



**TENDER NO. KP1/9A.2/OT/043/NM/20-21
FOR
SUPPLY, INSTALLATION AND COMMISSIONING OF
2 Nos. 1250KVA AND 3 Nos. 650KVA
ENCLOSED CONTAINERISED DIESEL GENERATOR
PLUS
OTHER ACCESSORIES AT MANDERA AND LODWAR POWER STATIONS.**

DATE OF TENDER DOCUMENT: JUNE 2021

**ALL TENDERERS ARE ADVISED TO READ CAREFULLY THIS
TENDER DOCUMENT IN ITS ENTIRETY BEFORE MAKING ANY BID**

(OPEN TENDER DOCUMENT FOR SUPPLY, INSTALLATION &
COMMISSIONING)

THE KENYA POWER & LIGHTING COMPANY LIMITED
CENTRAL OFFICE, STIMA PLAZA,
KOLOBOT ROAD, PARKLANDS,
P.O. BOX 30099-00100,
NAIROBI,
KENYA.

Telephones: 254-020-3201000; 3644000 Pilot Lines

Telephones: 254 -720-600070/1-5; 733-755001/2-3 Cellular

Website: www.kplc.co.ke

Email 1: Jimaya@kplc.co.ke
2: Pmuchori@kplc.co.ke
3: LKagundu@kplc.co.ke
4: Jmuigai@kplc.co.ke

TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	3
SECTION I - INVITATION TO TENDER.....	4
SECTION II - TENDER SUBMISSION CHECKLIST	6
TABLE OF PARAGRAPHS ON INSTRUCTIONS TO TENDERERS.....	9
SECTION III - INSTRUCTIONS TO TENDERERS (ITT).....	11
SECTION IV - BID DATA SHEET (Appendix to Instructions to Tenderers).....	35
SECTION V: SCHEDULE OF REQUIREMENTS	37
SECTION VI (a) BILL OF QUANTITIES	43
(b) SCHEDULE OF RATES AND PRICES	46
SECTION VII - SUMMARY OF EVALUATION PROCESS	66
SECTION VIII – GENERAL CONDITIONS OF CONTRACT.....	72
TABLE OF CLAUSES ON GENERAL CONDITIONS OF CONTRACT	72
SECTION IX – SPECIAL CONDITIONS OF CONTRACT.....	90
SECTION X - TECHNICAL SPECIFICATIONS.....	93
PART I – SPECIFICATONS FOR GENERATOR AND ASSOCIATED COMPONENTS	93
PART II – SPECIFICATIONS FOR 415VAC METAL CLAD SWITCH GEAR.....	108
PART III- SPECIFICATIONS FOR 11KV AC METAL CLAD SWITCH GEAR	134
PART IV – SPECIFICATIONS FOR 3.5MVA .415KV/11KV TRANSFORMER.....	153
PART V – SPECIFICATIONS FOR 650KVA GENERATOR POWER CABLES	160
PART VI – SPECIFICATIONS FOR 1250KV GENERATOR POWER CABLES	163
PART VII –SPECIFICATIONS FOR MV POWER CABLES FOR 3.5MVA TX.	166
PART VIII – SPECIFICATIONS FOR CABLE TRAYS	168
PART IX – SPECIFICATIONS FOR LAPTOP COMPUTOR	170
PART X – PERFORMANCE GUARANTEES	171
SECTION XI – STANDARD FORMS	172
SECTION XII – SUPPLIER EVALUATION FORM.....	208
SECTION XIII – GURANTEED TECHNICAL PARTICULARS	211
SECTION XIV – SITE VISIT FORM.....	237

ABBREVIATIONS AND ACRONYMS

BDS	Bid Data Sheet
BQ	Bill of Quantities
CBK	Central Bank of Kenya
CC	Conditions of Contract
DDP	Delivery Duty Paid
ERC	Energy Regulatory Commission
GoK	Government of Kenya
ICPAK	Institute of Certified Public Accountants of Kenya
JV	Joint Venture
KPLC	The Kenya Power & Lighting Company Limited
KSh./ KES	Kenya Shillings
PM	Project Manager
PPAD 2015	Public Procurement and Asset Disposal Act, 2015
PPRA	Public Procurement Regulatory Authority
VAT	Value Added Tax
NCA	National Construction Authority
Pc	Piece
Qty	Quantity

SECTION I - INVITATION TO TENDER

DATE: 10th June, 2021

TENDER NO. KP1/9A.2/OT/043/NM/20-21 FOR SUPPLY, INSTALLATION AND COMMISSIONING OF 2 Nos. 1250KVA AND 3 Nos.650KVA ENCLOSED CONTAINERISED DIESEL GENERATOR PLUS OTHER ACCESORRIES AT MANDERA AND LODWAR POWER STATIONS.

- 1.1 The Kenya Power & Lighting Company Limited hereinafter referred to KPLC invites bids from eligible Tenderers for Supply, installation and commissioning of 2 Nos. 1250KVA and 3Nos. 650KVA enclosed containerized diesel generator plus other accessories at Mandera and Lodwar stations. Interested eligible Tenderers may obtain further information from the General Manager- Supply Chain, The Kenya Power & Lighting Company Ltd at Stima Plaza, 3rd Floor, Kolobot Road, P.O. Box 30099 – 00100 Nairobi, Kenya.
- 1.2 **Obtaining tender documents.**
 - 1.2.1 Tender documents detailing the requirements may be obtained from the KPLC E-Procurement Portal.
 - 1.2.2 Prospective bidders may also download the tender document from KPLC's website (www.kplc.co.ke) free of charge.
- 1.3 Submission of Tender documents
Completed Tenders are to be submitted in electronic format on the KPLC's E-procurement portal on the due date and time published on the portal. Tenderers are required to visit the portal from time to time for revised closing dates and addendums. The Tender is to be submitted **ONLINE** on or before the submission date and time indicated on the **KPLC tendering portal under Rfx No. 1000001791**.
- 1.4 Prices
Prices quoted should be inclusive of all taxes and delivery costs to the required site (where applicable) and must be in Kenya Shillings or a freely convertible currency in Kenya and shall remain valid for one hundred and eighty (180) days from the closing date of the tender.
Please note that prices indicated on the KPLC tendering portal should be exclusive of VAT.

1.5 Opening of submitted Tenders

Tenders will be opened promptly thereafter in the presence of the Tenderer's or their representatives who choose to attend in KPLC Auditorium at Stima Plaza, Kolobot Road, Parklands, Nairobi .

1.6 Pre-bid /Site Visit meeting

There will be a Pre-bid meeting on 16th June 2021 to be held at Stima Club starting from 10.00 am. This will be followed by a **MANDATORY Site visit** to be held at **Mandera Power Station on 22nd June 2021 At 10.00am** and **Lodwar Power Station on 29th June 2021 At 10.00am.**

SECTION II - TENDER SUBMISSION CHECKLIST

Bidders are advised to clearly label their documents while uploading on the portal.

No.	Item	Tick Where Provided
1	Tender Security – Bank Guarantee or Letters of Credit (issued by Banks Licensed by the Central Bank of Kenya), Guarantee by a deposit taking Microfinance Institution, Sacco Society, the Youth Enterprise Development Fund or the Women Enterprise Fund.	
2	Declaration Form	
3	Duly completed Tender Form	
4	Confidential Business Questionnaire (CBQ)	
5	Duly completed Qualification Information Form and the required attachments	
6	Proposed Work Plan (Work method & schedule)	
7	Duly completed Site Visit Form (where applicable)	
8	Copy of Contractor's Certificate of Incorporation	
9	Certificate of Confirmation of Directors and Shareholding (C.R.12) for registered companies and if not a registered company a business name for those trading as a sole proprietor or a partnership registered under the Kenyan law or equivalent certification for foreign tenderers	
10	Copy of Subcontractor's Certificate of Incorporation (where applicable)	
11	Copy of Contractor's Certificate of Registration for the relevant category from the National Construction Authority (<i>and where applicable any other relevant body the User department may deem necessary based on the nature of the work to be carried out by the contractor</i>)	
12	Copy of Subcontractor's Certificate of Registration for the relevant category the National Construction Authority (<i>and where applicable any other relevant body the User department may deem necessary based on the nature of the work to be carried out by the contractor</i>)	
13*	Copy of Valid Tax Compliance Certificate	
14	Copy of PIN certificate	

15	Type Test Certificates and their Reports and or Test Certificates and their Reports	
16	Copy of accreditation certificate for the testing laboratory as per ISO/ IEC 17025,	
17	Valid and current ISO 9001 Certificates or for locally manufactured or produced goods, valid Mark of Quality Certificate or Standardization Mark Certificates from the Kenya Bureau of Standards (KEBS).	
18	Catalogues and or Manufacturer's drawings	
19	Duly completed Schedule of Guaranteed Technical Particulars	
20	Manufacturer's Authorization and warranty	
21	Names with full contact as well as physical addresses of previous customers of similar works and reference letters from at least four (4) of the customers	
22	Names with full contact as well as physical addresses of previous customers of similar goods and reference letters from at least four (4) of the customers	
23	Statement on Deviations	
24	For foreign tenderers, provide proof that Forty percent (40%) of the supplies are from citizen contractors	
25	Price Schedule and/or Bill of Quantities	
26	Audited Financial Statements. The audited financial statements required must be those that are reported within eighteen (18) calendar months of the date of the tender document. <i>(For companies or firms that are registered or incorporated within the last one calendar year of the Date of the Tender Document, they should submit certified copies of bank statements covering a period of at least six months prior to the date of the tender document. The copies should be certified by the Bank issuing the statements. The certification should be original).</i>	
27	Any other document or item required by the tender document. (The Tenderer shall specify such other documents or items it has submitted)	

***NOTES TO TENDERERS**

1. Valid Tax Compliance Certificate shall be one issued by the relevant tax authorities and valid for at least up to the tender closing date. All Kenyan registered Tenderers must provide a valid Tax Compliance Certificate.
2. Foreign Tenderers must provide equivalent documents from their country of origin as regards Tax Compliance Certificate OR statements certifying that the equivalent documentation is not issued in the Tenderer's country of origin. The Statement(s) that equivalent documentation is not issued by the Tenderer's country should be original and issued by the Tax authorities in the Tenderer's country of origin.
3. Valid Registration Certificate shall be one issued by the relevant body e.g. National Construction Authority (NCA).

TABLE OF PARAGRAPHS ON INSTRUCTIONS TO TENDERERS

Paragraph No.	Headings	Page No.
3.1	Definitions.....	11
3.2	Eligible Tenderers	12
3.3	Ineligible Tenderes	13
3.4	Declarations of Eligibility.....	14
3.5	Joint Venture	14
3.6	Time for Completion of Works	15
3.7	Source of Funding	15
3.8	Conflict of Interest	15
3.9	One Tender per Tenderer	16
3.10	Site Visit and Pre-Bid Meeting	16
3.11	Cost of Tendering.....	17
3.12	Contents of the Tender Document	17
3.13	Clarification of Documents	18
3.14	Amendment of Documents	18
3.15	Language of Tender	18
3.16	Documents Comprising the Tender	19
3.17	Tender Forms	20
3.18	Tender Rates and Prices	20
3.19	Tender Currencies.....	20
3.20	Tenderer's Eligibility and Qualifications.....	21
3.21	Eligibility and Conformity of Works to Tender Documents	22
3.22	Demonstration(s), Inspection(s) and Test(s).....	23
3.23	Warranty.....	24
3.24	Tender Security.....	24
3.25	Validity of Tenders	26
3.26	Alternative Offers	26
3.27	Preparation and Signing of The Tender.....	26
3.28	Deadline for Submission of Tender	27
3.29	Modification and Withdrawal of Tenders.....	27
3.30	Opening of Tenders.....	27
3.31	Process To Be Confidential.....	27
3.32	Clarification of Tenders and Contacting KPLC.....	28
3.33	Preliminary Tender Evaluation.....	28
3.34	Minor Deviations, Errors or Oversights.....	28

3.35	Technical Evaluation and Comparison of Tenders	29
3.36	Financial Evaluation of Tenders.....	29
3.37	Preferences.....	29
3.38	Debarment of a Tenderer.....	30
3.39	Confirmation of Qualification for Award.....	30
3.40	Award of contract	31
3.41	Termination of Procurement Proceedings.....	31
3.42	Notification of Award.....	31.
3.43	Clarifications with the Successful Tenderer (s).....	31
3.44	Signing of Contract.....	32
3.45	Performance Security	32
3.46	Corrupt or Fraudulent Practices.....	33

SECTION III - INSTRUCTIONS TO TENDERERS (ITT)

3.1 Definitions

In this tender, unless the context or express provision otherwise requires: -

- a) *Any reference to any Act shall include any statutory extension, amendment, modification, re-amendment or replacement of such Act and any rule, regulation or order made there-under.*
- b) *“Date of Tender Document” shall be the **start date** specified on the KPLC tendering portal.*
- c) *“Day” means calendar day and “month” means calendar month.*
- d) *“KEBS” wherever appearing means the Kenya Bureau of Standards or its successor(s) and assign(s) where the context so admits.*
- e) *“KENAS” wherever appearing means the Kenya National Accreditation Service or its successor(s) and assign(s) where the context so admits*
- f) *“NCA” wherever appearing means the National Construction Authority or its successor(s) and assign(s) where the context so admits*
- g) *“PPRA” wherever appearing means The Public Procurement Regulatory Authority or its successor(s) and assign(s) where the context so admits.*
- h) *Reference to “the tender” or the “Tender Document” includes its appendices and documents mentioned hereunder and any reference to this tender or to any other document includes a reference to the other document as varied supplemented and/or replaced in any manner from time to time.*
- i) *“The Procuring Entity” means The Kenya Power and Lighting Company Limited or its successor(s) and assign(s) where the context so admits (hereinafter abbreviated as KPLC).*
- j) *“The Tenderer” means the person(s) submitting its Tender for the performance of Works in response to the Invitation to Tender. This may include a business name, joint venture, private or public company, government owned institution or any combination of one or more of them.*
- k) *Where there are two or more persons included in the expression the “Tenderer”, any act or default or omission by the Tenderer shall be deemed to be an act, default or omission by any one or more of such persons.*
- l) *Words importing the masculine gender only, include the feminine gender or (as the case may be) the neutral gender.*
- m) *Words importing the singular number only include the plural number and vice-versa and where there are two or more persons included in the expression the “Tenderer” the covenants, agreements and obligations*

expressed to be made or performed by the Tenderer shall be deemed to be made or performed by such persons jointly and severally.

- n) "Works" means the construction, repair, renovation or demolition of buildings, roads or other structures and includes the design, supply, installation, testing and commissioning of equipment and materials, site preparation and other incidental services where applicable.*
- m) KPLC's "authorised person" shall mean its MD & CEO who is designated by the PPAD Act 2015 to exercise such power, authority or discretion as is required under the tender and any contract arising therefrom, or such other KPLC staff delegated with such authority.*
- n) Citizen contractors-a firm shall be qualified as a citizen contractor if its owners and shareholders are Kenyan citizens*
- o) Local contractors- a firm shall be qualified as a local contractor if it is registered in Kenya.*

3.2 Eligible Tenderers

- 3.2.1 This Invitation to Tender is open to all Tenderers eligible as described in the **Bid Data Sheet** (Appendix to Instructions to Tenderers). Successful Tenderers shall perform the Works in accordance with this tender and the ensuing contract.
- 3.2.2 Agreements between undertaking to directly or indirectly fix purchase or selling prices or any other trading conditions are prohibited. Where this is discovered, the undertakings involved will not be eligible for award and all undertakings involved shall be disqualified.
- 3.2.3 The classification of eligibility shall be in accordance with that maintained by Kenya's NCA or its successor responsible for the classification of contractors.
- 3.2.4 Government or government owned institutions in Kenya may participate only if they are legally and financially autonomous, if they operate under commercial law, are registered by the relevant registration board or authorities and if they are not a dependant agency of the Government.
- 3.2.5 All Tenderers shall comply with all relevant licensing and/or registration requirements with the appropriate statutory bodies in Kenya such as the NCA, the ERC, the National Treasury, the County Treasury or any other relevant authority.
- 3.2.6 Tenderers shall provide such evidence of their continued eligibility satisfactory to KPLC as KPLC may reasonably request.
- 3.2.7 Tenderers (including all members of a joint venture and subcontractors) shall provide a statement that they are not associated, or have not been associated in the past, directly or indirectly, with the Consultant or any other entity that has prepared the design, specifications, and other documents for this project or being proposed as

Project Manager for this Contract. A firm that has been engaged by the Employer to provide consulting services for the preparation or supervision of the Works, and any of its affiliates, shall not be eligible to tender

3.2.8 For purposes of this paragraph the Tenderer shall submit with its Tender, a valid copy of certificate of Confirmation of Directorships and Shareholding issued **and signed** by either the Registrar of Companies or Registrar of Business Names. This certificate must not be more than three (3) months old from the Date of the Tender Document. KPLC reserves the right to subject the certificate to authentication.

3.2.9 In addition a tenderer is eligible to bid for this contract only if the tenderer satisfies the following criteria—

- (a) the tenderer has the legal capacity to enter into a contract for procurement or asset disposal;*
- (b) the tenderer is not insolvent, in receivership, bankrupt or in the process of being wound up;*
- (c) the tenderer, if a member of a regulated profession, has satisfied all the professional requirements;*
- (d) the tenderer and his or her sub-contractor, if any, is not debarred;*
- (e) the tenderer has fulfilled tax obligations;*
- (f) the tenderer has not been convicted of corrupt or fraudulent practices;*
- and*
- (g) is not guilty of any serious violation of fair employment laws and practices.*

3.3 Ineligible Tenderers

3.3.1 The Procuring Entity's employees, committee members, board members, and their relative (spouse and children) are not eligible to participate in this tender.

3.3.2 In addition the tenderer shall be considered ineligible to bid, where in case of a corporation, private company, partnership or other body, the tenderer, their spouse, child or sub-contractor has substantial or controlling interest and is found to be in contravention of the provisions of section 3.2.9 above.

3.3.3 Despite the provisions of section 3.3.1 and 3.3.2, a tenderer having a substantial or controlling interest shall be eligible to bid where—

- (a) such tenderer has declared any conflict of interest; and
- (b) performance and price competition for that good, work or service is not available or can only be sourced from that tenderer.

3.3.4 For the purposes of this paragraph, any relative i.e. spouse(s) and child(ren) of any person mentioned in sub-paragraph 3.3.1 is also ineligible to participate in the tender. In addition, a Cabinet Secretary shall include the President, Deputy-President or the Attorney General of GoK.

3.3.5 Tenderers shall provide the qualification information statement that the Tenderer

(including all members of a joint venture and subcontractors) is not associated, or have been associated in the past, directly or indirectly, with a firm or any of its affiliates which have been engaged by KPLC to provide consulting services for the preparation of the design, specifications, and other documents to be used for the procurement of the goods under this Invitation to Tender.

- 3.3.6 Tenderers shall not be under declarations as prescribed at Section XIII
- 3.3.7 Tenderers who are not under these declarations shall complete the Declaration Form strictly in the form and content as prescribed at Section XIII.
- 3.3.8 Those that are under the Declaration as prescribed at Section XIII whether currently or in the past shall not complete the Form. They will submit a suitable Form giving details, the nature and present status of their circumstances.

3.4 Declarations of Eligibility

- 3.4.1 Tenderers shall not be under declarations of ineligibility for corrupt, fraudulent practices and are not amongst persons mentioned in sub-paragraphs 3.3.1, 3.3.2 and 3.3.4 above.
- 3.4.2 Tenderers who are not under these declarations shall complete the Declaration Form strictly in the form and content as prescribed at Section XI.
- 3.4.3 Those that are under the Declaration for corrupt and fraudulent practices whether currently or in the past shall not complete the Form. They will submit a suitable Form giving details, the nature and present status of their circumstances.

3.5 Joint Venture

- 3.5.1 Tenders submitted by a joint venture (JV) of two or more firms (consortium), as partners shall comply with the following requirements: -
 - a) The Tender Form and in case of a successful tender, the Contract Agreement Form, shall be signed so as to be legally binding on all partners of the joint venture.
 - b) One of the partners shall be nominated and authorized as being lead contractor. The authorization shall be evidenced by submitting a Power of Attorney signed by legally authorized signatories of all the partners/directors.
 - c) The Power of Attorney which shall accompany the tender, shall be granted by the authorized signatories of all the partners as follows:-
 - (i.) for local and citizen contractors, before a Commissioner of Oaths or a Notary Public or Magistrate of the Kenyan Judiciary.
 - (ii.) for a foreign bidder, before a Notary Public, or the equivalent of a Notary Public, and in this regard the bidder shall provide satisfactory proof of such equivalence.

- d) The lead contractor shall be authorized to incur liability and receive instructions for and on behalf of any and all the partners of the joint venture and the entire execution of the contract including payment shall be done exclusively with the lead contractor.

3.5.2 All partners of the joint venture shall be liable jointly and severally for the execution of the contract in accordance with the contract terms, and a relevant statement to this effect shall be included in the authorization mentioned in paragraph 3.5.1 (b) above as well as in the Form of Tender and the Contract Agreement Form (in case of the accepted tender).

3.5.3 The JV must be in either of the following forms –

- a) A registered JV agreement. The registration may either be :-
 - (i.) At the Ministry of Transport, Infrastructure, Housing and Urban Development or,
 - (ii.) At the Office of the Attorney General, or
 - (iii.) NCA
- b) A Letter of Intent to enter into a joint venture including a draft JV Agreement indicating at least the part of the Works to be executed by the respective partners.
- c) The JV agreement should be signed by at least two directors from each company or firm that is a party to the JV
- d) The JV agreement must be under the company or firm seal
- e) The Letter of Intent should be signed by at least one director from each company or firm that is a party to the intended joint venture

3.5.4 A copy of the agreement entered into, or Letter of Intent by the joint venture partners shall be submitted with the tender.

3.6 Time for Completion of Works

The successful Tenderer will be expected to complete the Works by the required completion period as specified in the BDS.

3.7 Source of Funding

KPLC has set aside funds during the present financial year. It is intended that part of the proceeds of funds will be applied to cover the eligible payments under the ensuing contract for these Works.

3.8 Conflict of Interest

3.8.1 A Tenderer (*including all members of a joint venture and subcontractors*) shall not have a conflict of interest. A Tenderer found to have a conflict of interest shall be disqualified. A Tenderer may be considered to have a conflict of interest with one or more parties in this tendering process if they:-

- a) are associated or have been associated in the past directly or indirectly with employees or agents of KPLC or a member of the Board or committee of KPLC
 - b) are associated or have been associated in the past directly or indirectly with a firm or company or any of their affiliates which have been engaged by KPLC to provide consulting services for the preparation of the design, specifications, and other documents to be used for the execution, completion and maintenance of the Works under this Invitation to Tender
 - c) have controlling shareholders in common with (b) above
 - d) receive or have received any direct or indirect subsidy from any of them
 - e) have a relationship with each other, either directly or through common third parties, that puts them in a position to have access to information about, or influence on the tender of another Tenderer, or influence the decisions of KPLC regarding this tendering process
 - f) submit more than one Tender in this tendering process.
- 3.8.2 A Tenderer will be considered to have a conflict of interest if they participated as a consultant in the preparation of the design or technical specification of the Works and related services that are the subject of this Tender.
- 3.9 One Tender per Tenderer**
- 3.9.1 A firm or company shall submit only one Tender in the same tendering process, either individually or as a partner in a joint venture.
- 3.9.2 No firm or company can be a sub-contractor while submitting a Tender individually or as a partner in a joint venture in the same tendering process.
- 3.9.3 A company or firm, if acting in the capacity of sub-contractor in any Tender may participate in more than one Tender but only in that capacity.
- 3.9.4 A Tenderer who submits or participates in more than one tender (*other than as a sub-contractor or in cases of alternatives that have been permitted or requested*) will cause all tenders in which the Tenderer has participated to be disqualified.
- 3.10 Site Visit and Pre-Bid Meeting**
- 3.10.1 The Tenderer, at the Tenderer's own responsibility and risk is advised to visit and examine the site of Works and its surrounding and obtain all information that may be necessary for preparing the tender and entering into a contract for the Works. The cost of visiting the site shall be at the Tenderer's own expense.
- 3.10.2 KPLC may conduct a site visit and pre-bid meeting. The purpose of the pre-bid meeting shall be to clarify issues and answer any questions that may be raised at that stage.
- 3.10.3 The Tenderer's designated representative is invited to attend a site visit and pre-bid meeting which if convened will take place at the venue and time stipulated in the BDS.

- 3.10.4 The Tenderer is requested as far as possible to submit any questions in writing or by electronic means to reach KPLC before the pre-bid meeting.
- 3.10.5 Minutes of the pre-bid meeting including the text of the questions raised and the responses given together with any response prepared after the pre-bid meeting will be transmitted within the time stated in the BDS to all purchasers of the Tender Document.
- 3.10.6 Non-attendance during the site visit or the pre-bid meeting will not be a cause of disqualification of the Tender unless specified to the contrary in the BDS.

3.11 Cost of Tendering

- 3.11.1 The Tenderer shall bear all costs associated with the preparation and submission of its Tender. KPLC will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the tendering process.

