1	The non-working days are Sundays, with the exception of work which must be undertaken during scheduled outages planned for Sundays.
5.8.1	The special non-working days are: The public holidays. The year-end break commences on about 16 December and ending on about the first Monday of the subsequent year, or the days on which the Contractor grants the majority of his permanent workforce leave.
5.3.1	The documentation required before commencing with the Works are: • Health and Safety Plan (refer to Clause 4.3 of the GCC 2015 conditions). • Initial programme (refer to Clause 5.6). Security (refer to Clause 6.2). • Insurance (refer to Clause 8.6). • Occupational Health and Safety Agreement (refer to Part C1.4 hereof). • Letter of Good Standing from the Compensation Commissioner.
5.3.2	The time to submit the documentation required before commencement of the Works is 14 days.

Clause	Data
5.12.2.2	A delay caused by inclement weather conditions will be regarded as a delay only if, in the opinion of the Employer's Agent, all progress on an item or items of work on the critical path of the working programme of the Contractor has been brought to a halt. Delays on working days only (based on a five-day working week) will be taken into account for the extension of time, but the Contractor shall make provision in his programme of work for an expected delay of two (2) working days per month caused by normal rainy weather, for which he will not receive any extension of time. Extension of time during working days will be granted to the degree to which actual delays, as defined above, exceed the number of two (2) working days. It shall be further noted that where the critical path is not affected, no extension of time for abnormal climatic conditions or for any other reason will be entertained. Abnormal climatic conditions are conditions that occur less frequently than once in ten years.
5.13.1	The penalty for failing to complete a works instruction in the time as confirmed under Item 5.6.1 above is R 3 000.00 excl. VAT per day. The Contractor must pay Delay Liquidated Damages in the amount equal to [0.1% of the Contract Price per day] from the Scheduled Date for Works Completion to the earlier of the Works Completion Date and the date this Contract is terminated up to a limit of [5% of the Contract Price].
5.14.1	The requirements for achieving Practical Completion are that the Works must be in a state of readiness, fit for the intended purpose and occupation without danger or undue inconvenience to the Employer.
5.16.3	The latent defects period is five (5) years.
6.5.1.2.3	The percentage allowance on the net cost of materials actually used in the completed Works is 10%, unless specifically tendered otherwise in the Pricing Schedules. The percentage allowance on the gross remuneration of the workmen and foremen actually engaged is 10%, unless specifically tendered otherwise in the Pricing Schedules.
6.8.2	Contract Price Adjustment (CPA) will be allowed. Price adjustment shall be increased or decreased by applying a "Contract Price Adjustment Factor" calculated according to the formula and the conditions set out in the Contract Price Adjustment Schedule.
6.8.3	Price adjustments for variations in the costs of special materials are allowed. The price of each special material specified in the Contract Data shall increase or decreased by the net amount of any variation incurred after the date of tender on the basis set out in the Contract Data, provided that any claim for the adjustment in terms hereof shall be substantiated by the submission acceptable invoices and any other supporting documents that the employer's Agent consider necessary for the purpose, and provided also no further adjustment be permitted price of "special material" after the Due Completion Date unless such material form part of any additional work or variation ordered to be carried out after the date.
6.10.1.5	The percentage advance on materials not yet built into the Permanent Works is 80%. The percentage advance on Plant not yet supplied to Site is 80%. Documentary evidence of ownership and an indemnity against claims in respect of the plant and or materials shall be provided, and items shall be clearly marked and identified as being the property of the Employer. A Certificate of Ownership of Plant / Materials as per Part C1.5 shall be submitted to the Employer's Agent together with the claim for payment.
6.10.3	Retention of 10% will be withheld on progress payment, up to the limit of retention money which is 5% of the Contract Sum. A guarantee in lieu of retention is not permitted.

Clause	Data
6.11	Failing agreement, between the Contractor and the Employer's Agent, both the Preliminary and General Fixed Charge and Time Related Items shall be adjusted on a pro-rata basis.
8.6.1.1.2	The value of Plant and material supplied by the Employer to be included in the insurance sum is R Nil
8.6.1.3	The amount to cover professional fees for repairing damage and loss to be included in the insurance sum is 5% of the contract sum.
10.3.2	The limit of indemnity for liability insurance is R10 million.
10.5.3	Amicable settlement in terms of Clause 10.4 shall be contemplated for all disputes prior to referring any dispute to adjudication or arbitration.
10.7.1	The number of Adjudication Board Members to be appointed is one (1). The determination of disputes which are unresolved in terms of Clause 10.4.2 shall be by arbitration.

PART 2: DATA PROVIDED BY THE SERVICE PROVIDER

<table>
<tr><td>Clause</td><td colspan="2">Data</td></tr>
<tr><td>1.1.1.9</td><td colspan="2">The name of the Contractor is
……...</td></tr>
<tr><td>1.2.1.2</td><td colspan="2">The address of the Contractor is:
Address (physical): …….
Address (postal):
……..
Telephone: ……
E-mail: ……</td></tr>
<tr><td>1.1.1.14</td><td colspan="2">The time for achieving Practical Completion measured from the Contract Commencement Date is ……. working weeks.</td></tr>
<tr><td rowspan="4">6.2.1</td><td colspan="2">The security to be provided by the Contractor shall be one of the following:</td></tr>
<tr><td>Type of security
Contractor’s (Value Added Tax is excluded from the Contract Sum and the value of the Works for calculating the percentages)</td><td>Contractor’s Choice (Indicate “Yes” or “No”)</td></tr>
<tr><td>Cash deposit of 10% of the Contract Sum plus retention of 5% of the value of the Works</td><td>……</td></tr>
<tr><td>Performance guarantee of 10% of the contract sum plus 10% of the Contract Sum plus retention of 5% of the value of the Works.</td><td>……</td></tr>
<tr><td></td><td>Variable Performance guarantee of 10% of the Contract Sum for the first period and 5% of the Contract Sum for the second period plus retention of 5% of the value of the Works.</td><td>NO</td></tr>
</table>

KOUGA LOCAL MUNICIPALITY

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BID NO.: 172/2025

Part C1.3: Form of Performance Guarantee

C1.4.1 PRO FORMA PERFORMANCE GUARANTEE

For use with the General Conditions of Contract for Construction Works, Third Edition (2015)

GUARANTOR DETAILS AND DEFINITIONS

"Guarantor" means:

……

Physical Address:

……

"Employer" means:

……

"Contractor" means:

……

"Employer's Agent" means:

……

"Works" means:

……

"Site" means:

……

“Contract” means: The Agreement made in terms of the Form of Offer and Acceptance and such amendments or additions to the Contract as may be agreed in writing between the parties.

“Contract Sum” means: The accepted amount inclusive of tax of R……...

Amount in words:

…….....

“Guaranteed Sum” means: The maximum aggregate amount of R …….

Amount in words:……..…….....

Type of Performance Guarantee: ……..… (Insert Variable or Fixed) “Expiry Date” means: …… (Give date) or any other later date set by the Contractor and/or Employer provided such instruction is received prior to the Expiry Date as indicated here.

1. VARIABLE PERFORMANCE GUARANTEE

1.1 Where a Variable Performance Guarantee has been selected, the Guarantor's liability shall be limited during the following periods to diminishing amounts of the Guaranteed Sum as follows:

1.1.1 From and including the date of signing the Performance Guarantee up to and including the date of the interim payment certificate certifying, for the first time, more than 50% of the Contract Sum: R …… (Amount in words) ……..

1.1.2 From the day following the date of the said interim payment certificate up to and including
the Expiry date, or the date of issue by the Employer's Agent of the Certificate of Completion of the Works, whichever occurs first:
R …… (Amount in words) ……

1.2 The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the interim payment certificate certifying, for the first time, more than 50% of the Contract Sum, has been issued and the date on which the Certificate of Completion of the Works has been issued.

2. FIXED PERFORMANCE GUARANTEE

2.1. Where a Fixed Performance Guarantee has been selected, the Guarantor's liability shall be limited to the amount of the Guaranteed Sum.

2.2. The Guarantor's period of liability shall be from and including the date on which the Performance Guarantee is signed, up to and including the Expiry Date, or the date of issue by the Employer's Agent of the Certificate of Completion of the Works, or the date of payment in full of the guaranteed Sum, whichever occurs first.

2.3 The Employer's Agent and/or the Employer shall advise the Guarantor in writing of the date on which the Certificate of Completion of the Works has been issued.

3. CONDITIONS APPLICABLE TO VARIABLE AND FIXED PERFORMANCE GUARANTEES

3.1 The Guarantor hereby acknowledges that:

3.1.1 Any reference in this Performance Guarantee to the Contract is made for the purpose of convenience and shall not be construed as any intention whatsoever to create an accessory obligation or any intention whatsoever to create a suretyship.

3.1.2 Its obligation under this Performance Guarantee is restricted to the payment of money.

3.2 Subject to the Guarantor's maximum liability referred to in 1.1 or 2.1, the Guarantor hereby undertakes to pay the Employer the sum certified upon receipt of the documents identified in 3.2.1 to 3.2.3:

3.2.1 A copy of a first written demand issued by the Employer to the Contractor stating that payment of a sum certified by the Employer's Agent in an Interim of Final Payment Certificate has not been made in terms of the Contract and failing such payment within seven (7) calendar days, the Employer intends to call upon the Guarantor to make payment in terms of 3.2.2;

3.2.2 A first written demand issued by the Employer to the Guarantor at the Guarantor's physical address with a copy to the Contractor stating that a period of seven (7) days has elapsed since the first written demand in terms of 3.2.1 and the sum certified has still not been paid;

3.2.3 A copy of the aforesaid payment certificate which entitles the Employer to receive payment in terms of the Contract of the sum certified in 3.2.

3.3 Subject to the Guarantor's maximum liability referred to in 1.1 or 2.1, the Guarantor undertakes to pay to the Employer the Guaranteed Sum or the full outstanding balance upon receipt of a first written demand from the Employer to the Guarantor at the Guarantor's physical address calling up this Performance Guarantee, such demand stating that:

3.3.1 The Contract has been terminated due to the Contractor's default and that this Performance Guarantee is called up in terms of 3.3; or

3.3.2 A provisional or final sequestration or liquidation court order has been granted against the Contractor and that the Performance Guarantee is called up in terms of 3.3; and

3.3.3 The aforesaid written demand is accompanied by a copy of the notice of termination and/or the provisional/final sequestration and/or the provisional liquidation court order.

3.4 It is recorded that the aggregate amount of payments required to be made by the Guarantor in terms of 3.2 and 3.3 shall not exceed the Guarantor's maximum liability in terms of 1.1 or 2.1.

3.5 Where the Guarantor has made payment in terms of 3.3, the Employer shall upon the date of issue of the Final Payment Certificate submit an expense account to the Guarantor showing how all monies received in terms of this Performance Guarantee have been expended and shall refund to the Guarantor any resulting surplus. All monies refunded to the Guarantor in terms of this Performance Guarantee shall bear interest at the prime C1.3.3 overdraft rate of the Employer's bank compounded monthly and calculated from the date payment was made by the Guarantor to the Employer until the date of refund.

3.6 Payment by the Guarantor in terms of 3.2 or 3.3 shall be made within seven (7) calendar days upon receipt of the first written demand to the Guarantor.

3.7 Payment by the Guarantor in terms of 3.3 will only be made against the return of the original Performance Guarantee by the Employer.

3.8 The Employer shall have the absolute right to arrange his affairs with the Contractor in any manner which the Employer may consider fit and the Guarantor shall not have the right to claim his release from this Performance Guarantee on account of any conduct alleged to be prejudicial to the Guarantor.

3.9 The Guarantor chooses the physical address as stated above for the service of all notices for all purposes in connection herewith.

3.10 This Performance Guarantee is neither negotiable nor transferable and shall expire in terms of 1.1.2 or 2.2, where after no claims will be considered by the Guarantor. The original of this Guarantee shall be returned to the Guarantor after it has expired.

3.11 This Performance Guarantee, with the required demand notices in terms of 3.2 or 3.3, shall be regarded as a liquid document for the purposes of obtaining a court order.

3.12 Where the Performance Guarantee is issued in the Republic of South Africa the Guarantor hereby consents in terms of Section 45 of the Magistrate's Courts Act No 32 of 1944, as amended, to the jurisdiction of the Magistrate's Court of any district having jurisdiction in terms of Section 28 of the said Act, notwithstanding that the amount of the claim may exceed the jurisdiction of the Magistrate's Court.

Signed at

…….....

Date

…….....

Guarantor's signatory (1)

……..……..

Capacity

…….....

Guarantor's signatory (2)

……...

Capacity

…….....

Witness signatory (1)

……

Witness signatory (2)

……

KOUGA LOCAL MUNICIPALITY

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BID NO.: 172/2025

Part C2: Pricing Data

C2.1 Pricing Instructions

C2.2 Bill of Quantity

KOUGA LOCAL MUNICIPALITY

Tender Notice Number 172/2025 for the ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.

BID NO.: 172/2025

Part C2.1: Pricing Instructions

BILL (SCHEDULE) OF QUANTITIES

GENERAL REFERENCES

1. The work scheduled below is described in more detail in the specifications and drawings. Where certain items are referred to the GCC or Specification or a certain drawing number for more information, the Tenderer is referred to the complete GCC, Specification and Drawings and it must not be presumed that the references are complete.

2. Arithmetical errors will be corrected. See T 1.1: Tender Data: Annexe F: F 3.9 of this Tender Document.

3. The price quoted in the Rate Column next to each item shall be assumed **the all-inclusive price** for the work to be executed as referred to in the item.

4. The prices as tendered in the Bill of Quantities shall be taken as being valid for the full duration of the Tender, unless otherwise stated in C 1.2: Contract Data: Part 1: Clause F.2.10.1 of this Tender Document. For the other years **CPA (SEIFSA)** will be applicable.

5. Should **no rate** be tendered, "**Included Elsewhere**" or "**Nil**" must be written in the Amount Column. A price or rate is to be entered against each item in the Bill of Quantities, whether the quantities are stated or not. An item against which no price is entered will be considered to be covered by the other prices or rates in the Bill.

   Where an item is priced "**Included Elsewhere**" or "**NIL**" it will be taken that **no remuneration** is payable or will be paid, **regardless of** if the final quantity differs from the quantity measured in the tender document at the time of handing in of the tender. The Client will thus make **no** additional compensation for these items, regardless of the final quantities for that item.

6. No deviation that may be requested by the Tenderer from the above, or from the GCC, Specification, Bill of Quantities, Tender form and conditions, shall be considered, unless clearly indicated in Part 2: Returnable Documents: Schedule 3 of this Tender Document when the Tender Document is submitted.

7. The costs to comply with all the conditions, obligations and liabilities and as described in the GCC and Specifications, shall be assumed as being all inclusive in this Bill of Quantities, except if indicated differently in Part 2: Returnable Documents: Schedule 3 of this Tender Document.

8. The Bill of Quantities must be completed in **BLACK INK** and must not be removed from the bound set of documents.

9. **No** correction fluid may be used.

10. The time of completion, as specified by the Tenderer, must be written into the Quantity Column in accordance with C 1.2: Contract Data: Part 2 of this Tender document.

11. Descriptions in the Bill of Quantities are abbreviated and comply generally with those in the Standardised Specifications. Clause 8 of each standardised specification, read together with the relevant clauses of the Scope of Work, set out what ancillary or associated activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standardised Specification, or the Scope of Work, conflict with the terms of the Bill, the requirements of the Standardised Specification or Scope of Work, as applicable, shall prevail.

    Reference shall be made, inter alia, to the Drawings, Standard Specifications, Project Specifications, General Conditions of Contract and Special Conditions of Contract for more detailed information regarding the extent of the work entailed under each item.

12. The quantities set out in the Bill of Quantities are the estimated quantities of the Contract Works, but the Contractor will be required to undertake whatever quantities the Engineer may direct from time to time. The Contract Price for the completed contract shall be computed from the actual quantities of work done, valued at the relevant unit rates and prices.

13. The prices and rates to be inserted in the Bill of Quantities are to be the full inclusive prices for the work described under the several items. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities and obligations set forth or implied in the documents on which the tender is based, as well as overhead charges and profit. Reasonable prices shall be inserted, as these will be used as basis for assessment of payment for additional works that may have to be carried out.

14. Except where rates only are required, insert all amounts to be included in the total tendered price in the “Amount” column and show the corresponding total tendered price.

15. The unit of measurement described in the Bill of Quantities are metric units. Abbreviations used in the Bill of Quantities are as follows:

    mm = millimetre

m	=	metre
km	=	kilometre
m²	=	square metre: cable size / cross-sectional area
kV	=	kilo volt
Cu	=	copper
Al	=	aluminium
kW	=	kilowatt
BCC	=	Bare copper conductor
CPA	=	Contract Price Adjustment (SEIFSA)

$$P = P_o\left[\left(\left(L \times \frac{EI}{SI}\right) + \left(S \times \frac{EI}{SI}\right)\right)\right]$$

- P – Escalated or New price
- P0 – Base price
- L – Labour percentage
- S – Steel percentage
- EI – Relevant index at the end of the escalation period
- SI – Relevant index at the start of the escalation period

16. For the purpose of this Bill of Quantities, the following words shall have the meanings hereby assigned to them:

Unit:	The unit of measurement for each item of work as defined in the specifications.
Quantity:	The number of units of work for each item.
Rate:	The payment per unit measurement at which the Tenderer tenders to do the work.
Amount:	The product of the quantity and the rate tendered for an item.
Lump Sum:	An amount tendered for an item, the extent of which is described in the Bill of Quantities, the Specifications or elsewhere, but the quantity of work of which is not measured in any units.

17. This Bill of Quantities forms an integral part of the contract documents.

The validity of the contract shall in no way be affected by differences between the quantities in the Bill of Quantities and the quantities finally certified for payment. Work shall be valued at the rates or lump sums tendered, subject only to the provisions of the General Conditions of Contract.

18. Rates and lump sums shall be comprehensive. Full compensation for completing and maintaining, during the maintenance period, all the work shown on the drawings and specified in the specifications, and for all the risks, obligations and responsibilities specified in the General Conditions of Contract, Special Conditions of Contract and specifications shall be considered as provided for collectively in the items of payment given in the Bill of Quantities, except in so far as the quantities given in the Bill of Quantities are only approximate.

19. The stating of quantities of material or amount of work in the Bill of Quantities shall not be regarded as authorization for the Contractor to order material or to execute work. The Contractor shall obtain the Engineer's detailed instructions for all work before ordering any materials for or executing work or making arrangements in this regard.

20. Reference shall be made to Clause 36 of the General Conditions of Contract regarding provisional sums and prime cost sums.

21. All rates and sums of money quoted in the Bill of Quantities shall be in Rands and whole cents. Fractions of a cent shall be discarded.

22. Final quantities will be calculated to the first decimal point (1 digit)

Part C2.2: Bill of Quantity

C2.2 Bill of Quantities		
ITEM	**ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION**	**TOTALS**
A.1	PRELIMINARIES & GENERAL	-
A.2	COMPLIANCE WITH OHS ACT INCL. SAFETY FILE AND SAFETY INSPECTIONS AND MEETINGS.	-
B	SITE CLEARANCE AND EARTHWORKS	-
C	TURNKEY BESS SOLUTION, COMPLETE WITH ONLINE MONITORING & CONTROL SYSTEM	
D	BATTERY ENERGY STORAGE AND POWER CONVERSION SYSTEM	-
E	MV EQUIPMENT & SCADA SYSTEM	
F	CIVIL & CONCRETE WORKS	-
G	TOTAL FOR PROJECT [**USE THIS VALUE FOR CONTINGENCY CALCULATION**]	
G1	SKILLS DEVELOPMENT (Minimum Contract Skills Development Goal. **CSDG Sum = CE** (0.25%) x Subtotal of the tender amount) (**H16 = H x 0.25 %)**	
H	OPERATION & MAINTENANCE & TRAINING (PC AMOUNT)	50,000.00
I	TOTAL FOR PROJECT AFTER [**OPERATION, MAINTENANCE & TRAINING AND SDGs**]	
J	CONTINGENCY (2.5 % OF TOTAL, **i.e. ROW [G] ABOVE**)	
K	SUB-TOTAL (VAT EXCL.)	
	ADD 15% VAT	
L	GROSS TENDER AMOUNT (**VAT INCL**.)	

Item No	Payment Clause	Short Description	Unit	QTY	SUM QTY	Rate	Amount R c
A1		**FIXED CHARGES AND VALUE RELATED ITEMS**					
		Erection of facilities on site including ablution facilities and accommodation for employees, if required	sum	1			
A1.1.1		Contractual requirements	sum	1			
A1.1.2		Provision of Sureties and Guarantees	sum	1			
A1.1.3		Site Administration including co-ordination with other contractors on site	sum	1			
A1.1.4		Setting out of the works and location of and protection of existing services	sum	1			
A1.1.5		Application for wayleaves and permits	sum	1			
A1.1.6		Liaison with Supply Authority to connect into the existing network	sum	1			
A1.1.7		Removal of facilities from site	sum	1			
		TIME RELATED ITEMS					
A1.2.1		Contractual requirements	sum	1			
A1.2.2		Usage and maintenance of facilities on site	sum	1			
A1.2.3		Supervision	sum	1			
A1.2.4		Company and Head Office overhead costs	sum	1			
A1.2.5		Insurance of the works during construction	Months	6			
A1.2.6		Security on site for the duration of the contract in terms of clause 4.22 of the conditions of contract	sum	1			
A.2		**HEALTH AND SAFETY COMPLIANCE (Must be priced)**					
A2.1		Compile health and safety plan including risk analysis, safe working procedures and work methods	sum	1			
A2.2		Compliance with the Occupational Health and Safety Act (Act No 85 of 1993) and Construction Regulations and Specification including maintenance of health and safety file on site for duration of contract	sum	1			
SUBTOTAL: Carried to Summary							**-**

Item No	Payment Clause	Short Description	Unit	QTY	SUM QTY	Rate	Amount R c
		SECTION B: SITE CLEARANCE AND EARTHWORKS					
B1	SANS 1200 C	**Site clearance**					
B1.1	SD C 8.2.1	Clear and grub site	m²	RATE	1		
B1.2	8.2.5	Break up existing asphalt, road kerbs and channels and dump at a site to be identified by the contractor	m³	RATE	1		
B1.3	8.2.14	Remove from site and dispose of rubble and undesirable material at a site to be identified by the Contractor	m³	10	10		
B1.4	8.2.10	Cut topsoil to nominal depth of 150mm, stockpile and maintain	m³	10	10		
B2	1200 D	**Earthworks**					
		Excavate in all materials:					
B2.1		Cut to fill and compact to 90% of MAMDD (100% for sand)	m³	RATE	1		
B2.2		Cut to stockpile on site	m³	RATE	1		
B2.3		Cut to spoil at solid waste site (14.5km one way)	m³	RATE	1		
	SD D 8.3.17	Control of groundwater inflow into bulk excavations					
B2.4		i) Provide equipment	Sum	RATE	1		
B2.5		ii) Operate and maintain	Sum	RATE	1		
B2.6		Hard rock excavation	m³	RATE	1		
B2.7		Fill from stockpile and compact to 90% of MAMDD (100% for sand):	m³	RATE	1		
B2.8	8.3.4	Fill with G7 material from commercial sources and compact to 91% MAMDD	m³	RATE	1		
B3		**Topsoiling**					
B3.1	8.3.10	Topsoiling from stockpile to a minimum thickness of 150 mm after compaction for general finishing	m³	RATE	1		
B3.2	8.3.4	Topsoiling from commercial sources to a minimum thickness of 150 mm after compaction (Provisional)	m²	RATE	1		
SUBTOTAL: Carried to Summary							-

Item No	Payment Clause	Short Description	Unit	QTY	SUM QTY	Rate	Amount R c
		SECTION C: TURNKEY BESS SOLUTION, COMPLETE WITH ONLINE MONITORING & CONTROL SYSTEM					
C.1		On-site Commissioning	Sum	1	1		
C.2		Integration with BESS Energy Management System	Sum	1	1		
C.3		Integration with On-site SCADA System	Sum	1	1		
C.4		Power Plant Controller (PPC)	Sum	1	1		
C.5		Topographical Survey	Sum	1	1		
C.6		Soil Thermal Resistivity Measurements	Sum	1	1		
C.7		Soil Earth Resistivity Measurements	Sum	1	1		
C.8		Earthing system simulation and design (step-and-touch potential)	Sum	1	1		
C.9		Labeling for complete project	Sum	1	1		
C.10		As built drawings	Sum	1	1		
C.11		**Perimeter Fence CCTV Security & Surveillance System**					
C.11.1		Perimeter fence CCTV security and surveillance system around BESS installation	Sum	PC	1	60,000.00	60,000.00
C.12		**Operation & Maintenance**					
C.12.1		Operation & Maintenance of Hybrid BESS Facility	Month	36	36		
C.12.2		Operation and Maintenance Plan complete as specified.	Sum	1	1		
C.12.3		Training programs complete as specified.	Sum	1	1		
C.12.4		Quality assurance plan as specified.	Sum	1	1		
C.12.5		Operation & Maintenance - Insurance	Month	36	36		
C.13		**Other (Please specify)**					
TOTAL CARRIED FORWARD							

Item No	Payment Clause	Short Description	Unit	QTY	SUM QTY	Rate	Amount R c
		SECTION D: TURNKEY BATTERY ENERGY STORAGE AND POWER CONVERSION SYSTEM					
D1		**Battery Energy Storage System (5,015kWh AC) Container**					
D1.1		Battery Energy Storage System (Sungrow ST5015UX-2H-US or similar and equal approved) 2 HOURS APPLICATION-ST5015UX-2-US 5,015kWh AC	No	1	1		
D2		**Power Conversion System (PCS) - 2,520MW**					
D2.1		Power Conversion System (Sungrow 12 * 210HX or similar and equal approved)	No	1	1		
D3		**Isolation Transformer Station Container**					
D3.1		Isolation Transformer (3,460MVA, 22/0.690kV) Sungrow MVS3460 or similar and equal approved)	No	1	1		
D3.2		SCC (Smart control cabinet) LC300, Control integration of the whole system (include PCS, battery, Liquid cooling system, FSS, BSC etc.). - network switch, UPS, etc.	No	1	1		
D4		**Project Specific Items**					
D4.1		Installation Cost	Sum	1	1		
D4.2		Consumables	Sum	1	1		
D4.3		DC Cables and General	Sum	1	1		
D4.4		AC Cables and General - 690 Volt PVC SWA PVC SINGLE CORE COPPER	Sum	1	1		
D4.5.1		Supply and install 12.7/22kV, 95mm² x 3C, Alu, PILC, SWA, Cable (Table 20) from Isolation Trf to Substation	m	50	50		
D4.5.2		Indoor Terminations 12.7/22kV, 95mm² x 3C, Alu, PILC, SWA, Cable (Table 20)	each	1	1		
D4.5.3		Outdoor Terminations 12.7/22kV, 95mm² x 3C, Alu, PILC, SWA, Cable (Table 20)	each	1	1		
D4.6		Cable Management	Sum	1	1		
D4.7		Cable Trenching	m	50	50		
D4.8		Electrical Equipment and Protection	Sum	1	1		
D4.9		Earthing System	Sum	1	1		
D4.10		Engineering and Project Management	Sum	1	1		
D4.11		Transport to site	Sum	1	1		
TOTAL CARRIED FORWARD							**-**

Item No	Payment Clause	Short Description	Unit	QTY	SUM QTY	Rate	Amount R c
BROUGHT FORWARD							-
D4.12		Rigging of BESS	Sum	1	1		
D4.13		On-site Commissioning	Sum	1	1		
D4.14		Integration with Energy Management System	Sum	1	1		
D5		**Other (Please specify)**					
D5.1						-	-
D5.2						-	-
D5.3						-	-
D5.4						-	-
D5.5						-	-
SUBTOTAL: Carried to Summary							-

Item No	Payment Clause	Short Description	Unit	QTY	SUM QTY	Rate	Amount R c
E1		**AUTO-RECLOSER**					
		Supply and install, test and commission the following					
E1.1		25kV Automatic Circuit Recloser - Outdoor Switching Module control and protection x6 combined current and voltage sensors built-in, including mounting cradle and sundries	No	4	4		
E1.2		RC5_3 Control cubicle - IP65 - Complete with battery backup and smart charger, AUX transformer 22kV, control cables and mounting brackets	No	4	4		
E1.3		Recloser control cubicle - Software programming and commissioning	No	4	4		
E1.4		Recloser cubicle input/output module	No	4	4		
E.1.5		RC5_3 Control cubicle - IP65 SEL-651RA Recloser Control or similar and equal approved)	RATE	1	1		
E2		**Air Break Switch Disconnector**					
		Pole Mounted Disconnectors 22kV (GEVEA GP2G or similar and equal approved)	No	1	1		
		Project Specific Items					
E2.1		22 kV Air Break Switch Disconnector - Manual Coastal Application: 22kV, 630A TPD	No.	3	3		
E2.2		Rigging, Installation and Testing	Sum	3	3		
E3		**Detail Engineering - Protection, Metering & Control**					
E3.1		Schematic design of All Protection Schemes	Sum	1	1		
E3.2		Relay logic configurations for all IEDs	Sum	1	1		
E3.2		Control cable schedules	Sum	1	1		
E3.4		Calculation of protection settings for new equipment	Sum	1	1		
E3.5		Compile relay settings files	Sum	1	1		
E3.6		Design review meetings with Engineer & Client (in KOUGA)	Sum	1	1		
E4		**Scada RTAC**					
		HMI panel, important that the relays we are communicating to support similar protocols as our RTAC such as Modbus, DNP, IEC 61580.					
E.4.1		Real-Time Automation Controller	Sum	PC	1	750,000.00	750,000.00
TOTAL CARRIED FORWARD							

Item No	Payment Clause	Short Description	Unit	QTY	SUM QTY	Rate	Amount R c
BROUGHT FORWARD							
E5	PS ES PS PE	**EARTH MAT INSTALLATION**					
E5		Supply and Install Earth Electrode Rods (Ø16mm, 1800mm) - High Tensile Steel, Copper Coated	No	6	6		
E5.2		Open trenches for installation of earth grid, 400mm wide, 1000m deep.	m	100	100		
E5.3		Supply and install new 10mm diameter, black annealed copper earth grid, at least 1000mm below finished ground level.	m	100	100		
E5.4		Exothermal welds	No	10	10		
E5.5		Supply and Install Earth Electrode Conductors (70 mm^2) - Bare Copper (Stranded) for bonding between earth bar and earth mat	m	50	50		
E5.6		70mm2 bare copper conductor for bonding of equipment to earth bar	m	10	10		
E5.7		Earth resistivity test to prove earth mat compliance	No	1	1		
E6		**OUTDOOR CIRCUIT BREAKER**					
		Supply all the labour and material, install test and commission the following					
E6.1		ACTOM CTB36 Circuit breaker (type 3) including VT, CT, Circuit Breaker, Control Box pole mounted with control panel. (**Or equally approved**)	each	1	1		
E6.2		SEL 751 Relay installed in IP66 Outdoor Encloser with BTU complete inside outdoor cabinet 2.5mm² x 12core Cu PVC PVC SWA control cable 12C x 2.5mm2 600/1000V control cable (No1 termination)	each	1	1		
E6.3		Plinth for ACTOM CTB36 Circuit breaker	each	1	1		
E6.4		SEL 751 Relay Commissioning + Protection Settings	each	1	1		
E6.5		Earthing of Transformer Outdoor CB (70 mm^2) - Bare Copper	m	60	60		
SUBTOTAL: Carried to Summary							

Item No	Payment Clause	Short Description	Unit	QTY	SUM QTY	Rate	Amount R c
		SECTION F: CIVIL & CONCRETE WORKS					
F1		**BATTERY AND GENERATOR STATION**					
F1.1		Construct battery station complete to drawings and specifications. Inclusive of foundation excavations, foundations, Inclusive of all materials, labour, profit, attendance, consumables, fittings and fixtures. In accordance with all applicable SANS10400, SANS1200 and other specifications.	Sum	1	1		
		FORMWORK					
F1.2		Strength concrete: Class 25MPa/19mm	m^3	4.5	4,5		
F1.3		Formwork for Plinths	m^2	22	22		
F1.4		Excavate and backfilling for holes	m^3	10	10.0		
F1.5		Y-Bar Steel Reinforcing	kg	1625	1625		
F2		**TRANSFORMER STATION**					
F2.1		Construct transformer station complete to drawings and specifications. Inclusive of foundation excavations, foundations, Inclusive of all materials, labour, profit, attendance, consumables, fittings and fixtures. In accordance with all applicable SANS10400, SANS1200 and other specifications.	Sum	1	1		
		FORMWORK					
F2.2		Strength concrete: Class 25MPa/19mm	m^3	4.5	4.5		
F2.3		Formwork for Plnths	m^2	22	22		
F2.4		Excavate and backfilling for holes	m^3	10	10.0		
F2.5		Y-Bar Steel Reinforcing	kg	1625	1625		
F.3		**CABLE DUCTS**					
F3.1		Trench excavations in all materials, backfilling, compacting and removal of surplus material and supply, handle, lay and bed (Class B bedding) Cable ducts 160mm uPVC (inclusive under floors), capped at both ends.	m	50	50		
F3.2		Soil insecticide to comply with SABS 1165 under floors, foundations, etc	m2	100	100		
F.4		**Other (Please specify)**					-
F4.1					-	-	-
F4.2					-	-	
		SUBTOTAL: Carried to Summary					-

MAIN OFFER: SUMMARY OF SECTIONS

			SUBTOTAL
SECTION A:	PRELIMINARY AND GENERAL	R	
SECTION B:	SITE CLEARANCE AND EARTHWORKS	R	
SECTION C:	TURNKEY HYBRID BESS SOLUTION, COMPLETE WITH ONLINE MONITORING & CONTROL SYSTEM	R	
SECTION D:	TURNKEY BATTERY ENERGY STORAGE AND POWER CONVERSION SYSTEM	R	
SECTION E:	MEDIUM VOLTAGE EQUIPMENT & SCADA SYSTEM	R	
SECTION F:	CIVIL & CONCRETE WORKS	R	
	SUBTOTAL OF SECTIONS	R	
	SKILLS DEVELOPMENT (Minimum Contract Skills Development Goal. CSDG Sum = CE (0.25%) x Subtotal of the tender amount) (H16 = H x 0.25 %)		
	CONTINGENCY (2.5 %)		
	SUBTOTAL		
	15 % VAT SUBTOTAL	R	
	GRAND TOTAL	R	

KOUGA LOCAL MUNICIPALITY

Tender Notice Number 172/2025 for the ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.

BID NO.: 172/2025

Part C3: Scope of Works

Part C 3.1 Description of Works

C.3.1 Scope of Work

3.1.1 Definitions

For the purposes of the Works Definition, the following general definitions apply:

The Works	means all Engineering, Procurement and Construction and related activities described in this document and the Employer's Works Information in order to deliver a defect-free Battery Energy Storage Facility with a design lifetime of 20 years and of an installed capacity of 2.5MW and 5MWh respectively connected to the existing grid 22kV Grid.
BESS Facility	means the functional and operating unit consisting of the materials, equipment, and activities in the works able to generate, store and export electricity. The BESS Facility remains an element of the works until Final Completion.
Practical Completion	means the works have passed the Practical Completion Tests, the Takeover Certificate is issued, and the Facility is accepted for the purposes of Commercial Operation. The Defects Notification Period and O&M Period of 60 months each begins.
Final Completion	means the works have passed the Final Acceptance Test (FAT) and the Facility has demonstrated guaranteed performance expectations and is defect-free. The Defects Notification Period and O&M Period conclude.

3.1.2 Problem Statement

St Francis Bay, a vibrant coastal town in South Africa's Eastern Cape within the Kouga Municipality, is renowned for its tourism-driven economy and a growing population of approximately 7,000 residents. Like many South African towns, St Francis Bay faces severe disruptions from load shedding, with South Africa experiencing over 6,800 hours of outages across 284 days in 2023. These planned power cuts, driven by Eskom's insufficient generation capacity and aging infrastructure, threaten the reliable operation of critical infrastructure, such as hospitals, emergency services, and wastewater treatment plants (WWTPs).

Local businesses, particularly in tourism and retail, have suffered significant economic losses, with 91% of businesses in the broader Nelson Mandela Bay region halting investment and expansion plans in 2023, and 36% considering relocation. Nationally, load shedding contributed to economic losses estimated at R60–120 billion in 2019, leading to job cuts, higher commodity prices, and increased poverty levels

To address this urgent issue, we propose a comprehensive solution aimed at securing a stable and reliable power supply for St Francis Bay. The primary objective is to ensure uninterrupted electricity to critical infrastructure and key industries, thereby safeguarding public safety, minimizing economic losses, and enhancing service delivery. Ultimately, the project aims to improve residents' quality of life, reduce the town's vulnerability to future energy crises, and foster long-term socio-economic resilience.

PROJECT SPECIFICATION

SCOPE

The project scope will be summarized as follow:

Design and engineering, procurement, supply, installation, testing, and commissioning of a Grid-Interactive Battery Energy Storage System (BESS) – 2.5 MW/5MWh.

This tender comprises of the Engineering (Design), Procurement and Construction (EPC) as well as Operation and Maintenance of a 5MWh/2.5MW Battery Energy Storage System complete with all earthworks, steelworks, inverter/s, battery systems, protection, metering and control systems, SCADA and synchronizing ancillary equipment.

The Tenderer shall allow for a complete, all-inclusive solution to the point of energizing and post-energization tests and safety checks of the facility.

The following aspects are included in the Scope of Work:

Engineering: The development of a detailed design for the hybrid solution in full compliance with all national and international standards related to electrical, MV and BESS works. The Contractor is responsible for the design, detailed drawings and design approvals of the proposed hybrid facility and municipal grid connection.

Procurement: The procurement, transportation, offloading, care and custody of all equipment, materials and consumables as well as procuring services required to complete the Works, including specialist sub-contractors.

Construction: The construction of the designed and approved Hybrid Solution Facility and Grid Connection through the use of self-supplied tools, equipment, vehicles, materials, consumables, machinery, infrastructure, professional services and labour required for the construction of the Works. The Contractor is responsible for surveying, setting-out, clearing and levelling of the Site to the Contractor's satisfaction, construction, erection, installation and assembling of all components of the facility, as well as the professional signing-off of the facility upon completion.

Commissioning: Commissioning and Testing of the constructed facility for correct functioning as defined in this document.

Operation & Maintenance: Preparation of operations & maintenance manuals and the effective day-to-day monitoring, operating, maintaining and securing of the plant for **24 months** after handover, including training of Kouga Municipality Staff.

Section 1 contains a general description of the project, available facilities and the conditions with which the works have to comply.

Section 2 consists of variations to the standardised and particular specifications applicable to this contract.

The specification and drawings show the general nature of the work and not all details are shown. The responsibility lies with the contractor to provide for all materials and installation in order to furnish a complete functional installation.

The Complete Engineering Works will include, but not be limited to, all geotechnical, civil, structural, mechanical, and electrical aspects. Further obligations of the Contractor shall be full responsibility for all activities associated with health and safety, loss prevention, fire protection, security, and environmental protection of the project during the detailed design and engineering, construction, commissioning, operation, and maintenance.

The scope of work to be covered by this project is understood to comprise of at least the following:

1. 5015 kWh Battery Energy Storage System (consisting of 1x 5015kWh batteries in container + Power Conversion System (PCS), which converts the DC battery output to AC power.).
2. 1x 2.5 to 3.5 MVA Isolation transformer, which steps the PCS output up to 21Kv
3. AC cables (LV & MV).
4. Energy Management System & Communication Network.
5. Protection, Control, Supervisory, SCADA & Telecomms.
6. Earthing and bonding installation.
7. Reconfiguration of the existing 22kV cable network at the ST Francis Load Centre No. 1 to facilitate a single Point-of-Utility Connection.
8. Factory Acceptance Testing + Site Acceptance Testing and As-built drawings, O&M manuals and all other hand-over documentation

CONTRACTOR'S RESPONSIBILITY

The work consists of the supply, installation, testing, commissioning and free maintenance during the guarantee period of the installation detailed in this Specification and on the accompanying drawings.

The Contractor shall provide all materials, equipment, labour and services necessary for the complete, safe and efficient installation and operation of the electrical installation in accordance with the intent of this Specification and the Drawings. The tendered prices shall include all costs incurred in meeting these requirements.

STATUTORY REQUIREMENTS AND STANDARDS

The activities shall comply with the statutory requirements and relevant guidelines, inter alia the Occupational Health and Safety Act 85 of 1993 as amended, Municipal bylaws and regulations and any special requirements of the supply authority, the relevant standards and codes of practice, whether NRS, SABS or BS.

SAFETY PROCEDURE

Any switching of existing power supplies shall be arranged beforehand with the Responsible Person of the Municipality.

The Contractor shall not perform work on any portion of a network until such portion has been isolated and earthed.
The Contractor shall request a written Work Permit from the Responsible Person, which shall be completed in duplicate. The original Work Permit shall be retained by the Contractor until completion of his work. Upon completion of the work, the Contractor shall sign a statement to this effect. He shall hand this statement, as well as the used Work Permit to the Responsible Person, to enable the latter to re-energise the relevant portion/portions of the network.