3.12 Contents of the Tender Document

- 3.12.1 The Tender Document comprises the documents listed below and Addendum (where applicable) issued in accordance with paragraph 3.14 of these Instructions to Tenderers: -

- a) *Invitation to Tender*
- b) *Tender Submission Checklist*
- c) *Instructions to Tenderers*
- d) *Bid Data Sheet*
- e) *Schedule of Requirements*
- f) *Bill of Quantities*
- g) *Summary of Evaluation Process/Evaluation Criteria*
- h) *General Conditions of Contract*
- i) *Special Conditions of Contract s*
- j) *Technical Specifications*
- k) *Drawings*
- l) *Tender Form*
- m) *Confidential Business Questionnaire Form*
- n) *Manufacturer's Authorization Form*
- o) *Manufacturer's Warranty*
- p) *Tender Security Forms*
- q) *Declaration Form*
- r) *Contract Agreement Form*
- s) *Performance Security Forms*
- t) *Proposed Work Program (Work method & schedule)*

- 3.12.2 The Tenderer is expected to examine all instructions, forms, provisions, terms and specifications in the Tender Document. Failure to furnish all information required by the Tender Document or to submit a tender not substantially responsive to the Tender Document in every respect will be at the Tenderer's risk and may result in the rejection of its Tender.
- 3.12.3 All recipients of the documents for the proposed Contract for the purpose of submitting a tender (whether they submit a tender or not) shall treat the details of the documents as "Private and Confidential".

3.13 Clarification of Documents

A prospective Tenderer requiring any clarification of the Tender Document may notify the General Manager Supply Chain in writing and ensure receipt is acknowledged at KPLC's Physical address indicated on the Tender Document. KPLC will respond in writing to any request for clarification of the Tender documents, which it receives not later than seven (7) days prior to the deadline for the submission of Tenders, prescribed by KPLC. Written copies of KPLC's response (*including an explanation of the query but without identifying the source of inquiry*) will be published and accessible to all prospective Tenderers on the KPLC's tendering portal.

3.14 Amendment of Documents

- 3.14.1 At any time prior to the deadline for submission of Tenders, KPLC, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Tenderer, may modify the tender documents by amendment.
- 3.14.2 All prospective Tenderers that have registered in the portal for the Tender will be notified of the amendment(s) (*hereinafter referred to or otherwise known as addendum*) in writing and will be binding on them.
- 3.14.3 In order to allow prospective Tenderers reasonable time in which to take the amendment into account in preparing their Tenders, KPLC, at its discretion, may extend the deadline for the submission of Tenders.

3.15 Language of Tender

The Tender prepared by the Tenderer, as well as all correspondence and documents relating to the tender, exchanged between the Tenderer and KPLC, shall be written in English language, provided that any printed literature furnished by the Tenderer may be written in another language provided that they are accompanied by an accurate English translation of the relevant passages in which case, for purposes of interpretation of the Tender, the English translation shall govern. The English translation shall be on the Tenderer's letterhead and shall be signed by the duly authorized signatory signing the Tender and stamped with the Tenderer's stamp.

3.16 Documents Comprising the Tender

The Tender prepared and submitted by the Tenderers shall include but not be limited to all the following components: -

- a) *Declaration Form, Tender Form and Priced Bill of Quantities (BQ) duly completed*
- b) *Documentary evidence that the Works and any ancillary services thereto to be performed by the Tenderer conform to the tender documents*
- c) *Technical Proposal in sufficient detail to demonstrate the adequacy of the Tenderer's proposal to meet the Works requirements and the completion time. Those details should include the following:-*
 - (i.) *a statement of work methods and schedule i.e. Methodology*
 - (ii.) *major items of equipment proposed to carry out the Contract*
 - (iii.) *an undertaking that the items in c (ii) will be available for the execution of the Contract.*
- d) *Tender Security furnished in accordance with the Tender requirements*
- e) *Power of Attorney authorizing the signatory of the Tender to commit the Tenderer in accordance with the Tender requirements.*
- f) *A detailed list of previous clients as prescribed in the BDS for similar Works on tender and their contact addresses including e-mail shall be submitted with the Tender for the purpose of reference, or for evaluation*
- g) *Statement of Deviations, if any, from the tender requirements on a separate sheet of paper clearly indicating –*
 - (i.) *the specific tender document requirement*
 - (ii.) *the deviation proposed by the Tenderer*
 - (iii.) *the technical specifications of the deviation*
 - (iv.) *the design, if any, of the deviation*
 - (v.) *justification or reason for the deviation*
 - (vi.) *the Tenderer's cost of that deviation and the Tenderer's estimate of the cost of complying with KPLC's requirement without the deviation.*
- h) *In case of a tender submitted by a joint venture, either of the following –*
 - (i.) *the registered joint venture agreement, or,*
 - (ii.) *a Letter of Intent to enter into a joint venture including a draft JV agreement indicating at least the part of the Works to be executed by the respective partners.*
- j) *Any information or other materials required to be completed and submitted by Tenderers as specified in the Tender Document*

3.17 Tender Forms

The Tenderer shall complete and sign the Tender Form and all other documents furnished in the Tender Document, indicating the Works to be performed, a brief description of the Works, quantities, and prices amongst other information required.

3.18 Tender Rates and Prices

- 3.18.1 The Tenderer shall indicate on the Price Schedule and/or Bill of Quantities, the unit rates and prices (where applicable) and total tender price of the Works it proposes to perform under the contract.
- 3.18.2 The Tenderer shall fill in rates and prices for all items of the Works described in the Price Schedule and/or BQs. Items for which no rates or price is entered by the Tenderer will not be paid for by KPLC when executed and shall be deemed covered by other rates and prices in the Price Schedule and/or BQs.
- 3.18.3 Prices and rates indicated on the Price Schedule and/or BQs shall be inclusive of all costs for the Works including insurances, duties, levies, Value Added Tax (V.A.T), Withholding Tax and other taxes payable and delivery to the premises of KPLC (where applicable) or other specified site(s). No other basis shall be accepted for evaluation, award or otherwise.
- 3.18.4 Price Schedule and/or BQ rates and prices to be submitted (quoted) by the Tenderer shall remain fixed for the contract duration.
- 3.18.5 For the avoidance of doubt, Tenderers shall quote on Delivered Duty Paid (*DDP*) basis. No other basis shall be accepted for evaluation, award or otherwise.
- 3.18.6 Section 20 of the Insurance Act Cap 487 requires all imports to the country to be insured with a local insurance company. It is now mandatory for all marine cargo imports to adhere to this requirement.
- 3.18.7 A price that is derived by a disclosed incorporation or usage of an internationally accepted standard formula shall be acceptable within the meaning of this paragraph.

3.19 Tender Currencies

- 3.19.1 For goods that the local Tenderer will supply from within or outside Kenya, the prices shall be quoted in Kenya Shillings, but for good supplied by overseas Tenderer from outside Kenya they may either in Kenya shillings or in another freely convertible currency in Kenya. The currency quoted must be indicated clearly on the Price Schedule of Goods.
- 3.19.2 The exchange rate to be used for currency conversion for evaluation purposes shall be the Central Bank of Kenya selling rate prevailing on the Tender closing date. *(Please visit the Central Bank of Kenya website).*

3.20 Tenderer's Eligibility and Qualifications

3.20.1 Pursuant to paragraph 3.2, the Tenderer shall furnish, as part of its Tender, documents establishing the Tenderer's eligibility to tender and its qualifications to execute, complete and maintain the Works in the contract if its Tender is accepted.

3.20.2 The documentary evidence of the Tenderer's qualifications to perform the contract if its Tender is accepted shall be established to KPLC's satisfaction –

- a) *that, in the case of a Tenderer offering to supply goods under the contract which the Tenderer did not manufacture or otherwise produce, the Tenderer has been duly authorized by the goods' manufacturer or producer to supply the goods. The authorization shall strictly be in the form and content as prescribed in the Manufacturer's Authorization Form in the Tender Document.*
- b) *that the Tenderer has the financial capability necessary to perform the contract. The Tenderer shall be required to provide -*
 - (i.) *Audited Financial Statements (Audited Accounts) that are reported within eighteen (18) calendar months of the date of the tender document. The Statements must be stamped and signed by the Auditors who must be currently registered by ICPAK.*
 - (ii.) *For companies or firms that are registered or incorporated within the last one calendar year of the Date of the Tender Document, they should submit certified copies of bank statements covering a period of at least six (6) months prior to the Date of the Tender Document. The copies should be certified by the Bank issuing the statements. The certification should be original.*
 - (iv.) *A valid and current Tax Compliance Certificate (TCC) issued by KRA. The Tenderer is strongly advised to confirm the authenticity of the TCC with KRA's Compliance Department to avoid rejection of its Tender.*
 - (iv.) *evidence of adequacy of working capital for this Contract eg. access to line(s) of credit and availability of other financial resources*
- c) *that the Tenderer has the technical and/or production capability necessary to perform the contract.*
- d) *that, in the case of a Tenderer not doing business within Kenya, the Tenderer is or will be (if awarded the contract) represented by an agent in Kenya equipped and able to carry out the Tenderer's maintenance, repair, spare parts and stocking obligations prescribed in the Conditions of Contract and or in the Technical Specifications.*
- e) *that the Tenderer has the technical and management capability necessary to perform the contract. These are as per the Qualification Information Form which includes :-*
 - (i.) *documents showing qualifications and experience of key site*

- management and technical personnel proposed for the Contract.*
- (ii.) employment records including contracts of employment for all key personnel*
 - (v.) The Tenderer's undertaking that the key site management and technical personnel will be available for the contract*
 - (vi.) List and evidence of ownership/lease of contractor's equipment proposed for carrying out the Works*
- f) that the Tenderer is duly classified and currently registered by NCA, ERC, the National Treasury, the County Treasury or any other relevant authorised body as capable of performing the Works under the contract. The Tenderer will furnish KPLC with a copy of the registration certificate and copy of renewal receipt. KPLC reserves the right to subject the certificate and receipt to authentication.*
- g) information regarding any litigation or arbitration current or during the last five (5) years, in which the Tenderer is involved, the parties concerned and disputed amount; and*
- h) detailed proposals for subcontracting components of the Works amounting to more than twenty percent (20%) of the Contract Price.*
- f) tenderer's confirmation that at least forty percent (40%) of their supplies is sourced from citizen contractors, where applicable.*

3.20.3 Tenderers with a record of unsatisfactory or default in performance obligations in any contract shall not be considered for evaluation or award. For the avoidance of doubt, this shall include any Tenderer with unresolved case(s) in its obligations for more than two (2) months in any contract.

3.21 Eligibility and Conformity of Works to Tender Documents

3.21.1 The Tenderer shall furnish, as part of its tender, documents establishing the eligibility and conformity to the Tender Document of all the Works that the Tenderer proposes to perform under the contract.

3.21.2 The documentary evidence of the eligibility of the goods shall consist of a statement in the Price Schedule of the country of origin of the goods and services offered which shall be confirmed by a certificate of origin issued at the time of shipment.

3.21.3 The documentary evidence of conformity of the Works to the Tender Document may be in the form of literature, drawings, and data, and shall (where applicable) consist of: -

- a) a detailed description of the essential technical and performance characteristics of the Works whether in brochures, catalogues, drawings or otherwise,*
- b) a list giving full particulars, including available source and current prices*

of spare parts, special tools and other incidental apparatus necessary for the proper and continuing performance of the Works for a minimum period of six (6) months following usage of the Works after the official handing over to KPLC, and,

- c) Duly completed Schedule of Guaranteed Technical Particulars (GTP) as per Tender Specifications demonstrating substantial responsiveness of the goods and service to those specifications and, if any, a statement of deviations and exceptions to the provisions of the Technical Specifications.*
- d) duly completed Price Schedule and/or BQs' in compliance with KPLC's schedule of requirements and/or BQs requirements or, a Statement of Deviations and exceptions to the provisions of KPLC's schedule of requirements and/or BQs' requirements.*

For (a), (b) and (c) above, the literature, drawings and data shall be those from the Manufacturer.

- 3.21.4 For purposes of the documentary and other evidence to be furnished pursuant to subparagraphs 3.21.1, 3.21.2 and paragraph 3.22, the Tenderer shall note that standards for workmanship, material, and equipment, designated by KPLC in its schedule of requirements and/or BQs' are intended to be descriptive only and not restrictive. The Tenderer may adopt higher standards in its Tender, provided that it demonstrates to KPLC's satisfaction that the substitutions ensure substantial equivalence to those designated in the BQs'.

3.22 Demonstration(s), Inspection(s) and Test(s)

- 3.22.1 Where required, all Tenderers shall demonstrate ability of performance of the required Works in conformity with the schedule of requirements and/or Bills of Quantities.
- 3.22.2 KPLC or its representative(s) shall have the right to inspect/ test the Tenderer's capacity, equipment, premises, and to confirm their conformity to the tender requirements. This shall include the quality management system. KPLC's representative(s) retained for these purposes shall provide appropriate identification at the time of such inspection/ test.
- 3.22.3 The bidder shall meet the cost of demonstration, inspection and test while KPLC shall meet the cost of air travel to the nearest airport and accommodation of its nominated officers inspecting and witnessing tests. Where conducted on the premises of the Tenderer(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to KPLC. In all cases, the equipment used for tests must be validly calibrated by the national standards body and a copy (ies) of the calibration certificate(s) must be submitted with the test report(s).

- 3.22.4 Demonstration and/or Inspection and/or Test Report(s) shall be completed upon conclusion of the demonstration/ inspection/ tests. This Report will be considered at time of evaluation and or award.

3.23 Warranty

- 3.23.1 Where required in the Tender, all Tenderers must also provide a Warranty that warrants that any part of the Works that comprises any equipment, the equipment to be provided under the contract are new, unused and or are of the most recent or current specification and incorporate all recent improvements in design and materials unless provided otherwise in the Tender.
- 3.23.2 The Warranty shall also warrant that the equipment in the Tenderer's bid have no defect arising from manufacture, materials or workmanship or from any act or omission of the Tenderer that may develop under normal use or application of the equipment under the conditions obtaining in Kenya.
- 3.23.3 This warranty will remain valid for the period indicated in the special conditions of contract after the goods, or any portion thereof as the case may be, have been delivered, installed and commissioned at the final destination indicated in the contract.

3.24 Tender Security

- 3.24.1 The Tenderer shall furnish, as part of its Tender, a tender security for the amount specified in the Appendix to Instructions to Tenderers. The Original Tender Security, in a clearly labelled envelop with tender number and name, shall be deposited in the Tender Security Box on 3rd Floor, procurement entrance on or before the opening date.
- 3.24.2 The tender security shall be either one or a combination of the following:-
- a) an original Bank Guarantee from a commercial bank licensed by the Central Bank of Kenya (CBK) that is strictly in the form and content as prescribed in the Tender Security Form (Bank Guarantee) in the Tender Document. The bank must be located in Kenya.
 - b) For local bidders, Standby Letters of Credit (LC). All costs, expenses and charges levied by all banks party to the LC shall be prepaid/borne by the Tenderer. The LC must contain all the mandatory conditions of payment to KPLC as prescribed in the Tender Security (Letters of Credit) provided in the Tender Document.
 - c) For foreign bidders, Standby Letters of Credit (LC) confirmed by a bank in Kenya. All costs, expenses and charges levied by all banks party to the LC including confirmation charges shall be prepaid/borne by the Tenderer. The

LC must contain all the mandatory conditions of payment to KPLC as prescribed in the Tender Security (Letters of Credit) provided in the Tender Document.

- d) An original Guarantee by a deposit taking Microfinance Institution, Sacco Society, Youth Enterprise Development Fund or the Women Enterprise Fund, that is strictly in the form and content as prescribed in the Tender Security Form
- 3.24.3 The Tender Security is required to protect KPLC against the risk of the Tenderer's conduct which would warrant the security's forfeiture pursuant to paragraph 3.24.10.
- 3.24.4 The Tender Security shall be denominated in Kenya Shillings or in another freely convertible currency, and shall be issued by a commercial bank located in Kenya and licensed by the Central Bank of Kenya or a deposit taking Microfinance Institution, Sacco Society, Youth Enterprise Development Fund or the Women Enterprise Fund. The bank or institution must be located in Kenya.
- 3.24.5 The Tender Security shall be valid for thirty (30) days beyond the validity of the tender.
- 3.24.6 KPLC shall seek authentication of the Tender Security from the issuing bank. It is the responsibility of the Tenderer to sensitise its issuing bank/institution on the need to respond directly and expeditiously to queries from KPLC. The period for response shall not exceed five (5) days from the date of KPLC's query. Should there be no conclusive response by the bank/institution within this period, such Tenderer's Tender Security may be deemed as invalid and the bid rejected.
- 3.24.7 Any Tender not secured in accordance with this paragraph will be rejected by KPLC as non-responsive, pursuant to paragraph 3.35.
- 3.24.8 The unsuccessful Tenderer's Tender Security will be released as promptly as possible, in any of the following circumstances: -
- a) *the procurement proceedings are terminated*
 - b) *KPLC determines that none of the submitted Tenders is responsive*
 - c) *a contract for the procurement is entered into*
- 3.24.9 The successful Tenderer's Tender Security will be released upon the successful Tenderer's signing the contract, pursuant to paragraph 3.44 and furnishing an authentic Performance Security, pursuant to paragraph 3.24.
- 3.24.10 The Tender Security shall be forfeited –
- a) *if the Tenderer withdraws its Tender after the deadline for submitting Tenders but before the expiry of the period during which the Tenders must remain valid*
 - b) *if the Tenderer fails to enter into a written contract in accordance with paragraph 3.44*

- c) *if the successful Tenderer fails to furnish the performance security in accordance with paragraph 3.24*
- d) *if the Tenderer fails to extend the validity of the tender security where KPLC has extended the tender validity period in accordance with paragraph 3.25.*

3.24.11 In cases of a JV bid, without prejudice to the provisions relating to a JV, the Tender Security may be in the name of any or all parties to the JV and the above provisions on Tender Security shall apply.

3.25 Validity of Tenders

3.25.1 Tenders shall remain valid for one hundred and eighty (180) days after the date of tender opening as specified in the Invitation to Tender or as otherwise may be prescribed by KPLC, pursuant to paragraph 3.29. A Tender that is valid for a shorter period shall be rejected by KPLC as non-responsive.

3.25.2 In exceptional circumstances, KPLC may extend the Tender validity period. The extension shall be made in writing. The tender security provided under paragraph 3.25 shall also be extended. A Tenderer shall not be required nor permitted to modify its tender during the extended period.

3.26 Alternative Offers

Only main offers shall be considered, as alternative offers are not acceptable.

3.27 Preparation and Signing of the Tender

3.27.1 The Original and all copies of the Tender shall be typed or written in indelible ink. They shall be signed by the Tenderer or a person or persons duly authorized to bind the Tenderer to the contract.

3.27.2 The authorization shall be indicated by a written Power of Attorney granted by the Tenderer to the authorized person before any of the following persons:-

a) *For local Tenderers, a Commissioner of Oaths or a Notary Public or a Magistrate of the Kenyan Judiciary.*

b) *For foreign Tenderers, a Notary Public in the country of the Tenderer.*

In either case above, the Power of Attorney shall accompany the Tender.

3.27.3 All pages of the Tender, including un-amended printed literature, shall be initialled by the person or persons signing the Tender and serially numbered.

3.27.4 The Tender shall have no interlineations, erasures, or overwriting except as necessary to correct errors made by the Tenderer, in which case such corrections shall be initialled by the person or persons signing the Tender.

3.27.5 KPLC will assume no responsibility whatsoever for the Tenderer's failure to comply with or observe the entire contents of paragraph 3.21.

3.27.6 Any Tender not prepared and signed in accordance with this paragraph may be rejected by KPLC as non-responsive, pursuant to this paragraph 3.27.

3.28 Deadline for Submission of Tenders

- 3.28.1 Tenders must be received by KPLC by the date and time specified in KPLC's tendering portal in PDF form.
- 3.28.2 KPLC may, at its discretion, extend this deadline for submission of Tenders by amending the tender documents in accordance with paragraph 3.14, in which case all rights and obligations of KPLC and the Tenderer previously subject to the initial deadline, will therefore be subject to the deadline as extended.

3.29 Modification and Withdrawal of Tenders

- 3.29.1 The Tenderer may modify or withdraw its Tender after it has submitted it, provided that written notice of the modification, including substitution or withdrawal of the Tender is received by KPLC prior to the deadline prescribed for submission of tenders.
- 3.29.2 No Tender may be modified after the deadline for submission of Tenders.
- 3.29.3 No Tender may be withdrawn in the interval between the deadline for submission of tenders and the expiration of the period during which the Tender must remain valid. Any withdrawal of a Tender during this interval shall result in forfeiture of the Tenderer's Tender Security.

3.30 Opening of Tenders

- 3.30.1 KPLC shall open all Tenders promptly at the date and time specified in the KPLC tendering portal and at the location specified in the Invitation to Tender or as may otherwise be indicated.
- 3.30.2 The Tenderer's names, tender modifications or withdrawals, the presence or absence of requisite Tender Security and such other details as KPLC, at its discretion, may consider appropriate, will be announced at the opening.
- 3.30.3 At the Tender opening, tender prices, discounts, and such other details as KPLC, at its discretion, may consider appropriate will be read out.
- 3.30.4 The Tenderers or their representatives may attend the opening and those present shall sign a register evidencing their attendance.

3.31 Process to be Confidential

- 3.31.1 After the opening of tenders, information relating to the examination, clarification, evaluation and comparisons of tenders and recommendations arising there-from shall not be disclosed to a Tenderer or other person(s) not officially concerned with such process until conclusion of that process.
- 3.31.2 Conclusion of that process shall be deemed to have occurred, at the latest, by the date and time KPLC notifies the successful bidder(s). In any event, official disclosure by KPLC of any information upon conclusion of that process may only be to the unsuccessful bidders and may contain only the information permissible by

law in summary form.

- 3.31.3 Any effort by a Tenderer to influence KPLC or any of its staff members in the process of examination, evaluation and comparison of tenders and information or decisions concerning award of Contract may result in the rejection of the Tenderer's tender.

3.32 Clarification of Tenders and Contacting KPLC

- 3.32.1 To assist in the examination, evaluation and comparison of Tenders KPLC may, at its discretion, ask the Tenderer for a clarification of its Tender. The request for clarification and the response shall be in writing, and no change in the prices or substance of the Tender shall be sought, offered, or permitted.
- 3.32.2 The Tenderer is required to provide timely clarification or substantiation of the information that is essential for effective evaluation of its qualifications. It is the responsibility of the Tenderer to provide in writing the clarification or substantiation which should reach KPLC within five (5) days from the date of KPLC's query. Such writing may include by electronic mail or postal mail. Should there be no conclusive response within this period, it shall result in the Tenderer's disqualification.
- 3.32.3 Save as is provided in this paragraph and paragraph 3.13 above, no Tenderer shall contact KPLC on any matter related to its Tender, from the time of the tender opening to the time the contract is awarded.
- 3.32.4 Any effort by a Tenderer to influence KPLC in its decisions on tender evaluation, tender comparison, tender recommendation(s) or contract award may result in the rejection of the Tenderer's Tender.

3.33 Preliminary Tender Evaluation

- 3.33.1 Prior to the detailed Technical and Financial evaluation, KPLC will determine the substantial responsiveness of each Tender. For purposes of this tender, a substantially responsive Tender is one that conforms to the requirements of Preliminary Evaluation. KPLC's determination of a Tender's responsiveness is to be based on the contents of the Tender itself without recourse to extrinsic evidence.
- 3.33.2 KPLC will examine the Tenders to determine whether they conform to the Preliminary Evaluation Criteria set out in Section VI Evaluation Criteria.
- 3.33.3 Notwithstanding the contents of the foregoing sub-paragraphs, if a Tender is not substantially responsive, it will be rejected at the earliest stage of evaluation by KPLC and cannot subsequently be made responsive by the Tenderer by correction of any non-conformity.

3.34 Minor Deviations, Errors or Oversights

- 3.34.1 KPLC may waive any minor deviation in a Tender that does not materially depart from the requirements of the goods and or services set out in the Tender Document.
- 3.34.2 Such minor deviation -

*3.34.2.1 shall be quantified to the extent possible,
3.34.2.2 shall be taken into account in the evaluation process, and,
3.34.2.3 shall be applied uniformly and consistently to all qualified Tenders duly
received by KPLC.*

3.34.3 KPLC may waive errors and oversights that can be corrected without affecting the substance of the Tender.

3.35 Technical Evaluation and Comparison of Tenders

3.35.1 KPLC will further evaluate and compare the Tenders that have been determined to be substantially responsive, in compliance to the Schedule of Requirements and/or BQs set out in the Tender Document and as per the prescribed Evaluation Criteria.

3.35.2 The Implementation Plan is a critical aspect of the Tender. KPLC requires that the Works shall be performed at the time specified in the BDS. KPLC's evaluation of a tender will also take into account the Work Plan proposed in the Tender.