Part C 3.2 Project Specifications: Applicable Standards & Specifications

Although not bound in nor issued with this document, the following Standards and Specifications shall form part of the contract document and shall apply. The Standards referred to or which are applicable to equipment, material or methods shall be the latest revised issue of the following:

SANS Codes:

SPECIFICATION	DESCRIPTION
SANS 1200	STANDARD SPECIFICATIONS FOR CIVIL ENGINEERING CONSTRUCTION
SANS10400	THE APPLICATION OF THE NATIONAL BUILDING REGULATIONS
SANS 10142-1	THE WIRING OF PREMISES PART 1
SANS 60529	CLASSIFICATION OF DEGREES OF PROTECTION PROVIDED BY ENCLOSURES
SANS 1029	MINIATURE SUBSTATIONS FOR RATED AC VOLTAGES UP TO 24KV
SANS 60076	POWER TRANSFORMERS
SANS 780	DISTRIBUTION TRANSFORMERS
SANS 10198-1 to 14	THE SELECTION, HANDLING AND INSTALLATION OF ELECTRIC POWER CABLES OF RATING NOT EXCEEDING 33KV
SANS 1507-1 to 6	ELECTRIC CABLES WITH EXTRUDED SOLID DIELECTRIC INSULATION FOR FIXED INSTALLATIONS (300/500V TO 1900/3300V)
SANS 60056	HIGH VOLTAGE ALTERNATING CURRENT CIRCUIT BREAKERS
SANS 10200	THE DESIGN AND INSTALLATION OF EARTH ELECTRODES
SANS 10292	THE EARTHING OF LOW VOLTAGE DISTRIBUTION SYSTEMS
SANS 1063	EARTH RODS, COUPLERS AND CONNECTORS
SANS 62271-102	A.C. CURRENT DISCONNECTIONS (ISOLATORS) AND EARTHING SWITCHES
SANS 60255-151	PROTECTION RELAYS
SANS 60947	LOW-VOLTAGE SWITCHGEAR AND CONTROL GEAR
SANS 10199	THE DESIGN AND INSTALLATION OF AN EARTH ELECTRODE
SANS 10292	LOW-VOLTAGE FUSES
SANS 10313	PROTECTION AGAINST LIGHTNING
SANS 156	MOULDED CASE CIRCUIT BREAKERS
SANS 10313	PROTECTION AGAINST LIGHTNING - PHYSICAL DAMAGE TO STRUCTURES AND LIFE HAZARD.
SANS 1063	EARTH RODS, COUPLERS AND CONNECTIONS
SANS 61000-6-2	ELECTROMAGNETIC COMPATIBILITY (EMC). GENERIC STANDARDS. IMMUNITY FOR INDUSTRIAL ENVIRONMENTS.
SANS 61000-6-4	ELECTROMAGNETIC COMPATIBILITY (EMC). GENERIC STANDARDS. EMISSIONS FOR INDUSTRIAL ENVIRONMENTS.
SANS 61024	PROTECTION OF STRUCTURES AGAINST LIGHTNING.
SANS 6131233	PROTECTION AGAINST LIGHTNING ELECTROMAGNETIC IMPULSE PART 3: REQUIREMENTS OF SURGE PROTECTIVE DEVICES (SPDS).
SANS 61643-1	SURGE PROTECTIVE DEVICES CONNECTED TO LOW-VOLTAGE POWER DISTRIBUTION SYSTEMS – PART 1: PERFORMANCE REQUIREMENTS AND TESTING METHODS
SANS 62305	EARTHING AND LIGHTNING PROTECTION.
SANS 62305-1 to 4	PROTECTION AGAINST LIGHTNING - PARTS 1 TO 4.
SANS 60044-1	INSTRUMENTATION TRANSFORMER'S PART 1: CURRENT TRANSFORMERS

SANS 60044-2	INSTRUMENTATION TRANSFORMERS PART 2: INDUCTIVE VOLTAGE TRANSFORMERS
SANS 121	HOT DIP GALVANIZED COATINGS ON FABRICATED IRON AND STEEL ARTICLES: SPECIFICATIONS AND TEST METHODS
SANS 10160	LOAD ASSUMPTION AND STRUCTURAL DESIGN
SANS 1195	BUSBARS
SANS 61084	CABLE TRUNKING AND DUCTING SYSTEMS FOR ELECTRICAL INSTALLATION
SANS 61386	CONDUIT SYSTEMS FOR ELECTRICAL INSTALLATIONS
SANS 10222	ELECTRIC FENCES AND MANUFACTURE REQUIREMENTS
SANS 8528 PART 1-12	RECIPROCATING INTERNAL COMBUSTION ENGINE ALTERNATING CURRENT GENERATING SETS
SANS 60034-22	ROTATING ELECTRICAL MACHINES: AC GENERATORS FOR ENGINE DRIVEN GENSETS

NRS Codes:

SPECIFICATION	DESCRIPTION
NRS 097-2	GRID CONNECTION OF EMBEDDED GENERATION PART 2
NRS 097-2-3	RPP GRID CODE
NRS 048	ELECTRICITY SUPPLY: QUALITY OF SUPPLY
NRS 024 Part 1	ROTATING ELECTRICAL MACHINES: AC GENERATORS FOR ENGINE DRIVEN GENSETS

IEC Codes:

SPECIFICATION	DESCRIPTION
IEC 61215 ED.2	CRYSTALLINE SILICON TERRESTRIAL PHOTOVOLTAIC (PV) MODULE - DESIGN QUALIFICATION AND TYPE APPROVAL.
IEC 60068 -1	ENVIRONMENTAL TESTING
IEC 61730-1	PHOTOVOLTAIC MODULE SAFETY QUALIFICATION – REQUIREMENTS FOR CONSTRUCTION
IEC 61730 -2	REQUIREMENTS FOR TESTING
IEC 61701-2	SALT MIST CORROSION TESTING OF PHOTOVOLTAIC MODULES
IEC 60891	PROCEDURES FOR TEMPERATURE AND IRRADIANCE CORRECTIONS TO MEASURED I-V CHARACTERISTICS
IEC 60904-1	MEASUREMENT OF PHOTOVOLTAIC CURRENT-VOLTAGE CHARACTERISTICS
IEC 60904-3	MEASUREMENT AND PRINCIPLES
IEC 60904-5	DETERMINATION OF EQUIVALENT CELL TEMPERATURE (ECT)
IEC 60904-6	PHOTOVOLTAIC DEVICES – PART 6: REQUIREMENTS FOR REFERENCE SOLAR MODULES
IEC 60904-7	PHOTOVOLTAIC DEVICES – PART 7: COMPUTATION OF SPECTRAL MISMATCH ERROR INTRODUCED IN THE TESTING OF A PHOTOVOLTAIC DEVICE
IEC 60904-8:	MEASUREMENT OF SPECTRAL RESPONSIVITY OF MULTI-JUNCTION PHOTOVOLTAIC (PV) DEVICES
IEC 60904-9	PHOTOVOLTAIC DEVICES – PART 9: SOLAR SIMULATOR PERFORMANCE REQUIREMENTS

SPECIFICATION	DESCRIPTION
IEC 60904-10	PHOTOVOLTAIC DEVICES – PART 10: METHODS OF LINEARITY MEASUREMENTS

IEC 61853	PERFORMANCE TESTING AND ENERGY RATING
IEC 60364-4-41	LOW-VOLTAGE ELECTRICAL INSTALLATIONS – PART 4-41: PROTECTION FOR SAFETY – PROTECTION AGAINST ELECTRIC SHOCK
IEC 60364-4-43	LOW-VOLTAGE ELECTRICAL INSTALLATIONS – PART 4-43: PROTECTION FOR SAFETY – PROTECTION AGAINST OVERCURRENT
IEC 60364-4-44	LOW-VOLTAGE ELECTRICAL INSTALLATIONS – PART 4-44: PROTECTION FOR SAFETY – PROTECTION AGAINST VOLTAGE DISTURBANCES AND ELECTROMAGNETIC DISTURBANCES
IEC 60364-7-712	ELECTRICAL INSTALLATION OF BUILDINGS PART 7-712. REQUIREMENTS FOR SPECIAL INSTALLATION OR LOCATIONS-SOLAR VOLTAIC POWER SUPPLY SYSTEMS.
EC 61277	TERRESTRIAL PHOTOVOLTAIC (PV) POWER GENERATING SYSTEMS - GENERAL AND GUIDE
IEC 61345	UV TEST FOR PHOTOVOLTAIC (PV) MODULES
IEC 61646	THIN-FILM TERRESTRIAL PHOTOVOLTAIC (PV) MODULES - DESIGN QUALIFICATION AND TYPE APPROVAL
IEC 61701	SALT MIST CORROSION TESTING OF PHOTOVOLTAIC (PV) MODULES
IEC 61724	PHOTOVOLTAIC SYSTEM PERFORMANCE MONITORING – GUIDELINES FOR MEASUREMENT, DATA EXCHANGE AND ANALYSIS
IEC 61730	PHOTOVOLTAIC (PV) MODULE SAFETY QUALIFICATION
IEC 61829	CRYSTALLINE SILICON PV ARRAY-ON-SITE MEASUREMENT OF I-V CHARACTERISTICS
IEC 61853	PERFORMANCE TESTING AND ENERGY RATING OF TERRESTRIAL PHOTOVOLTAIC (PV) MODULES
IEC 62716	AMMONIA CORROSION TESTING OF PHOTOVOLTAIC (PV) MODULE
IEC 60228	CONDUCTORS OF INSULATED CABLES
IEC 60269-6	LOW-VOLTAGE FUSES – PART 6: SUPPLEMENTARY REQUIREMENTS FOR FUSE-LINKS FOR THE PROTECTION OF SOLAR PHOTOVOLTAIC ENERGY SYSTEMS
IEC 60670	BOXES AND ENCLOSURES FOR ELECTRICAL ACCESSORIES FOR HOUSEHOLD AND SIMILAR FIXED ELECTRICAL INSTALLATIONS
IEC 60898	ELECTRICAL ACCESSORIES – CIRCUIT-BREAKERS FOR OVERCURRENT PROTECTION FOR HOUSEHOLD AND SIMILAR INSTALLATIONS
IEC 60898-2	CIRCUIT-BREAKERS FOR OVERCURRENT PROTECTION FOR HOUSEHOLD AND SIMILAR INSTALLATIONS – PART 2: CIRCUIT-BREAKERS FOR A.C. AND D.C. OPERATION
IEC 60947	LOW-VOLTAGE SWITCHGEAR AND CONTROL GEAR
IEC 61140	PROTECTION AGAINST ELECTRIC SHOCK – COMMON ASPECTS FOR INSTALLATION AND EQUIPMENT
IEC 61439	LOW-VOLTAGE SWITCHGEAR AND CONTROL GEAR ASSEMBLIES
IEC 61439-2	LOW-VOLTAGE SWITCHGEAR AND CONTROL GEAR ASSEMBLIES – PART 2: POWER SWITCHGEAR AND CONTROL GEAR ASSEMBLIES
IEC 62109	SAFETY OF POWER CONVERTERS FOR USE IN PHOTOVOLTAIC POWER SYSTEMS
IEC 62446-1	PHOTOVOLTAIC (PV) SYSTEMS – REQUIREMENTS FOR TESTING, DOCUMENTATION AND MAINTENANCE – PART 1: GRID CONNECTED SYSTEMS – DOCUMENTATION, COMMISSIONING TESTS AND INSPECTION
IEC 62852	CONNECTORS FOR DC-APPLICATION IN PHOTOVOLTAIC SYSTEMS – SAFETY REQUIREMENTS AND TESTS
IEC 62817	PHOTOVOLTAIC (PV) MODULE SAFETY QUALIFICATION
IEC 62116	UTILITY-INTERCONNECTED PHOTOVOLTAIC INVERTERS - TEST PROCEDURE OF ISLANDING PREVENTION MEASURES

SPECIFICATION	DESCRIPTION
IEC 61643-11	LOW-VOLTAGE SURGE PROTECTIVE DEVICES - PART 11: SURGE PROTECTIVE DEVICES CONNECTED TO LOW-VOLTAGE POWER SYSTEMS – REQUIREMENTS AND TEST METHODS
IEC 60287	ELECTRIC CABLES – CALCULATION OF THE CURRENT RATING – ALL PARTS
IEC 62305	PROTECTION AGAINST LIGHTNING – ALL PARTS
IEC 60364	LOW-VOLTAGE ELECTRICAL INSTALLATIONS – ALL PARTS
IEC 62108	CONCENTRATOR PHOTOVOLTAIC (CPV) MODULES AND ASSEMBLIES – DESIGN QUALIFICATION AND TYPE APPROVAL
IEC 60076	SPECIFICATION OF VOLTAGE REGULATING DISTRIBUTION TRANSFORMERS
IEC 60296	TRANSFORMER MINERAL OIL
IEC 61683	PHOTOVOLTAIC SYSTEMS - POWER CONDITIONERS - PROCEDURE FOR MEASURING EFFICIENCY
IEC 62093 Ed. 1.0	BALANCE-OF-SYSTEM COMPONENTS FOR PHOTOVOLTAIC SYSTEMS – DESIGN QUALIFICATION NATURAL ENVIRONMENTS
IEC 62103	ELECTRONIC EQUIPMENT FOR USE IN POWER INSTALLATIONS
IEC 62109-1	SAFETY OF POWER CONVERTERS FOR USE IN PHOTOVOLTAIC POWER SYSTEMS – PART 1: GENERAL REQUIREMENTS
IEC 62109-2	SAFETY OF POWER CONVERTERS FOR USE IN PHOTOVOLTAIC POWER SYSTEMS – PART 2: PARTICULAR REQUIREMENTS FOR INVERTERS
IEC 61727 Ed.2:	PHOTOVOLTAIC (PV) SYSTEMS - CHARACTERISTICS OF THE UTILITY INTERFACE.

Other Codes:

SPECIFICATION	DESCRIPTION
UL 61215	TERRESTRIAL PHOTOVOLTAIC (PV) MODULES - DESIGN QUALIFICATION AND TYPE APPROVAL
UL 61730	PV MODULE SAFETY STANDARDS UPDATES
UL 1741	STANDARD FOR INVERTERS, CONVERTERS, AND CONTROLLERS FOR USE IN INDEPENDENT POWER SYSTEMS
TÜV2 PFG 1169	REQUIREMENTS FOR CABLES FOR USE IN PHOTOVOLTAIC-SYSTEMS
DST 34-1765	DISTRIBUTION STANDARD FOR THE INTERCONNECTION OF EMBEDDED GENERATION
IEEE 1361	RECOMMENDED PRACTICE FOR DETERMINING PERFORMANCE CHARACTERISTICS AND SUITABILITY OF BATTERIES IN PV SYSTEMS
IEEE 80	GUIDE FOR GENERATING STATION GROUNDING
IEEE 665	THE DESIGN AND INSTALLATION OF EARTH ELECTRODES. NEUTRAL EARTHING IN MEDIUM VOLTAGE INDUSTRIAL POWER SYSTEM.
IEEE 519	IEEE RECOMMENDED PRACTICES AND REQUIREMENTS FOR HARMONIC CONTROL IN ELECTRICAL POWER SYSTEMS
IEEE 1547	IEEE STANDARD FOR INTERCONNECTING DISTRIBUTED RESOURCES WITH ELECTRIC POWER SYSTEMS

The listed specification shall be read in conjunction with the other specification of this package for the Installation of electrical equipment / system. CONTRACTOR shall follow the stringent one among them, which will be indicated by the ENGINEER in case of conflict between those specifications

Part C 3.3 Scope of Work: Particular Specifications

PS.1 CONFLICT BETWEEN SPECIFICATIONS AND DRAWINGS

ORDER OF PRECEDENCE

Should any of the technical requirements in terms of the Specification and the Drawings for the Works be found to be contradictory, the following list of documents, in descending order of precedence, shall apply:
a) Bill of Quantities
b) National / International Standards and Specifications
c) Technical Specification (Including Technical Schedules)
d) Drawings
e) Schedules

Should the Contractor note an inconsistency between the Specification and Drawings, he shall be responsible for notifying the Engineer and obtaining clarification or instructions prior to ordering or installing equipment.

PS.2 CONTRADICTORY REQUIREMENTS

Should any requirements of the Specification and/or the Drawings be found to be contradictory, the Contractor shall bring such contradictions to the attention of the Engineer prior to the ordering of materials and/or equipment and prior to the execution by the Contractor of any work which may be affected by such contradictions.

PS.3 GEOTECHNICAL SURVEY

The Contractor will be responsible for performing geotechnical studies, covering the entire area where the BESS structures will be installed and substation buildings are to be constructed.

The information obtained from the study will be used to determine which amount of the footings from the BESS containers.

The terms of reference for the geotechnical investigation shall include at least the following:
- Detailed soil profiles, Dynamic Probe Light (DPL) profiles and laboratory certificates
- Regional geology and soil profile summary
- Assessment of the ground water and bedrock conditions
- Assessment of the soil density/consistency with depth
- Identify any problematic soils
- Provide recommendations regarding the founding level and estimated bearing capacity

PS.4 TOPOGRAPHICAL SURVEY

The Contractor will be responsible for performing a topographical survey, covering the entire area where the BESS containers will be installed.

PS.4.1 Survey Extent The extent of the survey must cover the following:

a) The survey must extend a minimum of 10m beyond the facility boundary lines.
b) Survey (where applicable) the existing road including kerb and road centreline 50m beyond the extent of the Erf boundary lines. Indicate vehicle entrances, existing parking areas and pedestrian paths.

c) Spot levels in the road and rail servitudes (where applicable) to determine general storm water flow directions.

PS.5 SOIL THERMAL RESISTIVITY MEASUREMENTS

The thermal resistivity and stability of soil are important factors in the determination of the current ratings of underground cables.

The lower the thermal resistivity of the soil, the higher the rate of heat discharge from the cable. Conversely, the higher the thermal resistivity of the soil, the greater the rise in temperature of the cable due to the lower rate of heat discharge through the soil.

When the cable continuously operates at a temperature above its design value, undue aging takes place, increasing fault frequency and reducing cable life. When the thermal resistivity of the soil is high, cables shall have to be so derated that the cable temperature does not exceed the design value. Alternatively, cables of larger conductor size may be used.

The thermal resistivity of a soil is a measure of the resistance of the soil to the flow of heat and its value is inversely related to the moisture content of the soil. When electric cables are continuously operated at sheath (surface) temperatures of 55 °C or above, the moisture in the soil surrounding the cable may migrates away from the cable, leading to an increase in the thermal resistivity of the soil locally and consequent increase in the cable conductor temperature. This leads in turn to a further increase in the surface temperature of the cable. Steady state conditions are eventually achieved with the cable operating at a conductor temperature higher than its design temperature.This will not result in immediate failure of the cable but will reduce its life expectations.

In the SI system of units, thermal resistivity shall be measured in K.m/W.

The measurement of the thermal resistivity of soil can be carried out in a laboratory or on site. Laboratory methods are cheaper but might not recreate site conditions, and on-site methods are subject to the weather and the skill of the operator of the apparatus.

Thermal resistivity testing shall be carried out on both natural soils and specifically designed quarried products that will be used for MV cable installation and/or backfilling of trenches to determine the material’s thermal characteristics and how well they conduct heat away from the underground cable installation.
When testing natural soils, samples collected from site locations shall be progressively dried and tested to establish the thermal resistivity versus moisture content relationship. This dry out curve is of particular use if the native soil around a cable partially dries out under cable operating temperatures.

When testing quarry products to determine their thermal suitability as cable backfill or bedding a variety of methods can be adapted depending on the nature of the product and specification requirements.

The thermal resistivity of the natural soil and backfill material shall be done in accordance with SANS 10198-4 and the results will be used as input to the de-rating factors to be used as part of the MV and LV cable installations.

PS.6 SOIL EARTH RESISTIVITY MEASUREMENTS

The resistance of an earth electrode is related to the resistivity of the soil in which it is placed and driven, and thus soil resistivity calculations and measurements is a crucial aspect when designing earthing installations. Electrical resistivity is the measurement of the specific resistance of a given material. It is expressed in ohm-meters and represents the resistance measured between two plates covering opposite sides of a 1 m cube.

This soil resistivity test is commonly performed at raw land sites, during the design and planning of grounding systems specific to the tested site. Soil resistivity testing is the process of measuring a volume of soil to determine the conductivity of the soil.

Soil resistivity testing is the single most critical factor in electrical grounding design. This is true when discussing simple electrical design, to dedicated low-resistance grounding systems, or to the far more complex issues involved in Ground Potential Rise Studies (GPR). Good soil models are the basis of all grounding designs and they are developed from accurate soil resistivity testing.

The Contractor shall perform an on-site Soil Resistivity Measurement for at least three (3) different locations within the project area to get a good average of the overall soil conditions, using any one of the following methods:

- Wenner Array Method
- Schlumberger Array Method
- Driven Rod Method.

PS.7 BATTERY ENERGY STORAGE SYSTEM

Includes the design and engineering, procurement, supply, installation, testing, and commissioning of a Grid-Interactive Battery Energy Storage System (BESS) at St Francis Bay, delivered on a turnkey basis. The Contractor shall be responsible for:

- Complete design and detailed engineering of the BESS and associated systems.
- Procurement and supply of all equipment, materials, and components.
- Factory acceptance testing (FAT) at the manufacturer's works.
- Multi-level inspections, quality assurance, and compliance with relevant standards.
- Packing, forwarding, transportation, and delivery to site, including unloading and secure storage.
- All associated civil works, foundations, structural supports, and enclosures.
- Provision of all required services, permits, and licenses.
- Installation, erection, integration with existing infrastructure, and all related incidentals.
- Insurance coverage for all project stages, manufacture, transit, storage, erection, and commissioning.
- Testing and commissioning of the BESS, including grid integration and operational verification.
- Performance demonstration and system acceptance in line with specified metrics.

In addition, the Contractor shall provide a comprehensive operation and maintenance (O&M) service for TWO (2) years from the date of Operational Acceptance, covering preventive and corrective maintenance, system monitoring, spare parts, reporting, and performance optimization.

A proposed plant layout is provided in Drawings and illustrated in Drawing No. ME 1590-21-1 & ME 1590-21-2 – 2.5 MW/5MWh BESS Schematic. This schematic is intended for reference purposes only and illustrates a conceptual configuration of the Battery Energy Storage System (BESS).

Bidders are advised that the final design, equipment arrangement, and system configuration may differ from the reference drawing based on the bidder's proposed solution, provided that it meets or exceeds the technical and functional requirements outlined in this specification. Any deviations must be clearly identified and justified in the bidder's submission.

PS.7.1 General

The Contractor shall design and build a “behind-the-meter” Lithium-ion Battery Energy Storage System (BESS). The Contractor shall provide all labour, material, equipment, engineering, maintenance, and capital to design, install, commission, and interconnect a BESS as required herein.

The battery energy storage system shall comprise of stationary batteries in series and parallel strings with sufficient number of cells to provide the rating specified. The battery bank rated output shall be that available at the outgoing terminals, after making due allowance for the resistance of intercell connections.

The major equipment items shall include a battery, power conversion system (PCS), output/isolation transformer, and local and remote control and monitoring equipment. Additional equipment shall include HVAC, wiring, connectors, protective devices, grounding, junction boxes and enclosures, instrumentation, enclosures, and all other items needed for a fully functional, utility-interactive system to meet the requirements set forth in this specification.

Only Lithium-ion Phosphate (LiFePO4) batteries (or similar and equal approved) with life expectancy rating of at least 10 years under normal operating conditions, suitable for outdoor installation, shall be used. The batteries shall be of the totally enclosed type and capable of providing the guaranteed output throughout the range of ambient conditions specified.

The batteries shall be housed in a separate enclosure or containerised unit complete with the required control and monitoring equipment.

All battery stands shall be suitably protected against corrosion and attack by the electrolyte. Intercell connections shall be of low resistance and protected against corrosion.

Fully document the design and expected performance of the system by means of documents, drawings, reports, data, and other submittals, as required herein.

Conduct design review meetings during initial design and fabrication.

Supply any special equipment and tools required for maintenance of the BESS.
Provide a warranty for the entire BESS and its constituent equipment.

PS.7.2 Design, Fabrication and Construction Requirements

The General This technical specification includes several general and supporting specifications for equipment and components. In cases of conflict between this specification and the codes, standards, and general specifications, the Contractor shall notify the Engineer in writing of any such conflicts. Work shall not proceed until such conflicts are resolved.

The design of all aspects of the BESS shall be subject to the Engineer’s approval.

The methods and materials specified in this technical specification are intended to represent minimum requirements. Reliance thereon shall not diminish the responsibility for meeting performance and other requirements stated in this technical specification.
System-Level Design and Performance Requirements

All systems and components of systems, including electrochemical cells, switching devices in the PCS, components of monitoring and control systems, and components of auxiliary systems must use proven and previously demonstrated technology.

Electrochemical cells, PCS switching devices, and control system hardware and software must be commercially available and in use for other markets.