3.36 Financial Evaluation

3.36.1 The financial evaluation and comparison shall be as set out in the Summary of Evaluation Process. The comparison shall include:-

- a) the rates and prices [which must be inclusive of insurances, duties, levies, Value Added Tax (V.A.T), Withholding Tax and other taxes payable (where applicable) and delivery to the premises of KPLC (where applicable) or other specified site(s)]
- b) Confirming if there are any deviations in the Payment Schedule from what is specified in the Special Conditions of Contract

3.36.2 Where other currencies are used, KPLC will convert those currencies to the same currency using the selling exchange rate prevailing on the date of tender closing provided by the Central Bank of Kenya.

3.37 Preferences

3.37.1 Subject to availability and realization of the applicable international or local standards, only such manufactured articles, materials or supplies wholly mined and produced in Kenya shall be subject to preferential procurement.

3.37.2 Despite the above provisions, preference shall be given to —

- (a) Manufactured articles, materials and supplies partially mined or produced in Kenya or where applicable have been assembled in Kenya; or
- (b) Firms where Kenyans are shareholders.

3.37.3 The threshold for the provision under 3.37.2 (b) shall be above fifty-one percent of Kenyan shareholders.

- 3.37.4 Where a person is entitled to more than one preference scheme, the scheme with the highest advantage to the person shall be applied.
- 3.37.5 In the evaluation of tenders, exclusive preference shall be given to citizen contractors where the amount of the tender as evaluated is below KShs. 500 Million in respect of works.
- 3.37.6 For purposes of this paragraph the Tenderer shall submit with its Tender, the following documents:-
- a) a valid copy of certificate or letter of Confirmation of Ownership or Partnerships and Shareholding (CR12) issued and signed by the Registrar of Companies or Registrar of Business Names both of the Office of the Attorney General of Kenya.
 - b) The certificate must not be more than three (3) months old from the Date of the Tender Document. KPLC reserves the right to subject the certificate to authentication.
 - c) A copy of the Memorandum and Articles of Association of the company
 - d) In JV, sub-contracting or other contractual arrangements, copies of the Memorandum and Articles of Association of each company in the JV, sub-contracting or other contractual arrangements.

3.38 Debarment of a Tenderer

A Tenderer who gives false information in the Tender about its qualification or who refuses to enter into a contract after notification of contract award shall be considered for debarment from participating in future public procurement.

3.39 Confirmation of Qualification for Award

- 3.39.1 KPLC may confirm to its satisfaction whether the Tenderer that is selected as having submitted the lowest evaluated responsive tender is qualified to perform the contract satisfactorily.
- 3.39.2 The confirmation will take into account the Tenderer's financial, technical, and performance capabilities. It will be based upon an examination of the documentary evidence of the Tenderer's qualifications submitted by the Tenderer, pursuant to paragraph 3.20 as well as confirmation of such other information as KPLC deems necessary and appropriate. This may include factory, office and other facilities inspection and audits.
- 3.39.3 An affirmative confirmation will be a prerequisite for award of the contract to the Tenderer. A negative confirmation will result in rejection of the Tenderer's Tender, in which event KPLC will proceed to the next lowest evaluated responsive tender to make a similar confirmation of that Tenderer's capabilities to perform satisfactorily.

3.40 Award of Contract

- 3.40.1 KPLC will award the contract to the successful Tenderer whose Tender has been determined to be substantially responsive, compliant with the evaluation criteria and has been determined to be the lowest evaluated tender, and further, where deemed necessary, that the Tenderer is confirmed to be qualified to perform the contract satisfactorily.

3.41 Termination of Procurement Proceedings

- 3.41.1 KPLC may at any time terminate procurement proceedings before contract award and shall not be liable to any person for the termination.
- 3.41.2 KPLC shall give prompt notice of the termination to the Tenderers, and, on request from any Tenderer, give its reasons for termination within fourteen (14) days of such request.

3.42 Notification of Award

- 3.42.1 Prior to the expiration of the period of tender validity, KPLC shall notify the successful Tenderer in writing that its Tender has been accepted.
- 3.42.2 The notification of award shall not constitute the formation of the contract until one is finally signed by both parties.
- 3.42.3 Simultaneously, and without prejudice to the contents of paragraph 3.42, on issuance of Notification of Award to the successful Tenderer, KPLC shall notify each unsuccessful Tenderer.
- 3.42.4 A notification of the tender outcome does not reduce the validity period for any tender security whether the Tenderer is successful or not, except where such tender security is officially released to the Bank/institution and/or the Tenderer and such Bank/institution discharged of all its obligations by KPLC prior to the expiry of its stated validity period.

3.43 Clarifications with the Successful Tenderer (s)

- 3.43.1 Clarifications may be undertaken with the successful Tenderer(s) relating to any or all of the following areas:-
- a) A minor alteration to the technical details of the Schedule of requirements and/or BQ's
 - b) Reduction of quantities for budgetary reasons where the reduction is in excess of any provided for in the Tender Document
 - c) A minor amendment to the SCC.
 - d) Finalising payment arrangements
 - e) Mobilisation arrangements e.g. operational details
 - f) Agreed final delivery or Work Plan to accommodate any changes required by KPLC.

- g) Methodology and Staffing
- h) Clarifying details that were not apparent or could not be finalized at the time of tendering

3.43.2 Clarifications shall not change the substance of the Tender.

3.44 Signing of Contract

- 3.44.1 At the same time as KPLC notifies the successful Tenderer that its Tender has been accepted, KPLC will send the Tenderer the Contract Agreement provided in the Tender Document together with any other necessary documents incorporating all agreements between the Parties.
- 3.44.2 Within fourteen (14) days of the date of notification of award, the successful Tenderer shall only sign the Contract Form and all the documents specified in that Form and return them to KPLC within that period of fourteen (14) days.
- 3.44.3 KPLC shall sign and date the Contract not earlier than fourteen (14) days from the date of notification of contract award. Further, KPLC shall not sign the contract until and unless the authentic performance security is received in accordance with paragraph 3.45.
- 3.44.4 Failure of the successful Tenderer to sign the Contract, the award shall be annulled and its tender security forfeited in which event KPLC shall notify the next lowest evaluated Tenderer that its Tender has been accepted.
- 3.44.5 Paragraph 3.45 together with the provisions of paragraph 3.44 will apply with necessary modifications with respect to the Tenderer notified under this sub-paragraph 3.42.4.

3.45 Performance Security

- 3.45.1 Within fourteen (14) days of the date of notification of award from KPLC, the successful Tenderer shall furnish KPLC with a Performance Security. The Performance Security shall be denominated in Kenya Shillings and shall be valid shall be until a date sixty (60) days beyond the date of issue of the Certificate of Completion.
- 3.45.2 The Performance Security shall be either one or a combination of the following:
 - a) An original Bank Guarantee from a commercial bank licensed by the Central Bank of Kenya that is strictly in the form and content as prescribed in the Performance Security Form (Bank Guarantee) in the Tender Document. The bank issuing the Bank Guarantee must be located in Kenya.
 - b) For Local bidders, Standby Letters of Credit (LC). All costs, expenses and charges levied by all banks party to the LC shall be prepaid/borne by the Tenderer. The LC must contain all the mandatory conditions of payment to KPLC as prescribed in the Tender Security (Letters of Credit) provided in

the Tender Document.

- c) For Foreign bidders, Standby Letters of Credit (LC) confirmed by a bank in Kenya. All costs, expenses and charges levied by all banks party to the LC including confirmation charges shall be prepaid/borne by the Tenderer. The LC must contain all the mandatory conditions of payment to KPLC as prescribed in the Tender Security (Letters of Credit) provided in the Tender Document.

- 3.45.3 The successful Tenderer shall furnish a Performance Security being the sum of ten percent (10%) of the contract price.
- 3.45.4 KPLC shall seek authentication of the Performance Security from the issuing bank. It is the responsibility of the successful Tenderer to sensitise its issuing bank on the need to respond directly and expeditiously to queries from KPLC. The period for response shall not exceed three (3) days from the date of KPLC's query. Should there be no conclusive response by the Bank within this period, such successful Tenderer's Performance Security may be deemed as invalid.
- 3.45.5 Failure of the successful Tenderer to furnish an authentic Performance Security, the award shall be annulled and the Tender Security forfeited, in which event KPLC may notify the next lowest evaluated Tenderer that its Tender has been accepted.
- 3.45.6 Without prejudice to sub-paragraph 3.45.5, failure of the successful Tenderer to furnish an authentic Performance Security, during the existence of a running Contract, the Performance Security of the running Contract shall be liquidated by KPLC before expiry of the same.

3.46 Corrupt or Fraudulent Practices

- 3.46.1 KPLC requires that Tenderers observe the highest standard of ethics during the procurement process and execution of contracts. When used in the present Regulations, the following terms are defined as follows: -
 - a) *"Corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of public official in the procurement process or in contract execution;*
 - b) *"Fraudulent practice" means a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of KPLC, and includes collusive practice among Tenderers (prior to or after Tender submission) designed to establish tender prices at artificial non-competitive levels and to deprive KPLC of the benefits of free and open competition.*
- 3.46.2 KPLC will reject a proposal for award if it determines that the Tenderer recommended for award has engaged in corrupt or fraudulent practices in competing for the contract in question.

- 3.46.3 Further, a Tenderer who is found to have indulged in corrupt or fraudulent practices risks being debarred from participating in public procurement in Kenya.

SECTION IV - BID DATA SHEET (Appendix to Instructions to Tenderers)

The following information regarding the particulars of the tender shall complement and or amend the provisions of the Instructions to Tenderers *hereinafter abbreviated as ITT*. Wherever there is a conflict between the provisions of the ITT and the Bid Data Sheet, the provisions of the BDS shall prevail over those of the ITT.

No.	ITT Reference Clause	Particulars of Appendix
1.	3.2.1 Eligible Tenderers	<i>This Invitation to Tender is open to Local Tenderers only</i>
2.	3.6 Time for Completion of Works	<i>The work should be completed within twenty (20) weeks after commencement date.</i>
3.	3.10 Site Visit and Pre-Bid Meeting	<i>There will be a Pre-bid meeting on 16th June 2021 to be held at Stima Club starting from 10.00 am. This will be followed by a <u>MANDATORY</u> Site visit to be held at Mandera Power Station on 22nd June 2021 At 10.00am and Lodwar Power Stations on 29th June 2021 At 10.00am.</i>
4.	3.16(f) – List of Previous Customers	<i>The Tenderer shall submit at least six (6) names with Full contact including telephone, email and physical addresses of previous clients of similar Works and letters from the previous clients confirming satisfactory completion of the contracts and on schedule.</i>
5	3.19.1 Tender Currency	<i>Tender Prices SHALL be in Kenya Shillings</i>
6.	3.20 Documents of evidence of eligibility and qualification	<i>Registration certificates/documents with relevant Bodies i.e., NCA should be submitted with the tender.</i>
7.	3.21.3 (a) Catalogues, Brochures, Manufacturer's/ Principal's Drawings	<i>Catalogues, Brochures and Manufacturers drawings of The Generator set and their components are required.</i>
8.	3.22.4 Demonstration and/or Inspection and/or Test Report(s)	<i>Type test reports for the Generator set and other Auxiliaries required.</i>
9	3.23.3 Warranty/Warranty Period	<i>Defects liability period is twelve calendar months from the date indicated on Taking over certificate/commissioning certificate.</i>

10.	3.24.1 Tender Security	<i>The tenderer shall furnish, as part of its tender, a tender security for Kshs 3,000,000 Per LOT. Tender Security should be kept in an envelope clearly labeled with the tender number & name, shall be deposited in the Tender Security Box in Stima Plaza 3rd Floor and a copy to be stamped at Supply Chain Reception on or before the opening date.</i>
11.	3.25 Validity of Tenders	<i>Tender validity period is 180 days from the Tender Closing date</i>
12.	3.42 Award of contract	<i>The tender will be awarded to the lowest evaluated Price Per Lot</i>

SECTION V: SCHEDULE OF REQUIREMENTS

Part A – SUPPLY, INSTALLATION AND COMMISSIONING OF 2Nos. 1250KVA AND 3 Nos.650KVA ENCLOSED CONTAINERISED DIESEL GENERATOR PLUS OTHER ACCESORRIES AT MANDERA POWER STATION (LOT 1).

Mandera Power Station is located in Mandera County, approximately 1100km from Nairobi CBD and at an altitude of approximately 960m and average annual temperature of 30 degrees centigrade.

Item No.	Brief Description	Unit Of Measure	Quantity
1	Supply of 1250KVA Enclosed Diesel Generator & Accessories including official documentations (Workshop/service manual, operation and maintenance manual and parts catalogue) The 1250kva generators should be of similar Make/Brand and Model type	Set	2
2	Supply of 650KVA Enclosed Diesel Generator & Accessories including official documentations (Workshop/service manual, operation and maintenance manual and parts catalogue). The 650kva generators shall be of similar Make/Brand and Model/Type	Set	3
3	Containerized 415V board comprising 5 No. generator circuit breaker panels, 8000A TPN Copper Busbar and 1 ACB Bus Coupler, These shall be supplied in a standard steel.	Set	1
4	Containerized 11KV Switchgear Panel comprising of 2 Nos Incomer Vacuum circuit breaker and 2 Nos feeder Vacuum circuit breaker panels (all of 630A rating), 2000A TPN Copper Busbar and 630A Busbar coupler which shall be supplied in a standard steel container. Complete with 24V DC battery system and supervisory control desk	Set	1
5	3.5 MVA and 0.415/11KV Station Transformer	Nos	2
6	Fuel flow meters	Nos	5
7	Fuel Day Tanks for each diesel generator of min 3500 Litres.	Nos	5

8	Fuel Pipework	Lot	1
9	Fuel Hand pumps	Nos	5
10	Power cables and communication cables	Lot	1
11	Control Cables	Lot	5
12	Supply of Laptop Computer	Nos	1
13	Supply Of Standard Tools	Lot	1
14	Supply Of Special Tools(Per engine Model)	Lot	2
15	Supply Of Critical Spares	Lot	2
16	Supply Of Consumables	Lot	2
17	Testing and Commissioning	Lot	5
18	Training	Lot	2
19	1 year Running Hour Maintenance, Warranty & Defects liability period	Lot	5
20	Factory acceptance test (FAT) for the Diesel generators and Auxiliary equipment for 2 KPLC staff (KPLC will pay the air ticket and accommodation for its staff).	Lot	1
21	Factory acceptance test (FAT) for the 415V and 11KV Switchgear Panels and Auxiliary equipment's for 2 KPLC Engineers (KPLC will pay the air ticket and accommodation for its staff).	Lot	1
22	Factory acceptance test (FAT) for 2No. 3.5MVA Transformers and Auxiliary equipment's for 2 KPLC Engineers (KPLC will pay the air ticket and accommodation for its staff).	Lot	1

PART B – DELIVERY SCHEDULE AFTER AWARD AND CONTRACT SIGNING.

				KPLC REQUIREMENT	BIDDERS OFFER
No	Description	Place of Delivery	Qty	No of weeks to deliver and install on site after signing of Contract	Bidders to indicate the offered delivery schedule
1	2 Nos. 1250KVA and 3 Nos.650KVA Enclosed Containerized Diesel Generator plus other accessories at Mandera Power Station.	Mandera Power Station	1	20 Weeks	

The contract period is for one (1) year but the work should be completed within twenty (20) weeks after commencement date.

Part B – SUPPLY, INSTALLATION AND COMMISSIONING OF 2Nos. 1250KVA AND 3 Nos.650KVA ENCLOSED CONTAINERISED DIESEL GENERATOR PLUS OTHER ACCESORRIES AT LODWAR POWER STATION (LOT 2).

Introduction

Lodwar Power Station is located in Turkana County, approximately 850 km from Nairobi CBD and at an altitude of approximately 520m and average annual temperature of 30 degrees centigrade.

Item No.	Brief Description	Unit Of Measure	Quantity
1	Supply of 1250KVA Enclosed Diesel Generator & Accessories including official documentations (Workshop/service manual, operation and maintenance manual and parts catalogue) The 1250kva generators should be of similar Make/Brand and Model type	Set	2
2	Supply of 650KVA Enclosed Diesel Generator & Accessories including official documentations (Workshop/service manual, operation and maintenance manual and parts catalogue). The 650kva generators shall be of similar Make/Brand and Model/Type	Set	3
3	Containerized 415V board comprising 5 No. generator circuit breaker panels, 8000A TPN Copper Busbar and 1 ACB Bus Coupler, These shall be supplied in a standard steel.	Set	1
4	Containerized 11KV Switchgear Panel comprising of 2 Nos Incomer Vacuum circuit breaker and 2 Nos feeder Vacuum circuit breaker panels (all of 630A rating), 2000A TPN Copper Busbar and 630A Busbar coupler which shall be supplied in a standard steel container. Complete with 24V DC battery system and supervisory control desk	Set	1
5	3.5 MVA and 0.415/11KV Station Transformer	Nos	2
6	Fuel flow meters	Nos	5
7	Fuel Day Tanks for each diesel generator of min 3500 Litres.	Nos	5
8	Fuel Pipework	Lot	1
9	Fuel Hand pumps	Nos	5

10	Power cables and communication cables	Lot	1
11	Control Cables	Lot	5
12	Supply of Laptop Computer	Nos	1
13	Supply Of Standard Tools	Lot	1
14	Supply Of Special Tools(Per engine Model)	Lot	2
15	Supply Of Critical Spares	Lot	2
16	Supply Of Consumables	Lot	2
17	Testing and Commissioning	Lot	5
18	Training	Lot	2
19	1 year Running Hour Maintenance, Warranty & Defects liability period	Lot	5
20	Factory acceptance test (FAT) for the Diesel generators and Auxiliary equipment for 2 KPLC staff (KPLC will pay the air ticket and accommodation for its staff).	Lot	1
21	Factory acceptance test (FAT) for the 415V and 11KV Switchgear Panels and Auxiliary equipment's for 2 KPLC Engineers (KPLC will pay the air ticket and accommodation for its staff).	Lot	1
22	Factory acceptance test (FAT) for 2No. 3.5MVA Transformers and Auxiliary equipment's for 2 KPLC Engineers (KPLC will pay the air ticket and accommodation for its staff).	Lot	1

PART B – DELIVERY SCHEDULE AFTER AWARD AND CONTRACT SIGNING.

				KPLC REQUIREMENT	BIDDERS OFFER
No	Description	Place of Delivery	Qty	No of weeks to deliver and install on site after signing of Contract	Bidders to indicate the offered delivery schedule
1	Supply, Installation and Commissioning Of 2nos. 1250kva and 3 Nos.650kva Enclosed Containerised Diesel Generator Plus Other Accesories at Lodwar Power Station (LOT 1).	Lodwar Power Station	Lot 2	20 Weeks	

The contract period is for one (1) year but the work should be completed preferably twenty (20) weeks after commencement date.

SECTION VI - (a) BILL OF QUANTITIES

6.0 A: Notes for preparing Bills of Quantities

6.1 Preamble to Bill of Quantities

The Bill of Quantities shall form part of the Contract Documents and is to be read in conjunction with the Instructions to Tenderers, Conditions of Contract Parts I and II, Specifications and Drawings.

The brief description of the items in the Bill of Quantities is purely for the purpose of identification, and in no way modifies or supersedes the detailed descriptions given in the conditions of Contract and Specifications for the full direction and description of work and materials.

The Quantities set forth in the Bill of Quantities are estimated and provisional, representing substantially the work to be carried out, and are given to provide a common basis for tendering and comparing of Tenders. There is no guarantee to the Contractor that he will be required to carry out all the quantities of work indicated under any one particular item or group of items in the Bill of Quantities. The basis of payment shall be the Contractor's rates and the quantities of work actually done in fulfillment of his obligation under the Contract.

The prices and rates inserted in the Bills of Quantities will be used for valuing work executed, and the Engineer will measure the whole of the works executed in accordance with this Contract.

A price or rate shall be entered in ink against every item in the Bill of Quantities with the exception of items, which already have provisional sums, affixed thereto. The Tenderers are reminded that no "nil" or "included" rates or "lump-sum" discounts will be accepted. The rates for various items should include discounts if any. Tenderers who fail to comply will be disqualified.

Provisional sums (including Dayworks) in the Bill of Quantities shall be expended in whole or in part at the discretion of the Engineer in accordance with Sub-clause 52.4 and Clause 58 of part of the Conditions of Contract.

The price and rates entered in the Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all Constructional plant to be used, labour, insurance, supervision, compliance, testing, materials, erection, maintenance or works, overheads and profits, taxes and duties together with all general risks, liabilities and obligations set out or implied in the Contract, transport,

electricity and telephones, water, use and replenishment of all consumables, including those required under the Contract by the Engineer and his staff.

Errors will be corrected by the Employer for any arithmetic errors in computation or summation as follows:

Where there is a discrepancy between amount in words and figures, the amount in words will govern; and

Where there is a discrepancy between the unit rate and the total amount derived from the multiplication of the unit price and the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer, there is an obviously gross misplacement of the decimal point in the unit price, in which event the total amount as quoted will govern and the unit rate will be corrected.

If a Tenderer does not accept the correction of errors as outlined above, his Tender will be rejected.

The Bills of Quantities, unless otherwise expressly stated therein, shall be deemed to have been prepared in accordance with the principles of the latest edition of the Civil Engineering Standard Method of Measurement (CESMM).

“Authorized” “Directed” or “Approved” shall mean the authority, direction or approval of the Engineer.

Unless otherwise stated, all measurements shall be net taken on the finished work carried out in accordance with the details shown on the drawings or instructed, with no allowance for extra cuts or fills, waste or additional thickness necessary to obtain the minimum finished thickness or dimensions required in this Contract. Any work performed in excess of the requirements of the plans and specifications will not be paid for, unless ordered in writing by the Engineer.

Hard material, in this Contract, shall be defined as the material which, in the opinion of the Engineer, require blasting, or the use of metal wedges and sledgehammers, or the use of compressed air drilling for their removal, and which cannot be extracted by ripping with a dozer tractor of at least 150 brake horse power (112 kilowatt) with a single, rear-mounted, hydraulic ripper. Boulders of more than 0.2m³ occurring in soft material shall be classified as hard material
Soft material shall be all material other than hard material.

B: Price Schedule - New Diesel Engine Generator Set Option

The quantities listed hereunder are deemed to be correct but the Contractor is requested to make his own assessment from the documentation supplied and site visits for the

purposes of quantifying of materials and pricing. Any price omitted from the items listed shall be deemed to have been included in another.

The prices shall include all obligations under the Contract agreement, including, but not limited to supply of materials, equipment apparatus, fittings, spares, tools, insurance, storage as may be necessary, lifting facilities, installation, and commissioning among others.

The rates shall also be inclusive of Value Added Tax (VAT), duties, shipping freight, insurance and handling charges, transport, clearing and forwarding, IDF of handling and inspection fees etc. and no allowance of the same shall be made thereafter or any other charges e.g. late payment to port whatsoever.

The prices entered in this schedule include for the supply and set to work of new Diesel Engine Generator sets complete with its auxiliary equipment fully connected to the existing control panel, whether it be fully described or not. They shall include the cost of labour, supervision and all other overheads. 12 months from the takeover date shall be the applicable warranty period.

The Tenderer shall indicate the currency of the offer prices. All goods are to be supplied under DDP (Delivered Duty Paid

SECTION VI – (b) SCHEDULE OF RATES AND PRICES(LOT 1)

SUPPLY, INSTALLATION AND COMMISSIONING OF 2Nos. 1250KVA AND 3 Nos.650KVA ENCLOSED CONTAINERISED DIESEL GENERATOR PLUS OTHER ACCESORRIES AT MANDERA POWER STATION (LOT 1).

PRICE SCHEDULE 1: GENSET AND AUXILIARIES –

No	Description	Unit	Qty	Rate ()	Amount ()
1	<p>1250KVA enclosed containerized diesel generator, and accessories inclusive of Air circuit breaker (ACB) & residential exhaust system. This shall be enclosed in a 6m standard steel container inclusive of delivery, installation and commissioning at Mandera power station. Exhaust system to exhaust at least 6 metres above the ground. Bidders shall provide Reinforced precast concrete pier blocks (600mm *600mm*400mm) on which the steel container will be placed.</p> <p>The make of generator shall be supplied with:-</p> <ul style="list-style-type: none"> a) Operators Instruction and Maintenance Manual b) Service/Workshop Manual c) Spare Parts Catalogue 	No.	2		
2	<p>650KVA enclosed containerized diesel generator, and accessories inclusive of circuit breaker & residential exhaust system. This shall be enclosed in a 6m standard steel container inclusive of delivery, installation and commissioning at Mandera power station. Exhaust system to exhaust at least 6 metres above the ground. Bidders shall provide Reinforced precast concrete pier blocks (600mm *600mm*400mm) on which the steel container will be placed.</p> <p>The make of generator shall be supplied with:-</p> <ul style="list-style-type: none"> a) Operators Instruction and Maintenance Manual b) Service/Workshop Manual c) Spare Parts Catalogue 	No.	3		

No	Description	Unit	Qty	Rate ()	Amount ()
3	415V board comprising 5 No. generator circuit breaker panels, 8000A TPN Copper Busbar and 1No ACB Busbar Coupler, these shall be supplied in a standard steel container. Bidders shall provide Reinforced precast concrete pier blocks (600mm *600mm*400mm) on which the steel container will be placed.	No	1		
4	11KV Switchgear Panel comprising of 2 Nos Incomer Isolator switch and 2 Nos feeder Vacuum circuit breaker panels (all of 630A rating), 2000A TPN Copper Busbar and 630A Busbar coupler which shall be supplied in a standard steel container complete with a control desk and 24VDC Battery system. Bidders shall provide Reinforced precast concrete pier blocks (600mm *600mm*400mm) on which the steel container will be placed.	No	1		
5	3.5MVA 0.415/11KV Station Transformer System and associated civil works all inclusive.	No	2		
6	11000V Switchgear ,415V Switchgear and Transformers Earthing	No	1		
7	Fuel Flow Meters.	Set	5		
8	Fuel Day tank inclusive of Gate valves	Lot	5		
9	Fuel Pipe work	Lot	5		
10	Fuel Pump, hand operated	Pc	5		
11	Power Cables Total lengths(M) at Mandera Power station plus associated cable trays and Accessories (If applicable).	Lot	5		
12	Control communication cables (M)	Lot	5		
13	Laptop computer complete with installed engine software and adapter connectors for the two Makes/Brand of genset.	Lot	1		
	SUB-TOTAL 1				

PRICE SCHEDULE 2: SERVICES

No	Description	Unit	Qty	Rate ()	Amount ()
1	Transport to all the station, installation and commissioning of all equipment under supervision of KPLC engineers	lot	1		
2	Site preparation (includes; ground leveling, site access etc)	lot	1		
3	Reliability run Operation for 1 week inclusive of KPLC staff operator training.	lot	1		
4	12 Months maintenance plus training of Maintenance staff.	Lot	1		
5	Factory acceptance test for the Diesel generators and Auxiliary equipment for 2 KPLC staff (KPLC will pay the air ticket and accommodation for its staff).	Lot	1		
6	Factory acceptance test for the 415V and 11KV Switchgear Panels and Auxiliary equipment's for 2 KPLC Engineers (KPLC will pay the air ticket and accommodation for its staff).	Lot	1		
7	Factory acceptance test for the 2Nos. 3.5MA Transformers and Auxiliary equipment's for 2 KPLC Engineers (KPLC will pay the air ticket and accommodation for its staff).	Lot	1		
	SUB-TOTAL 2				

PRICE SCHEDULE 3: STANDARD TOOLS

No	Description	Unit	Qty	Rate ()	Amount ()
1	Mechanical Workshop 450+ Pieces (Cr-V) Drawer Tool Trolley (with plastic/foam modular inlay tool control system) –robust, sturdy and lockable.	Set	1		
2	Socket Spanner Tool Set (Cr-V) in sturdy sheet steel case - ¾” Drive 12 point (bi-hexagon) heavy duty.	Set	1		
3	Electrical Workshop 55+ Piece Inlay Tool Set with carry case	Set	1		
4	Battery Charger 12/24 Volt: Heavy Duty Portable, Automatic; Input Voltage 150-300vac; Constant/Float Charging; Max Boost 40A; Float 8A;	Set	1		
5	Electric Hand Drill Chuck Capacity Of 1.5 – 13 Mm With carry Case	Pc	1		
6	Angle Grinder 4 ½ ” with carry case	Set	1		
7	Wire Cup Brush Wheel for angle grinders 4’’ x 5/8- 11unc- (twist knot) – (max speed 12500 rpm)	Pc	1		
8	Wire Cup Brush Wheel for angle grinder, 4’’ x 5/8’’ -11unc (fine crimped –(max speed 12500 rpm)	Pc	1		
9	Electric Blower 800w	Pc	1		
10	Gantry Crane, 5 Ton;	Pc	1		
11	Electric Heat Gun	Pc	1		
12	Electrical Digital Multi <ul style="list-style-type: none"> • Meter:Auto/manual range; • AC/VDC : upto - 1000 • Resistance: upto 200Mohms • AC/DC- current : 50A • Frequency: upto 100htz • Temperature: upto 120 °C • Diodes check feature. • Capatance : upto 50 micro Farad 	Pc	1		

No	Description	Unit	Qty	Rate ()	Amount ()
13	Electrical Clamp-On Meter <i>Auto/manual range;</i> <ul style="list-style-type: none"> • <i>AC/VDC : upto - 1000</i> • <i>Resistance: upto 2M-ohms</i> • <i>AC/DC- current : 2000A</i> • <i>Frequency: upto 100htz</i> • <i>Diodes check feature.</i> • <i>Capatance : upto 1000 micro Farad</i> 	Pc	1		
14	Arc Welding Machine Single phase Rating 90-300Amps	Set	1		
15	Steam Water Pressure Cleaner (WF 400-800 l/hr: Pressure 30-150Pa: Temp 155/80 °C: Motor rating 6.4kw; Pressure hose length 10m) (WF 400-800 l/hr: Pressure 30-150Pa: Temp 155/80 °C: Motor rating 6.4kw; Pressure hose length 10m)	Set	1		
16	Workshop Bench 2x1.5 (Metres) (Metres) Sheet Metal; Sturdy/Robust 14 Gauge Frame material Mild Steel, 14 Gauge	Pc	1		
17	Bench Vice 6” – 7.5 kg heavy duty workshop	Pc	1		
18	Belt Tension Dial Gauge, Universal		1		
19	Torque Wrench 1/2 “ drive 3/8 ” Drive ; Size 20: Twin Scales N.M/Ft.Lb (30 – 250 Ft..Lb)	Pc	1		
20	Torque Wrench 3/4 “ drive 3/4” DRIVE; Size 65; Twin Scales (100 – 480 Ft.Lb)	Pc	1		
	SUB-TOTAL 3				

PRICE SCHEDULE 4: SPECIAL TOOLS, MECHANICAL**A: 1250KVA DIESEL GENERATOR**

No	Description	Unit	Qty	Rate ()	Amount ()
1	Liner Installation Tool	Set	1		
2	Cylinder Liner Removal Set	Set	1		
3	Piston Ring Expander	Pc	1		
4	Piston Ring Wear Gauge	Pc	1		
5	Piston Ring Compressor Sleeve	Pc	1		
6	Valve Seat Extractor Kit	Set	1		
7	Valve Spring Compressor	Set	1		
8	Connecting Rod Guide Pins	Pc	1		
9	Main Bearing Cap Puller	Set	1		
10	Injector Adjustment Tool	Set	1		
11	Crankshaft Timing Pin	Set	1		
12	Camshaft Bushing Removal/Installation Kit	Set	1		
13	Camshaft Gear Timing Pin	Set	1		
14	Injector Puller/Installation Kit	Set	1		
15	Valve Guide Remover/Replacer	Set	1		
16	Engine special tool kit	Set	1		
	SUB-TOTAL 4A				

B: 650KVA DIESEL GENERATOR

No	Description	Unit	Qty	Rate ()	Amount ()
1	Liner Installation Tool	Set	1		
2	Cylinder Liner Removal Set	Set	1		
3	Piston Ring Expander	Pc	1		
4	Piston Ring Wear Gauge	Pc	1		
5	Piston Ring Compressor Sleeve	Pc	1		
6	Valve Seat Extractor Kit	Set	1		
7	Valve Spring Compressor	Set	1		
8	Connecting Rod Guide Pins	Pc	1		
9	Main Bearing Cap Puller	Set	1		
10	Injector Adjustment Tool	Set	1		
11	Crankshaft Timing Pin	Set	1		
12	Camshaft Bushing Removal/Installation Kit	Set	1		
13	Camshaft Gear Timing Pin	Set	1		
14	Injector Puller/Installation Kit	Set	1		
15	Valve Guide Remover/Replacer	Set	1		
16	Engine special tool kit	Set	1		
SUB-TOTAL 4B					

PRICE SCHEDULE 5: MINIMUM CRITICAL SPARES**A: 1250KV DIESEL GENERATOR**

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Fan belt-	Pc	2		
2	Water pump (complete)	Pc	1		
3	Alternator belt	Pc	2		
4	Oil pressure sensor	Pc	2		
5	Temperature sensor	PC	2		
6	Thermostat -	Pc	2		
7	Diodes set	Pc	2		
8	AVR Set	Pc	2		
9	Genset controller (Similar to Genset)	Pc	1		
10	Governor Module/Fuel control Module	Pc	1		
11	Fuel Injectors	Pc	6		
12	Turbo-Charger Service kit	Pc	1		
13	12V 180AH Starting Battery Lead acid	Pc	4		
SUB-TOTAL 5A					

B: 650KVA DIESEL GENERATOR

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Fan belt	Pc	3		
2	Water pump (complete)	Pc	3		
3	Alternator belt	Pc	3		
4	Oil pressure sensor	Pc	3		
5	Temperature sensor	Pc	3		
6	Thermostat	Pc	3		
7	Diodes set	Pc	3		
8	AVR Set	Pc	3		
9	Genset controller (Similar to Genset supplied)	Pc	2		
10	Governor Module/Fuel control Module (Similar to Genset)	Pc	2		
11	Fuel Injectors	Pc	12		
12	Turbo-Charger Service Kit	Pc	1		
13	12V 180AH Starting Battery Lead acid	Pc	6		
	SUB-TOTAL 5B				

C: CONTROL PANEL SPARES

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Trip Coils (415VAC Breakers)	4			
2	Closing Coils (415VAC Breakers)	4			
3	Trip Coils (11KV Breakers)	4			
4	Closing Coils (11KV Breakers)	4			
5	Fuses of each type of fuse	5			
6	MCB of each type	2			
7	Bulbs of each type of bulb	5			
8	Circuit Breaker Control Switch	2			
9	Two (2) Ammeters with MDI for Feeder, with face plates for both C.T. ratios	2			
10	Generator Control Units for parallel operation and load sharing.	2			
11	415 VAC Air Circuit Breaker	2			
12	11KV VCB (Vacuum Circuit Breaker)	1			
	SUB-TOTAL 5C				

PRICE SCHEDULE 6: MINIMUM CONSUMABLE SPARES**A: 1250KVA DIESEL GENERATORS**

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Oil filter (Primary)	Pc	70		
2	Oil filter (Secondary) if applicable	Pc	70		
3	Fuel filter (primary)	Pc	70		
4	Fuel filter (secondary) if applicable.	Pc	70		
5	Water filter (if applicable)	Pc	24		
6	Air Filter	Pc	24		
7	Engine Oil (as recommended by	Litres	1230		
8	Engine coolant 50/50 premix ethylene-glycol	Litres	200		
	SUB-TOTAL 6A				

B: 650KVA DIESEL GENERATORS

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Oil filter (Primary)	Pc	105		
2	Oil filter (Secondary) if applicable	Pc	105		
3	Fuel filter (primary)	Pc	105		
4	Fuel filter (secondary) if applicable.	Pc	95		
5	Water filter (if applicable)	Pc	36		
6	Air Filter	Pc	36		
7	Engine Oil (as recommended by Manufacturer)	Litres	1230		
	SUB-TOTAL 6B				

NOTE:-

1. The offered unit price MUST be rounded to two decimal places. Where the Tenderer fails to round the offered unit price as required, then, the offered unit price shall be rounded down-wards to two decimal places and used for the purposes of this tender.
2. Man day is 8 working hours per Resource

SUMMARY OF PRICE SCHEDULE SUB-TOTALS FOR MANDERA POWER STATION LOT 1

No.	Description	Sub-Total	Amount Currency ()
1	Genset And Auxiliaries	Sub-Total 1	
2	Services	Sub-Total 2	
3	Standard Tools	Sub-Total 3	
4	Special Tools, Mechanical	Sub-Total 4A	
		Sub-Total 4B	
5	Minimum Critical Spares	Sub-Total 5A	
		Sub-Total 5B	
		Sub – Total 5C	
6	Minimum Consumable Spares	Sub-Total 6A	
		Sub-Total 6B	
Sum of Sub-Totals			
Add 16% VAT (Clearly indicate any component that is not subject to VAT if any)			
GRAND TOTAL			

SECTION VI – (b) SCHEDULE OF RATES AND PRICES (LOT 2)

SUPPLY, INSTALLATION AND COMMISSIONING OF 2Nos. 1250KVA AND 3 Nos.650KVA ENCLOSED CONTAINERISED DIESEL GENERATOR PLUS OTHER ACCESORRIES AT LODWAR POWER STATION (LOT 2).

PRICE SCHEDULE 1: GENSET AND AUXILIARIES –

No	Description	Unit	Qty	Rate ()	Amount ()
1	<p>1250KVA enclosed containerized diesel generator, and accessories inclusive of Air circuit breaker (ACB) & residential exhaust system. This shall be enclosed in a 6m standard steel container inclusive of delivery, installation and commissioning at Lodwar power station. Exhaust system to exhaust at least 6 metres above the ground. Bidders shall provide Reinforced precast concrete pier blocks (600mm *600mm*400mm) on which the steel container will be placed.</p> <p>The make of generator shall be supplied with:-</p> <ul style="list-style-type: none"> d) Operators Instruction and Maintenance Manual e) Service/Workshop Manual f) Spare Parts Catalogue 	No.	2		
2	<p>650KVA enclosed containerized diesel generator, and accessories inclusive of circuit breaker & residential exhaust system. This shall be enclosed in a 6m standard steel container inclusive of delivery, installation and commissioning at Lodwar power station. Exhaust system to exhaust at least 6 metres above the ground. Bidders shall provide Reinforced precast concrete pier blocks (600mm *600mm*400mm) on which the steel container will be placed.</p> <p>The make of generator shall be supplied with:-</p> <ul style="list-style-type: none"> a) Operators Instruction and Maintenance Manual b) Service/Workshop Manual c) Spare Parts Catalogue 	No.	3		

No	Description	Unit	Qty	Rate ()	Amount ()
3	415V board comprising 5 No. generator circuit breaker panels, 8000A TPN Copper Busbar and 1No ACB Busbar Coupler, these shall be supplied in a standard steel container. Bidders shall provide Reinforced precast concrete pier blocks (600mm *600mm*400mm) on which the steel container will be placed.	No	1		
4	11KV Switchgear Panel comprising of 2 Nos Incomer Isolator switch and 2 Nos feeder Vacuum circuit breaker panels (all of 630A rating), 2000A TPN Copper Busbar and 630A Busbar coupler which shall be supplied in a standard steel container complete with a control desk and 24VDC Battery system. Bidders shall provide Reinforced precast concrete pier blocks (600mm *600mm*400mm) on which the steel container will be placed.	No	1		
5	3.5MVA 0.415/11KV Station Transformer System and associated civil works all inclusive.	No	2		
6	11000V Switchgear ,415V Switchgear and Transformers Earthing	No	1		
7	Fuel Flow Meters.	Set	5		
8	Fuel Day tank inclusive of Gate valves	Lot	5		
9	Fuel Pipe work	Lot	5		
10	Fuel Pump, hand operated	Pc	5		
11	Power Cables Total lengths(M) at Mandera Power station plus associated cable trays and Accessories (If applicable).	Lot	5		
12	Control communication cables (M)	Lot	5		
13	Laptop computer complete with installed engine software and adapter connectors for the two Makes/Brand of genset.	Lot	1		
	SUB-TOTAL 1				

PRICE SCHEDULE 2: SERVICES

No	Description	Unit	Qty	Rate ()	Amount ()
1	Transport to all the station, installation and commissioning of all equipment under supervision of KPLC engineers	lot	1		
2	Site preparation (includes; ground leveling, site access etc)	lot	1		
3	Reliability run Operation for 1 week inclusive of KPLC staff operator training.	lot	1		
	12 Months maintenance plus training of Maintenance staff.	Lot	1		
4	Factory acceptance test for the Diesel generators and Auxiliary equipment for 2 KPLC staff (KPLC will pay the air ticket and accommodation for its staff).	Lot	1		
5	Factory acceptance test for the 415V and 11KV Switchgear Panels and Auxiliary equipment's for 2 KPLC Engineers (KPLC will pay the air ticket and accommodation for its staff).	Lot	1		
6	Factory acceptance test for the 2Nos. 3.5MA Transformers and Auxiliary equipment's for 2 KPLC Engineers (KPLC will pay the air ticket and accommodation for its staff).	Lot	1		
	SUB-TOTAL 2				

PRICE SCHEDULE 3: STANDARD TOOLS

No	Description	Unit	Qty	Rate ()	Amount ()
1	Mechanical Workshop 450+ Pieces (Cr-V) Drawer Tool Trolley (with plastic/foam modular inlay tool control system) –robust, sturdy and lockable.	Set	1		
2	Socket Spanner Tool Set (Cr-V) in sturdy sheet steel case - ¾” Drive 12 point (bi-hexagon) heavy duty.	Set	1		
3	Electrical Workshop 55+ Piece Inlay Tool Set with carry case	Set	1		
4	Battery Charger 12/24 Volt: Heavy Duty Portable, Automatic; Input Voltage 150-300vac; Constant/Float Charging; Max Boost 40A; Float 8A;	Set	1		
5	Electric Hand Drill Chuck Capacity Of 1.5 – 13 Mm With carry Case	Pc	1		
6	Angle Grinder 4 ½ ” with carry case	Set	1		
7	Wire Cup Brush Wheel for angle grinders 4’’ x 5/8- 11unc- (twist knot) – (max speed 12500 rpm)	Pc	1		
8	Wire Cup Brush Wheel for angle grinder, 4’’ x 5/8’’ -11unc (fine crimped –(max speed 12500 rpm)	Pc	1		
9	Electric Blower 800w	Pc	1		
10	Gantry Crane, 5 Ton;	Pc	1		
11	Electric Heat Gun	Pc	1		
12	Electrical Digital Multi <ul style="list-style-type: none"> • Meter:Auto/manual range; • AC/VDC : upto - 1000 • Resistance: upto 200Mohms • AC/DC- current : 50A • Frequency: upto 100htz • Temperature: upto 120 °C • Diodes check feature. • Capatance : upto 50 micro Farad 	Pc	1		

No	Description	Unit	Qty	Rate ()	Amount ()
13	Electrical Clamp-On Meter <i>Auto/manual range;</i> <ul style="list-style-type: none"> • <i>AC/VDC : upto - 1000</i> • <i>Resistance: upto 2M-ohms</i> • <i>AC/DC- current : 2000A</i> • <i>Frequency: upto 100htz</i> • <i>Diodes check feature.</i> • <i>Capatance : upto 1000 micro Farad</i> 	Pc	1		
14	Arc Welding Machine Single phase Rating 90-300Amps	Set	1		
15	Steam Water Pressure Cleaner (WF 400-800 l/hr: Pressure 30-150Pa: Temp 155/80 °C: Motor rating 6.4kw; Pressure hose length 10m) (WF 400-800 l/hr: Pressure 30-150Pa: Temp 155/80 °C: Motor rating 6.4kw; Pressure hose length 10m)	Set	1		
16	Workshop Bench 2x1.5 (Metres) (Metres) Sheet Metal; Sturdy/Robust 14 Gauge Frame material Mild Steel, 14 Gauge	Pc	1		
17	Bench Vice 6” – 7.5 kg heavy duty workshop	Pc	1		
18	Belt Tension Dial Gauge, Universal		1		
19	Torque Wrench 1/2 “ drive 3/8 ” Drive ; Size 20: Twin Scales N.M/Ft.Lb (30 – 250 Ft..Lb)	Pc	1		
20	Torque Wrench 3/4 “ drive 3/4” DRIVE; Size 65; Twin Scales (100 – 480 Ft.Lb)	Pc	1		
	SUB-TOTAL 3				

PRICE SCHEDULE 4: SPECIAL TOOLS, MECHANICAL**A: 1250KVA DIESEL GENERATOR**

No	Description	Unit	Qty	Rate ()	Amount ()
1	Liner Installation Tool	Set	1		
2	Cylinder Liner Removal Set	Set	1		
3	Piston Ring Expander	Pc	1		
4	Piston Ring Wear Gauge	Pc	1		
5	Piston Ring Compressor Sleeve	Pc	1		
6	Valve Seat Extractor Kit	Set	1		
7	Valve Spring Compressor	Set	1		
8	Connecting Rod Guide Pins	Pc	1		
9	Main Bearing Cap Puller	Set	1		
10	Injector Adjustment Tool	Set	1		
11	Crankshaft Timing Pin	Set	1		
12	Camshaft Bushing Removal/Installation Kit	Set	1		
13	Camshaft Gear Timing Pin	Set	1		
14	Injector Puller/Installation Kit	Set	1		
15	Valve Guide Remover/Replacer	Set	1		
16	Engine special tool kit	Set	1		
	SUB-TOTAL 4A				

B: 650KVA DIESEL GENERATOR

No	Description	Unit	Qty	Rate ()	Amount ()
1	Liner Installation Tool	Set	1		
2	Cylinder Liner Removal Set	Set	1		
3	Piston Ring Expander	Pc	1		
4	Piston Ring Wear Gauge	Pc	1		
5	Piston Ring Compressor Sleeve	Pc	1		
6	Valve Seat Extractor Kit	Set	1		
7	Valve Spring Compressor	Set	1		
8	Connecting Rod Guide Pins	Pc	1		
9	Main Bearing Cap Puller	Set	1		
10	Injector Adjustment Tool	Set	1		
11	Crankshaft Timing Pin	Set	1		
12	Camshaft Bushing Removal/Installation Kit	Set	1		
13	Camshaft Gear Timing Pin	Set	1		
14	Injector Puller/Installation Kit	Set	1		
15	Valve Guide Remover/Replacer	Set	1		
16	Engine special tool kit	Set	1		
SUB-TOTAL 4B					

PRICE SCHEDULE 5: MINIMUM CRITICAL SPARES**A: 1250KV DIESEL GENERATOR**

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Fan belt-	Pc	2		
2	Water pump (complete)	Pc	1		
3	Alternator belt	Pc	2		
4	Oil pressure sensor	Pc	2		
5	Temperature sensor	PC	2		
6	Thermostat -	Pc	2		
7	Diodes set	Pc	2		
8	AVR Set	Pc	2		
9	Genset controller (Similar to Genset)	Pc	1		
10	Governor Module/Fuel control Module	Pc	1		
11	Fuel Injectors	Pc	6		
12	Turbo-Charger Service kit	Pc	1		
13	12V 180AH Starting Battery Lead acid	Pc	4		
SUB-TOTAL 5A					

B: 650KVA DIESEL GENERATOR

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Fan belt	Pc	3		
2	Water pump (complete)	Pc	3		
3	Alternator belt	Pc	3		
4	Oil pressure sensor	Pc	3		
5	Temperature sensor	Pc	3		
6	Thermostat	Pc	3		
7	Diodes set	Pc	3		
8	AVR Set	Pc	3		
9	Genset controller (Similar to Genset supplied)	Pc	2		
10	Governor Module/Fuel control Module (Similar to Genset)	Pc	2		
11	Fuel Injectors	Pc	1		
12	Turbo-Charger Service Kit	Pc	1		
13	12V 180AH Starting Battery Lead acid	Pc	6		
	SUB-TOTAL 5B				

C: CONTROL PANEL SPARES

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Trip Coils (415VAC Breakers)	4			
2	Closing Coils (415VAC Breakers)	4			
3	Trip Coils (11KV Breakers)	4			
4	Closing Coils (11KV Breakers)	4			
5	Fuses of each type of fuse	5			
6	MCB of each type	2			
7	Bulbs of each type of bulb	5			
8	Circuit Breaker Control Switch	2			
9	Two (2) Ammeters with MDI for Feeder, with face plates for both C.T. ratios	2			
10	Generator Control Units for parallel operation and load sharing.	2			
11	415 VAC Air Circuit Breaker	2			
12	11KV VCB (Vacuum Circuit Breaker)	1			
	SUB-TOTAL 5C				

PRICE SCHEDULE 6: MINIMUM CONSUMABLE SPARES**A: 1250KVA DIESEL GENERATORS**

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Oil filter (Primary)	Pc	70		
2	Oil filter (Secondary) if applicable	Pc	70		
3	Fuel filter (primary)	Pc	70		
4	Fuel filter (secondary) if applicable.	Pc	70		
5	Water filter (if applicable)	Pc	24		
6	Air Filter	Pc	24		
7	Engine Oil (as recommended by	Litres	1230		
8	Engine coolant 50/50 premix ethylene-glycol	Litres	200		
	SUB-TOTAL 6A				

B: 650KVA DIESEL GENERATORS

Item	Description	Unit	Qty	Rate ()	Amount ()
1	Oil filter (Primary)	Pc	105		
2	Oil filter (Secondary) if applicable	Pc	105		
3	Fuel filter (primary)	Pc	105		
4	Fuel filter (secondary) if applicable.	Pc	95		
5	Water filter (if applicable)	Pc	36		
6	Air Filter	Pc	36		
7	Engine Oil (as recommended by Manufacturer)	Litres	1230		
	SUB-TOTAL 6B				

NOTE:-

3. The offered unit price MUST be rounded to two decimal places. Where the Tenderer fails to round the offered unit price as required, then, the offered unit price shall be rounded down-wards to two decimal places and used for the purposes of this tender.
4. Man day is 8 working hours per Resource

SUMMARY OF PRICE SCHEDULE SUB-TOTALS FOR LODWAR POWER STATION LOT 2

No.	Description	Sub-Total	Amount Currency ()
1	Genset And Auxiliaries	Sub-Total 1	
2	Services	Sub-Total 2	
3	Standard Tools	Sub-Total 3	
4	Special Tools, Mechanical	Sub-Total 4A	
		Sub-Total 4B	
5	Minimum Critical Spares	Sub-Total 5A	
		Sub-Total 5B	
		Sub – Total 5C	
6	Minimum Consumable Spares	Sub-Total 6A	
		Sub-Total 6B	
Sum of Sub-Totals			
Add 16% VAT (Clearly indicate any component that is not subject to VAT if any)			
GRAND TOTAL			

SECTION VII - SUMMARY OF EVALUATION PROCESS

Evaluation of duly submitted tenders will be conducted along the following three main stages: -

7.1.0 Part I - Preliminary Evaluation Criteria Under Clause 3.35 of the ITT. These are mandatory requirements.

This shall include confirmation of the following: -

7.1.1 Submission of Tender Security - Checking its validity, whether it is Original; whether it is issued as required in the tender document; whether it is strictly in the format required in accordance with the sample Tender Security Form(s).