Electrochemical cells must be replaceable (in small orders) with a maximum six (6) week lead time under normal business conditions.

Designs using experimental or otherwise undocumented components are not permitted.

Containerization and Transportability

The BESS shall be containerized, using either standard ISO 668 shipping containers or custom-designed power equipment centres.

The container/s shall be designed to be installed onto a properly prepared pad or foundation (such as compacted soil, concrete plinth or platform).

When fully installed, all BESS components—including all auxiliaries, such as HVAC and fire suppression systems, step-up transformers to match utility grid, AC switchgear, etc. shall be enclosed in (or on) the container/s, even if certain components must be separately shipped and installed on site.

Containers shall be designed and constructed to meet IP 54 requirements, which protect the equipment inside from harmful effects resulting from the ingress of water, dirt, dust, and wind. The Contractor shall use containers that meet the requirements of IEC 62271-202 for BESS installations.

Containers designed for personnel entrance shall meet all Occupational Safety and Health Administration, National Electrical Code, and National Fire Protection Association requirements for electrical and fire safety, including aisle width, working space, lighting, emergency egress, etc.

All containers and packaging of separately shipped components shall be suitable for land or sea transport, including offering suitable protection of the equipment inside against damage from weather and vibration or shock from transportation.

The containers and their contents shall be designed to be easily prepared for transport, shipped, connected and operated on site. The Contractor shall be responsible for damages during initial transport.

It is the intention of this specification that the BESS be designed so that it can be transported from the factory to the installation site with the batteries already installed in the containers. However, in some cases, a strict adherence to the transportability requirements of the above paragraphs may not be practical or cost effective. For example, restrictions on overweight and/or oversize shipments may come into play in some locations.

Additional transportability requirements and/or clarifications are as follows:

- The BESS container/s shall be of a size and weight to be capable of being transported on public roads. Dimensions must account for both horizontal and vertical (such as overhead utility lines or infrastructure) clearance. Although it is not required, a 20-foot standard ISO container would meet the size requirements but not necessarily the weight requirements.
- Containers shall incorporate standard lugs or other means for lifting by crane or shall be properly palletized for movement with forklift trucks, or both.
- Transport will be over provincial and national road systems but may include roads with marginal clearance and road surface conditions.
- The weight and size of shipping containers shall meet all expected local jurisdictional limits as allowed by permit.

Modularity

The design of the BESS, both overall and in particular, shall incorporate modularity when cost effective to do so. However, this requirement should not be taken to mean that massive modularity at all subsystem and system levels is necessarily desirable, especially when other non-cost factors such as complexity, maintenance and maintainability, space requirements, and reliability are taken into account.

Design Life and Life-Cycle Costs

The BESS shall have a minimum (10) ten-year design life. This means that the system shall be capable of providing all the capabilities described in the specification for ten years from the initial commissioning. To meet the specified design life, it shall be permissible for Contractor to make periodic replacements or upgrades to the BESS equipment, components, and unit batteries, as required.

The BESS should be designed, and in particular battery capacity should be specified, so that battery replacement is not required within the first two years of operation. If a failure or performance problem indicates that replacement of one or more unit batteries is required during this period, it shall be done under warranty.

The BESS shall be designed to facilitate rapid and easy replacement of the unit batteries without significant downtime.

The BESS shall be designed to provide the lowest life-cycle cost. That is, the design philosophy shall be to minimize and optimize all costs to the Owner, not simply initial capital costs or low maintenance costs, etc.

Reliability, Availability and Operability

The BESS shall be designed for high reliability, as follows:
- Starting reliability, 99% (this means that the unit shall start in 99 of 100 attempts).
- Availability, 99% or greater annually during the first two years of operation.
- Less than 72 hours mean-time-to-repair, from the time of notification of a need for repair to the time of completion of repairs (that is, inclusive of time for arrival of spare parts and repair personnel at the location of the BESS).

Availability is the percentage of hours that the BESS is available during the year. The availability guarantee shall begin upon facility commissioning. Annual availability shall be calculated as follows:

$[1 – (\sum \text{accountable BESS outage durations in hours})/ 8760)] \times 100$

For calculation of availability, the following definitions shall be used:

- Accountable BESS outages are outages caused or necessitated by the BESS equipment that result in reduced capacity or loss of essential function of the BESS. These outages may be initiated by failure of components, loss of battery capacity, operation of protective devices, alarms, or manual action. Such outages include both forced outages due to equipment problems and scheduled outages for BESS maintenance.

- Accountable BESS outage duration is the elapsed time of accountable BESS outages from the instant the BESS experiences reduced capacity or is out of service to the instant it is returned to service or full capacity. If the BESS experiences reduced capacity but is determined by the Owner to be available for service even if the Owner elects not to immediately return the equipment to full capacity, such time will be discounted from the outage duration.

• The capacity of the BESS refers to the nameplate ratings. The BESS shall be considered to be under an accountable outage if any of those ratings cannot be met. The BESS shall also be considered to be under an accountable outage if a scheduled (or required) charge cycle cannot be completed.

It shall be possible to fully remove, repair, and replace in the field any failed or poorly performing component (including electrochemical cells) in six hours or less, assuming that spare parts, test equipment, and repair personnel are on the site. This capability shall be demonstrated in the factory acceptance test (FAT) for unit batteries and other key components.

The BESS shall be capable of unattended operation, with remote monitoring and control.

PS.7.3 Plant Nameplate Ratings

BESS Real Power & Energy Ratings

During discharge, the BESS shall be rated to supply at the PUC the continuous (nett) AC real power and AC energy output as specified in the Technical Schedules. Nett power and energy mean that losses and power consumed by required plant auxiliary systems (whether derived from the BESS output transformer or from auxiliary distribution feeders provided by the Host Utility) shall be subtracted from the gross power output of the BESS to determine the nett deliverable power and energy at the site. These ratings shall be referred to in all project documentation, including this specification, as the nameplate watt rating and the nameplate watt-hour rating.

All nameplate ratings shall be achievable over the entire design life of the BESS.

The nameplate watt rating and nameplate watt-hour rating shall be achievable during discharge for the full range of stated environmental conditions, provided that the battery is fully charged, and the HVAC system has stabilized.

In all modes, the BESS shall be capable of being discharged at reduced power levels from that specified above. However, in no case will the energy removed from the battery be greater than the nameplate watt-hour rating.

BESS Reactive Power Rating

In accordance with the VAR-related control modes, the BESS shall be capable of dispatching both leading and lagging reactive power at the PUC and to the connected plant loads, up to the rated VAR capacity specified, regardless of whether the battery is being simultaneously discharged or charged. This rating shall be referred to in all project documentation, including this specification, as the nameplate VAR rating.

The BESS shall be capable of simultaneously producing real and reactive power as long as no nameplate rating is exceeded. That is, the combination of operation at full nameplate watt rating and full nameplate VAR rating shall not exceed the nameplate VA rating.

If the BESS is called upon to dispatch real power at less than its nameplate watt rating, it shall be capable of dispatching reactive power at levels exceeding the nameplate VAR rating, as long as the nameplate VA rating is not exceeded.

Efficiency

Losses and power consumed by required plant auxiliary systems (whether derived from the BESS output transformer or from auxiliary distribution feeders provided by the Host Utility) shall be subtracted from the gross power output of the BESS to determine the nett round-trip energy efficiency.

Unless otherwise specified herein, round-trip AC-AC energy efficiency calculations shall be calculated on a 24-hour basis. That is, regardless of mode of operation, the energy consumed by auxiliary systems shall be accounted for during a full 24-hour period.

Further, for operation in which more than one charge/discharge cycle occurs during a 24-hour period (such as frequency regulation) all charges and discharges shall be included in a single round-trip efficiency calculation for that 24-hour period.

Energy consumption outside the 24-hour period for which an efficiency is determined (for example, energy consumed by auxiliaries while the BESS is in a standby mode) is not to be included in efficiency calculations.
The Contractor shall clearly state in its O&M manual as well as during design review the expected efficiencies of the major sub-systems (battery, PCS, etc.) as well as the expected losses from auxiliaries.

PS.7.4 BESS Use Cases

The BESS shall be capable of operating over its entire life in one or more of the use cases described in this section to serve potential needs for battery energy storage. This section of the technical specification only prescribes use case requirements and is non-prescriptive with respect to the use cases for which the BESS must be capable for a particular procurement.

The possible use cases supported by this technical specification include the following:
- Peak management (PM) – Energy arbitraging
- VAR compensation /voltage support (VC/VS)
- Frequency regulation (FR)
- Intermittent resource support (IRS)

The purpose for defining and describing the use cases is to provide the Contractor with essential information needed to ensure that the BESS will have the desired life and performance characteristics. In particular, the requirements listed in this section should support Contractor's efforts to accomplish the following:

- Properly size the battery to meet the needs.
- Determine other BESS sub-system performance capabilities.
- Understand the various combinations of uses that may be required.

Each use case description in the following subsections includes a capability requirement for a number of cycles and days per year of operation in that use case. On days of the year in which a particular use case is not being used, the BESS shall be considered available for operation in some other use case, as long as the nameplate ratings specified elsewhere are not exceeded.

Simultaneous operation in two or more of the real power use cases (PM, SR, FR, IRS) is not required, but it may be optionally provided at the discretion of the Contractor, as long as no nameplate rating is exceeded. Simultaneous operation in the VC/VS use case together with one of the other use cases is a required capability.

Important Note: The various use cases, power dispatch profiles, and combinations thereof, described below, represent a wide range of battery and PCS capabilities. The BESS shall be designed to accommodate the most stringent of the intended operation scenarios so that any of the scenarios can be exercised without exception.

The use cases described assumes the provision of a suitably designed control system, as outlined in in another section of this specification. Accordingly, the descriptions of the use cases must be read and understood in conjunction with the description of the control functions specified.

Peak Management (PM)

In the PM use case, the BESS is controlled to reduce peak power demand on the Host Utility feeder to which the BESS is connected. The BESS would be discharged at any power level up to the maximum power level specified as the nameplate watt rating.

The BESS shall support operation in this application for up to the number of times per year specified in the technical schedules. Each daily operation is expected to consist of one discharge and charge cycle, in either a variable or a constant power output, as described below.

Some applications may require two discharges in a day. In that event, the maximum number of days per year that the BESS would operate with two daily discharges is one-half the number of days in single-daily-discharge mode. In the case of two discharges in a single day, it may be desirable for the Host Utility to charge the battery between the two discharges (opportunity charging) and the BESS shall permit such operation. For example, a morning and afternoon peak may be shaved, with a partial (or complete) recharge taking place during the day between the morning and evening peaks.

Note: Specification of the number of days per year for the two-daily-discharges scenario at half those for the single-daily-discharge mode is based on the assumption that opportunity charging between daily cycles would fully restore battery capacity, so that each of the two discharges in the day would take place at the full nameplate watt-hour rating. If each discharge were less than the nameplate watt-hour rating, the PM operation in a two-daily-discharges scenario could potentially occur on more days per year.

Two different power dispatch profiles during discharge are specified, as described in the following two subsections.

CONSTANT POWER

The BESS is discharged at a single, constant power level for a specified duration, as requested by Host Utility's system dispatcher.

The dispatch power level may be any value less than or equal to the nameplate watt rating.

The duration of the constant power discharge may be any period of time (up to six hours), as long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or exceed any other operational or safety limits.

PEAK LIMITING

The BESS is discharged at a varying power level proportional to the amount by which the actual load on the Host Utility feeder or substation transformer exceeds a desired value.

The dispatch of power from the BESS in this case would mirror the shape of the Host Utility load (which may be, generally, sinusoidal in shape).

The duration of this discharge may be several hours, as long as the total energy dispatched to the load does not exceed the nameplate energy rating of the BESS or any other operational or safety limits. As an example, with the BESS installed at a distribution substation, the load on the secondary winding of the substation transformer would be monitored and sent to the control system. The Host Utility operator would enter a set pointset point, and the BESS would operate so as to prevent or reduce overloading of the transformer by serving some (or all) of its entire peak load.

Actual discharge profiles may vary with respect to overall shape, number of peaks and valleys per day, ramp rate, and overall duration of discharge, including possible standby time between

successive peaks. The Contractor shall specify all operational and warranty, specific limitations on the use of the battery for the two different power dispatch profiles.

Voltage Support

The BESS shall be capable of supporting voltage on the Host Utility feeder to which it is connected by the injection or absorption of both real and reactive power (VARs).
This operation shall be possible during real power discharge or charge and during standby. The operation may be dynamic (continuously varying reactive/real power output) or static (operation at a fixed power factor).
In this use, it shall be possible for the Host Utility to determine the priority of operation and/or the level of reactive power support desired, including different levels for leading and lagging VARs, as well as precedence of reactive power over real power or real power over reactive power. Specifically, it shall be possible to give either real power or reactive power the higher priority, as long as the nameplate VA rating is not exceeded.
In this use, the BESS shall be capable of responding to both real-time and pre-programmed control signals.

VAR Compensation

For VAR compensation the intent is that the BESS be capable of carrying out the basic functions of a synchronous generator, having the following characteristics:

- Include injection voltage control/reactive power consumption and limitation of active power when the effect of the reactive power is not sufficient. Use a progressive curve, whereby the higher the deviation is from the target voltage, the greater is the effort to correct the deviation.

- Negative sequence, limited to a maximum phase current of 1.2 per unit permanent.

- Harmonics up to a crest factor of 2 and a 40% permanent total harmonic distortion in the current (THDi), with a maximum voltage distortion equal to the limit of harmonics for low voltage according EN 50160.

- Connection and short-circuit current limited to a value of 2 per unit for 10 seconds.

- It may be necessary to automatically disable over frequency or under frequency protection during operation in VC/VS mode. The Contractor shall coordinate this with the Host Utility.

Frequency Regulation

The BESS shall be capable of both charging and discharging, at the power level in response to an external signal (such as an automatic generation control signal).
FR may occur for as much as 24 hours per day and for as much as 365 days per year.
FR operation would not be simultaneous with any other real power discharge or charge, but it may occur simultaneously with supply of reactive power.

Intermittent Resource Support

The BESS will support the integration of intermittent resources (typically, renewable resources such as wind or solar) into the grid by either eliminating or reducing undesirable voltage and power fluctuations on the Host Utility feeder or by firming the power delivered by the resource (that is, augmenting the power produced so that an expected output may reliably be achieved).
In this use, the renewable resources may be local to the BESS or at some distance.
In IRS use, the BESS shall respond to one of two classes of controlling signals:
- (1) the voltage at the electrical connection point or PUC and
- (2) the output power level of the intermittent resource (or some other power level signal).

Several scenarios are possible, as described in the following paragraphs.

Voltage Flicker

In a voltage flicker control scenario, the BESS shall be dispatched to control rapid but small (such as 2% to 5%), potentially frequent changes in voltage on the utility feeder that produce voltage flicker at other customer loads on the feeder.
The control signal is the power output level of the PV array. The BESS shall operate so as to compensate for all changes in output power level as per Grid Code requirements.
Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS. The BESS shall respond instantaneously for each qualifying power level change and then immediately begin a ramp to zero power as per Grid Code requirements.
Depending on a number of factors—including the size of the intermittent resource compared to the native feeder load, the impedance of the feeder (X/R), and the location of the BESS and the intermittent resource relative to one another—voltage flicker may be improved by the BESS providing either real or reactive power or both in response to either variations in the voltage at the electrical connection point or variations in the output power level of an intermittent resource.
Depending on a number of factors—including the size of the intermittent resource compared to the native feeder load, the impedance of the feeder (X/R), and the location of the BESS and the intermittent resource relative to one another—voltage flicker may be improved by the BESS providing either real or reactive power or both in response to either variations in the voltage at the electrical connection point or variations in the output power level of an intermittent resource.

Ramp Rate Control

In a ramp-rate-control scenario, the BESS shall be dispatched to limit the rate of power change up or down (ramp rate) from the intermittent resource so that large step changes in power output are smoothed over time to produce a controlled ramp (up or down).
Ramp rate control is effectively the same as voltage flicker control from the point of view of power in or out of the storage system except that the goal, for example, is to limit the operation of automatic voltage regulators and tap changers on the feeder or at the substation that are caused by relatively larger changes in output of the intermittent resource. As with flicker, there would be different standards of acceptability for power ramp rates.
The control signal is the power output level of the PV array. The BESS shall operate to compensate for all changes in output power level as per Grid Code requirements.
Drops in power shall be compensated by a discharge of the BESS, whereas increases in power shall be compensated by a charge of the BESS. The BESS shall respond instantaneously for each qualifying power level change and then immediately begin a ramp to zero power as per Grid Code requirements.
The BESS shall be dispatched in response to variations in power at the point of concern, whether it is the feeder at the electrical connection point or the output terminals of the intermittent resource. The output of the BESS (either discharge or charge) shall be instantaneous in response to a change in the monitored quantity, followed by a ramp to zero over an operator-settable period of time. The maximum output (either discharge or charge) of the BESS shall be as specified.

PS.7.5 Charging Requirements

On weekdays, normal charging of the battery shall be completed within OFF-PEAK hours**.**

On weekends, all times of the day may be available for supplementary charging (if required), depending on the feeder loads and other factors specific to the Host Utility.

The control system shall allow the Host Utility dispatcher to initiate a specified or programmed charge cycle.

The Contractor shall work with each Host Utility to ensure that the Host Utility's requirements are met to the full capability of the BESS and that the battery is properly charged in all anticipated uses.

The O&M manual supplied with the BESS shall clearly and in a detailed manner describe all charging requirements and shall guide the user in ensuring that charging of the battery is properly carried out**.**

PS.7.6 Battery Sub-System Design Requirements

Electrochemical Cells

The battery shall consist of lithium-ion cells and shall be capable of providing the type of service described herein.

Only cells that are commercially available or for which suitable (not necessarily identical) replacement cells can be supplied on short notice throughout the BESS test program will be allowed. For both premature cell failures and end-of-battery-life replacement, the Contractor shall guarantee cell availability and the length of down time (hours or days) required to replace cells.

The cells may be supplied as separate, individual units or as group of cells combined into modules.

The design, materials, and method of cell construction shall conform to the codes, standards, and other requirements of this specification.

The cells shall meet the seismic requirements specified by the current version of the International Building Code for the planned location of the BESS.

Cell and module design shall accommodate the anticipated vibrations and shocks associated with the periodic transportation of the BESS and shall resist deterioration due to vibrations resulting from highway transportation.

External connections to the cells, including inter-cell or inter-module connections (such as cables and/or straps) and cell monitoring equipment (such as thermocouple and voltage sensor connections) shall also be designed to prevent failure during transportation.

Terminal post seals shall not transmit stresses between the cover or container and the posts. External auxiliaries (if any) shall either be removed during transport or mounted so as to prevent damage during shipment from one site to the next.

Cell terminals and interconnects shall have adequate current-carrying capacity.

Labelling of the cells or unit batteries shall include manufacturer’s name, cell type, nameplate rating, and date of manufacture, in fully legible characters.

All cells shall be traceable to the point of origin for purpose of addressing safety issues. The polarities of cell or unit battery terminal posts shall be embossed on the cover at the terminal.

The capacity of the cells at the factory, before the FAT, shall be such that the BESS can deliver 95% of its rated capacity on the first discharge cycle of the FAT.

The Contractor shall certify to the Owner, three days before the planned FAT starting date, that the cells have demonstrated to the Contractor’s satisfaction the 95% capacity capability specified in this paragraph.

Storage System

The storage system may consist of one or more unit batteries. If the storage system consists of more than one unit battery, these may be electrically interconnected in any desirable series and parallel configuration to achieve the overall system storage and power rating requirements.
The battery system may operate at any DC voltage selected by the Contractor. However, live parts in circuits over 150 V to ground, while energized, shall not be accessible to other than qualified persons.

For systems with an open-circuit series cell string voltage above 600 VDC nominal, it is recommended, but not mandatory, that the battery sub-system include an approved means of sectionalizing the cell string or strings into segments of not more than 600 V (open circuit) for maintenance activities. These switches need not be load-break switches. Non-load-break switches shall include provisions to ensure that the string disconnect device is (or devices are) open before the sectionalizing switches can be opened or closed.

The open-circuit voltage for a unit battery that has exposed terminals (that is, upon removal, the terminals are capable of being accidentally contacted by service personnel) shall be not more than 60 VDC.
Each electrically series-connected string of unit batteries shall include a means of disconnecting the string from the rest of the system and of providing over-current protection (during a fault).

Disconnecting devices shall be capable of being operated with normal load current present. The means of disconnect shall provide for a physical interruption of the string electrical circuit, which shall be visible to anyone servicing the individual unit batteries in the string and shall be capable of being locked or secured in an open position. Exception: A configuration in which the DC terminals of the unit battery's interconnection with the DC bus is at or near the back of an otherwise enclosed rack or mounting structure, so that neither the DC bus nor the unit battery terminal-to-bus connections are capable of being accidentally contacted by service personnel, is an acceptable means of meeting the requirements of this paragraph.

If the disconnect means consists of removal of a unit battery (see Exception above), the storage system shall be designed to allow maintenance personnel to determine that there is no current flowing in the string and provisions (for example, a key interlock) to ensure that the PCS is off before the unit battery is removed. Procedures for maintenance and/or field replacement of unit batteries shall neither require nor recommend removal of the unit battery without first ensuring that no current is flowing in the string circuit.

Over-current protection, whether on the AC or DC side, in paralleled unit battery strings shall be sized and coordinated so that currents from other strings do not contribute to a fault in any unit battery string.

The O&M manual and training for the Host Utility's personnel shall address closing of non-loadbreak disconnect devices that may cause a discharged cell string to be connected in parallel with charged strings of cells and shall prescribe procedures for preventing equipment damage or personal injury.

Where appropriate, DC wiring shall be braced for available fault currents. Protection shall include a DC breaker, fuse, or other current-limiting device on the battery bus. This protection shall be coordinated with the PCS capabilities and battery string protection and shall take into account switching or other transients and the inductance/resistance (L/R) ratio at the relevant areas of the DC system.

The Contractor shall produce a fault analysis and protection coordination study for the battery DC sub-system during final design. The Owner reserves the right to withhold permission to ship the BESS until the fault analysis has been satisfactorily completed.