7.1.2 Submission of Declaration Form(s) duly completed and signed.

7.1.3 Submission and considering Tender Form duly completed and signed.

7.1.4 Submission and considering the following:-

- a) Company or Firm's Registration Certificate*
- b) PIN Certificate.*
- c) Valid Tax Compliance Certificate.*
- d) Names with full contact as well as physical addresses of previous customers of similar goods and reference letters and completion certificates confirming satisfactory completion of orders from at least four (4) previous customers.*

7.1.5 Site/survey visit signed and stamped form by authorized staff.

7.1.6 Submission of NCA Certificate.

7.1.7 Submission and considering the Confidential Business Questionnaire:-

- a) Is fully filled.*
- b) That details correspond to the related information in the bid.*
- c) That the Tenderer is not ineligible as per paragraph 3.3 of the ITT.*

*7.1.8 Submission and considering the Certificate of Confirmation of Directors (**Issued within the last 12 months**) and Shareholding if any one of the undertakings owns a significant interest in the other or has at least one director or one substantial shareholder in common as per paragraph 3.3 and 3.4 of the ITT.*

7.1.9 Submission of a detailed description of implementation plan indicating step by step Procedures right from works commencement to commissioning of the project at both sites.

- 7.1.10 *Submission of Guaranteed Technical Particulars as per Technical Specifications.*
- 7.1.11 *Submission of Copies of relevant Type Test Certificates and their Reports or Test Certificate and their Reports from the designated bodies.*
- 7.1.12 *Submission of a copy of accreditation certificate for the testing body to ISO/ IEC 17025.*
- 7.1.13 *Submission of a copy of:-*
- a) *the Manufacturer's valid quality management system certification i.e. ISO 9001 for goods from outside Kenya.*
 - b) *Valid KEBS Diamond mark of quality or standardization mark for goods manufactured in Kenya*
 - c) *Submission of the Manufacturer's authorization form for generator sets, switch gear and accessories, transformers. Power and control cables.*
 - d) *Submission of the Manufacturer's warranty form for generator sets, switch gear and accessories, transformers. Power and control cables.*
- 7.1.14 *Record of unsatisfactory or default in performance obligations in any contract shall be considered. This shall include any Tenderer with unresolved case(s) in its performance obligations for more than two (2) months in any contract.*
- 7.1.15 *Notwithstanding the above, considering any outstanding obligations/Supplier Performance Review Scheme (SPRS) where applicable and the performance capacity indicated by the Tenderer.*
- 7.1.16 *Submission and checking that the Bill of Quantities is fully filled, priced, signed and stamped, where applicable.*
- 7.1.17 *Power of Attorney in the event the signatory of the Tender is not one of the Company director.*
- 7.1.18 *Submission of audited financial statements required which must be those that are reported within eighteen (18) calendar months of the date of the tender document accompanied by valid ICPAK practicing license.*

Tenderers will proceed to the Technical Stage only if they qualify in compliance with Part 1 above, Preliminary Evaluation under clause 7.

7.2.0 Part II(a) Technical Evaluation under clause 3.41 of the ITT.

It will include the following stages: -

7.2.1 Evaluation of the following technical information against Tender Requirements and specifications: -

- 7.2.1.1 Considering the submitted relevant ISO 9001 certification for goods manufactured outside Kenya.
- 7.2.1.2 Considering the submitted relevant KEBS Standardization Mark certificates For goods manufactured in Kenya –
- 7.2.1.3 Considering the submitted Type Test Certificates and their Reports or Test Certificates and their Reports from the designated bodies for full compliance with Tender Specifications
- 7.2.1.4 Considering the accreditation certificate for the testing laboratory to ISO/ IEC 17025.
- 7.2.1.5 As contained in the following documents
Schedule of Guaranteed Technical Particulars as per Technical Specifications dully filled signed and stamped.
- 7.2.1.6 Considering the Submitted audited financial statements required which must be those that are reported within eighteen (18) calendar months of the date of the tender document including confirmation the validity of practicing license of the auditor
- 7.2.1.7 Considering a detailed description of implementation plan indicating step by step Procedures right from works commencement to commissioning of the project at both sites.

7.2.2 Part II (b) Detailed Technical Evaluation (Mandatory)

- a) The Schedule of Mandatory Guaranteed Technical Particulars (GTP) shall be evaluated against Tender Specifications to confirm compliance of the goods and services to the specifications and evaluation of any deviations and exceptions declared by the Tenderer
- b) Identifying and determining any deviation(s) from the requirements; errors and oversights.

NB: Tenderers who do not comply with the mandatory requirements as Part II (b) above shall not be allowed to proceed to subsequent evaluation stage i.e., Part II(c) – Scoring criteria

7.2.3 Part II (c) Additional Technical Requirements scoring Criteria
(Bidder to insert comments indicating Reference for supporting documents-)

7.2.3.1 Project Implementation Capability

<i>No.</i>	<i>EVALUATION CRITERIA</i>	<i>Maximum Marks</i>
7.2.3.1.1	<p>Previous experience: Details of. 2 Nos diesel Generators installation projects inclusive of Synchronization & load sharing with existing Generators of above 500kVA power undertaken successfully within the last 10 years and evidenced by completion certificates and letters of reference from clients for the respective projects.:-</p> <p>1.Each completion certificate will be awarded 15 marks (maximum 30 marks)</p> <p>2.Each reference letter will be awarded 10 marks (maximum 20 marks)</p> <p>Note:</p> <ol style="list-style-type: none"> 1. No marks shall be awarded for Purchase orders or Contracts award without proof of completion of Works. 2. Clients contact details MUST be provided this shall include valid email address, physical location and telephone contacts. 	50

7.2.3.1.2	<p>Qualified Key personnel as required under clause 3.20.2 (e) of the ITT with minimum 2 years' experience:-</p> <p>(Provide detailed recent CVs, attach copies of certificates. Telephone contacts must be provided).</p> <p>Mechanical and Electrical Engineer Detailed Curriculum Vitae clearly indicating similar work experience (CV without attached copies of certificates will not be considered)</p> <p>- 10 Marks (5mks for Mechanical & 5 marks for Electrical)</p> <p>Copy of Degree Certificate Mechanical Engineer -Degree holder (5 Marks)</p> <p>Copy of Degree Certificate Electrical Engineer – Degree holder (5 Marks)</p> <p>Mechanical and Electrical Technicians Detailed Curriculum Vitae clearly indicating similar work experience(CV without attached copies of certificates will not be considered)</p> <p>- 10 Marks (5 mks for Mechanical & 5 mks for Electrical)</p> <p>Copy of diploma Certificate Mechanical - (2 Marks)</p> <p>Copy of diploma Certificate Electrical – (3 Marks)</p>	35
7.2.3.1.3	<p><i>Company's proof of ownership of required working tools or ability to hire the same (Log book, lease deed with equipment details).</i></p> <p>a. <i>Lifting equipment with a tonnage capacity of not less than 10 tones--- (5 mks)</i></p> <p>b. <i>Off road vehicles (5 mks)</i></p> <p>c. <i>Truck with a tonnage capacity of not less than 10 tones-(5 mks)</i></p>	15
	TOTAL	100

Note:

Tenderers will proceed to the next evaluation stage if they score a minimum of 75% in Part II (c) above.

7.3.0 Part III Financial Evaluation under clause 3.38 of the ITT.

Evaluation of the following Financial information against Tender Requirements and Specifications:-

NO.	EVALUATION CRITERIA
7.3.1	<i>a) Confirmation of and considering schedule of rates and prices are duly completed, with no arithmetic errors and signed.</i>
	<i>b) Checking that the Tenderer has quoted prices based on all costs including insurances, duties, levies, Value Added Tax (V.A.T), Withholding Tax and other taxes payable and delivery to the premises of KPLC or designated site(s)</i>
	<i>c) Where applicable, Conducting a financial comparison, including conversion of tender currencies into one common currency</i>
	<i>d) Confirmation of and considering that the bidder has quoted in Ksh.</i>
	<i>e) Taking into account the cost of any deviation(s) from the tender requirements</i>
	<i>f) Where applicable, Conducting a financial comparison</i>
7.3.2	<i>Considering information submitted in the Confidential Business Questionnaire against other information in the bid including declared maximum value of business.</i>
	TOTAL

*The Successful Tenderer shall be the bidder with the lowest evaluated price **PER LOT**.*

***NOTES: -**

- For purposes of evaluation, the exchange rate to be used for currency conversion shall be the selling exchange rate prevailing on the date of tender closing provided by the Central Bank of Kenya. (Visit the Central Bank of Kenya website).
- Total tender value means the Tenderer's total tender price inclusive of Value Added Tax (V.A.T) for the works it offers to provide.
- For companies or firms that are registered or incorporated within the last one calendar year of the Date of the Tender Document, they should submit certified copies of bank statements covering a period of at least six months prior to the date of the tender document. The copies should be certified by the Bank issuing the statements. The certification should be original.
- The spot balance of 20% required will be that which is seen in the certified bank statements at least in any day of the month of the Date of the Tender Document.

SECTION VIII – GENERAL CONDITIONS OF CONTRACT

TABLE OF CLAUSES ON GENERAL CONDITIONS OF CONTRACT

Clause No.	Headings	Page No.
8.1	Definitions.....	74
8.2	Application....	75
8.3	Country of Origin.....	75
8.4	Standards.....	75
8.5	Use of Contract Documents and Information.....	75
8.6	Patent Rights.....	76
8.7	Performance Security.....	76
8.8	Approval before Manufacture.....	77
8.9	Inspections and Tests.....	77
8.10	Pre – Shipment Verification of Conformity.....	79
8.11	Consignment.....	79
8.12	Packaging and Labeling	79
8.13	Delivery and Documents for Goods on Delivered Duty Paid (DDP) Terms	80
8.14	Transportation.....	80
8.15	Liability and Insurance.....	80
8.16	Payment	81
8.17	Interest	82
8.18	Prices	82
8.19	Variation of Contract	82
8.20	Assignment	83
8.21	Sub-Contracts	83
8.22	Project Manager.....	83
8.23	Works.....	83
8.24	Safety at work sites.....	83
8.25	Discoveries.....	83
8.26	Access to site	84
8.27	Instructions.....	84
8.28	Dayworks.....	84
8.29	Early Warning.....	84
8.30	Defects.....	84
8.31	Completion and Taking Over	85

8.32	Retention/Defects Liability	85
8.33	Early Completion.....	85
8.34	Corrupt Gifts.....	85
8.35	Termination.....	86
8.36	Force Majeure.....	87
8.37	Liquidated Damages	88
8.38	Warranty.....	88
8.39	Resolution of Disputes.....	88
8.40	Language and Law.....	89
8.41	Waiver.....	89

The General Conditions of Contract *hereinafter referred abbreviated as the GCC* shall form part of the Conditions of Contract in accordance with the law and KPLC's guidelines, practices, procedures and working circumstances. The provisions in the GCC will apply unless an alternative solution or amendment is made under other parts of the Contract including the Special Conditions of Contract.

8.1 Definitions

In this contract, the following terms shall be interpreted as follows: -

- a) ***“Day”*** means calendar day and *“month”* means calendar month.
- b) ***“Dayworks”*** are work inputs subject to payment on a time basis for labour and the associated materials and plant.
- c) ***“Certificate of Acceptance”*** means the certificate issued by KPLC to the Contractor confirming that the Works have been completed as per the terms of the Contract.
- d) ***“The Contract”*** means the agreement entered into between KPLC and the Contractor, as recorded in the Contract Form signed by the parties, including all attachments and appendices thereto and all documents incorporated by reference therein.
- e) ***“The Contract Price”*** means the price payable to the Contractor under the contract for the full and proper performance of its contractual obligations.
- f) ***“A Defect”*** is any part of the Works not completed in accordance with the Contract.
- g) ***“The Defects Liability Certificate”*** is the certificate issued by the Project Manager upon correction of defects by the Contractor.
- h) ***“The Defects Liability Period”*** is the period specified in the Special Conditions of Contract when the Contractor is to remedy any defects in the Works.
- i) ***“The Goods”*** includes all of the equipment, machinery, and or other materials, which the Contractor is required to supply to KPLC under the contract and install and commission under the contract as the case may be.
- j) ***“Party”*** means KPLC or the Contractor or both as the context so requires.

- k) *“Project Manager” is the employee of KPLC responsible for supervising the execution of the Works and administering the Contract.*
- l) *“Site” is the area where the Works under this Contract are to be carried out as specified in the Contract.*
- m) *“The Contractor” means the individual or firm supplying the goods and undertaking the Works under this Contract as the case may be or his/ her/ its permitted heir(s), personal representative(s), successor(s) or permitted assign(s) where the context so admits. For the avoidance of doubt this shall mean the successful Tenderer(s) pursuant to the tender.*
- n) *“Works” means the construction, repair, renovation or demolition of buildings, roads or other structures and includes the design, supply, installation, testing and commissioning of equipment and materials, site preparation and other incidental services where applicable.*
- o) *Wherever used in the contract, “delivery” shall be complete or be deemed to be complete, unless the circumstances indicate otherwise, when the goods have been inspected and tested in accordance with the Contract and where KPLC does not signify its approval to the Contractor, but retains the goods without giving notice of rejection, on the expiration of thirty (30) days from date of documented receipt by the duly authorized representative of KPLC, of the goods, at KPLC stores or other indicated site.*

8.2 Application

These General Conditions shall apply to the extent that provisions of other parts of the contract do not supersede them.

8.3 Country of Origin

- 8.3.1 For purposes of this clause, “Origin” means the place where the goods were mined, grown, or produced.
- 8.3.2 The origin of Goods and Services is distinct from the nationality of the Contractor.

8.4 Standards

The Goods supplied under this contract shall conform to the standards mentioned in the Technical Specifications.

8.5 Use of Contract Documents and Information

- 8.5.1 The Contractor shall not, without KPLC’s prior written consent, disclose the contract, or any provision thereof or any specification, plan, drawing, pattern,

sample, or information furnished by or on behalf of KPLC in connection therewith, to any person other than a person employed by the Contractor in the performance of the contract.

8.5.2 The Contractor shall not, without KPLC's prior written consent, make use of any document or information enumerated in clause 8.5.1 above.

8.5.3 Any document, other than the contract itself, enumerated in clause 8.5.1 shall remain the property of KPLC and shall be returned (including all copies) to KPLC on completion of the Contractor's performance under the contract if so required by KPLC.

8.6 Patent Rights

The Contractor shall indemnify KPLC against all third party claims of infringement of patent, trademark, or industrial design rights arising from use of the goods of any part thereof in KPLC's country.

8.7 Performance Security

8.7.1 Within fourteen (14) days of the date of the notification of contract award, the Contractor shall furnish to KPLC the Performance Security which shall be either one or a combination of the following:-

- a) an original Bank Guarantee that is strictly in the form and content as prescribed in the Performance Security Form (Bank Guarantee) in the Tender Document.
- b) Confirmed Standby Letters of Credit (LC). All costs, expenses and charges levied by all banks party to the LC including confirmation charges shall be prepaid/borne by the successful Tenderer. Certain mandatory conditions of the LC shall be as prescribed in the Performance Security Form (LC) in the Tender Document.

8.7.2 The Performance Security shall be issued by a commercial bank licensed by the Central Bank of Kenya. The bank must be located in Kenya.

8.7.3 The Performance Security shall be the sum of ten percent (10%) of the contract price. It shall be in the currency of the contract price.

8.7.4 Failure of the Contractor to furnish the Performance Security, the award shall be annulled and the Tender Security forfeited, in which event KPLC may notify the next lowest evaluated Tenderer that its Tender has been accepted.

8.7.5 The proceeds of the Performance Security shall be payable to KPLC as compensation for any loss resulting from the Contractor's failure to comply with its obligations in accordance with the contract without KPLC being required to

demonstrate the loss it has suffered.

- 8.7.6 The Performance Security shall be valid for a minimum of sixty (60) days after satisfactory delivery, installation and commissioning for both Foreign and Local Contractors.
- 8.7.7 KPLC shall seek authentication of the Performance Security from the issuing bank. It is the responsibility of the Contractor to sensitize its issuing bank on the need to respond directly and expeditiously to queries from KPLC. The period for response shall not exceed five (5) days from the date of KPLC's query. Should there be no conclusive response by the Bank within this period, such Contractor's Performance Security may be deemed as invalid and the Contract nullified, unless information to the contrary is received by KPLC two (2) days before the expiry of the Contractor's Tender Security.
- 8.7.8 Subject to the provisions of this contract, the Performance Security will be discharged by KPLC and returned to the Contractor not earlier than sixty (60) days following the date of completion of the Contractor's obligations under the contract, including any warranty obligations, under the contract.

8.8 Approval before Manufacture

- 8.8.1 All technical details and design drawings for the items to be supplied shall be submitted by the Contractor to KPLC for approval before manufacture.
- 8.8.2 Should the Contractor fail to observe this condition of approval before manufacture, KPLC may decline to accept the goods, or the Contractor shall either replace them or make alterations necessary, but in any case, KPLC shall incur no liability howsoever.

8.9 Inspection and Tests

- 8.9.1 KPLC or its representative shall have the right to inspect and/or to test the goods to confirm their conformity to the contract specifications. KPLC shall notify the Contractor in writing in a timely manner, of the identity of any representative(s) retained for these purposes.
- 8.9.2 Prior to the manufacture or production of the goods on order, KPLC reserves the right to inspect the manufacturing or production facility and the quality management system. The manufacturer or producer shall meet the cost of routine inspection while KPLC shall meet the cost of air travel to the nearest airport and accommodation of two of its nominated officers inspecting and witnessing tests.

- 8.9.3 It is the responsibility of the Contractor to confirm if this right is to be exercised. Such visit and or inspection shall in no way prejudice KPLC's rights and privileges.
- 8.9.4 Upon completion of manufacturing or production process, KPLC reserves the right to send two of its nominated officers to inspect the goods on order at the place of manufacture where inspection and acceptance tests as per tender specifications shall be carried out in their presence. Tests shall be done in accordance with the test standard(s) given in the Technical Specification of the goods on order.
- 8.9.5 The manufacturer or producer shall meet the cost of tests as per tender specifications while KPLC shall meet the cost of air travel to the nearest airport and accommodation of its two nominated officers inspecting and witnessing the tests.
- 8.9.6 The inspections and tests may be conducted on the premises of the Contractor or its subcontractor(s), at point of production, manufacture, delivery and or at the goods' final destination. If conducted on the premises of the Contractor or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data, shall be furnished to the inspectors at no charge to KPLC. In all cases, the equipment used for tests must be validly calibrated by the national standards body and a copy (ies) of the calibration certificate(s) must be submitted with the test report(s).
- 8.9.7 Complete test report(s) for all the goods as per Tender Specifications shall be submitted to KPLC for approval before packaging and shipment. No material or goods shall be shipped or delivered without written approval from KPLC.
- 8.9.8 Should any inspected or tested goods fail to conform to the specifications, KPLC shall reject the goods, and the Contractor shall either replace the rejected goods or make alterations necessary to meet specification requirements free of cost to KPLC. The period for replacement or alterations together with delivery to KPLC shall be fourteen (14) days or as may otherwise be specified in the notice of rejection.
- 8.9.9 The Supplier shall collect the rejected goods within fourteen (14) days from the date of notification of rejection. If the rejected goods are not collected within this period, they shall attract storage and handling charges at prevailing market rates or as determined by KPLC without making any reference to the supplier pending the disposal of the goods by KPLC as guided by the Disposal of Uncollected Goods Act, Chapter 38 of the Laws of Kenya. .
- 8.9.10 Notwithstanding any previous inspection(s) and test(s) KPLC shall inspect and may test the goods upon arrival at the indicated site. Where KPLC inspects and rejects the goods after the goods arrival, KPLC shall claim from the Contractor the full cost of the goods including delivery charges to KPLC Stores or other indicated site and other incidental costs incurred in relation thereof.

- 8.9.11 KPLC's right to inspect, test and where necessary, reject the goods after their arrival shall in no way be limited or waived by reason of the goods having previously been inspected, tested and passed by KPLC or its representative(s) prior to the goods delivery.
- 8.9.12 For the avoidance of doubt, any acknowledgement by KPLC on the Contractor's or sub-contractor's document shall not be conclusive proof or evidence of satisfactory delivery without duly authorized approval by KPLC.
- 8.9.13 Nothing in clause 8.9 shall in any way release the Contractor from any warranty or other obligations under this Contract.

8.10 Pre-Shipment Verification of Conformity (PVoC)

- 8.10.1 All Contractors of imported goods and or products must obtain a Certificate of Conformity issued by an authorized KEBS appointed partner prior to shipment.
- 8.10.2 The Certificate is a mandatory customs clearance document in Kenya. KEBS has appointed, to perform the PVoC programme on their behalf depending on the country of supply origin. The cost of pre-shipment verification shall be borne by the Contractor.

8.11 Consignment

- 8.11.1 The terms shall be strictly on Delivered and Duty Paid (DDP) basis.
- 8.11.2 The Consignee shall be the supplier or supplier's agent whose responsibilities shall include payment of all Customs taxes, duties and levies, clearance of the goods, and delivery to KPLC stores. For avoidance of doubt, this includes Value Added Tax (VAT), Railway Development Levy (RDL) and Import Duties.

8.12 Packaging and Labelling

- 8.12.1 The Contractor shall provide such packaging of the goods as is required to prevent their damage or deterioration during transit to their final destination, as indicated in the contract.
- 8.12.2 The method of packaging, labeling and marking shall comply strictly with such special requirements as shall be specified and attached to the Tender and particular Order.
- 8.12.3 The labelling, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be expressly provided for in the contract.
- 8.12.4 The goods shall be packed in good condition suitable for sea/air/road/rail dispatch. Hazard in transit to the final destination shall include rough handling and storage in tropical conditions.

8.12.5 The Contractor shall enclose a packing list in each package and all documents relating to the Order shall show the Stores Code Number detailed against the items.

8.12.6 The labeling on each package shall include the following;

- (i) General description of the item(s)
- (ii) KPLC Order No.....
- (iii) Cautionary notes and handling instructions
- (iv) Package number

8.13 Delivery and Documents for Goods on Delivered Duty Paid (DDP) Terms.

8.13.1 Delivery of the goods shall be made by the Supplier to the named place and in accordance with the terms specified by KPLC in its Schedule of Requirements.

8.13.2 The Supplier shall notify KPLC of the full details of the delivered goods by delivering together with the goods a full set of the following documents:-

- a) *Supplier's invoice showing the goods description, quantity, unit price and total price*
- b) *Delivery note for every consignment originating from the party contracted by KPLC. The Delivery Note should be serialized, dated and contain the number of the Official Purchase Order*
- c) *Manufacturer's warranty certificate*
- d) *Packing list identifying contents of each package which list should include casing number, full description of the items and the quantities in each package.*

8.13.3 It is the responsibility of the Supplier to ensure that the delivery documents are received by KPLC at the designated delivery point at the time of delivery.

8.13.4 Any late or non-submission of the delivery documents shall be treated as part of non-performance on the part of the Supplier and KPLC shall be entitled to call up the Performance Security.

8.13.5 The Supplier should notify KPLC in writing of its intention to deliver goods fourteen (14) days prior to delivery, and a further confirmation two (2) working days before actual delivery to the designated delivery point.

8.14 Transportation

8.14.1 The Supplier shall be required to meet all transport expenses until delivery.

8.15 Liability and Insurance

8.15.1 The goods supplied under the contract shall be fully insured by the Contractor against loss or damage incidental to manufacture, production or acquisition,

transportation, storage and delivery in the manner specified in this Contract (Delivery Duty Paid terms.

- 8.15.2 The Contractor shall be responsible for and keep in force current appropriate insurance covers for its property and persons engaged in the performance of Works under the contract.
- 8.15.2 The Contractor shall (except in respect to losses, injuries or damage resulting from any act or neglect of KPLC) indemnify and keep indemnified KPLC against all losses and claims for injuries or damage to any person or property whatsoever which may arise out of or in consequence of the contract and against all claims, demands, proceedings, damages, costs, charges, and expenses whatsoever in respect thereof or in relation thereto.