Cells, wiring, switchgear, and all DC electrical components shall be insulated for the maximum expected voltages plus a suitable factor of safety. The DC bus work and load-carrying cables

within the storage sub-system shall have a load factor of not more than 60%. Load factor of all other components shall be not more than 70%.
The battery system may be ungrounded or grounded. Grounded configurations may be centreor one-pole-grounded and/or solid or high-resistance grounded. However, the battery system shall include a system to detect and alarm excessive ground leakage current levels.

Ground fault detection shall be enabled for each container or, if more than one electrical series string is installed in the container, for each series string. The detection/trip level shall be field adjustable.

The Contractor shall have overall responsibility for the safety of the electrical design and installation of the battery, as well as all aspects of the system.

The battery system shall include a monitoring/alarm system and/or prescribed maintenance procedures to detect abnormal unit battery conditions and notify proper personnel of their occurrence. Abnormal conditions shall include but not be limited to:

- weak unit batteries that could reasonably be expected to fail to provide rated capacity upon full discharge,
- high-resistance or open-unit batteries,
- high-resistance or open external unit battery connections,
- unit batteries with temperatures exceeding operating thresholds, and
- internally shorted unit batteries.

Unit battery monitoring, whether automatic or manual, should be specified to alert the proper personnel in a timely manner that an abnormal unit battery condition exists or may exist. The intent of this requirement is to prevent the BESS from suffering the degraded operation, premature capacity loss, or equipment damage that can result from certain types of unit battery failures that are commonly known to occur for the type of unit battery specified.

All alarms shall be part of the control system and shall include remote display or annunciation capability.

The unit batteries or cells in the battery system shall be racked or shall be housed in stackable modules.

The unit batteries or cells in the battery shall be arranged to maximize energy density (kWh/m2).

For systems designed for unit battery or cell maintenance/replacement in the field, the unit batteries or cells shall be arranged and installed to permit easy access for equipment and personnel.

For systems designed for unit battery or cell maintenance/replacement in a remote service centre, the moveable units shall be arranged and installed to permit easy access for shall be possible to remove and replace a prematurely failed unit battery or cell (as appropriate) in less than two hours, when BESS performance specifications cannot be met, assuming the replacement part(s) is (are) at the site.

The lengths and widths of all aisles and spaces into which personnel may enter in the field for operations and/or routine or unscheduled maintenance purposes, as well as egress routes from these aisles and spaces, shall conform to applicable codes established by the jurisdiction having authority.

All racks and metallic conductive members of stackable modules shall be grounded to earth.

Racks shall meet the seismic load and road vibration requirements specified herein and shall include means to restrain cell movement during seismic events and highway transport.

The Contractor shall furnish analyses and/or other data that show that the rack and cell designs are designed to meet all potential seismic and transport vibration requirements.

The structural components of all modules and racks (including self-contained, combination battery and PCS modules) shall be designed to meet the seismic requirements.

The design of all modules and racks shall specifically account for the anticipated vibrations and shocks associated with the periodic transportation of the BESS.

Cell/Battery Auxiliary Systems

The cells and battery systems shall be supplied with all required and/or recommended accessories.

This includes inter-cell connectors and monitoring devices for cell temperature and cell voltage, if required.

PS.7.7 Auxiliary Power

Power for BESS auxiliary loads (fans, lights, etc.) will not necessarily be available from the Host Utility at low voltage. The BESS shall include an auxiliary power system derived from the Host Utility AC bus, the PCS transformer low-side bus, PCS transformer tertiary winding, or similar means.

The point of supply for the auxiliary power system shall be downstream from the main kWh meter for the BESS (that is, on the BESS side of the meter).

The auxiliary power system shall include all step-down transformers, breakers, fuses, motor starters, relaying, panels, enclosures, junction boxes, conduits, raceways, wiring, and similar equipment, as required for the BESS operation.

The auxiliary power system shall include separate potential transformers and current transformers, so that auxiliary power consumption can be measured and electronically recorded in real time, independently of operation of the PCS or of net power flows to and from the battery.

The auxiliary power system and/or control system design shall provide for whatever emergency power is necessary for an orderly BESS shutdown during abnormal conditions such as a loss of Host Utility power.

The auxiliary power system and/or control system design shall also provide for the capability to restart automatically after BESS shutdowns of several days.

PS.7.8 Control and Communication

The control system shall be designed to provide for automatic, unattended operation of the BESS in all of the use cases described in this specification.

The control system design shall provide for local manual operation and remote operation or dispatch from a remotely located computer or the Client’s operation centre.

The control system shall be programmable by the Host Utility for establishing or adjusting all parameters, set points, algorithms, limits, and so on that are required for effective operation in any of the use cases described in this specification.

The control system shall include the capability for the Host Utility to adjust all the settings for monitoring and managing the various functions as set forth herein.
One purpose of the BESS is to assist the Host Utility in responding to abnormal utility system conditions. Therefore, the Contractor shall design the control system, including its power supplies and connections to sensors, to be immune from utility voltage and/or frequency excursions, transients, and similar events.

PS.7.9 Control System Hardware Requirements

All local control and monitoring system components shall be housed in appropriate controlledenvironment enclosures.

Control computers shall be industrially hardened, microprocessor-based computers using standard operating systems.

The control system shall be designed to prevent externally supplied, control panel or local signals from causing the BESS to operate in an unsafe manner or in a manner that may damage the BESS, its equipment, or the connected utility system equipment.

As applicable to the design/layout of the BESS, there shall be one or more emergency trip push buttons strategically located at the site. The push buttons shall be suitably protected to prevent accidental operation. Operation of the push buttons shall activate shutdown or bypass modes, as appropriate, as outlined in previous sections.

The control system shall provide for setting the operating mode from a BESS local control panel or local data acquisition system (SCADA) computer and by signals from the remotely located computer, as described in later subsections.

PS.7.10 Control System Self-Protection and Self-Diagnostic Features

The system shall include appropriate self-protective and self-diagnostic features to protect itself and the battery from damage in the event of BESS component failure or from parameters beyond the BESS's safe operating range due to internal or external causes.

The self-protective features shall not allow local or remote signals to cause the BESS to be operated in a manner that may be unsafe or damaging to the BESS or to the connected utility system equipment.
All protective operations resulting in a shutdown shall be carried out in an orderly and safe manner, even in the absence of utility power.

Temperature sensors shall be incorporated in critical components within the BESS. The system shall alarm and go to standby/fault mode when an over-temperature condition is detected.

The system shall alarm upon detection of a DC ground fault. The alarm trip level shall be field adjustable.

Door interlock switches shall be provided for all BESS container doors. The system shall alarm and go to shutdown mode when a BESS door is opened. Doors shall be fitted with provisions for external locks.

The system shall alarm and go to shutdown mode upon detection of smoke.

Surge-protection devices shall be provided at the input and output terminals of the BESS.

All transducers and sensors shall be accessible to qualified and approved service personnel for calibration.

Similarly, all test points in the BESS shall be accessible for testing, maintenance, and troubleshooting by qualified and approved service personnel.

All control and monitoring system components shall be housed in appropriate, controlledenvironment enclosures.

PS.7.11 Local Control Panel

The BESS shall include a local control panel or console, which is easily accessible, on or within the BESS container.

As a minimum, the following operator controls shall be located on the control panel:
- Trip/reset for the BESS AC circuit breaker or contactor.
- Trip/reset for circuit breaker(s) on the high voltage side of the Host Utility distribution transformer.
- Trip/reset for DC circuit breaker(s)/contactor(s).
- PCS on/off.
- Reset toggle or push button. When reset is initiated, the control system shall resume control and proceed to the appropriate operating mode.
- Reset cut-out selector switch to disable remote or local reset signals.
- A selector switch to manually set the operating state (that is, the shutdown, disconnect, or operate state) and to have the control system set the operating state automatically.
- A selector switch to manually set the operating mode and to have the control system set the operating mode automatically.

The control panel or console shall also include meters, indicators, and displays as described in a following section of this document.

PS.7.12 Supervisory Control (SCADA)

The BESS shall allow for supervisory control access to locally or remotely adjust settings of operating modes and/or control parameters.

Supervisory access shall be implemented both in the local control computer and via a remote computer that is connected to the local control system by a remote communications link.
The BESS shall have the equipment and capability to communicate with the Host Utility's operations centre via a Host-supplied communications channel. Details on this communications link will be specified at the time of award.

As a minimum, the remote control link shall allow the Host Utility's personnel to trip/reset the AC circuit breakers, reset the control system, and set the operating state and operating mode.

The communications link also shall transmit status, alarms, and selected performance values to the Host Utility's operations centre.

PS.7.13 Performance Monitoring and Data Acquisition System

The BESS shall include a SCADA to provide continuous monitoring and display of key operational parameters, as well as permanent archival of all measured parameters.

The SCADA shall include sensors, transducers, wiring, signal isolation and conditioning circuitry, and data acquisition and analysis hardware and software as required to perform the functions described in this section.

The SCADA shall be of standard commercial manufacture and shall use hardened components suitable for a utility substation environment.

The SCADA shall measure operational data, as described in this section, and shall record all data points to fixed and removable non-volatile memory.

The SCADA shall be capable of making all monitored data and events available through the DNP3 communication interface and shall permit display of current values and recent historical trends (such as the past 24 hours) on a local screen for all recorded points.

In addition, the SCADA shall provide panel meter displays of certain operational parameters. Provision for monitoring and event data via the communication interface shall adhere to DNP3 AN2011-001 to the extent possible.

The SCADA shall preferably be based on personal computer technology with a Microsoft Windows XP or later operating system.

Other system architectures are acceptable, but regardless of system architecture, the SCADA shall, at a minimum, provide remote data inquiry from personal computer based platforms and data file export capabilities in ASCII format on independent media (such as a universal serial bus drive) that are readable on personal computer-based systems.

All sensors, transducers, circuit boards, and test points in the SCADA shall be easily and safely accessible for calibration, maintenance, and troubleshooting by the Host Utility.

The SCADA shall continuously measure or calculate the data points identified and shall make them available via the DNP3 communication connection as specified.

All measured parameters shall also be permanently archived in all modes of operation.

For continuously varying quantities, the Contractor shall propose for Owner's review and approval an approach to data archiving that is suitable for each quantity measured. The final approach will be decided during product design.

Local displays of the information identified shall exist on the BESS local control panel, console, or SCADA computer.

Digital displays, if used, shall be no less than 2.54 cm high and shall update at least once per second.

The SCADA shall also continuously monitor and report (alarm) via the DNP3 communication connection all the events. These events shall also be permanently archived.

The SCADA shall also include a monitoring/alarm system (with prescribed response procedures) to detect weak unit batteries.
The SCADA shall provide unsolicited message capability for reporting critical alarms to the Host Utility. This shall not be a polled operation that the Host Utility needs to initiate. The Contractor and the Host Utility will agree on a list of alarms that are reported the instant they are detected.

The BESS shall include provisions for determining and storing in non-volatile memory the sequence of abnormal events, trips, and/or alarms that cause the BESS to go the disconnect or shutdown state. It is preferable that this function be implemented separately from the normal operations data acquisition function of the SCADA so that failures in the latter (whether hardware/software failures or power interruptions) will not prevent the permanent logging of abnormal event sequences.

Disturbance reporting shall be provided. The data file format shall be compatible with IEEE C37.111-1999.

Disturbance reporting shall have the following characteristics:

- A minimum rate of 1 kHz (16 samples/cycle) at a minimum resolution of 0.05% of full scale (alternatively, a 12-bit resolution is acceptable)
- A minimum duration of 1 second
- A minimum pre-fault duration of 250 msec

The SCADA shall also report sequence of events for, but not limited to, the following points:

- Event records with resolution of 1 msec
- BESS connection status
- Transfer trip signal status
- Distributed generation end open signal status
- Relays operated (targets and description)
- Any available sequence-of-events records related to the above

The system shall include provisions to transmit, at a minimum, the data displayed on the panel meters and the alarm/status indicators to the remote computer via the communications channel provided by the Host Utility.

PS.7.14 Earthing

A suitable equipment grounding system shall be designed and installed for the BESS.

This system shall be designed to be tied to an existing site grounding system. The system also shall be adequate for the detection and clearing of ground faults.

All exposed non-current-carrying metal parts shall be solidly grounded.

Particular attention shall be given to prevention of corrosion at the connection of dissimilar materials such as aluminium and steel.

The BESS's ground shall be connected at one point to the site bare copper ground cables provided by the Host Utility at the AC interface. The means of connection shall include two physically separate cables for redundancy. The design shall allow for disconnect of the cables at the interface point so that each grounding system resistance-to-ground value can be measured independently.

The grounding of the BESS shall not cause over-voltages that exceed the rating of equipment connected to the Host Utility's distribution system.

The grounding of the BESS shall not cause over-voltages that exceed the rating of equipment connected to the Host Utility's distribution system.

PS.7.15 Wiring

Note: In the case of original equipment manufacturer equipment purchased by the Contractor under a purchase order or a competitive solicitation for installation and use in the BESS (such as the personal computer-based SCADA) and for which it is not practical or cost effective to pass through certain requirements of this section, the Contractor may take exception to such requirements. However, the Contractor must identify the equipment that may not meet these requirements together with the requirements which will likely not be met.

All wiring shall be new and continuous for each wiring run; splices are not acceptable.

Aluminium wire shall not be used.

Wiring that may be exposed to mechanical damage shall be placed in conduit or armoured.

Wires shall have identifying labels or markings on both ends. The labels or markings shall be permanent and durable. Stick-on labels will not be allowed. All field wiring between separate equipment items supplied by the Contractor shall be color-coded according to specified standards.

In general and where practicable, control and instrumentation wiring shall be separated from power and high-voltage wiring by use of separate compartments or enclosures or by use of separate wireways and appropriate barrier strips within a common enclosure.

BESS and PCS control and instrumentation system wiring shall be bundled, laced, and otherwise laid in an orderly manner. Wires shall be of sufficient length to preclude mechanical stress on terminals.

Wiring around hinged panels or doors shall be extra flexible (Class K stranding or equivalent) and shall include loops to prevent mechanical stress or fatigue on the wires.

Insulation and jackets shall be flame retardant and self-extinguishing and shall be capable of passing the flame test of IEEE 1202-2006.

The shield of signal circuits shall be connected to a separate terminal at the terminal block. Signal circuit shields shall be grounded at one point only.

Wiring to terminal blocks shall be arranged as marked on wiring diagrams. Terminal groupings shall be in accordance with external circuit requirements.

Conduits and cable systems shall not block access to equipment by personnel. There shall be no exposed current-carrying or voltage-bearing parts.

PS.8 POWER CONVERSION SYSTEM (PCS)

PS.8.1 General

The PCS is the interface between the DC battery system and the AC system and provides for charging and discharging of the battery.

The PCS may consist of one or more parallel units. Paralleling may be at the DC or AC terminals.

The PCS shall be a static device (non-rotational) using solid-state electronic switch arrays in a self-commutated circuit topology. Line-commutated systems or systems that require the presence of utility voltage or current to develop an AC output are not acceptable.

The PCS circuit topology shall be voltage source (that is, the PCS at its AC terminals shall appear to the utility grid as a voltage source rather than as a current source and, at its DC terminals, shall be capable of reversing current flow in the battery without reversing the polarity of the DC bus).
Only commercially proven switch technology and circuit designs are acceptable.

All bus work and load-carrying cables within the PCS sub-systems shall have a load factor of not more than 60%. Load factor of all other components shall be not more than 70%.

The PCS shall be air-cooled, with final rejection of waste heat to the ambient air. This does not preclude use of closed-loop fluid cooling for portions of the PCS.
The air-handling systems shall include filtering that is adequate to keep dust from the interior of the PCS system.

Replacement of filters shall not require special tools or involve more than two hours of labour at the site.

Fluid cooling systems shall provide means for detecting coolant leaks and for alarming and, if necessary for equipment or personnel safety, shall provide means for shutting down the BESS in the event of a leak.

The PCS shall be housed within one or more appropriate weatherproof and dustproof enclosures, with provisions to prevent moisture condensation and to prevent the entrance of water, airborne salt or dust, rodents, insects, and/or similar materials or pests into air intake/exhaust ports.

PS.8.2 Power Conditioning System Rating

The PCS shall be capable of delivering an apparent power (VA) that is equal to:

SQRT [(nameplate watt rating)2 + (nameplate VAR rating)2],

where nameplate watt rating and nameplate VAR rating are defined in the technical schedules.

This rating shall be referred to in all project documentation, including this specification, as the nameplate VA rating.

To account for losses in the PCS, the dc input power to the PCS will be higher than the rated PCS output power. The available dc input power will be the BESS nameplate watt rating divided by the PCS full load efficiency during discharge.

PS.8.3 Power Conditioning System Protection and Control

The PCS, in conjunction with the control system, shall be capable of completely automatic, unattended operation, including self-protection, synchronizing and paralleling with the utility, and disconnect. The control of the PCS shall be integrated with the overall BESS controls.

The PCS shall include all necessary self-protective and self-diagnostic features to protect itself from damage in the event of component failure or the excursion of operating parameters beyond a safe or expected range. This includes excursions due to internal or external causes.

The self-protective features shall prevent the PCS from being operated in a manner that may be unsafe or damaging.

Faults due to malfunctions within the PCS, including commutation failures, shall be cleared by the PCS over-current protection device(s).

PCS protection and control shall be integrated with the overall system protection scheme.

PS.8.4 Power Conditioning System AC Interface with Utility Host Equipment

The BESS must meet applicable harmonic current and voltage specifications in accordance with standards listed.
Harmonic suppression may be included with the PCS or at the system AC system level. However, the Contractor shall design the BESS electrical system to preclude unacceptable harmonic levels in the BESS auxiliary power system.
The PCS transformer may be used to aid in harmonic cancellation and may include tertiary windings to supply BESS auxiliary power requirements. The transformer must be dry type.

The PCS shall include provisions for disconnect on both its AC and DC terminals for maintenance work.

Conductor separation must be clearly visible; flags or indicators are not acceptable. These disconnects shall be capable of being locked open (or made safe by a functionally equivalent procedure) for maintenance work.

PCS capacitors with stored energies greater than 50J shall be flagged, and jumpers must be furnished to discharge them before maintenance work. This procedure shall be addressed in the O&M manual.

One purpose of the BESS is to assist the Host Utility in responding to abnormal utility system conditions. In most cases, the BESS will be located on the utility's distribution system where voltage sags and surges due to utility operations (such as switching) and transients due to lightning or other natural causes may frequently occur. In addition to observing the general requirements and standards listed in previous sections, the Contractor shall design the PCS, including its controls, power supplies, and connections to sensors, to be immune from utility system voltage and/or frequency transients and similar events.

PS.8.5 Electromagnetic Interference

The PCS shall not produce electromagnetic interference (EMI) that will cause maloperation of instrumentation, communications, or similar electronic equipment within the BESS or on the Host Utility system.

The PCS shall be designed in accordance with the applicable IEC standards to suppress EMI effects.

PS.8.6 Islanding

The PCS design shall include provisions to limit run-on and islanding to no longer than 160ms upon the loss of the Host Utility bus.

This capability shall be demonstrated to the Owner's and Host Utility's satisfaction during the FAT

PS.8.7 Black Start Capability

If black start capability is required, the PCS shall be capable of starting and operating without the presence of the utility voltage.

Exercise of the black start capability shall be manual and shall under no circumstance result in an accidental energizing of the Host Utility's bus.

During final design and during factory testing, the Contractor shall demonstrate to the Owner's and Host Utility's satisfaction that accidental energizing of the utility bus is not possible.

PS.9 ENERGY MONITORING & CONTROL SYSTEM

PS.9.1 General

This section covers the supply, delivery, installation and commissioning of materials and components necessary for the establishment of a SCADA based energy control and monitoring system.

The remote PV plant monitoring system shall incorporate all functions in real time necessary for PV Plants, Battery Energy Storage System and Standby Diesel Generator control and

supervision, and shall be installed in accordance with the guidelines of IEC 61724 standard and the relevant Employers standards.

Any other control and surveillance systems (such as fire detection system and security system) shall also be connected to the PV plant monitoring system.

The data shall be stored in a server hosted on site which shall be located in a kiosk or building. The Employer shall be able to access the PV plant server remotely via a web server or software.

All necessary communications systems shall be provided as part of the PV plants' installation, to enable the required level of monitoring.

All the monitoring equipment (including weather station) must be powered by UPS with at least 4 hours of uninterrupted power supply capacity. The status of the UPS devices (like batteries level, UPS temperature etc.) must be monitored at all times by the monitoring system and alarms must be triggered in case of values exceeding specific ranges.

PS.9.2 Power Plant Controller (PPC) Modules

Cabinet/s to be installed at the various plant locations to provide PV Solar / BESS / Gensets control with 100% autonomous configuration & operation fitting the following main use cases:
- Grid-tied operation
- Off-grid (islanded) operation

The PPC cabinet also houses the RTU and SCADA modules, which allows for the collection of equipment data and statuses, for remote monitoring and control purposes.

PS.9.3 Software Platform

Software platform accessible remotely which gathers all the production and automated analysis data of the different plants in order to optimize plant performance.

PS.9.4 Functionality

The Energy Monitoring and Control System will incorporate all functions in real time necessary for control and supervision of the PV Plant, Battery Energy Storage System and Diesel Generators.

Any other control and surveillance systems (such as fire detection system and security system) shall also be connected to the plant monitoring system.

The EMS shall provide at least the following functionality:

- Plant performance tracking.
- Active/reactive power management.

- Reliable data logging from all linked devices, such as meters, solar inverters, ESS, genset controllers, weather stations (irradiance/temperature...), and I/O modules), and offer a secure local storage.

- Simplified plant synoptics.

- Data analysis.

- The possibility to edit setpoints of all linked devices locally from a single interface.

- Customizable alarms.
- Inverter heatmaps, etc.