8.16 Payment

- 8.16.1 Payments shall be made promptly by KPLC and shall not be less than thirty (30) days from delivery and submission of invoice together with other required and related documents or as otherwise prescribed in the contract.
- 8.16.2 Payment shall primarily be through KPLC's cheque or Real Time Gross Settlement (RTGS) or telegraphic transfer. Where applicable, a copy of a valid Performance Security, stamped, certified as authentic by KPLC, shall form part of the documents to be presented to KPLC before any payment is made. The terms shall be strictly on Delivered and Duty Paid (DDP) basis.
- 8.16.3 Contractors who request for a Letter of Credit (*hereinafter abbreviated as LC*) –
- a) *Shall meet all the LC costs. Indicative costs levied by the banks include opening charges (0.25% per quarter), confirmation charges (0.25% flat), settlement (0.25% flat), acceptance charges (0.25% flat) and any amendment charges.*
 - b) *Any extension and or amendment charges and any other costs that may result from the Contractor's delays, requests, mistakes or occasioned howsoever by the Contractor shall be to the Beneficiary's account.*
 - c) *The maximum number of extensions and amendments shall be limited to two (2).*
 - d) *Should the Contractor require a confirmed LC, then all confirmation and any other related charges levied by both the Contractor's and KPLC's bank shall be to the Beneficiary's account.*
 - e) *The LC shall be opened only for the specific Order within the validity period of the contract.*

- f) *LCs shall be partial for partial performance or full for whole performance as per the contract.*
- g) *The Contractor shall be required to submit a proforma invoice for each lot for use in the placement of order and opening of the LC. The proforma invoice shall be on total DDP basis.*
- h) *A copy of the Performance Security, stamped and certified as authentic by KPLC, whose expiry date should not be less than sixty (60) days from the LC expiry date, shall form part of the documents to be presented to the Bank before any payment is effected.*

8.16.4 KPLC shall have the sole discretion to accept or decline any Contractor's payment request through Letters of Credit without giving any reason for such decline.

8.17 Interest

8.17.1 Interest payment by KPLC is inapplicable in the contract.

8.18 Prices

8.18.1 Subject to clause 7.18.2 herein-below, prices charged by the Contractor for goods delivered and services performed under the contract shall, be fixed for the period of the contract with no variations.

8.18.2 A price that is derived by a pre-disclosed incorporation or usage of an internationally accepted standard formula shall not be deemed to be a price variation within the meaning of this clause.

8.19 Variation of Contract

KPLC and the Contractor may vary the contract only in accordance with the following: -

- a) *the quantity variation for goods shall not exceed ten percent (10%) of the original contract quantity.*
- b) *the quantity variation for works does not exceed fifteen per cent (15%) of the original quantity.*
- c) *the cumulative value of all contract variation shall not exceed twenty five per cent (25%) of the original contract price.*
- d) *the quantity variation must be executed within the period of the contract.*

8.20 Assignment

- 8.20.1 The Contractor shall not assign in whole or in part its obligations to perform under this contract, except with KPLC's prior written consent.

8.21 Subcontracts

- 8.21.1 The Contractor shall notify KPLC in writing of all subcontracts awards under this contract if not already specified in the tender. Such notification, in the original tender or obligation under the Contract shall not relieve the Contractor from any liability or obligation under the Contract.
- 8.21.2 In the event that an award is given and the Contract is sub contracted, the responsibility and onus over the contract shall rest on the Contractor who was awarded.

8.22 Project Manager

- 8.22.1 KPLC shall appoint a Project Manager who shall be an employee of KPLC and who will be responsible for supervising the execution of the Works. The names and contacts of the person appointed as the Project Manager shall be communicated to the Contractor once such appointment is made.
- 8.22.2 Except where otherwise specifically stated, the Project Manager will decide contractual matters between KPLC and the Contractor.
- 8.22.3 The Project Manager may delegate any of his duties and responsibilities to another KPLC employee and thereafter notify the Contractor of the person to whom such duties are delegated.

8.23 Works

- 8.23.1 The Contractor shall perform the Works in accordance with the specifications set out in the Contract.

8.24 Safety at Work Sites

- 8.24.1 The Contractor shall be responsible for the safety of all activities on the sites where Works are performed.

8.25 Discoveries

- 8.25.1 Anything of historical or other interest or of significant value unexpectedly discovered on site where the Works are being carried out shall be the property of KPLC. The Contractor shall notify the Project Manager of such discoveries and carry out the Project Manager's instructions for dealing with them.

8.26 Access to Site (s)

8.26.1 The Contractor shall allow the Project Manager and any other person authorized by the Project Manager, access to the site (s) where Works are carried out and to any place where work in connection with the contract is being carried out or is intended to be carried out.

8.27 Instructions

8.27.1 The Contractor shall carry out all instructions of the Project Manager which are in accordance with the Contract.

8.28 Day works

8.28.1 If applicable, the Dayworks rates in the Contractor's tender shall be used for small additional amounts of work only when the Project Manager has given written instructions in advance for additional work to be paid for in that way.

8.28.2 All work to be paid for as Dayworks shall be recorded by the Contractor on Forms approved by the Project Manager. Each completed form shall be verified and signed by the Project Manager within two days of the work being done.

8.28.3 The Contractor shall be paid for Dayworks subject to obtaining signed Dayworks forms.

8.29 Early Warning

8.29.1 The Contractor shall warn the Project Manager at the earliest opportunity of specific likely future events or circumstances that may adversely affect the quality of the Works, increase the contract price or delay the execution of the Works.

The Project Manager may require the Contractor to provide an estimate of the expected effect of the future event or circumstance on the Contract Price and completion date. The estimate shall be provided by the Contractor as soon as reasonably possible.

8.29.2 The Contractor shall cooperate with the Project Manager in making and considering proposals on how the effect of such an event or circumstance can be avoided or reduced by anyone involved in the Works and in carrying out any resulting instructions of the Project Manager.

8.30 Defects

8.30.1 The Project Manager shall inspect the Contractor's work and notify the Contractor of any defects that are found. Such inspection shall not affect the Contractor's responsibilities. The Project Manager may instruct the Contractor to search for a

defect and to uncover and test any Works that the Project Manager considers may have a defect. Should the defect be found, the cost of uncovering and making good shall be borne by the Contractor.

- 8.30.2 The Project Manager shall give notice to the Contractor of any defects before the end of the Defects Liability Period which begins after issuance of the Certificate of Acceptance by KPLC to the Contractor. The Defects Liability Period shall be extended for as long as defects remain to be corrected.
- 8.30.3 When notice of a defect is given; the Contractor shall correct the notified defect within the length of time specified by the Project Manager's notice. If the Contractor has not corrected a defect within the time specified in the Project Manager's notice, the Project Manager will assess the cost of having the defect corrected by other parties and such cost shall be treated as a variation and be deducted from the Contract Price.
- 8.30.4 The Project Manager shall issue the Contractor with a Defects Liability Certificate after the defects are corrected.

8.31 Completion and taking over

- 8.31.1 Upon assessment by the Project Manager that the Works are complete, KPLC shall issue the Contractor with a Certificate of Acceptance.

8.32 Retention/Defects Liability

- 8.32.1 KPLC shall retain 10% of the Contract Price for the duration of the Defects Liability Period after issuing the Certificate of Acceptance for the whole of the Works.

8.33 Early Completion

- 8.33.1 No bonus for early completion of the Works shall be paid to the Contractor by the Employer.

8.34 Corrupt gifts

- 8.34.1 The Contractor shall not offer or give or agree to give to any person in the service of the KPLC any gift or consideration of any kind as an inducement or reward for doing or forbearing to do or for having done or forborne to do any act in relation to the obtaining or execution of this or any other Contract for KPLC for showing or forbearing to show favour or disfavour to any person in relation to this or any other contract with KPLC.
- 8.34.2 Any breach of this Condition by the Contractor or by anyone employed by him or acting on his behalf (whether with or without the knowledge of the Contractor) shall be an offence under the provisions of the Public Procurement and Disposal Regulations 2005 and the regulations made thereunder.

8.35 Termination

8.35.1 KPLC may, without prejudice to any other remedy for breach of contract, by written notice sent to the Contractor, terminate this contract in whole or in part due to any of the following: -

- a) *if the Contractor fails to perform any obligation(s) under the contract.*
- b) *if the Contractor in the judgment of KPLC has engaged in corrupt or fraudulent practices in competing for or in executing the contract.*
- c) *by an act of force majeure.*
- d) *if the Contractor becomes insolvent or bankrupt*
- e) *if the Contractor has a receiving order issued against it, compounds with its creditors, or an order is made for its winding up (except for the purposes of its amalgamation or reconstruction), or a receiver is appointed over its or any part of its undertaking or assets, or if the Contractor suffers any other analogous action in consequence of debt.*
- f) *the Contractor stops work for 30 days when no stoppage of work is shown on the current program and the stoppage has not been authorised by the Project Manager;*
- g) *the Project Manager gives notice that failure to correct a particular defect which is a fundamental breach of Contract and the Contractor fails to correct it within a reasonable period of time determined by the Project Manager;*
- h) *if the Contractor abandons or repudiates the Contract*

8.35.2 KPLC may by written notice sent to the Contractor, terminate the Contract in whole or in part, at any time for its convenience. The notice of termination shall specify that the termination is for KPLC's convenience, the extent to which performance, by the Contractor, of the Contract, is terminated and the date on which such termination becomes effective.

8.35.3 For the remaining part of the Contract after termination for convenience, KPLC may pay to the Contractor an agreed amount for partially completed satisfactory performance of the Contract.

8.35.4 In the event that KPLC terminates the Contract in whole or in part, it may procure, upon such terms and in such manner as it deems appropriate, goods similar to those undelivered or not rendered, and the Contractor shall be liable to KPLC for any excess costs for such similar goods and or any other loss PROVIDED that the Contractor shall not be so liable where the termination is for convenience of KPLC.

8.35.5 The Parties may terminate the Contract by reason of an act of *force majeure* as provided for in the contract.

- 8.35.6 The Contract may automatically terminate by reason of an act of *force majeure* as provided for in the Contract.
- 8.35.7 If the Contract is terminated, the Contractor shall stop work immediately, make the Site safe and secure, and leave the Site as soon as reasonably possible. The Project Manager shall immediately thereafter arrange for a meeting for the purpose of taking record of the Works executed and materials, goods, equipment and temporary buildings on Site.

8.36 Force Majeure

- 8.36.1 *Force majeure* means any circumstances beyond the control of the parties, including but not limited to: -
- a) *war and other hostilities (whether war be declared or not), invasion, act of foreign enemies, mobilization, requisition or embargo;*
 - b) *ionizing radiation or contamination by radio-activity from any nuclear fuel or from any nuclear waste from the combustion of nuclear fuel, radioactive toxic explosives or other hazardous properties of any explosive nuclear assembly or nuclear components thereof;*
 - c) *rebellion, revolution, insurrection, military or usurped power and civil war;*
 - d) *riot, commotion or disorder except where solely restricted to employees servants or agents of the parties;*
 - e) *un-navigable storm or tempest at sea.*
- 8.36.2 Notwithstanding the provisions of the contract, neither party shall be considered to be in default or in breach of its obligations under the contract to the extent that performance of such obligations is prevented by any circumstances of *force majeure* which arise after the Contract is entered into by the parties.
- 8.36.3 If either party considers that any circumstances of *force majeure* are occurring or have occurred which may affect performance of its obligations it shall promptly notify the other party and provide reasonable proof of such circumstances.
- 8.36.4 Upon the occurrence of any circumstances of *force majeure*, the Contractor shall endeavour to continue to perform its obligations under the contract so far as is reasonably practicable. The Contractor shall notify KPLC of the steps it proposes to take including any reasonable alternative means for performance, which is not prevented by *force majeure*. The Contractor shall not take any such steps unless directed so to do by KPLC.
- 8.36.5 If the Contractor incurs additional costs in complying with KPLC's directions under sub clause 8.37.4, then notwithstanding the provisions of the Contract, the amount thereof shall be agreed upon with KPLC and added to the contract price.
- 8.36.6 If circumstances of *force majeure* have occurred and shall continue for a period of twenty one (21) days then, notwithstanding that the Contractor may by reason

thereof have been granted an extension of time for performance of the contract, either party shall be entitled to serve upon the other seven (7) days' notice to terminate the Contract. If at the expiry of the period of twenty-eight (28) days, *force majeure* shall still continue, the contract shall terminate.

8.37 Liquidated Damages

Notwithstanding and without prejudice to any other provisions of the Contract, if the Contractor fails to deliver any or all of the goods or complete the Works within the period specified in the contract, KPLC shall, without prejudice to its other remedies under the contract, deduct from the contract prices, liquidated damages sum equivalent to 0.5% of the delivered or shipment price (whichever is applicable) per day of delay of the delayed items up to a maximum of ten percent (10%) of the delivered price of the delayed goods.

8.38 Warranty

- 8.38.1 The Contractor warrants that the Goods supplied under the contract are new, branded, unused, of the most recent or current specification and incorporate all recent improvements in design and materials unless provided otherwise in the contract. The Contractor further warrants that the goods supplied under this contract shall have no defect arising from manufacture, materials or workmanship or from any act or omission of the Contractor that may develop under normal use of the supplied goods under the conditions obtaining in Kenya.
- 8.38.2 This warranty will remain valid for the period indicated in the special conditions of contract after the goods, or any portion thereof as the case may be, have been delivered, installed and commissioned at the final destination indicated in the contract.
- 8.38.3 KPLC shall promptly notify the Contractor in writing of any claims arising under this warranty.
- 8.38.4 Upon receipt of such a notice, the Contractor shall, with all reasonable speed, replace the defective goods without cost to KPLC.
- 8.38.5 If the Contractor having been notified fails to remedy the defect(s) within a reasonable period, KPLC may proceed to take such remedial action as may be necessary, at the Contractor's risk and expense and without prejudice to any other rights which KPLC may have against the Contractor under the contract.

8.39 Resolution of Disputes

- 8.39.1 KPLC and the Contractor may make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the contract.

8.39.2 If, after thirty (30) days from the commencement of such informal negotiations both parties have been unable to resolve amicably a contract dispute, either party may resort to resolution before a recognised local forum for the resolution of disputes.

8.40 Language and Law

The language of the contract and the law governing the contract shall be the English language and the laws of Kenya respectively unless otherwise stated.

8.41 Waiver

Any omission or failure by KPLC to exercise any of its rights or enforce any of the penalties arising from the obligations imposed on the Contractor shall in no way, manner or otherwise howsoever, alter, amend, prejudice, vary, waive or be deemed to alter, amend, prejudice, vary, waive or otherwise whatsoever any of KPLC's powers and rights as expressly provided in and as regards this contract.

SECTION IX – SPECIAL CONDITIONS OF CONTRACT

The Special Conditions of Contract *hereinafter abbreviated as SCC* shall form part of the Conditions of Contract. They are made in accordance with the law and KPLC's guidelines, practices, procedures and working circumstances. They shall amend, add to and vary the GCC. The clauses in this section need not therefore, be completed but must be completed by KPLC if any changes to the GCC provisions are deemed necessary. Whenever there is a conflict between the GCC and SCC, the provisions of the SCC shall prevail over those in the GCC.

CONDITIONS OF CONTRACT	CLAUSE	REQUIREMENT(S)
Employer		Kenya Power and Lighting Company Ltd. P. O. Box 30099 00100 NAIROBI, KENYA
Project Manager		The Project Manager's address is: Name – Chief Engineer Off Grid Power Stations Address – P. O. Box 30099 00100 Nairobi, Kenya Mobile No-+254719079508
The Name and identification number of the contract		
The work consist of		
Start Date		After site handing over
Intended Completion Date for the whole of the works		As per accepted tender
Other documents to form part of the contract		As per tender
The number of days within which the contractor shall submit a revised program for the Works after delivery of the Letter of Acceptance		7 days
The Site Possession Date		<i>After issuance of the contract and site handover</i>
Site Location and Drawing Number		1. Mandera Power station 2. Lodwar Power Station
Defects Liability Period (in days)		12 Months from date of successful test and commissioning

Other Contractors, utilities etc to be engaged by the Employer on the Site		7 days
The period between program updates (In days)		14 days
The proportion of payment to be retained (in Percent)		10%
The Price Adjustment Clause (Shall/shall not apply)		Shall not apply
The liquidated damages for the whole of the works in % (per week)		0.5 % of contract value
Maximum Limit of liquidated damages in %		10% of contract value.
Performance Security (as a percentage of the Contract Price)		10% of contract value.
Completion Period for the works (in weeks)		8 Months
The rate of exchange for calculation of foreign currency payments		CBK prevailing rate at the date of tender opening
Advance payment (Shall/Shall not be granted)		Shall not be granted
Percentage of Retention(Of the Interim Payment Certificate)		10% of interim payment certificate
Minimum amount of interim certificates		5% contract value
Time (in days) after which payment is to be made after Interim Payment Certificate signed by Project Manager and date of receipt of Invoice.		30 days
Time after which payment to be made after Final Payment Certificate signed by Project Manager and date of receipt of Invoice.		30 days
Terms of Payment		<p>60% after delivery and inspection of ALL deliverable items as per Checklist (see Section XV)</p> <p>30% on Successful Installation and Commissioning;</p> <p>10% after the defect liability period.</p>

		<p><i>The credit period shall be thirty (30) days</i></p> <p><i>Above Payment milestones shall be subject to KPLC Engineers approval.</i></p>
Warranty Period		12 months
Defects Liability Period		12 months
Appointer of Arbitrator		The Employer and Contractor

SECTION X: DETAILED TECHNICAL SPECIFICATIONS

10.0.0 PART I – SPECIFICATIONS FOR GENERATORS AND ASSOCIATED COMPONENTS

10.1.0 Diesel Gen-Set plus other equipment's and accessories Specifications

10.1.2	<u>Scope of work</u>
	<p>Supply and install a complete, functional and operable Electric generating system, including all devices and equipment specified herein, or required for the service. Equipment shall be new, factory tested, and delivered ready for installation to operate at Mandera and Lodwar Power Station - Off-grid Systems.</p> <p>The installed Electric generating system with 5 sets of generators must be able to <u>synchronize and load share</u> within themselves on auto –mode.</p> <p>The Electric generating system which shall comprises of:</p> <ol style="list-style-type: none"> 1. 2 Nos. 1250KVA enclosed containerized diesel generator, 3 Nos. 650KVA enclosed containerized diesel generator and accessories inclusive of Air circuit breaker (ACB) & residential exhaust system. 2. 1 x 415V board comprising 5 No. generator circuit breaker panels, 8000A TPN Copper Busbar and ACB Feeder, these shall be supplied in a standard steel container. 3. 1 x 11KV Switchgear Panel comprising of 2 Nos Incomer Vacuum circuit breaker and 2 Nos feeder Vacuum circuit breaker panels (all of 630A rating), 2000A TPN Copper Busbar and 630A Busbar coupler which shall be supplied in a standard steel container complete with supervisory control desk. 4. 2 Nos 3.5MVA,0.415/11KV Transformer Power and communications cables plus all other accessories. 5. Design and construction of plinth for both transformers which shall be subject to approval by Project Manager.
10.1.3	Requirements:
	<p>(a) 2 nos. 1250KVA and 3 nos.650KVA enclosed containerized Diesel generator plus other accessories at Mandera power station.</p> <p>All generators must be to synchronizes and load share between themself.</p> <p>The Enclosed Diesel Generator sets shall have a complete super silenced Residential exhausts. The exhaust height should be at least 6m above ground level applying an extended pipe.</p> <p>The right amperes rating for Air Circuit breaker for respective Generator and other associated equipment's. Bidders shall provide Reinforced precast concrete pier blocks</p>

	(b)	1 x 415V board comprising 5 No. generator circuit breaker panels, 8000A TPN Copper Busbar, these shall be supplied in a standard steel container. Bidders shall provide Reinforced precast concrete pier blocks (600mm *600mm*400mm) on which the steel container will be placed.
	(c)	1 x 11KV Switchgear Panel comprising of 2 Nos Incomer Vacuum circuit breaker and 2 Nos feeder Vacuum circuit breaker panels (All of 630A rating), 2000A TPN Copper Busbar and 630A Busbar coupler which shall be supplied in a standard 40ft steel container which shall incorporate the following portion ; (i) 11KV switchgear Panel to occupy a length of 20ft. (ii) Battery bank cubicle to occupy a length of 6 ft. (iii) Supervisor control room to occupy a length of 14 ft
	(d)	2Nos 3.5 MVA and 0.415/11KV Transformer
	(e)	11 KV Earthing,415V Earthing and Transformers
	(f)	Fuel day tank for each diesel generator, 3500L capacity
	(g)	Fuel connecting pipework
	(h)	Other accessories
10.1.4	Submittals	
	Within 28 days after award of contract, provide two sets of the following information for	
	(a)	Manufacturer's product literature and performance data, sufficient to verify compliance to specification requirements.
	(b)	A paragraph by paragraph specification compliance statement, describing the differences between the specified and the proposed equipment.
	(c)	Manufacturer's certification of prototype testing.
	(d)	Shop drawings showing plan and elevation views with certified overall dimensions, as well as wiring interconnection details.
	(e)	Interconnection wiring diagrams showing all external connections required; with field wiring terminals marked in a consistent point-to-point manner.
	(f)	Manufacturer's installation instructions.
10.1.5	Warranty – Basic One Year Cover	
	The complete diesel generator and accessories is new and warranted against defects in materials and workmanship for a period of one year from the date of system start-up. Coverage includes parts, labour, travel expenses, and labour to remove/re-install said equipment, per the manufacturer's standard published limited warrant.	
10.1.6	Single Tenderer Tenderer shall be the manufacturer or authorized distributor, who shall provide initial start-up services The, conduct field acceptance testing, and warranty service. The Tenderer shall have 24-hour service availability and factory-trained service technicians authorized to perform warranty service on all products provided.	

10.1.7	Manuals
	Original OEM Operator's manuals shall be provided for all system equipment. The manuals shall include outline, interconnection, wiring, and control drawings accurately describing the equipment provided. Provide 2 sets of original OEM hard copy of the following: (scan or photo copies not acceptable.)
	(a) Operations and maintenance manuals
	(b) Engine workshop manuals
	(c) Spare part and Specification Catalogues
10.1.8	One Year Maintenance
	The Tenderer will be required to provide spares for the required maintenance for the first one year. The Tenderer will carry out all required preventative maintenance as per the recommendations of the manufacturer as contained in the operations and maintenance handbook supplied. This will include parts, labor and travel expenses at no extra cost. During this time, the
10.1.9	One Week Operation The Tenderer will be required to operate the diesel generator for seven (7) days during which time he will train KP operators on how to operate the plant.
10.1.10	One Month Reliability Run The generators will undergo a thirty days reliability run at rated capacity or station demand whichever is lower before a completion certificate is issued.
10.2.0	Generator Sets – 2 nos. 1250KVA and 3 nos.650KVA Enclosed Containerized Diesel Generator plus other accessories at Mandera Power Station.
	10.2.1 Generator Set – Prime Power
	The generator set shall run at 1500 rpm to supply power at 50Hz. The prime Power rating of the set shall be slightly above the stated kVA, at temperatures up to 45° degrees Centigrade and Altitude at site elevation. There shall be a 10% overload capacity available for one hour in twelve. The genset shall be enclosed in a standard 6m shipping steel container with a super silenced residential silencer having stainless steel flexible bellows and exhausting 6m above ground level applying an extend pipe. The noise level must be below 85db at 1m distance. 10.2.2 Steel Container Specifications

	<p>The steel container shall be new and have protective painting of 2 coat RAL9001 epoxy and polyurethane so as to withstand normal atmospheric conditions for the tropics without requiring any housing.</p> <p>The generator container shall have inspection doors on at least three sides to facilitate day to day minor service. The minimum requirements for the engine container shall be as follows:</p> <ul style="list-style-type: none"> a) Three inspection doors on three sides for day to day inspection and minor maintenance of the engine. b) Provide sufficient quantity of louvres for suction of air and dissipation of the hot air at an ambient temperature of up to 40°C without affecting the efficiency or performance of the Diesel generator. c) The lining acoustic material shall be 50mm thick Rockwool covered with G.I. perforated sheets cover. Any kind of foam material will not be acceptable. d) Door with anti-panic bar(door with anti- panic button will not be accepted). e) Lighting with LED fluorescent tubes like 2x 18w or Equivalent IL luminous level (4 feet length) f) 2 power sockets 10/16 amps plus earth rectangular type (British). g) 1x 9 kg carbon dioxide fire extinguisher. h) Acoustic baffles for air inlet and exhaust. i) Two security lights on the longer sides of the container. j) Appropriate Earthing connection point. <p>The tenderer shall provide and install all the required power cables between the generator and control room inclusive of appropriate cable protection in terms of outdoor cable trays.</p> <p>10.2.3 Reinforced precast concrete block support</p> <ul style="list-style-type: none"> a) Bidder shall provide reinforced precast concrete blocks (600mm x 600mm x 400mm) on which the steel container will be placed. b) Base rock to be added, soil to be compacted and firm before placement of Block. c) Provision for shims for levelling
10.3.0	Performance
10.3.1	<u>Voltage regulation</u>
	The voltage regulation shall be +/- 0.5% at any power factor between 0.8 lagging and unity, at any load from no load or rated load, at any temperature from hot to cold and at speed droop variations up to 4.5% of rated speed
10.3.2	<u>Frequency regulation</u>
	The frequency regulation shall be isochronous from steady state no load to steady state rated load. The random frequency variation shall not exceed +/- 0.25% of its mean value for constant loads at any load from no load to rated load.

10.4.0	Engine	<p>The engine shall be an approved, turbocharged-after cooled, pressure lubricated, 4 stroke engine. Two stroke engines are not acceptable.</p> <p>Engine accessories and features shall include: -</p>
	10.4.1	Engine coolant drain tap.
	10.4.2	Electronic governor system to provide automatic frequency regulation. The speed control from no load to rated load shall be adjustable from 0% droop (isochronous) to 5% droop.
	10.4.3	The engine shall be cooled by a base frame mounted radiator and cooling system rated for full load operation in an ambient temperature of 50 degrees centigrade measured at the generator air inlet. The radiator shall be provided with a duct adapter flange. The cooling system shall be filled with 50/50 ethylene glycol/water mixture by the equipment supplier. Rotating parts shall be guarded against accidental contact in accordance with EN 294 requirements.
	10.4.4	Liquid level switch to sense loss of engine coolant. When the coolant level is below that recommended by the engine manufacturer, a “Low Coolant Level” alarm shall be given on the Generator Set Control panel.
	10.4.5	Engine mounted sensor to detect engine coolant temperature. When the engine coolant temperature is above that recommended by the engine manufacturer, a “High Engine temperature” alarm shall be given on the Generator Set Control panel.
	10.4.6	Electric starting motor(s) capable of three complete cranking cycles without overheating.
	10.4.7	Positive displacement, mechanical, full pressure, lubrication oil pump.
	10.4.8	Engine mounted sensor to detect engine oil pressure. When the engine oil pressure is below that recommended by the engine manufacturer, a “Low Oil Pressure” alarm shall be given on the Generator Set Control panel.
	10.4.9	Engine mounted manual pump to enable the lubricating oil to be pumped from engine sump during routine oil change operation
	10.4.10	Engine driven, mechanical, positive displacement fuel pump. Fuel filter with replaceable spin-on canister element.
	10.4.11	Heavy-duty replaceable dry element air cleaner with restriction indicator.

	10.4.12	Flexible supply and return fuel lines.
	10.4.13	Engine mounted battery charging alternator, 35 ampere minimum, and solid-state voltage regulator.
10.5.0	AC Generator – Prime Power	
	10.5.1	The generator shall be capable of delivering rated output (kVA) at rated frequency and power factor, at any voltage not more than 5 per cent above or below rated voltage.
	10.5.2	A permanent magnet (PMG) exciter and 3 phase voltage regulator shall be included to provide optimum generator excitation and output voltage regulation performance.
	10.5.3	The generator shall be fitted with a kit to reduce emissions of RFI and to improve immunity to RFI (Radio Frequency Interference).
	10.5.4	The generator shall be fitted with an embedded temperature detector (ETD) to detect the temperature of the windings. When the temperature of the windings is above that recommended by the generator manufacturer, a “High Alternator Temperature” warning shall be given on the Generator Set Control panel.
	10.5.5	The generator shall be provided with a voltage regulator having shunt excitation to reduce field current in response to transient frequency dips when large electrical loads are connected to the generator set.
	10.5.6	The generator shall be provided with a paralleling droop compensator for adjusting the share of total reactive current carried by each generator set.
10.6.0	Engine-Generator Set Control	
	The enclosed control panel shall be mounted on the generator set with anti-vibration mountings. The generator set mounted control panel shall include the following features and functions	
	10.6.1	<u>Three-position control switch labeled RUN/OFF/AUTO</u>
		(a) In the RUN position the generator set shall manually start, and accelerate to rated speed and voltage.
		(b) In the OFF position the generator set shall immediately stop, bypassing all.
		- Time delays. The position is also used to clear a fault and allow restarting.
		- The generator set after it has shut down for any fault condition.
		(c) In the AUTO position the generator set shall be ready to accept signal from.
		- A remote device to start and accelerate to rated speed and voltage.
	10.6.2	<u>Generator Set AC Output Metering</u>

		The generator set shall be provided with a metering set with the following features and
		(a) Analog AC Voltmeter, dual range, 90 degree scale, 2% accuracy
		(b) Three number Analog AC Ammeter, dual range, 90 degree scale, 2% accuracy: Analog frequency/RPM meter, 45-65 Hz, 1350-1950 RPM, 90 degree scale, +/- 6% accuracy
		(c) Seven position phase selector switch with OFF position to allow meter display of line to line and line to neutral voltages.
		(d) Digital metering set, 0.5% accuracy, to indicate generator voltage and frequency, output current, output kW, kW-hours, and power factor. Generator output voltage display shall be available in line-to-line or line-to-neutral voltage simultaneously.
	10.6.3	<u>Generator Set Alarm and Status Display</u>
		The generator set shall be provided with alarm and status indicating lamps to indicate existing alarm and shutdown conditions. The lamp condition shall be clearly apparent under bright room lighting conditions. The generator set control shall indicate the existence of the following alarm and shutdown condition on the display panel:
		(a) Low oil pressure (shutdown)
		(b) High coolant temperature (shutdown)
		(c) Emergency stop operated (shutdown)
		(d) Over speed / over frequency (shutdown)
		(e) Battery charge alternator failed (alarm)
		(f) Under speed / under frequency (shutdown)
		(g) Coolant low (alarm)
		(h) Coolant low (shutdown)
		(g) Set failed to start (shutdown)
	10.6.4	<u>Engine Status Monitoring</u>
		The following information shall be available from devices and from a digital status panel on the generator set control:
		(a) Engine coolant temperature (degrees C)
		(b) Engine oil temperature (degrees C)
		(c) Engine speed (rpm)
		(d) Number of hours of operation (hours).
		(e) Number of start attempts.
		(f) Battery voltage (DC volts)
		(g) Fuel consumed (litres)
	10.6.5	<u>Control Functions</u>

		10.6.5.1	The control system provided shall include a cycle cranking system, which shall be for 3 cranking periods of 10 seconds each with 10 second rest period between cranking periods.
		10.6.5.2	The control system shall include an engine speed governor control, which functions to provide steady state frequency regulation as noted elsewhere in this specification. The governor control will include adjustments for gain, damping and a ramping function to control engine speed and limit exhaust smoke while the unit is starting. The governor control shall be suitable for use in paralleling applications without component changes.
		10.6.5.3	The control system shall include time delay start (adjustable 0-300 seconds) and time delay stop (adjustable 0-600 seconds) functions.
		10.6.5.4	The control system shall include all interfaces necessary for proper operation with the paralleling equipment provided under this contract. The generator set Tenderer shall be responsible for complete compliance to all specification requirements for both the generator set and the paralleling equipment.
	10.6.6	<u>Generator Control Functions</u>	
		10.6.6.1	The generator set shall include an automatic voltage regulation system that is matched and tested with the engine speed governing system provided. It shall be immune from malfunction due to load – induced voltage wave form distortion and provide a pulse width modulated output to the generator exciter.
		10.6.6.2	The voltage regulation system shall be equipped with three-phase RMS sensing and shall control buildup of AC generator voltage to provide a linear rise and limit overshoot. The system shall include a torque-matching characteristic, which shall reduce output voltage in proportion to frequency below a threshold of (48/49 or 58/59
		10.6.6.3	The voltage regulator shall include adjustments for gain, damping, and frequency roll-off. Adjustments shall be brad range, and made via digital raise-lower switches, with an alphanumeric LED readout to indicate setting level.
		10.6.6.4	The voltage regulation system shall include provisions for reactive load sharing and electronic voltage and frequency matching for paralleling applications . Motorized voltage adjust pot is not acceptable for voltage matchng.

		10.6.6.5	Controls shall be provided to monitor the output current of the generator set and initiate an alarm when load current exceeds 110% of the rated current of the generator set on any phase for more than 60 seconds. The controls shall shut down and lock out the generator set when output current level approaches the thermal damage point of the generator.
		10.6.6.6	Controls shall be provided to monitor the kW load on the generator set, and initiate an alarm condition when total load on the generator set exceeds the generator set rating for in excess of 5 seconds.

		10.6.6.7	Controls shall include a load-shed control, to operate a set of volt-free contacts (for use in shedding customer load devices) when overload of the generator set occurs.
		10.6.6.8	An AC over/under voltage monitoring system that responds only to true RMS voltage conditions shall be provided. The system shall initiate shutdown of the generator set when alternator output voltage exceeds 110% of the operator-set voltage level for more than 10 seconds, or with no intentional delay when voltage exceeds 130%. Under voltage shutdown shall occur when the output voltage of the alternator is less than 85% for more than 10 seconds.
		10.6.6.7	A battery monitoring system shall be provided which initiates alarm when the DC control and starting voltage is less than 25 VDC or more than 32 VDC. During engine starting, the low voltage limit shall be disabled, and if DC voltage drops to less than 14.4 volts for more than two seconds a “weak battery” alarm shall be initiated.
	10.7.0 Base Design and Anti-vibration Mountings		
	The engine-generator set shall be mounted on a heavy duty steel baseplate to maintain alignment between components with bonded rubber anti-vibration units positioned between the engine and alternator support feet and the baseplate.		
	10.8.0 Auxiliaries		
		10.8.1 Fuel Day Tank	

			<p>Provide a 2000 litres capacity, rectangular, Mild steel construction to BS EN/10 025 Steel, single skin fuel storage tank for each genset. The tank shall comply with the requirements of BS799: Part 5 and shall be complete with:</p> <ul style="list-style-type: none"> (a) Fill connection (b) Return line connection (c) Vent connection (d) Fuel level sight gauge (e) Drain connection (f) Lifting Lugs connection (g) Fuel meter (h) Level switch connection (i) Up Stands (j) Multi-position float switch with five positions to detect and control the following functions:- <ul style="list-style-type: none"> (i) Very high fuel level (warning) (ii) Very low fuel level (warning) (iii) High and low fuel levels (pump control) (iv) Very low fuel level (shutdown) (k) 150mm high concrete bund wall for fuel leak containment
--	--	--	--

		10.8.2 Manual Fuel Hand Pump
		<p>A manual fuel transfer hand pump, suitable to transfer fuel by hand from service tankfuel storage or tapped from existing feed pipes to the generator set day tank.</p> <p>This should be installed as an integral bypass supply to the Day tank supplied, in case the transfer pump fails.</p>
		10.8.3 Fuel Pipe-work
		<p>Unless otherwise stated, all exterior fuel pipe work shall be of Carbon Steel, conforming to ASTM 53, Grade B.</p> <p>The pipe work design shall be above ground and incorporate flanges for easy dismantling and service. The pipework shall be well secured by clamping to rigid supports to adequately protect them from sagging.</p> <p>In the event above ground pipework is not possible at a specific location, the pipe shall have no mechanical joint (except at man-holes) and must be protected from mechanical damage, excessive surface loading, ground movement and corrosive soils.</p>
		10.8.4 Super Silenced Residential Exhaust System

		Super silenced residential engine exhaust system shall be provided for each engine, size and type as recommended by the generator set manufacturer to meet the sound attenuation level of a residential environment of not more than 85 dBA at 1 metre. Exhaust system shall be installed according to the recommendations of the generator set manufacturer and applicable codes and standards. The exhaust system shall be designed and installed in such a way that the exhaust fumes are released not less than six (6) metres above the ground.
		10.8.5 Flexible Exhaust Pipe Connection Flexible exhaust pipe for connecting the engine exhaust outlet to the exhaust system as recommended by the generator set manufacturer.
		10.8.6 Lead-Acid Starting and Control Batteries Starting battery bank, heavy-duty conventional Lead-Acid type, 12 volt DC, sized as recommended by the generator set manufacturer, shall be supplied for each generator set with battery leads and connectors. A battery tray and holding down clamps shall be incorporated within the rails of the baseplate.
		10.8.7 Audible Alarm Audible alarm horn to signal a generator set shutdown fault condition. When any condition that causes the control to shut-down the generator set, the audible alarm horn shall be activated. Means shall be provided to mute the alarm and reset the detection circuit in the generator Set Control panel.

10.9.0 Standard Tool Specifications

Please note that all the tools noted below SHALL be supplied from a known Brand and the electrical or electronic tool/equipment be accompanied with Manufacturer's warranty card.

1	Mechanical Workshop/Factory 450+ Pieces Drawer Tool Trolley With Plastic/Foam Modular Inlay Tool Control System Branded, Chrome-Vanadium material Lockable. Metric. To include:- sets for double ended ring, double ended open and combined ring spanners Allan key set
2	Socket Spanner Tool Set – Branded ½ ” Drive, 22 pieces: (must include 15, 17 19 and 22 mm socket) 12 Point (Bi-Hexagon) spline socket. (Hexagonal sockets will not be acceptable). Chrome- vanadium Heavy Duty Supplied with sturdy durable carry case
3	Electrical Workshop 55+ Piece Inlay Tool Set Branded. Suppled with sturdy durable carry case
4	Battery Charger 12/24 Volt: Heavy Duty Portable, Automatic; Branded Input Voltage 150-300vac; Constant/Float Charging; Boost 40a; Float 8a;
5	Electric Hand Drill Branded Chuck Capacity Of 1.5 – 13 Mm 240V ~ 700W ~ 8Amp Hammer/ drill /reversible function Supplied with in sturdy durable carry case
6	Angle Grinder Branded, Size 4 ½ ’ Supplied with sturdy durable in carry case
7	Wire Cup Brush Wheel For Angle Grinders Branded 4’ X 5/8- 11UNC- (Twist Knot) – Max speed 12500 RPM

8	Wire Cup Brush Wheel For Angle Grinder Branded 4' X 5/8" -11UNC (Fine Crimped – Max Speed 12500 RPM
9	Electric Blower Branded 220-240V - ~800W Flow rate ~ 4.5m ³ /min With dust extraction feature and dust bag.
10	Gantry Crane 5TON; Branded, All steel construction Sturdy Wheels; Max Span 2M; Adjustable height up to 2.5 M high Test/Safety certificate
11	Electric Heat Gun, Branded, 240V – 2000Watts Heavy Duty; Adjustable heat range 50°C ~ 600°C Supplied with Carry Case with nozzle adapters included.
12	Electrical Digital Multi Meter – Professional Rugged Calibrated Auto/manual range; AC/VDC : upto - 1000 Resistance: upto 200Mohms AC/DC- current : 50A Frequency: upto 100htz Temperature: upto 120 0C Diodes check feature. Capacitance : upto 50 micro Farad`
13	Electrical Clamp-On Meter – Professional; Auto/manual range; AC/VDC : upto - 1000; Resistance: upto 2M-ohms AC/DC- current : 2000A Frequency: upto 100htz Diodes check feature. Capacitance : upto 1000 micro Farad
14	Arc Welding Machine Branded Single Phase
15	Steam Water Pressure Cleaner Branded (WF 400-800 l/hr: Pressure 30-150Pa: Temp 155/80 °C: Motor rating 6.4kw; Single Phase Pressure hose length 10m)

16	Cordless Impact Wrench Complete Branded, (18v, 3.0ah); supplied with 2 x b18 3.0 ah li-ion batteries, Supplied with a sturdy durable carry case.
17	Workshop Bench Dimensions (1½ x 1)M : Sheet Metal Top; Steel Metal Frame Rigid, Sturdy/Robust
18	Bench Vice 6” – 7.5Kg Heavy Duty Engineers vice, Quick release feature,
19	Belt Tension Dial Gauge, Universal

10.10.0 Special Mechanical Tools – Specifications

- (i) Shall be provided as listed in the Diesel Generator Workshop or Service Manual.
- (ii) Shall be genuine Original Equipment Manufacturer OEM.
- (iii) Delivered in original branded packaging complete with Logo and seals.
- (iv) The table below list the sample requirements but should be guided as per the Workshop manual.

Item no	Description	1250 KVA	650 KVA
		Qty	Qty
1	Cylinder Liner Puller With Puller Plate	1	1
2	Liner Installation Tool	1	1
3	Piston Ring Expander	1	1
4	Piston Ring Wear Gauge	1	1
5	Piston Ring Compressor Sleeve	1	1
5	Valve Seat Extractor Kit	1	1
6	Valve Spring Compressor	1	1
7	Connecting Rod Guide Pins	1	1
8	Main Bearing Cap Puller	1	1
9	Injector Adjustment Tool	1	1
10	Camshaft Bushing Removal/Installation Kit	1	1
11	Injector Puller	1	1

10.11.0 Minimum Diesel generator Critical Spares – Specifications

- (i) Shall be original, genuine and branded.
- (ii) Supplied in original packaging, brand logo and anti-counterfeit or tamper proof seals.
- (iii) Manufacturer's warranty.

Item No.	Description	1250 KVA	650 KVA
		Qty	Qty
1	Fan belt	2	3
2	Water pump (complete)	1	1
4	Alternator belt (if applicable)	2	3
5	Oil pressure sensor	2	3
6	Thermostat	2	3
7	Diodes set	2	3
8	AVR Set	2	3
9	ECM Auto start control module (similar to genset)	1	3
10	Fuel Control Module	1	2
11	Fuel Injectors	6	12
12	12V Starting Battery Lead acid (conventional) supplied with no acid	4	6

10.12.0 Minimum Diesel generator consumable spares – Specifications

- (i) Shall be original, genuine and branded.
- (ii) Supplied in original packaging, brand logo with anti-counterfeit or tamper proof seals

Item	Description	1250 KVA	650 KVA
		Qty	Qty
1	Oil filter (Primary)	70	105
2	Oil filter (Secondary) if applicable	70	105
3	Fuel filter (primary)	70	105
4	Fuel filter (secondary) if applicable.	70	95
5	Water filter	24	36
6	Air Filter	24	36
7	Engine Oil (litres)	1230	1230
8	Engine coolant 50/50 premix ethylene-glycol (litres)	200	200

Bidder advised to include additional critical spares and consumables necessary for 1 year maintenance period to avoid downtime cost.

PART II - SPECIFICATIONS FOR 415V AC METAL CLAD SWITCHGEAR BOARD

10.13.0 415 V AC Metal-Clad Switchgear Board Specifications

10.13.1 General Specifications

10.13.2 Scope

This Specification covers the Design and Engineering, Manufacture, Testing at The Manufacturer's Factory, painting, packing for transport, insuring, shipping, delivering to the port of Kenya, landing, customs clearing, Local Transportation and Delivery to Site, Unpacking, Erection, Test and Commissioning of 415 V AC Indoor Metal Clad Switchgear Panels.

Subsequent paragraphs will give detailed descriptions and requirements for the Switchgear Panels, including Air Circuit Breakers, Current Transformers, Protection Relays, Metering, Measuring, Indicating and Control devices and other equipment's/Devices, specified herein.

All these shall be housed in a 20 feet ISO (CSC certified) steel container. The steel container shall be new, factory tested and have protective painting of 2 coat RAL9001 epoxy and polyurethane so as to withstand normal atmospheric conditions for the tropics without requiring any housing. The Tenderer shall provide required physical protection for the cables between the generators and the control container as there shall be no cable trenches.

The minimum requirements for the control room container shall be as follows:

- i. Sound proof by insulation panel
- ii. Air Conditioning sufficient for the control room
- iii. Door with anti-panic bar
- iv. Lighting with fluorescent tube 2 x 40w
- v. 2 Power socket 10/16 amps + Earth British Type
- vi. 1 extinguisher 9 kg CO₂
- vii. 20 feet ISO steel container

10.13.3 Standards

Ratings, characteristics, tests and test procedures, etc. for the 415V AC Metal-Clad Switchgear Board and all the Protection Relays, Measuring and Indicating Instruments and the control and monitoring devices and Accessories, including Current transformers shall comply with the provisions and requirements of the standards of the International Electro-technical Commission (IEC), and also relevant ANSI Standards where Specified.

The latest revision or edition in effect at the time of Bid Invitation shall apply. Where references are given to numbers in the old numbering scheme from IEC it shall be taken to be the equivalent number in the new five-digit number scheme. The Bidder shall specifically state the Precise Standard, complete with identification number, to which the

various equipment and materials are manufactured and Tested. The Bid Document may not contain a full list of standards to be used, as they only are referred to where useful for clarification of the text.

10.13.4 Service conditions

From the geographical condition, the area where the switchgear panels shall be installed is categorized into the tropical climate zone.

In choosing materials and their finishes, due regard shall be given to the humid tropical conditions under which the switchgear panels shall be called upon to work. The Manufacturer of the Switchgear panels shall submit details of his usual practice of tropicalization which have proven satisfactory for application to the Switchgear panels and associated equipments to prevent Rusting and Ageing in the Tropical Climate Zone. The Applicable standards for tropicalization shall be listed.

10.13.5 Climatic Conditions & Geo-Reference

Unless otherwise specifically stated in Particular Technical Specifications, any equipment or component or assembly shall be designed for the following service conditions:

Parameter	Max	Min
Ambient air temperature		
Outdoor	+40°C	-1°C
Indoor	+40°C	-1°C
24 hour average maximum	+30°C	-1°C
Relative humidity	90 -100%	
Height above sea level	1000 m	
EMC Class (IEC 61000)	Industrial environments	
Seismic coefficient	1.5	
Rainfall conditions		
Average	800-1700 mm/year	
Maximum	160mm in 24 hrs	
Annual mean isokeraunic level	Max 180 thunderstorm days	
Pollution (IEC 60815)	Heavy :class II	
<u>Geo-Reference</u>		
Latitude (o°)	N 4.20878	
Longitude (o°)	E 34.35825	
Altitude (m) a.s.l.	636	

10.13.6 Switchgear room Temperature

The Switchgear shall be installed in a standard 20 feet steel container to be supplied by the tenderer. All the Protection and control devices employed shall be capable of operating in an environment where the air conditioning may fail, without failure for their designed life time. Particularly the power supply modules of the Protection and Control devices shall be designed for minimum heat generation and effective heat

dissipation to ensure that the temperature of these devices enclosed in the relay panels at the above listed Ambient temperatures shall not exceed the Maximum operating temperature of the device.

10.13.7 Tropicalization

All equipment must be designed for operations in the severe tropic climate conditions and fully comply with climatic aging tests as per IEC 60932-class 2

Iron and Steel are generally to be painted or galvanized as appropriate.

Indoor parts may alternatively have chromium or copper-nickel plates or other approved protective finish. Small iron and steel parts (other than rustless steel) of all instruments and electrical equipment, the cores of electromagnets and the metal parts of relays and mechanisms shall be treated in an appropriate manner to prevent rusting

The use of Iron and steels shall be avoided in instruments and electrical relays wherever possible. Steel screws shall be zinc, cadmium or chromium plated or where plating is not possible owing to tolerance limitations, shall be of corrosion resisting steel. Instrument screws (except those forming part of a magnetic circuit) shall be of brass or bronze. Springs shall be of non-rusting material, e.g., phosphor-bronze or nickel silver, as far as possible.

10.13.8 Working Stress And Equipment/Apparatus Design

10.13.8.1 General

The design, dimensions and materials of all parts shall be such that they will not suffer damage under the most adverse conditions nor result in deflections and vibrations, which might adversely affect the operation of the equipment. Mechanisms shall be constructed to avoid sticking due to rust or corrosion.

The equipment and apparatus shall be designed and manufactured in the best and most substantial and workmanlike manner with materials best suited to their respective purpose and generally in accordance with up-to-date recognized standards of good practice.

The equipment shall be designed to cope with 0.10G acceleration of seismology on the centers of gravity.

All equipment shall be designed to minimize the risk of fire and consequential damage, to prevent ingress of vermin and dust and accidental contact with electrically energized or moving parts. The switchgear panels shall be capable of continuous operation with minimum attention and maintenance in the exceptionally severe conditions likely to be obtained in a tropical climate and where the switchgear is called upon to frequently interrupt fault currents on the system and also where the duty of operation is high.

10.13.8.2 Strength and quality

Liberal factors of safety shall be used throughout, especially in the design of all parts subject to alternating stresses or shocks.

10.13.8.3 Design data low voltage equipment

Low voltage equipment and installation shall be designed in accordance with EMC directives. The rating and design criteria for low voltage equipment shall be as follows:

(i) AC Supply Rating system

Rated voltage between phase	415 V
Connection type	3ph 4wire
Rated voltage between phase to earth	240 V
Grounding system	Solid Earthing
Frequency	50 HZ
Voltage variation	+/-10%
Frequency variation	+/-2%
Power frequency 1 min, Test Voltage	3 kV

The three-phase supply shall be used for power circuit and the single-phase supply for lighting, indication, motor controls and similar small power circuits.

Unless otherwise specified, the equipment provided under this Tender is to be capable of reliable operation at voltages as low as 85% of the rated voltage, and to withstand continuously up to 110% supply voltage above the rated value of 240V single phase or 415V AC three phases.

ii) AC Supply Rating system

Rated voltage between phase	415V
Connection type	3ph
Grounding system	Solid Earthing
Frequency	50 HZ
Voltage variation	+/-10%
Frequency variation	+/-2%
Power frequency 1 min, Test Voltage	3 kV

The three-phase supply shall be used for power circuit and the single-phase supply for lighting, indication, motor controls and similar small power circuits.

(iii) DC Auxiliary Supply Rating

Equipment/Device Rated voltage	24V DC
Connection type	2 wire
Voltage variation	18-36 V DC

The Auxiliary DC Supply shall be used for controls, indication, alarm, protection relays, and Circuit breaker tripping and closing circuit, etc.