The EMS shall be able to operate according to at least the following three (3) different network configurations as presented in the table below:

Configuration	BESS	Grid
Grid Prime	Grid Following	Grid Forming
BESS Prime	Grid Forming	Grid Following
Gensets Prime	Grid Following	Grid Following

The following functions shall be available when operated in the Grid Prime Configuration:
- Peak shaving
- Grid reactive power control
- BESS Time-of-Use Management

The following functions shall be available when operated in the BESS Prime Configuration:
- BESS charge control
- Genset start/stop management (Future)

The following table provides a summary of the functions that will be available from each of the EMS's control subsystems:

Control Subsystem	Available Functions
BESS Control	BESS Ramp Control BESS Charge Control BESS Time-of-Use Management BESS Dispatch Control SoC Equalization
Grid Control	Export Control Peak Shaving Grid Reactive Power Control
Islanding Control	Automatic Black-start Automatic Grid Reconnection

PS.9.5 Data Logging

A secure communications network must be installed and commissioned for the BESS Plant monitoring systems.

PS.9.6 Interface with SCADA

The system shall be secure, such that security breaches of the remote BESS Plants monitoring system do not influence the Employer's systems.

PS.10 POWER TRANSFORMERS

PS.10.1 General

The step-up / isolation power transformers shall be of the oil-immersed or dry-type transformer technology.

The MV transformer must be designed at its low-voltage windings for voltages that arise during pulsed mode of the inverter.

The low-voltage windings of the MV transformer must be designed for voltages that are capable of a rate of rise in voltage dV/dt of up to 500 V/µs to ground. The line-to-line voltages are sinusoidal.

It is recommended to provide a shield winding grounded on the tank between the low-voltage windings and the high-voltage windings. This serves as an additional dV/dt filter.
The voltages at the low-voltage windings of the MV transformer must match the AC output voltage of the inverter.

The voltage level on the high-voltage side of the MV transformer must be selected according to the grid connection point. The MV transformer must be connected to the medium-voltage grid or the high-voltage grid.

The MV transformer must be rated according to the temperature-dependent power behaviour of the inverter.

PS.10.2 Duty Requirements

The transformer/s and all its accessories like current transformers, bushings etc. shall be designed to withstand, without damage, the thermal and mechanical effects of any external short circuit to earth and of short circuits at the terminals of any winding for a period of at least 2 seconds.

Transformer shall be capable of withstanding thermal and mechanical stresses caused by symmetrical or asymmetrical faults on any winding.

Source short circuit levels to be assumed for design purposes:

- MV: 15 kA
- LV: 40 kA

The transformer shall be of the Harmonic Mitigating type with a K-Factor of at least 4. 3rd Order harmonics shall be treated in the secondary windings through flux cancellation. Harmonic treatment shall be through electromagnetic means; filters, capacitors, power electronic circuitry or other such devices shall not be used to treat harmonics.

Transformer Oil shall be Polychlorinated Biphenyls (PCB)-free in line with IEC 60296 and the Neutral shall be oversized (200% rated) to reduce losses.

An electrostatic ground shield shall be provided between the primary and secondary windings to prevent capacitive coupling.

The transformer manufacturer shall provide test certificates to indicate the K-factor of the transformer in compliance with IEEE C57.110-1998 and IEEE C57.159.
The transformer shall be capable of being loaded in accordance with SANS / IEC. There shall be no limitation imposed by bushings, tap-changer etc. on the transformer.

The overload capacity of the transformers and their emergency short time ratings called for in technical schedules shall be furnished.

The transformer shall be suitable for continuous operation with a frequency variation of +/- 5% without exceeding the specified temperature rise.

The transformer shall be capable of being operated without danger on any tapping at the rated power with voltage variation of +10% corresponding to the voltage of that tapping and at the same time with a frequency of 5% below normal.

Similar ratio transformers shall operate satisfactorily in parallel with each other.

The noise-level, when energised at normal voltage and frequency, shall not exceed, when measured under standard conditions, the value specified by SANS / IEC.

The maximum flux density in any part of the core and yokes at normal voltage and frequency shall be such that the flux density under over voltage conditions shall not exceed the maximum permissible values for the type of core and yoke material used. The type of material and values of flux density in the core / yoke for the 100%, 110%, 125% and 140% and the hysteresis characteristic curves shall be included in the tender and shall be subject to the Engineer's approval.

All the transformers shall be designed for the following over-fluxing withstand capability:

- 110% - Continuous
- 125% - for 10 s

Transformers shall operate below the knee-point of the saturation curve at 110% voltage to preclude ferro-resonance and non-linear oscillations.

Transformers shall be capable of operating under naturally cooled conditions to the specified capacity.

Transformers shall be capable of operating continuously in accordance with the application standard loading guide at their rated power and at any of the specified voltage ratios.

PS.10.3 Enclosures (Dry-type Transformers)

The enclosure shall allow access to the transformer and all associated fittings, terminals and tapping links for maintenance either through lift off lockable doors, hatches or covers removable with aid of tools.

The enclosure shall be removable without need for disconnection of bushings/terminals from the transformer.

The transformer shall be designed to withstand outdoor environments where it can be dusty and moist. The enclosure shall have a minimum ingress protection (IP) of IP55.

The enclosure shall allow for bottom or side cable entry for primary and secondary power cables.

All panel edges and door edges shall be reinforced against distortion / deformation by rolling, bending and addition of welded reinforcement members.

All panels that can be opened will require either a key or tool.
Hinged panels for access to terminations and/or core and coil inspections.

Cable junction boxes and control panels shall have a minimum IP rating of IP55.
Transformer enclosure material will be at least 3mm thick Mild Steel.

All steel will be chemically treated (Phosphating).

All steel work will be powder coated and be heat treated.

All removable gland plates on HV and LV will be undrilled aluminium material and 6mm thick.

PS.10.4 Tank Construction (Oil-immersed Transformers)

The transformer tank shall be of conventional type. The transformer tank and cover shall be fabricated from good quality low carbon steel of adequate thickness and shall be designed to allow the complete transformer, when arranged for transport, to be lifted by crane and transported without overstraining any joints and without causing subsequent leakage of oil.

Each tank shall be provided with a minimum of four jacking pads, to enable the transformers, complete with all tank-mounted accessories and filled with oil, to be raised or lowered by jacks. The jacking point shall be not less than 300 mm above base level for masses up to 10 metric tons and for greater masses 500 mm.

Facilities shall also be provided to enable the transformer to be hauled or slewed in any direction.

The base of such tank shall be so designed that it shall be possible to move the complete transformer by skidding in any direction without injury using plates or rails.

The tank shall be capable of withstanding filling by full vacuum, continuous internal pressure of 35 kN/m2 over normal hydrostatic pressure of oil, short circuit forces and full vacuum for drying purposes.

The main tank body, tap changing compartments, radiators and coolers, shall each be capable of withstanding, when empty of oil, the vacuum test level specified in the Schedules. The plate thickness for the tank sides shall be a minimum of 6 mm.

Adequate space shall be provided at the bottom of the tank for collection of sediments. Suitable guides shall be provided for positioning various parts during assembly or dismantling.

Tank stiffeners and mounting brackets shall be continuously welded to the tank.

The base (if of channel construction) and tank stiffeners shall be designed to prevent retention of water.

Wherever possible, the transformer tank and its accessories shall be designed without pockets, wherein gas may collect. Where pockets cannot be avoided, pipes shall be provided to vent the gas into the main expansion pipe. All vent pipes shall have a minimum inside diameter of 15 mm and, if necessary, shall be protected against mechanical damage.

All seams and joints, other than those, which may have to be opened, shall be welded and wherever possible, double welded. All welding shall be stress relieved, if required.

All joints other than those which may have to be broken shall be welded. Caulking of defective welded joints will not be permitted. Such defective joints may be re-welded subject to the Engineer’s acceptance of written recommendation of the Contractor.

PS.10.5 Construction

The transformer and accessories shall be designed to facilitate operation, inspection, maintenance and repairs.
All materials used shall be of the best quality and of the class most suitable for working under the conditions specified and shall withstand the variations in temperature and atmospheric conditions, arising under working conditions, without undue distortion or deterioration or setting up of undue stresses in any part and also without affecting the strength and suitability of the various parts for the work which they have to perform.

No patching, plugging, shimming or other such means of overcoming defects, discrepancies or errors will be accepted.

Corresponding parts liable for replacement shall be interchangeable.

All outdoor apparatus, including bushing insulators with their mounting shall be designed so as to avoid pockets in which water can collect.

All mechanism shall wherever necessary, be constructed of stainless steel, brass or gun metal to prevent sticking due to rust or corrosion.

All taper pins used in any mechanism shall be of the split type.

Labels or plates of non-corrosive material shall be provided for all apparatus such as relays, switches and fuses, contained in any cubicle or marshalling kiosks.

Steel bolts and nuts exposed to atmosphere shall be with suitable finishes like cadmium or zinc plating.
Before painting, un-galvanised parts shall be completely cleaned and freed from rust, scale and greases, and all external surface cavities on castings shall be filled by metal pasting.

Similarly, the outer surface shall also be cleaned of all scale and rust by shot / sand blasting and then the primary coat shall be applied, immediately after cleaning. The second coat shall be of epoxy paint of shade conforming to the shade specified in the Technical Schedules. Before despatch, the transformer shall be given another final coat of epoxy paint.

All interior surfaces of mechanism chambers and kiosks except those, which have received anti corrosion treatment, shall receive three coats of paint, applied to the thoroughly cleaned metal surface. The final coat shall be of a light coloured anti-condensation mixture.

Metal parts not accessible for painting shall be made of corrosion resistant material.

PS.10.6 Core

The transformer design shall be core type. The core shall be manufactured from high grade, non-ageing, low loss, cold-rolled grain-oriented silicon steel laminations. The core shall be painted and insulated with suitable resin to protect it against corrosion. The lamination shall be free from sharp projections.

The yoke laminations shall be interleaved and carefully assembled to avoid air-gaps in the magnetic circuit. The cores shall be earthed as per relevant standards.

The design of the magnetic circuit shall be such as to avoid static discharges, development of short circuit paths within itself or to the earthed clamping structure.

The assembled core with all the clamping structures shall be free from deformation and shall withstand the vibrations during operation.

The core clamping structure shall be designed to minimize eddy current losses.

The electrical continuity of the core laminations shall not be interrupted. Where it is required by either insulation or cooling, tin-plated copper conductors shall be installed to give electrical continuity. The core shall be earthed via a removable link installed at an accessible position.

The core shall be mechanically strong enough to withstand all forces acting upon it during the transport of the transformer, electrical faults and when the core and windings are removed for maintenance.

PS.10.7 Windings (Oil-immersed)

The winding conductor shall be of electric grade copper and windings made in dust-proof atmosphere.

Coils of the windings of identical voltage and ratings shall be interchangeable.

The windings shall have uniform insulation as per transformer rating. The neutral points shall be insulated for line voltages of the particular winding.

The windings shall be designed to reduce the out of balance forces in the transformer to a minimum. They shall withstand the impulse and power frequency test voltages as specified in this specification. The Tenderer shall indicate the type of winding provided and reason for the selection.

Tappings shall be arranged at such positions on the windings as will preserve, as far as possible, electro-magnetic balance at all voltage ratios.

Winding insulation and all non-metallic material used in winding stacks shall be so treated that no further shrinkage shall take place after assembly.

Coils shall be constructed to avoid abrasion of the insulation, (e.g. on transposed conductors), allowing for the expansion and contraction set up by changes of temperature or the vibration encountered during normal operation.

The insulation on the conductors between turns shall be of paper.

The insulation of transformer windings and connections shall be free from insulating composition, liable to soften, ooze out, shrink or collapse and be non-catalytic and chemically inactive in transformer oil during service.

The stacks of windings shall receive adequate shrinkage treatment before final assembly. Adjustable devices shall be provided for taking up any possible shrinkage of coils in service.

Coils shall be supported at frequent intervals by means of wedge type insulation spacers permanently secured in place and arranged to ensure proper oil circulation. To ensure permanent tightness of winding assembly, the insulation spacers shall be dried and compressed at high pressure before use.

The completed core and coil assembly shall be dried in vacuum at not more than 0.5 mm of mercury absolute pressure and shall be immediately impregnated with oil after process to ensure the elimination of air and moisture within the insulation.

All threaded connections shall be provided with locking facilities. All leads from the winding to terminal board and bushings shall be rigidly supported to prevent injury from vibration. Guide tubes shall be used where practicable.

Adequate insulation and clearances between high voltage windings and low voltage windings shall be provided. All clearances of windings and other live parts shall be adequate for the rated system voltage plus 10%.

The coil clamping arrangement and the finished dimensions of any oil duct shall be such as not to impede the free circulation of oil through the ducts.

The conductors shall be transposed at sufficient intervals in order to minimise eddy current and equalise the distribution of currents and temperature along the windings.

The connections of all windings shall be braced.

Coil clamping rings, if provided, shall be of steel or of suitable insulating material. Axially laminated material, other than bakelined paper, shall not be used. End coil clamping shall be adequate to prevent distortion of end coils under any type of fault condition.

Inter-earthing arrangements shall be provided to maintain all metal parts at earth potential.

PS.10.8 Windings (Dry Type)

Electrolytic grade copper shall be used for transformer HV and LV windings. The design and arrangement of the windings and their insulation shall be such as to ensure uniform distribution of the voltage surges among all the coils of the windings.

The winding shall be provided with Class-F epoxy resin cast insulation. The insulation shall have high tensile and dielectric strength. Enough measures shall be taken during casting to avoid any void formation, cracking, etc. of the cast coils.

Both HV and LV windings of each phase shall be separately cast on rigid tubular coils, coaxially arranged under vacuum into the moulds. The epoxy resin insulation shall be fibre glass strengthened.

The resin used for winding insulation shall be non-hygroscopic to prevent the penetration of moisture into windings. It should be possible to energize the transformer without pre-drying even after long periods of service interruption. The resin used shall be non-flammable, selfextinguishing, void free and suitable for tropical climates with 100% relative humidity. The case of windings provided with taps, the inter-turn insulation of tapped windings shall be reinforced to obtain uniform stress distribution.

PS.10.9 Earthing Arrangements

A suitable earthing terminal shall be located externally, near the bottom of the enclosure.

Two (2) additional earth terminals shall be provided external to the enclosure on diagonally opposite sides of the transformer.

The earth terminals shall be a minimum M12 stud to accommodate a 70mm2 copper cable lug.

PS.10.10 Voltage Control

Off-load tap changing shall be provided with total tapping range of +5% to -5% in steps of 2.5%. The taps shall be on the high voltage side.

The transformer shall be capable of delivering its rated output at any tap position without damage.

PS.10.11 Bushings / Cable Terminations

The characteristics of all the bushings/terminations shall be as per the latest of SANS 1371.

All bushings shall be equipped with suitable terminals and terminal clamps of approved type and size and all external current carrying contact surfaces shall be adequately silver-plated. Main terminals shall be solderless. Flexible connectors shall be made from tinned copper sheets. Size of terminal / conductor for which the clamp is suitable, and the rated current shall be embossed / punched on each clamp.

Each bushing shall be co-ordinated with the insulation class of the winding.

All porcelain, used in bushings, shall be homogeneous and free from cavities or other flaws. The glazing shall be uniform in colour and free from blisters and other defects. The glazing shall be brown.

Stress shield for the bushings shall be considered as an integral part of the bushing assembly.

Porcelain bushings may be used for voltage ratings up to 36kV. No condenser bushings are required.

Clamps and flanges shall not be re-entrant shape, which may trap air.

The minimum clearance of air between live phase-to-phase and phase-to-earth of the outdoor bushings shall be as per SANS / IEC. Creepage distance for the bushings shall be selected to 25 mm / kV, as per IEC-60137.

PS.10.12 Impedances

The percentage impedance for voltages at nominal tapping on the ratio primary / secondary power base shall be as per relevant SANS/IEC standards (or otherwise approved). The permitted tolerance on these values shall not exceed +/- 10% for all the transformers.

To achieve the above percentage impedance values, no reactor either inside or outside the tank shall be used.

PS.10.13 Cooling

Cooling method of the dry-type transformer shall be by air naturally (AN), or ONAN for oilimmersed transformers, however, provision shall also be made for forced cooling if required.

Should forced-cooling be required to avoid the overheating of the transformers at full load capacity, the level of redundancy of the cooling shall be at least N+1, where N is the number of units required to cover the 100 % cooling requirement.

PS.11 CABLES

PS.11.1 Medium Voltage (AC) Cables

The selection, handling and installation of electric cables shall meet the requirements of SANS 10198 Part 1 to Part 14.

MV cables will be used to interconnect MV equipment: substations, power transformers and MV switchgear.
The Contractor shall be responsible for the accurate measurement of all cables installed and for the implementation of a cable drum management system for the reconciliation of final cable quantities.

All MV cable installations shall be done with 11/11 kV, Copper, 3-Core, PILC, PVC, DSTA, PVC, (BLK) and manufactured to SANS requirements, unless specifically stated otherwise in the Technical Schedules.

Cable sizes shall be calculated, based on the manufacturer's datasheets, with the required de-rating factors applied for correct sizing of the cables for each specific application. A detailed cable calculation spreadsheet shall be provided to the Engineer for approval, based on actual installation conditions, prior to the ordering/installation of any cables.

All tests to be performed on the cable in order to ensure safe reliable operations. Manufacturers to be used: Aberdare Cables or African Cables (or similar and equal approved).

Cable joints and terminations shall be done by means of heat shrink systems.

Cable terminations and joints shall meet the Supply Authority specifications in all respects.

Jointing and terminations shall be in accordance with the manufacturer's instructions by approved jointers experienced in this type of work.

The cables shall be delivered on drums in such lengths as to ensure that the cable lengths between terminations and joints, and between joints, will be approximately equal.

MV cable markers shall be supplied and installed as indicated on the relevant drawings or at acceptable distance interval. The cable markers must be manufactured in concrete with a 150 x 150mm top and a 300 x 300mm base and a height of 300mm. The description “MV CABLE ▲“ shall be engraved on the top of the marker. The arrow must point in the direction of the cable and the marker must be installed 50mm above finished ground level.

All MV cables shall be subjected to Very Low Frequency (VLF) pressure testing in accordance with IEC 60502 (up to 35 kV), prior to being energised.

PS.11.2 Low Voltage (AC) Cables

LV AC cables must be suitable for a solar energy system application.

The selection, handling and installation of LV electric cables shall meet the requirements of SANS 10198 Part 1 to Part 14.

The LV cables shall be PVC insulated, PVC bedded SWA PVC sheltered 600/1000V cables manufactured to SANS 1507.

Cable sizes shall be calculated, based on the manufacturer's datasheets, with the required de-rating factors applied for correct sizing of the cables for each specific application. A detailed cable calculation spreadsheet shall be provided to the Engineer for approval, based on actual installation conditions, prior to the ordering/installation of any cables.

All tests to be performed on the cable in order to ensure safe reliable operations.

Manufacturers to be used: Aberdare Cables or African Cables (or similar and equal approved).
The following bending radii are the absolute minimum and under no circumstances shall the radii be less than these dimensions for the size of cable specified.

Max Bending Radius = 12 x D, where D = overall sheath diameter.
The Engineer reserves the right to reject any cables which have been twisted, kinked or damaged in any way, without additional time being granted for completion of the contract.

All pipe ducts must be cleared of all foreign matter before cables are pulled in. Adequate protection and attention at the entrance and exit to pipe ducts are essential. Maximum pulling forces specified by the manufacturers must not be exceeded.

PS.11.3 Low Voltage (DC) Cables

DC cables must be suitable for a solar energy system application.

The selection, handling and installation of electric cables shall meet the requirements of SANS 10198 Part 1 to Part 14.

The Contractor shall design for cable losses of less than 1% on DC cable circuits, unless otherwise approved by the Engineer. Evidence of a detailed wiring loss analysis shall be submitted as part of the detail design submission.

DC string, array and main cabling must be selected and installed in such a way to prevent the risk of leakage currents. Single-core conductors shall be used for the enforcement of cable protection against external conditions.

The area inside DC cable loops shall be kept as small as possible to reduce the induction of unwanted voltages and currents, for example due to lightning strikes.

The positive and negative DC cables will be installed in separate cable trays to prevent electromagnetic coupling between two DC cables of opposing polarities.

Where bundles of DC cables with positive and negative polarities run parallel in close proximity to each other a screening material should be installed between bundles to prevent electromagnetic coupling.

Cables used for DC circuits will be installed in cable trays attached to the mounting frame. The interconnection of PV panels will be facilitated with the standard leads and connectors provided with the PV panels.

Leads for string cables will be of the Solardac type from the Aberdare cable series (or similar and equal approved).

The string inputs for the inverter/s will be facilitated with the Sunclicks connectors (or similar and equal approved). Bidders should confirm the correct connectors with the supplier of the inverters.

DC string, array and main cabling must be selected and installed in such a way to prevent the risk of leakage currents.

DC Cabling shall be neatly strapped and each string labelled at the inverter as well as at the starting and ending points of each string.

Above-ground cables will be installed to the mounting system using durable fixings in a way that protects them from animals, weather and UV radiation.

DC cables will only be installed above ground. Any underground DC cable installations will be subject to Engineers approval.

Insulation and resistance measurements will be carried out after every cable installation in order to locate any possible faults and records should be kept so that faults can be identified in the future.
Typical PV Solar (DC) cable installation and management detail (for fixing to mounting frames) has been included in Annexure D of this specification.

PS.11.4 Fibre Optic Communication Cables

The Contractor shall be responsible for the installation of all optic fibre/data cables with the underground cable reticulation network between the Plant and Point of Supply.

The fibre optic network will be utilized to establish communication links between all essential components and equipment as per the detail design requirements.

The fibre optic cables shall be of the 24-core, Single-mode fibre (Simplex), 1310nm, Heavy Duty Duct fibre optic cable type and shall be installed in the same trench as the power cables.

PS.12 DC CONNECTORS

DC Connector refers to those connectors which provide the electrical connection between string cables, cables going into the combiner boxes and inverter, respectively.

The connector type shall be MC4 Multilam Technology or equivalent recommended by module manufacturer.

Module connectors and DC cable connectors shall be compatible and from the same manufacturer throughout the whole PV plant.

The Contractor shall use cables with connectors which are contact-proof and designed to avoid corrosion.

PS.13 DC COMBINER BOXES (IF APPLICABLE)

The maximum voltage of DC combiner of junction boxes shall be 1000 V.

In between modules and inverters, combiner boxes serve as either combiner of several string cables to a sub-array cable (connection in parallel), or for extending the string cables that are directly guided to the inverter.

Additionally, the combiner boxes shall comply with following minimum technical requirements:

- Protection class IP 65 or above.
- Door switch interlock.
- Over-current protection (fuses with disconnect bases in each positive and negative string input).
- PV specific surge arrester Type 2 shall be proved.
- Earthing bars connected to the PV Plants earthing system.
- Plants Ventilation lugs to be used to prevent condensation forming inside panels.
- Fully labelled and colour coded wiring.
- Each string shall have DC fuses with string disconnection switch (on-load isolator) on DC-negative and DC-positive or 2P DC circuit breaker.
- Array disconnect switch (on-load isolator). If the isolator is not provided with Combiner box, a separated DC on-load isolator will be provided next to the inverter.

The combiner boxes shall be equipped with sun shields where exposed to direct sunlight. To further prevent overheating inside the boxes, reduced terminal occupancy shall be considered.

The installation location must be easily accessible and offer a secure base for working on the device. Combiner boxes shall be equipped with a load break switch to allow for safe isolation when being worked on.

PS.14 EARTHING & BONDING
PS.14.1 General

The Contractor shall design, supply and install an earth mat based earthing system for the ground mounted PV Plant that eliminates the risk to personnel or animals of electric shock under normal operating conditions as well as fault conditions.

An effective earth shall be design and installed as part of the overall installation, which shall prevent dangerous over voltages arising between metallic structures, frames, supports or enclosures of electrical equipment and the ground during fault conditions.

An effective earth must be able to permit fault currents of sufficient magnitude to flow to operate protective devices to isolate the fault before damage can occur.

The ohmic resistance of an effective earth installation must be low enough to ensure that the step-potential on the ground in the vicinity of the earthing point is within safe limits under fault conditions i.e. a voltage gradient not exceeding 40 V/m for fault durations exceeding 1s.

PS.14.2 Materials for Earth Electrodes

Bare copper, either in stranded, strip or rod form, is considered the most suitable generalpurpose material to be used for earth electrodes.

Bare galvanised iron and steel, either in stranded, strip or rod form, has a satisfactory record of survival in non-aggressive soils and is more economical than copper, and not that susceptible to theft.

Because galvanised ferrous metals corrode sacrificially to copper, galvanised iron and steel electrodes shall not be buried in close proximity to bare copper.

PS.14.3 Specific Requirements

An earth mat consisting of at least 10mm² solid copper conductor is required on the platform on which the PV panels and mounting structures will be installed.

Joints in earth bars shall preferably be brazed or exothermally welded.

Where bolted joints are used in copper-to-copper connections, or copper to steel they shall have the joint faces tinned.

The steel wire armouring of cables must be bonded to the earth bar at the Substation, Minisubstation or Ring Main Unit.

The solar photovoltaic generator (solar module array, mounting structure and inverters) will be bonded to the underground earthing network by means of insulated earth conductor installed in galvanized water pipes, where applicable.

The security fence will also be bonded to the earth mat at regular intervals of at least every 20m.

Copper rods 16mm² in diameter and 1500mm in length will be used in conjunction with the earth mat to obtain an earth resistance reading of less than 2 ohm.

Inverters, transformers, minisubs as well as all MV and LV switchgear should also be bonded to the same earthing network to ensure the safety of personnel and maintenance workers during fault conditions.

The Contractor shall provide an earth mat design proposal including but not limited to:

- A project specific earthing system diagram
- An earth mat simulation model, using CDEGS or CYMGRD (or other similar approved) software package, to calculate the maximum expected step-and-touch potentials and earth potential rise for the overall site, based on the soil models obtained from the actual earth resistivity measurements.

The Contractor shall conduct tests on the earthing system to fully verify and certify the safety of the site.

The earthing conductors used shall be adequate to withstand for the maximum system fault current for one second.

The current density of the earth conductor shall be not greater than 200 A/mm2 for a 1 second short time current rating and 100 A/mm2 for a 3 second duration.

Single connections between equipment and the earth system shall carry the total short circuit current, but the cross-sectional area of branch connections may be reduced to take account of current distribution in two or more conductors.

Metal parts of all equipment and structures, other than those forming part of an electrical circuit shall be connected directly to the main earth system via a single conductor. The arrangement of the mesh earth system shall be such so as to minimise the length of these single connections.

The step-up transformer/s and MV switchgear shall be bonded to the earth mat with at least two separate opposing 70 mm² bare Cu earth conductors.

The AC Distribution Boards shall be bonded to the earth mat with a 50 mm² minimum bare Cu earth conductor.

Protective earthing or bonding conductors connected to the main earthing system shall be provided for the array frames.

Protective earthing or bonding conductors connected to the main earthing system shall be provided for all metallic housing and/or swing frame doors.

Connections to apparatus and structures shall be made clear of ground level, preferably to a vertical face and protected against electrolytic corrosion by the plating/tinning of the copper surface in contact with the apparatus or structure. They shall be made between clean surfaces and of sufficient size and pressure to carry the rated short circuit current without damage.

PS.15 SURGE & LIGHTNING PROTECTION

PS.15.1 General

The successful tender will carry out a risk assessment for lightning and install an adequate lightning protection system.

The Contractor shall design the Lightning Protection system in accordance with the latest edition of the SANS/IEC 62305 standards.

The lightning protection system will protect the plant, inverters, control and monitoring systems and any other electrical and mechanical equipment against damage caused by lightning strikes. Contractor will submit proposals to The Engineer for ensuring adequate design against lightning induced overvoltage risk prior to installation.

Overvoltage protection will be installed at the DC side as well as AC side of the inverter and within the PV arrays.

In general, the design of the DC system must ensure that cables are kept in parallel and as short as possible, while cable loops are also avoided or restricted. Protection against direct strikes (direct strike lightning protection) will be installed and coupling as a result of strikes elsewhere in the grid (indirect strike lightning protection) will be taken into consideration and designed out of the system.

In addition to the abovementioned, this section covers the earthing of electrical installations and PV generators. The total earthing system will comply with the standards listed in the quality standards.

The successful contractor should conduct earth resistivity tests/ studies to determine the soil resistivity of the proposed PV field. The information will be applied to design an earth mat that will give an adequate earth reading.

Supplementary earthing and bonding will be provided throughout the facility with bonding of PV module mounting system, inverters, cable containment and wire ways (and any other extraneous metalwork), including bonds to lighting masts air termination network at suitable intervals with the aim of achieving equipotential of the entire installation.
The earthing system will also be designed with the design of the lighting protection taken into consideration.

PS.16 WEATHER STATION

A fully installed weather station, that is integrated to the onsite SCADA and monitoring equipment, is required for each project site.

The weather station will be located near the PV module arrays and installed according to the OEM guidelines and that set forth in World Meteorological Organisation best practices.

The purpose of the weather stations will be to record all meteorological parameters required to monitor the Plants' performance.

The minimum equipment specification for the weather station includes.

Pyranometer	
Quantity	For each array's tilt and azimuth angle; 1 in plane of array and 1 on the horizontal plane for PV Plants
Type	Secondary Standard conforming to international standards ISO 9060 and IEC 61724
Range	-40 to +80deg C
Accuracy	±2°%
Loaction	Installed in the plane of the array with the same tilt and azimuth as the PV modules and shall be adequately located across the site to provide an average measured irradiance that is representative for the site. Shall not be shaded at all times during the year.
Temperature sensors	
Type	Type PT1000 with minimum IP54 protection class
Quantity	1 to measure cell temperature (back of the module) and 1 to measure ambient temperature (shielded ventilated)
Range	-40 to +80°C
Accuracy	±1°C
Location	Module temperature sensor shall be adequately bonded to the module and in the middle of a cell at the centre of the module
Anemometer	
Operational temperature	-20 to 50°C
Speed range	0.5 to 40m/s
Accuracy	Threshold the higher between 0.5m/s or 5%
Location	At the height of the top row of modules

The weather station would be required to log all parameters on a minimum time step of 30 seconds where possible and store integrated parameter values for every 15 minutes.

The weather station equipment be procured from a reputable hardware provider and system installer.

PS.17 SECURITY SYSTEM

A surveillance system shall be provided for each PV Plant in line with the South African standards, including a system of closed circuit television cameras, which communicate with the PV Plants Monitoring system.

Intruder detection and surveillance equipment shall be provided to detect and deter unauthorised access to the PV Plants, while enabling access by authorised staff and visitors.

Installed security and surveillance equipment shall be manufactured by a well-established, reputable manufacturer, with a proven track record of providing the required type of systems.

The surveillance system shall cover the points of entry to the site and the following critical areas as a minimum:

- Site entrance gate.
- Plants interconnection station and the enclosure housing the control room and spare parts.
- Main road(s) leading to and within the PV Plants.
- Security fence.

CCTV cameras shall be suitably weatherproofed and include remote control facilities.
These CCTV cameras shall be able to monitor the whole PV Plants perimeter without dead areas.

Purpose-built poles must be provided to achieve suitable viewing positions for the cameras, where necessary.

The following system design requirements shall be met:

- night vision capability;
- pan, tilt and zoom capability;
- secure power supply;
- provision of sufficient cameras; and
- image recording and playback system.

The CCTV system shall be capable of being remotely monitored by both the Employer and any 3rd party responsible for security monitoring on the site.

Part C 3.4 CONSTRUCTION HEALTH & SAFETY SPECIFICATION

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CONSTRUCTION HEALTH AND SAFETY SPECIFICATION

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1. INTRODUCTION AND BACKGROUND

1.1 Background to the Pre-construction Health and Safety Specification

The Construction Regulations 2014 place the onus on the client to prepare a pre-construction Health & Safety Specification, highlighting all risks not successfully eliminated during design.

1.2 Purpose of the Pre-construction Health and Safety Specification

To assist in achieving compliance with the Occupational Health & Safety Act 85/1993 and the Now promulgated Construction Regulations 2014 in order to reduce incidents and Injuries. This pre-construction specification shall act as the basis for the drafting of the Construction phase health &safety plan.

The pre-construction specification sets out the requirements to be followed by the Principal Contractor and other Contractors so that the health & Safety of all persons potentially at risk may receive the same priority as other facets of the project e.g. cost, programme, environment, etc.

1.3 Implementation of the Pre-construction Health and Safety Specification

This specification forms an integral part of the contract, and the Contractor is required to use it at pre-tender phase when drawing up its project-specific construction phase health & safety plan, to be **approved by the Client** or his appointed representative before commencement of construction work. The Principal contractor shall forward a copy of this specification to all Contractors at their bidding stage so that they can in turn prepare health & safety plans relating to their operations.

Note: It is still and will be the responsibility of every Professional consultant, contractor, sub contractor and services provider to make themselves conversant with the various Acts pertaining to their profession at all times. This document does not purport to be an exhaustive canvassing of all issues and duties imposed by the Occupational Health and Safety Act, Act 85 of 1993 of Regulations governing the duties and obligations of a contractor performing duties i.t.o. an agreement with the client. The various duties imposed on a contractor are more fully described in the OHS Act, Act 85 of 1993 and its regulations and the contractor should acquaint himself therewith before commencing with any work

2. PRE-CONSTRUCTION HEALTH AND SAFETY SPECIFICATION

2.1 Scope

This Specification covers the requirements of eliminating and mitigating incidents and injuries on the particular project. The scope also addresses legal compliance, hazard identification and risk assessment, risk control and promoting a health and safety culture amongst those working on the project. The specification also makes provision for the protection of those persons other than employees.

2.2 Interpretations

2.2.1 Application

This specification is a compliance document drawn up in terms of South African legislation and is therefore binding. It must be read in conjunction with the relevant legislation as noted previously.

2.2.2 Definitions

The definitions as listed in the Occupational Health & Safety Act 85/1993 and Construction Regulations 2014 shall apply.

2.3 Minimum Administrative Requirements

2.3.1 Notification of Intention to Commence Construction Work

The Principal Contractor shall notify the Provincial Director of the Department of Labour, (KOUGA), in writing on the prescribed form, before construction work commences. A copy of this notification shall be forwarded to the client on appointment.

2.3.2 Assignment of Contractor's Responsible Persons to Supervise Health and Safety on Site

The contractor shall submit supervisory appointments as well as any relevant appointments in writing (as stipulated by the OHS Act and Construction Regulations 2014), prior to commencement of work. Proof of competency must be included. See annexure B

2.3.3 Competency for Contractor's Appointed Competent Persons

Contractor's competent persons for the various risk management portfolios shall fulfil the criteria as stipulated under the definition of Competent in accordance with the Construction Regulations 2014. Proof of competence for the various appointments must be included in the health and safety plan.

2.3.4 Compensation of Occupational Injuries and Diseases Act 130 of 1993 (COIDA/ FEM)

The Principal Contractor shall submit a letter of good standing with its Compensation Insurer, to the client or his appointed representative, as proof of registration. Contractors shall submit proof of registration to the Principal Contractor before they commence work on site.

2.3.5 Occupational Health and Safety Policy

The Principal Contractor and all Contractors shall submit a Health and Safety Policy signed by their Chief Executive Officer. The Policy must outline objectives and how they will be achieved and implemented by the Company / Contractor.

2.3.6 **Health and Safety Organogram**

The Principal Contractor and all Contractors shall submit an organogram, outlining the Health and Safety Site management Structure including the relevant appointments/competent persons and shareholders. In cases where appointments have not been made, the organogram shall reflect the intended positions. The organogram shall be updated when there are any changes in the Site Management Structure.

2.3.7 **Preliminary Hazard Identifications and Risk Assessment and Progress Hazard Identification and Risk assessment.**

The contractor shall cause a hazard identification to be performed by a competent person before commencement of construction work, and the assessed risks shall form part of the construction phase health and safety plan submitted for approval by the Client. The risk assessment must include;

a) A list of hazards identified as well as potentially hazardous tasks

b) A documented risk assessment based on the list of hazards and tasks

c) A set of safe working procedures (method statements) to eliminate, reduce and/or control the risks assessed

d) A monitoring and review procedure of the risks assessment as the risks change

The Principal Contractor shall ensure that all employees and or Contractors are informed, instructed and trained by a competent person regarding any hazards, risks and related safe work procedures before any work commences and thereafter at regular intervals as the risks change and as new risks develop.

The Principal Contractor shall be responsible for ensuring that all persons who could be negatively affected by its operations are informed and trained according to the hazards and risks and are conversant with the safe work procedures, control measures and other related rules (tool box talk strategy to be implemented). Posting appropriate signage regarding the dangers attached to the work and hazards identified must be posted at strategic places for everyone to see and be included in the method statement to be provided in the health and safety plan.

2.3.8 **Health and safety Representative(s) (applicable when 20 or more persons are employed)**

The Principal Contractor and all Contractors shall ensure that Health and Safety Representative(s) are appointed under consultation and trained to carry out their functions. The appointment must be in writing. The Health and Safety Representative shall carry out regular inspections, keep records and report all findings to the Responsible Person forthwith and at health & safety meetings.

2.3.9 **Health and Safety committees (applicable when 50 or more persons are employed)**

The Principal Contractor shall ensure that project health and safety meetings are held monthly and minutes are kept on record Meetings must be organized and chaired by The Principal Contractor's Responsible Person. All Contractors Responsible Persons and Health & Safety Representatives shall attend the monthly health & safety committees in accordance with the OHS Act 85/1993 and minutes of their meetings shall be forwarded to the Principal Contractor on a monthly basis.

2.3.10 **Health and Safety Training**

2.3.10.1 Introduction:

The Principal Contractor shall ensure that all site personnel undergo a risk-specific health & safety induction training session before starting work. A record of attendance shall be kept in the health & safety file.

2.3.10.2 Awareness

The Principal Contractor shall ensure that, on site, periodic toolbox talk take place at least once per week. These talks should deal with risks relevant to the construction work at hand. A record of attendance shall be kept in the health & safety file. All Contractors have to comply with this minimum requirement.

2.3.10.3 All competent persons shall have the knowledge, experience, training, and qualifications specific to the work they have been appointed to supervise, control, carry out. This will have to be assessed on a regular basis e.g. periodic audits by the Client, progress meetings, etc. The Principal Contractor is responsible to ensure that Competent Contractors are appointed to carry out construction work.

2.3.11 General Record Keeping

The Principal Contractor and all Contractors shall keep and maintain Health and Safety (THE FILE) records to demonstrate compliance with this Specification, with the OHS Act 85/1993, Construction Regulations 2014 and any other legislation applicable on site. The Principal Contractor shall ensure that all records of incidents/accidents, training, inspections, audits, etc, are kept in a health & safety file held in the site office. The principal Contractor must ensure that every Contractor opens its own health & safety file, maintains the file and makes it available on request.

2.3.12 Health & Safety Audits, Monitoring and Reporting

The client will conduct at least, a once monthly Health & Safety audit of the work operations including a full audit of physical site activities as well as an audit of the administration of health & safety. The Principal Contractor is obligated to conduct similar audits or all contractors appointed by it. Detailed reports of the audit findings and results shall be reported on at all levels of project management meetings/forums. Copies of the Client audit reports shall be kept in the Primary Project Health & Safety File while the Principal Contractor audit reports shall be kept in their File, a copy being forwarded to the Client. Contractors have to audit their sub-contractors and keep records of these audits in their health & safety files, available on request. These audits must be conducted by a competent person.

2.3.13 Emergency Procedures

The Principal Contractor shall submit a detailed Emergency Procedure for approval by the Client prior to commencement on site. The procedure shall detail the response plan including the following key elements:

- List of key competent personnel
- Details of emergency services
- Actions or steps to be taken in the event of the specific types of emergencies
- Information on hazardous material/situations
- Public and Road traffic control measures and signage
- Working close to, over or in water, river floods.

Emergency procedure(s) shall include, but shall not be limited to, fire, spills, accidents to employees, use of hazardous substance, bomb threats, major incidents/ accidents, working close to over or in water, river floods etc. The Principal Contractor shall advise the Client in writing forthwith of any emergencies, together with a record of action taken. A contact list of all service providers (Fire Department, Ambulance, Police, medical and Hospital, etc) must by maintained and available to site Personnel.

2.3.14 First Aid Boxes and First Aid Equipment

The Principal Contractor and all Contractors shall appoint in writing First Aider(s) as described in General Safety Regulations 3(4). The appointed First Aider(s) must be in possession of a valid certificate which are to be kept on site. The Principal Contractor shall provide an on-site First Aid Station with first aid facilities,

including first aid boxes adequately stocked at all times. All contractors with more than 5 employees shall supply their own first aid box. Contractors with more than 10 employees shall have a trained, certified first aider on sit at all times.

2.3.15 Accident / Incident Reporting and Investigation

Injuries are to be categorized into first aid; medical; disabling; and fatal. The Principal Contractor must stipulate in its construction phase health & safety plan how it will handle each of these categories. When reporting injuries to the Client, these categories shall be use. All injuries shall be investigated by the Principal Contractor, with a report being forwarded to the Client forthwith. All Contractors have to report on the 4 categories of injuries to the Principal Contractor at least monthly. The Principal Contractor must report all injuries to the Client in the form of a detailed injury report at least monthly.

2.3.16 Hazards and Potential Situations

The Principal Contractor shall immediately notify other Contractors as well as the Clients Agent of any hazardous or potentially hazardous situations that may arise during performance of construction activities. Hazards to be taken into account;

- Machine Hazards
- Energy Hazards
- Material Handling Hazards
- Work Practices Hazards

- Water Hazards
- Working at heights Hazards
- Moving Vehicle Hazards
- Hazardous Chemical Hazards

2.3.17 Personal Protective Equipment (PPE) and Clothing

The Principal Contractor shall ensure that all workers are issued and wear appropriate PPE e.i, hard hats, safe Footwear, gloves, ear/ eye protection and overalls etc. Keep a record of the PPE issued and which must be signed by employees. The Principal Contractor and all Contractors shall make provision and keep adequate quantities of SABS approved PPE on site at all times. The Principal Contractor shall clearly outline procedures to be taken when PPE or Clothing is:

- Lost or Stolen
- Worn out or damaged.

The above procedure applies to Contractors and their Sub-contractors, as they are all Employees in their own right.

2.3.18 Occupational health and Safety Signage

The Contractor shall provide adequate on-site OHS signage. Including but not limited to: 'Construction Site', 'no unauthorized entry', 'report to site office', 'site office', Road traffic signage as per Manual 13, etc. Signage shall be posted at all entrances to site as well as on site in strategic locations e.g. access routes, entrances to structures and buildings, and other potential risk areas/operations (where and if applicable on the specific site and as directed by Client/ representative).

2.3.19 Permits

Permits (PTW= Permit to Work) may include the following (as required and directed by Clients agent):

- Use of Explosives and Blasting
- Work for which a fall prevention plan is required
- Use of cradles
- Excavations, etc.

2.3.20 Contractors and Sub-contractors

The Principal Contractor shall ensure that all Contractors under its control comply with this Specification, the OHS Act of 1993, Construction Regulations 2014 and all other relevant legislation that may relate to the activities directly or indirectly. The Contractor, when appointing other Contractors as 'Sub-contractors', shall mutatis mutandis ensure compliance.

2.3.21 Incentives and Penalties

Certain incentives may be provided for on-going compliance to the provisions of the Construction phase health & safety plan submitted by the Principal Contractor. Penalties may be implemented for on-going non- compliance to the provisions of the Construction-phase health & safety plan as submitted by the Principal Contractor.

2.4 Physical Requirements

2.4.1 Demolition Work (If any is required)

Prior to any demolition work being carried out, the Principal Contractor shall submit a safe working procedure and a detailed engineering survey for approval by the Client. Acceptance will then be issued to the Principal Contractor to proceed with the demolition work. The Principal Contractor shall ensure that demolition work complies with the Construction Regulations 2014.

2.4.2 Excavations, Shoring, Dewatering or Drainage (where and when required)

The Principal Contractor and any relevant Contractors shall make provision in their tender for shoring, dewatering or drainage of any excavation as per this specification. The Contractor shall make sure that:

a) The excavations including shoring and bracing are inspected;

- before every shift,
- after every blasting operation,
- after an unexpected fall or collapse of ground,
- after substantial damage to supports,
- after rain or bad weather.
- and a record is kept, and

b) Safe work procedures have been communicated to the workers

c) The safe work procedures are enforced and maintained by the Contractor's Responsible Persons at all times

d) The requirements as per Regulation 13 of the Construction Regulations are adhered to

e) The required appointments are made in writing.

2.4.3 Edge Protection and Penetrations (where and when required - bridge in Beaufort West)

The Principal Contractor must ensure that all exposed edges and openings are guarded and demarcated at all times until permanent protection has been erected. The Principal Contractor's risk assessment must include these items. E.g. protection of decking edges,

finished floor slab edges, stairways, floor penetrations, lift shafts, and all other openings and areas where a person may fall.

2.4.4 Explosives and Blasting (where and if required)

The Principal Contractor shall ensure that the use of explosives and blasting (where required) be undertaken by a competent Contractor. A safe Work Procedure (SWP) must be submitted to the Client for the approval before commencement of blasting work. The Client will issue a permit to authorize the operation.

2.4.5 Piling (where and if required)

The Contractor shall ensure that piling is undertaken by a competent Contractor. A SWP shall be submitted to the Client for approval before commencement of this work.

2.4.6 Stacking of materials

The Principal Contractor and other relevant contractors shall ensure that there is an appointed staking supervisor and all materials, all equipment is stacked and stored safely in a demarcated area.

2.4.7 Speed Restrictions, Signage and Protection

The Principal Contractor shall ensure that all persons in its employ, all Contractors, and all those that are visiting the site are aware and comply with the site speed restriction(s). Separate vehicle and pedestrian access routes shall be provided, maintained, controlled, and enforced. Signage shall be provided and should comply as per OHS Act and the South African Road Traffic legislation with specific reference to Manual 13.

2.4.8 Hazardous Chemical Substances (HCS)

The Principal Contractor and other relevant Contractors shall provide the necessary training and information regarding the use, transport, and storage of HCS. The Principal Contractor shall ensure that the use, transport, and storage of HCS is carried out as prescribed by the HCS Regulations. The Contractor shall ensure that all hazardous chemicals on site have a Material safety Data Sheet (MSDS) on site and the users are made aware of the hazards and precautions that need to be taken when using the chemicals. The First Aiders must be made aware of the MSDS and how to treat HCS incidents appropriately.

2.4.9 Asbestos

Not applicable

2.4.10 Areas subjected to flush floods, strong winds and working near water

The Contractor must constantly monitor the prevailing weather patterns of the work area, stop work, remove employees when the area becomes unsafe and keep a daily record of such. The Contractor shall not allow any work to carry on if it becomes unsafe when the river water reach the work area. No work shall be carried out in wind of a strength capable of making a person unsteady on his feet without special/adequate precautions being taken. No electrical powered tools and machinery to be used whilst working in water filled areas.

2.5 Plant and Machinery

2.5.1 Construction Plant

"Construction Plant" includes all types of plant including but not limited to, cranes, piling rigs, excavators, road vehicles, and all lifting equipment.
The Principal Contractor shall ensure that all such plant complies with the requirements of the OHS Act 85/1993, Driven Machinery Regulations and Construction Regulations 2014. The Principal Contractor and all relevant contractors shall inspect and keep records of inspections of the construction plant used on site. Only authorized/competent persons are to use machinery under proper supervision. Appropriate PPE and Clothing must be provided and maintained in good condition at all times.

2.5.2 Vessels under Pressure (VUP) and Gas Bottles

The Principal Contractor and all relevant Contractors shall comply with the Vessels under Pressure Regulations, including:

- Providing competency and awareness training to the operators
- Providing PPE or clothing
- Inspect equipment regularly and keep records of inspections
- Providing appropriate fire fighting equipment (Fire Extinguishers) on hand.

2.5.3 Fire Extinguishers and Fire Fighting Equipment

The Principal Contractor and relevant Contractors shall provide adequate, regularly serviced fire fighting equipment located at strategic points on site, specific to the classes of fire likely to occur. The appropriate notices and signs must be posted up as required.

2.5.4 Hired Plant and machinery

The Principal Contractor shall ensure that any hired plant and machinery used on site is safe for use. The necessary requirements as stipulated by the OHS Act 85/1993 and Construction Regulations 2014 shall apply. The Principal Contractor shall ensure that operators hired with machinery are competent and that certificates are kept on site in the health & safety file. All relevant Contractors must ensure the same.

2.5.5 Scaffolding / Working at Heights

Working at heights includes any work that takes place in an elevated position (**building of walkway next to bridge**). The Contractor must submit a **risk-specific fall prevention plan** in accordance with the Construction Regulations 2014 before this work is undertaken. The fall prevention plan must be approved by the Client before work may commence, and a permit to operate will be issued. Scaffolding used must comply with, erected and inspected by competent persons appointed in writing in accordance with SABS 085.

2.5.6 Formwork and Support work for Structures (where and if required)

The Principal Contractor shall ensure that the provisions of section 11 of the Construction Regulations 2014 are adhered to. These provisions must include but not limited to ensuring that all equipment used is examined for suitability before use; that all formwork and support work is inspected by a competent person immediately before, during en after placement of concrete or any other imposed load and thereafter on a daily basis until the formwork and support work has been removed. Records of all inspections must be kept in a register on site.

2.5.7 Lifting Machines and Tackle (where and if required)

The Principal Contractor and all Contractors shall ensure that lifting machinery and tackle is inspected before use and thereafter in accordance with the Driven Machinery Regulations and the Construction Regulations (section 20). A competent lifting machinery and tackle inspector need to be appointed in writing and must inspect the equipment daily or before use, taking into account that:

- All lifting machinery and tackle have a safe working load clearly indicated
- Regular inspection and servicing are carried out
- Records are kept of inspections and of service certificates
- There is a proper supervision in terms of guiding the loads that includes a trained banksman to direct lifting operations and check lifting tackle
- The tower crane bases have been approved by an engineer
- The operators are competent as well as physically and psychologically fit to work; and in possession of a medical certificate of fitness to be available on site.

2.5.8 Ladders and Ladder Work

The Principal Contractor shall ensure that all ladders are inspected monthly, are in good safe working order, are the correct height for the task, extend at least 1m above the landing, fastened and secured, and at a safe angle. Records of inspections must be kept in a register on site. Contractors using their own ladders must ensure the same. A safe work procedure to be included into the Health and Safety Plan.

2.5.9 General Machinery

The principal Contractor and relevant Contractors shall ensure compliance with the Driven Machinery Regulations, which include inspecting machinery regularly, appointing a competent person to inspect and ensure maintenance, issuing PPE or clothing, and training those who use machinery.

2.5.10 Portable Electrical Tools and Explosive Powered Tools

The Contractor shall ensure that use and storage of all explosive powered tools and portable electrical tools are in compliance with relevant legislation. The Contractor shall ensure that all electrical tools, electrical distribution boards, extension leads, and plugs are kept in safe working order. Regular inspections and toolbox talks must be conducted to make workers aware of the dangers and control measured to be implemented e.g. personal protection equipment, guards, etc. The Contractor shall consider the following:

- A competent person undertakes routine inspections and records are kept

- Only authorized trained persons use the tools
- The safe working procedures apply
- Awareness training is carried out and compliance is enforced at all times and
- PPE and clothing are provided and maintained
- A register indicating the issue and return of all explosive round
- Signs to be posted up in the areas where explosive powered tools are being used.

2.5.11 High Voltage Electrical Equipment, underground and Overhead power lines

Care shall be taken when working close to, over or under high voltage reticulation power lines or cables. Underground services to be identified beforehand and the layout of such to be include in the contractors Health and Safety Plan. A safe work procedure be drawn up and included into contractors Health and Safety Plan.

2.5.12 Public and Site Visitor Health & Safety

The Principal Contractor shall ensure that every person working on or visiting the site, as well as the public in general, shall be made aware of the dangers likely to arise from site activities, including the precautions to be taken to avoid or minimize those dangers. Appropriate health and safety notices and signs shall be posted up but shall not be the only measure taken. Both the Client and Principal Contractor have a duty in terms of the OHS Act 85/1993 to do all that is reasonably practicable to prevent members of the public and site visitors from being affected by the construction activities. Site visitors must be briefed on the hazards and risks they may be exposes to and what measures are in place or should be taken to control these hazards and risks. A record of these "inductions" must be kept on site in accordance with the Construction Regulations.

2.5.13 Night Work (where and if required)

The Principal Contractor must ensure that adequate lighting is provided to allow for work to be carried out safely. Permission to be obtained from the Client to work at night.

2.5.14 Transport of Workers

The Principal Contractor and other Contractors shall not:

- Transport persons together with goods or tools unless there is an appropriate area of section to store them and all loose tool and plant are tied down and secured
- Transport persons in a non-enclosed vehicle, e.g. truck; there must be a proper canopy (properly covering the back and top) with suitable sitting area. Workers shall not be permitted to stand or sit at the edge of the transporting vehicle
- Transport workers in bakkies unless they are closed/ covered and have the correct number of seats for the passengers.

2.6 Occupational Health

2.6.1 Occupational Hygiene

The contractor shall ensure that:

(a) suitable housekeeping is continuously implemented on each construction site, including provisions for the:

i) proper storage of materials and equipment; and

ii) removal of scrap, waste and debris at appropriate intervals

(b) loose materials required for use, are not placed or allowed to accumulate on the site so as to obstruct means of access to and egress from workplaces and passageways

(c) waste and debris are not disposed of from a high place with a chute, unless the chute complies with the requirements set out regulation 12(6); and

(d) construction sites in built–up areas, adjacent to a public way are suitably and sufficiently fenced off and provided with controlled access points to prevent the entry of unauthorised persons.

2.6.2 Welfare Facilities

(a) A contractor shall, depending on the number of workers and the duration of the work, provide at or within reasonable access of every construction site, the following clean and maintained facilities:

i) at least one shower facility for every 15 workers
ii) at least one sanitary facility for every 30 workers
iii) changing facilities for each sex; and
iv) sheltered eating areas.

(b) A contractor shall provide reasonable and suitable living accommodation for the workers at construction sites which are remote from their homes and where adequate transportation between the site and their homes, or other suitable living accommodation, is not available.

2.6.3 Alcohol and Other Drugs

i) An employer or a user, as the case may be, shall not permit any person who is or who appears to be under the influence of intoxicating liquor or drugs, to enter or remain at a workplace.

ii) No person at a workplace shall be under the influence of or have in his possession or partake of or offer any other person intoxicating liquor or drugs.

iii) An employer or user, as the case may be, shall in the case where a person is taking medicines, only allow such person to perform duties at the workplace if the side effects of such medicine do not institute a threat to the health or safety of the person concerned or other persons at such workplace.

2.7 Copy of the Act and Regulations

Every employer with five or more persons in his employ shall have a copy of the Act and the relevant regulations readily available at the work place: Provided that, where the total

number of employees is less than five, the employer shall, on request of an employee, make a copy of the Act available to that employee.

2.8 Other Acts and Laws that may apply

The contractors attention is directed to the following Acts that may be applicable and must be adhered to at all times. It is the contractor's responsibility to become conversant with the requirements applicable in these laws:

Compensation for Occupational Injuries and Diseases ACT 130 of 1993,
Mineral Act No. 50 of 1991,
Water Act No. 54 of 1956, and
Atmospheric Pollution Prevention Act No. 45 of 1965,
Occupational Health and Safety Act No. 85 of 1993,
Environmental Conservation Act No. 73 of 1989.
Hazardous Substances Act No.15 of 1973,
National Building Regulations and Building Standards Act No.103 of 1977,
National Environmental Management Act No. 107 of 1998,
National Road Traffic Act No. 93 of 1996,
National Water Act No. 36 of 1998,
Relevant By-laws.

2.9 ACCEPTANCE OF CONDITIONS OF THESE SPECIFICATIONS

- **The contractor must provide a certified copy of his Public Liability insurance when signing this document.**

I, _____ the Contractor, do hereby

declare that my company, _____ acknowledge having read and understood the conditions contained in this legal document and furthermore we agree and accept to abide by the conditions and requirements of the act.

SIGNATURE CONTRACTOR: _____

DATE: _____

SIGNATURE WITNESS: _____

PRINT NAME: _____

AGENT ACTING ON BEHALF OF THE CLIENT:

NAME: _____

DATE: _____

SIGNATURE: _____

SIGNATURE WITNESS: _____

PRINT NAME: _____

2.10 INDEMNIFICATION

The Contractor hereby certifies that all contracting workmen recognize the inherent hazards that exist on the premises / property / site of _____ _____ (Client detail and site address) and that the Contractor;

■ enters the property entirely at his/her own risk and therefore the Contractor waives any claim of whatsoever nature against _____, (Client) its employees, agents

and/or mandatories in respect of any loss, damage and/or injury whether same is the result of any negligent act or omission on the part of _____(contractor), it's employees, agents and/or mandatories or other independent Contractors or by a third person or by way of defective equipment or materials supplied by the company, and further the Contractor;

■ Hereby indemnifies _____(Client), its employees, agents and/or mandatories against any claims from the Contractor's employees and/or from any other person, arising and being caused in the manner set out above.

3 Annexure A

Proof of notification to be kept in Health and Safety File on site

ANNEXURE A

OCCUPATIONAL HEALTH AND SAFETY ACT, 1993
Regulation 3 of the Construction Regulations, 2014

NOTIFICATION OF CONSTRUCTION WORK

1. (a) Name and postal address of principal contractor:

_____

_____

(b) Name and tel. no of principal contractor's contact person:

_____

_____

_____

2. Principal contractor's compensation registration number:

_____

3. (a) Name and postal address of client:

_____

_____

_____

(b) Name and tel no of client's contact person or agent:

_____

_____

_____

4. (a) Name and postal address of designer(s) for the project:

_____

_____

(b) Name and tel. no of designer(s) contact person:

_____

_____

5. Name and telephone number of principal contractor's construction supervisor on site appointed in terms of regulation 6.(1).

_____

_____

6. Name/s of principal contractor's sub-ordinate supervisors on site appointed in terms of regulation 6.(2)

_____

_____

7. Exact physical address of the construction site or site office:

_____

_____

8. Nature of the construction work:

_____

_____

_____

9. Expected commencement date: _____

10. Expected completion date: _____

11. Estimated maximum number of persons on the construction site: _____

12. Planned number of contractors on the construction site accountable to principal contractor:

_____

13. Name(s) of contractors already chosen.

_____

_____

_____

_____

Principal Contractor	Date
Client	Date

THIS DOCUMENT IS TO BE FORWARDED TO THE OFFICE OF THE DEPARTMENT OF LABOUR PRIOR TO COMMENCEMENT OF WORK ON SITE.

ALL PRINCIPAL CONTRACTORS THAT QUALIFY TO NOTIFY MUST DO SO EVEN IF ANOTHER PRINCIPAL CONTRACTOR ON THE SAME SITE HAD DONE SO PRIOR TO THE COMMENCEMENT OF WORK.

4 Annexure A

APPOINTMENT OF CONTACTOR CONSTRUCTION WORK

CONSTRUCTION REGULATION 4(1) (c)

AGENT BEHALF OF: _____ (Name of Client)

PROJECT/SITE:_____ (Name & Address or Area)

_____

PROJECT PERIOD: from _____ to _____

AGREEMENT WITH MANDATARY IN TERMS OF SECTION 37(1) AND (2) OF OHS ACT 85 OF 1993

DEFINITION OF MANDATARY

- includes an agent, a contractor or a subcontractor for work, but without derogating from his status in his own right as an employer or a user.

DEFINITION OF AGENT

- means any person who acts as a representative for a client in the managing of the overall construction work.

SECTION 37(1)

(1) Whenever an employee does or omits to do any act which it would be an offence in terms of this Act for the employer of such employee or a user to do or omit to do, then, unless it is proved that-

(a) In doing or omitting to do that act, the employee was acting without the connivance or permission of the employer or any such user

(b) it was not under any condition or in any circumstance within the scope of the authority of the employee to do or omit to do an act, whether lawful or unlawful, of the character of the act or omission charged and

(c) all reasonable steps were taken by the employer or any such user to prevent any act or omission of the kind in question, the employer or any such user himself shall be presumed to have done or omitted to do that act, and shall be liable to be convicted and sentenced in respect hereof; and the fact that he issued instructions forbidding any act or omission of the kind in question shall not, in itself, be accepted as sufficient proof that he took all reasonable steps to prevent the act or omission.

SECTION 37(2)

The provisions of subsection (1) shall mutates mutandis apply in the case of a mandatory of any employer or user, except if the parties have agreed in writing to the arrangements and procedures between them to ensure compliance by the mandatory with the provisions of this Act.

ACCEPTANCE BY MANDATARY

In terms of the provisions of Section 37(2) of the Occupational Health and Safety Act 1993, and Construction Regulation 4(1) (c),

I, _____(Appointed 16(2) person) acting for and on behalf of _____ (Company / Close Corporation/Enterprise/ Owner/User) undertake to ensure that the requirements and provisions of the Act and Regulations are complied with.

Print Name :_____.(Agent, Principal Contractor or Contractor)

Signature: _____at_____.

Designation: _____. Date: _____.

Mandatory- COIDA / Federated Employers Mutual No.: _____

Mandatory- Professional Indemnity Insurance no: _____

CLIENT

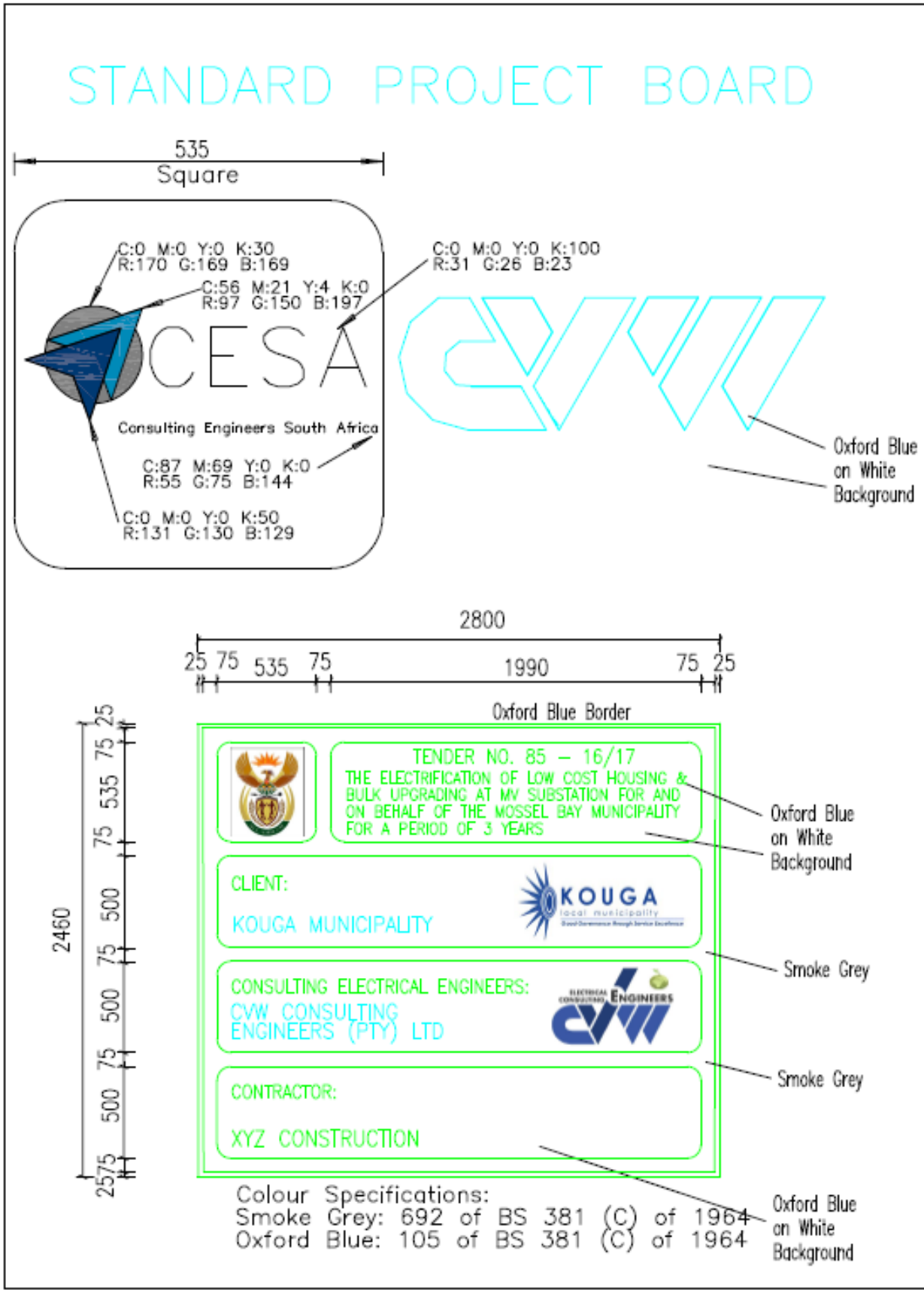
Print Name: _____. (Appointed 16(1) person/Client/Agent of Client or Principal Contractor)

Signature: _____ at _____

Designation: _____ Date: _____

ANNEXURE B: STANDARD PROJECT BOARD

STANDARD PROJECT BOARD



ANNEXURE C: MONTHLY CONTRACTOR FORMS

(MONTHLY FORMS TO BE COMPLETED BY THE CONTRACTOR)

DRAWINGS

KOUGA LOCAL MUNICIPALITY

Tender Notice Number 172/2025 for the ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.

BID NO.: 172/2025

Part C4: Site Information

DATA PROVIDED BY THE CONTRACTOR

KOUGA LOCAL MUNICIPALITY

Tender Notice Number172/2025 for the ELECTRO-MECHANICAL DEPARTMENT, PROCUREMENT FOR THE SUPPLY, DELIVERY, CONSTRUCTION AND COMMISSIONING OF AN INTEGRATED ENERGY ARBITRAGE & PEAK SHAVING 2.5 MW/5 MWH BATTERY ENERGY STORAGE SYSTEM AT THE ST FRANCIS LOAD CENTRE ONE1 – 22/11kV SUBSTATION.

BID NO.: 172/2025

Part C5: Health and Safety Specification