All equipment and apparatus including the Circuit Breakers, Protective relays, Control Devices and Accessories, Measuring and Indicating Instruments and electronic equipment shall be capable of satisfactory operation at 80% to 125% of the rated supply voltage.

10.13.9.0 Basic Requirements For Electrical Equipment

All materials supplied under this Contract shall be new and of the best quality and of the class most suitable for working under the conditions specified. They shall withstand the variations of temperature and atmospheric conditions arising under working conditions without distortion, deterioration or undue stresses in any parts and also without affecting the suitability of the various parts of the Works for which they were designed.

(a) Electrical controls, auxiliaries and power supplies

(i) Responsibility for electrical control and auxiliaries

The Manufacturer shall provide all control, indication, alarm and protection devices and all auxiliary equipment with wiring and interconnecting cable which are integral parts of or are directly associated with or mounted on the Switchgear panels to be supplied under this Tender. The design of Protection and Control schemes for the switchgear panels shall be subject to approval by the Employer.

(ii) Operation and control

Interlocking devices shall be incorporated in the control circuit to ensure Safety, and Proper sequence and correct operation of the equipment.

(b) Measuring instruments

(i) All measuring instruments, including energy meters, shall be of flush-mounted, back-connected, dust-proof and heavy-duty switchboard type. Each measuring instrument shall have a removable cover, either transparent or with a transparent window. Each instrument shall be suitable for operation with the instrument transformers detailed in this specification, under both normal and short-circuit conditions.

(ii) For analog type instruments, scale plates shall be of a permanent white circular or rectangular finish with black pointer and markings. The scale range shall be determined from the current transformer and voltage transformer ratios and is given in the detailed specifications for each instrument.

(iii) All measuring instruments of analog type shall be approximately 110mm² enclosures and shall be provided with clearly readable long scale, approximately 240 degrees. The maximum error shall be not more than one and a half (1.5) percent of full-scale range.

(c) Indicating lamps

Indicating lamp assemblies shall be of the switchboard type, insulated for 24 V D.C. service, with appropriately colored lens and integrally mounted resistors for 110-volt service. The lens shall be made of a material, which will not be softened by the heat from the lamps.

For the Circuit Breakers, Red indicating lamps shall be used for “ON” position, green lamps for “OFF” position Indication and Amber for Transition

(d) Nameplate and Escutcheon Plates

- i. Each cubicle, panel, meter, switch and device shall be provided with a nameplate or escutcheon plate for identification with English description and also where appropriate the IEC Number on the front of the panel directly below each device as appropriate. On the inside of the control compartment of the switchgear panel, a yellow label, engraved in Black Letters and Numbers shall be fixed below each device. The Device Name/Number fixed on the inside of the control compartment shall correspond to the Name/Number used in the drawings. Each equipment shall be provided with a rating plate containing the necessary information specified in the relevant IEC standards.
- ii. The plates shall be made of weatherproof and corrosion-proof materials and shall not be deformed under the service conditions at the site. The entries on the plates shall be indelibly marked by engraving with black letter on a white background

e) Wiring

General

- (i) All wiring inside the switchgear panel shall be done with XLPE insulated wire not less than 2.5 sq.mm, flexible cable. A suitable wiring duct system firmly fixed on the panel and having covers shall be installed for all inter-panel and front-to-rear panel wiring as well as for wiring within the panels, which will provide easy access for inspection and replacement of the wires.
- (ii) Wiring between terminals of the various devices shall be point to point. Splices or tee connection will not be acceptable. Wire runs from the duct to the device shall be neatly trucked or clamped.
- (iii) Exposed wiring shall be kept to a minimum, but where used, shall be formed into compact groups suitably bound together and properly supported.
- (iv) Instrument transformer secondary circuits shall be grounded only on the Terminal Block in the Control Compartment. Cable supports and clamp type terminal lugs shall be provided for all incoming and outgoing power wiring terminated at each panel. All wiring conductors (wires) shall be marked at each point of termination onto the terminal block or device. These wire markers shall be of an approved type and permanently attached to the conductor insulation. The method of ferruling shall be subject to approval by the Employer; It is however preferred that the Wire marker (ferrule) correspond to the device terminal Number of the device or the Terminal Block Number where it is terminated.

Phase arrangement

The standard phase arrangement when facing the front of the panel shall be R-S-T-N, and P-N from the left to right, from top to bottom, and front to back for A.C three-phase and single-phase circuits. For DC circuit it shall be N-P from left to right, P-N from top to bottom and front to back. All relays, instruments, other devices, buses and equipment involving three-phase circuit shall be arranged and connected in accordance with the standard phase arrangement wherever possible.

(f) Terminal blocks

- (i) Terminal blocks for control wiring shall be rated not less than 600V AC
- (ii) Each Individual Terminal Block shall be marked with a distinctive Number, which shall be the same Number used in the drawings, for identification purposes. The TB number shall be engraved in black numbers in white background.
- (iii) Each set of terminal Block shall be identified by a label to distinguish it from another set of terminal block with similar Numbers for the individual terminal blocks. The labels used will match those used in the drawings.

10.13.10 Equipment and Switchgear Earthing

General

All the Compartments including the hinged doors of the Switchgear Panels and all the earthing points of the equipment installed/mounted in the Switchgear panels shall be connected to the grounding conductor at the bottom of the panel for external connection to the substation earthing System.

Earthing conductors shall be of annealed high conductivity copper. The earthing conductor on the primary equipment such as the Earth Switch and also for inter-panel earth-bonding as well as for external connection to the substation Earthing – grid shall be adequate to carry the rated switchgear short-circuit current of 65kA for 1 seconds.

10.13.11 Materials and Workmanship

General

Materials shall be new; the best quality of their respective kinds and such as are usual and suitable for work of like character. All materials shall comply with the latest issues of the specified standard unless otherwise specified or permitted by the Employer.

Workmanship shall be of the highest class throughout to ensure reliable and vibrations free Operations. The design, dimensions and materials of all parts shall be such that the stresses to which they may be subjected shall not cause distortion, undue wear, or damage under the most severe conditions encountered in service.

All parts shall conform to the dimensions shown and shall be built in accordance with approved drawings. All joints, datum surfaces and meeting components shall be machined and all castings shall be spot faced for nuts. All machined finished shall be shown on the drawings. All screw, bolts, studs and nuts and threads for pipe shall conform to the latest standards of the International Organization for Standardization covering these components and shall all conform to the standards for metric sizes

All materials and works that have cracks, flaws or other defects or inferior workmanship will be rejected by the Employer.

10.13.12 Assembly

Necessary items of equipment shall be assembled in the factory prior to shipment and Routine tests shall be performed by the Manufacturer as per the requirements of the latest issue of IEC as specified under each equipment in these specifications to demonstrate to the satisfaction of the Employer that the Switchgear panels comply with the requirements of the relevant IEC standards.

10.13.13 Casting

Casting shall be true to pattern, of workmanlike finish and of uniform quality and condition, free from blowholes, porosity, hard spots, shrinkage defects, cracks or other injurious defects, shall be satisfactorily cleaned for their intended purpose.

10.13.14 Operational Details

Instructions shall be engraved on the switchgear panel, on the circuit breaker compartment describing in simple steps how to carry out correct and safe Isolation, racking-in and switching operations on the circuit breaker. Similar details should be provided for the operation of the earth switch.

10.13.15 Protection, Cleaning and Painting

All outside panel surfaces shall be primed, filed where necessary, and given not less than two coats of synthetic undercoat. The finishing coat for the indoor installations shall be gloss paint. Primer shall be applied to surfaces prepared in accordance with the plant manufacturer's instructions. The surface shall be wiped clean immediately prior to applying the paint. The primer and finish coats of paint shall be applied using the methods and equipment recommended by the manufacturer.

No painting or protection is required for finished or unfinished stainless-steel parts.

The humid and tropical conditions shall be taken into account on selection of the paints and painting procedure.

10.13.16 Drawings

- (i) Before starting manufacture of the Switchgear panels, dimensioned drawings and data showing all significant details of the equipment and materials to be used shall be submitted to the Employer for approval. Four 4 weeks shall be allowed for discussions between the manufacturer and the employer leading to final Approval of the drawings by the Employer. Manufacturing of the switchgear panels shall not commence under any circumstances without receipt of Approved drawings by the Manufacturer from the employer.
- (ii) The drawings shall be modified as necessary if requested by the Employer, and resubmitted for final approval.
- (iii) The manufacture of the switchgear shall then proceed strictly in accordance with the Approved drawings and also in accordance with the Detailed specifications as contained herein. Where conflict may arise between the specifications and the approved drawings, the Specifications will take precedence, unless it's specifically indicated in writing on the Approved drawings that the conflicting clause in the specifications is superseded, or where following discussions between the Manufacturer and the employer, the employer gives approval in writing to supersede the conflicting clause in the specifications.

- (iv) It is to be understood, however, that approval of the drawings will not relieve the manufacturer of any responsibility in connection with the works that the switchgear will fully comply with the relevant IEC/ANSI standards and with these specifications.
- (v) **All drawings submitted for approval or sent to the Employer for any other reason shall be in hard copy form and shall be sent by courier. Drawings for Approval shall not by any means be forwarded via e-mail or any other media except in hard copy form.**
- (vi) Following completion of the manufacture of the switchgear Panels, the manufacturer shall carry out the following Checks and Tests before Inviting the Employer for Factory Acceptance Tests.
 - 1. Dimensional checks for the switchgear Board and the Busbars.
 - 2. Primary Injection Tests to check correct connection of the current transformers to the relays and instruments and Measuring devices.
 - 3. Electrical Functional Tests
 - 4. Mechanical/Interlock checks.**Any problems noted will be rectified and the switchgear panels shall only be shipped once the above tests and Checks are confirmed to be satisfactory.**
- (vii) Upon testing of the panels as in clause 10.13.16 (vi) above, the drawings will be edited to capture any minor wiring errors detected in order to produce the final construction drawings. A copy of the final construction drawings signed by the Manufacturer shall be send by courier to the employer before the panels are shipped.
- (viii) All Protection and Control drawings shall be done on A4 - size paper. The function of each drawing shall be clearly indicated. Related drawings shall be arranged sequentially, and have the same drawing number but different sheet numbers. The drawings shall include the following; All Protection and Control drawings shall be done on A4 - size paper. The function of each drawing shall be clearly indicated. Related drawings shall be arranged sequentially, and have the same drawing number but different sheet numbers. The drawings shall include the following;
 - (a) Ac single line drawing
 - (b) AC Schematics
 - (c) DC Schematics
 - (d) Functional Drawings
 - (e) Panel wiring and cable terminations and schedules
 - (f) Panel device layout drawing
 - (g) General layout drawings for the switchgear panels
 - (h) Relays and accessories list.

10.13.17 Three (3) Copies of Final As built drawings shall be supplied after commissioning of the Switchgear.

10.14.0 Operating And Maintenance Instructions

The Contractor shall supply detailed instructions manuals concerning the correct manner of assembling/Installing/Erection, configuring, setting, Testing and Commissioning, operating and maintaining the equipment and devices constituting the Switchgear Board, including the board itself. The maintenance details of each component shall also be described, including the frequency of inspections and lubrication.

The instruction manual shall include a separate and complete section describing the normal and emergency operating procedures for the Switchgear, and shall include explanatory diagrammatic drawings to facilitate understanding the instructions.

The Manufacturer shall, in preparing the instruction manuals, take into account the lack of experience and familiarity of the Operators with this type of equipment.

The manual shall give specific information as to oil, grease, or any other materials needed for maintenance operations. This information shall include brand names and manufacturer's numbers or designations for at least two brands available in Kenya, preferably manufactured in Kenya.

10.14.1 A complete set of the Operating and Maintenance manuals for All the Plant, Equipment and Accessories to be installed/mounted in the switchgear panels shall be sent to the Employer together with the Drawings for Approval. The operating and maintenance manuals shall be original copies printed by the manufacturer. Any illegible copies of the operating and maintenance manuals submitted shall be rejected by the employer.

10.14.2 Before Approval of Shipment of the switchgear Panels, 2 copies each of the manuals shall be sent to the employer by Courier for purpose of evaluation.

10.15.0 Testing At Place Of Manufacturer

10.15.1 The manufacturer shall be responsible for performing or for having performed all the required tests specified under the specification for the switchgear and all the Current Transformers, Protection Relays, Energy Meter, Measuring and Indicating instruments.

10.15.2 Tenderer shall confirm the manufacturer's capabilities in this regard when submitting tenders. Any limitations shall be clearly specified.

10.15.3 Tender documents shall be accompanied by copies of Type test and Routine test reports & certificates for similar rated equipment for the purpose of tender evaluation. Type test reports & certificates shall be certified by the National Standards and Testing Authority (NSTA) of the country of origin or by a third party Reputable Testing Authority. Where a body other than NSTA is used to certify the type-test reports, a copy of the certificate of accreditation shall be attached. Current contact information of the testing and certification authority shall be provided. Tenderers should note that this requirement is Mandatory.

10.16.0 Software

- 10.16.1 One copy of each different type of Software in a CD Rom, for Protection Relays and other measuring and Control Devices whose Configuration and Settings is Software based and the connection Cable (Two for each type of device) shall be sent to the employer by courier before Approval for Shipment of the Switchgear Board is granted by the Employer. All the software indicated in the Technical Schedules shall be supplied. The software shall also be capable of downloading and analyzing data from the Relay/measuring device.
- 10.16.2 It shall be possible to load the software into at Least 2No. Different Laptop Computers without requirement for additional licenses, in order to facilitate Operations.
Where additional licenses are required, the cost shall be considered to have been included in the bid.
- 10.16.3 One (1) set of hard cover manuals for each type of software Supplied providing detailed instructions for programming settings and configuration of the relays and other devices and downloading of data, shall be supplied with the switchgear.

10.17.0 Spare Parts

- 10.17.1 The manufacturer shall furnish spare parts as listed in the specifications.
- 10.17.2 The spare parts supplied shall be packed or treated in such a manner as to be suitable
for storage under the climate conditions at the Site for a period of not less than two
years, and each part shall be clearly marked with the description and purpose on the
outside of the package. The manner of storage shall be recommended by the
manufacturer.
- 10.17.3 Spare parts so provided shall be delivered with the switchgear to the employer's
stores. Delivery of spare parts will not be deemed to be complete until the
packages
have been opened and their contents checked by a representative of the Employer.

10.18.0 Detailed Specifications For 415 V Ac Metal-Clad Indoor Switchgear Panels

10.18.1 Construction For Each Panel

The whole switchgear equipment and components shall be designed and constructed in accordance with IEC 60298 and IEC 60947. The Board shall be complete with all the relevant components including, Busbars, Circuit Breaker, Cable Compartment, Instrument Transformers, Protection Relays, instruments and controls.

- (a) The Switchgear Board, shall be constructed to 1P42 degree of Protection in accordance with IEC 60529. A type test Report for the Degree of Protection of the Switchgear panels from a third party Reputable Testing Laboratory or Certified by the National Standards and Testing Authority (NSTA) or a laboratory Accredited to the NSTA shall be submitted with the Tender for Evaluation Purposes.
- (b) The switchgear panel or cubicle shall be built up of separate metal clad-compartmented cubicles with earthed metal partitions. The compartments shall be for busbar, cable connection and current transformer, Air circuit breaker, and Protection and Control compartments.
- (c) The Air circuit breakers shall be mounted on an inbuilt carriage to facilitate Isolation and withdrawal of the Air Circuit Breaker. Where the carriage is fixed in the compartment and does not allow complete withdraw of the Air circuit breaker outside it's compartment, then a purposely built Trolley shall be provided equipped with a lowering/raising gear to lower the Air circuit breaker to the floor, and to raise the circuit breaker to it's compartment by one switching operator.
- (d) The complete switchgear shall be such that the complete switchboard is of flush-front design.
- (e) All the Protection Relays, Auxiliary Relays, Energy Meters Indication Lamps, Instruments, Control and selection switches and any other associated accessories will be mounted in the Protection and Control compartment. All the Protection Relays, Auxiliary Relays, Energy Meters Indication Lamps, Instruments, Control and selection switches and any other associated accessories will be mounted in the Protection and Control compartment.
- (f) The cable compartment should have an anti vermin guard plate giving protection against rats, rodents etc.
- (g) The Circuit breaker compartment door shall be provided with provisions for padlocking.
- (h) The doors shall be capable of withstanding the effects of maximum internal arcing fault without being blown off and causing danger to other equipment/personnel.
- (i) The busbar shall be single, three phase, air insulated. The primary busbars and connections shall be of high conductivity and electrolytic material, high grade copper, and shall be in unit lengths.
- (j) Busbars, connections and their support shall be rated 8000A continuously under ambient conditions and capable of carrying the short-time current associated with the short circuit ratings of the circuit breakers, of 65kA for 1 Seconds.
- (k) Busbars shall be extensible at both ends, such extension shall entail the minimum possible disturbance to the existing busbar.
- (l) Provision shall be made for locking busbar and circuit shutters separately in the Circuit Breaker compartment.

- (m) Provision shall be made for integral circuit earthing and for busbar earthing. Means of earthing shall be by circuit breaker or purposely built earth switch. Mechanical interlocks to ensure correct switching operation shall then be provided.
- (n) The earth switch shall be easy to operate by one operator and be spring loaded to ensure Effective Make Operation independent of the Operator Action. The earth switch shall be rated to make and carry for 3 seconds, the rated short-circuit current of the Air Circuit Breaker.
- (o) The Status of the earth Switch shall be visible from the front of the Panel.
- (p) The operation of the Earth Switch shall be set in such a way that during both the Close and Open Operations, a clearance of at least 9 inches shall be maintained between the operating handle and the bottom of the switchgear panel.
- (q) It shall not be possible to insert the Earth switch Operating handle into Position except when the Circuit breaker is in the Test or Isolated Position.
- (r) All Earthing facilities shall be rated for fault making at the rated switchgear short-circuit current.
- (s) The Panel wiring for protection, instruments, indication and metering circuits and other control accessories shall be completely done. All circuits for connection to external cables such DC & AC auxiliary supplies, external tripping, and Indications shall be wired up to the terminal Block at the Back of the panel where external cables shall be connected. At least 12 spare terminals shall be provided on the terminal board for any future requirements.
- (t) It is emphasized that Each Switchgear panel will have a terminal block at the back of the panel where all external cables such as Auxiliary DC supply, shall be made.
- (u) Auxiliary 24 V DC supplies for Circuit Breaker control, Alarm circuits and Protection relays, shall be controlled by suitably rated Miniature Circuit Breakers.
- (v) The cubicle shall be tropical vermin proof. The plates shall be of mild steel thoroughly cleaned by shot blasting or other approved methods. They shall then be given a primary coat and two coats of contrasting colour of durable and weather resisting paint. The final coat shall be gloss and of Admiralty Grey (Shade 632) as specified in BS 381C. The final thickness of the paint shall not be less than 80 Microns at any point within the switchgear panel
- (w) Anti-condensation heaters shall be provided inside each cubicle. They shall be located so as not to cause injury to personnel or damage to equipment. The heaters shall be controlled by a hygostat with a variable humidity and

temperature setting. The Heaters shall be dimensioned to ensure that condensation cannot occur within the switchgear panel.

- (x) The 240V AC supply, for the heaters shall be controlled by a suitably rated single pole miniature circuit Breaker.
- (y) All the switchgear panels shall be rodent and vermin proof.

10.18.2 Draw out Circuit Breakers

- (a) The Draw out circuit breaker shall be three pole operated, indoor type, Air Circuit Breakers.
- (b) The moving portion of each circuit breaker shall consist of a three-pole circuit breaker, operating mechanism, primary and secondary disconnecting devices, auxiliary switches, position indicators and necessary control wiring. The Auxiliary switches shall be of the plug-in type, with the male contacts mounted on the Breaker carriage and the female contacts on the plug-in cable connected to the Panel wiring. Other options may be considered where there is adequate proof that the auxiliary contacts will always be making firmly without mis-alignment. Finger contacts will however not be acceptable.
- (c) The Draw out circuit breakers of the same current and voltage ratings shall be fully interchangeable, both electrically and mechanically.
- (d) Name plate for the circuit breaker shall be provided with all the required details as per IEC Standards.
- (e) The Draw out circuit breaker operating mechanism shall be motor wound spring operated, power closing with electrical release and with provision for hand charge.
- (f) Mechanical indication shall be provided to indicate the state of the spring.
- (g) The operating mechanism shall be completely trip free both mechanically and electrically.
- (h) The Draw out circuit breaker shall have a mechanical operations counter
- (i) One mechanical ON/OFF indicator, with inscription "ON" white letters on red background and inscription "OFF" white letters on green background shall be provided for the circuit breaker.
- (j) One mechanical indication of the state of the spring inscription – SPRINGS CHARGED (white letters on red background); SPRINGS FREE, (white letters on green background) shall be provided for the circuit breaker.
- (k) The breaker controls shall have anti-pumping facilities.

- (l) Where the Draw out Circuit Breaker is used for Circuit or Busbar Integral earthing, the control wiring of the breaker housing should be such that when the breaker is in circuit earth or busbar earth positions it shall only be Operated mechanically and not electrically.
- (m) The Draw out Circuit Breaker Maintenance and Operations Manual shall contain clear instructions on the Maintenance requirements of the Circuit Breaker (if any), to prevent Switchgear failure in service, due to excessive Fault Current Clearance or any other cause.

10.18.3 Current Transformers

- (a) Current transformers shall be Cast Resin Type and shall be accommodated inside the cubicle, in a separate compartment.
- (b) The current transformers shall be in accordance with the requirement of IEC 60044-1 and shall have the specified accuracy under load conditions and shall be able to withstand the effect of short-circuit fault current rating of the switchgear, of 65kA for 1 seconds.
- (c) Current transformers shall have a rated burden as specified, sufficient for the connected Numerical Protection relays and Energy meters and instruments.
- (d) Copies of Type Test certificates and routine Test Reports/Certificates as per IEC 60044-1, of CTs of similar Rating and Class as the specified CTs shall be submitted with the Tender for tender Evaluation Purposes. The Specified CTs must be within the Product Range of the manufacturer.

10.18.4 Protection Relays

- (a) The Measurement relays shall be Flush mounted and of Numeric Design, with event recording, Fault recording, power measurement, and shall be in accordance to IEC 60255.*
- (b) Besides the communication port, the relays shall have a human – machine interface facility (MMI) with and LCD Screen where one can easily access relay information.
- (c) Relay contacts shall be suitable for making and breaking the maximum currents, which they are required to control in normal service. Where contacts of the protective relays are not sufficient for Circuit Breaker Tripping, auxiliary Trip relays shall be provided, in order to prevent Damage to output contacts of the Measuring relay.
- (d) Relay contacts shall make firmly without bounce and the relay mechanism shall not be affected by Panel vibration or external magnetic fields.
- (e) Relays shall be provided with clearly inscribed labels describing their functions and IEC Device Function numbers.

- (f) Relays shall be suitable for operation on the station D.C. supply without use of dropping resistors or diodes.
- (g) To reduce the effect of electrolysis, relay coils operating on DC shall be so connected such that they are not continuously connected from the positive pole of the station battery.
- (h) The relay Thermal rating shall be such that the fault clearance times on any combination of current and time multiplier settings shall not exceed the thermal withstand capability of the relay. (Max. fault current = 25kA).
- (g) The relays shall be EMC 89/336/EEC compliant.

10.18.5 Indications And Instruments

- (a) All instruments shall be flush mounted and shall be in accordance with the requirement of IEC 51.
- (b) Each cubicle shall have the following indications:-
 - (i) One indicator lamp to show the breaker in closed position - RED colour
 - (ii) One indicator lamp to show the breaker in open position - GREEN colour
- (c) The instruments shall be supplied as described under each panel in the subsequent sections.

10.18.6 Power Cable Termination

Cable compartment design shall be suitable for heat shrinkable (or equivalent) jointing application termination. The compartment shall be adequate for connection of cables to evacuate the total load of 1600 Amps.

10.18.7 Accessories:

The following accessories shall be supplied with the switchboard at no extra cost:

- | | |
|--|------------|
| (a) Spring charging handle | Two sets |
| (b) Circuit breaker draw out handle | Two sets |
| (c) Recommended set of circuit breaker maintenance tools | One set |
| (d) Rack in/out tool and transportation trolley. | One number |

10.18.8 Consumable Spares

The following consumable spares shall be supplied with the switchgear board.

- Two (2) Electronic Fuel Control Units (Governor).
- Two (2) Automatic Voltage Control Unit (AVR)
- Four (4) Trip Coils
- Four (4) Closing Coils
- Five (5) Fuses of each type of fuse
- Two (2) MCB of each type
- Five (5) Bulbs of each type of bulb

Two (2) Circuit Breaker Control Switch
 Two (2) Ammeters with MDI for Feeder, with face plates for both C.T. ratios
 Two (2) Generator Control Units for parallel operation and load sharing.

10.19.0 Ratings Of Switchgear and Equipments

10.19.1 Generator and bus coupler Air Circuit Breaker

Interrupting Medium	Air
Number of poles	3
Highest equipment Voltage	600 V AC
Nominal System Voltage	415 V AC
One minute power frequency withstand voltage	3 kV
Impulse withstand voltage (BIL)	8 kVp
Frequency	50 Hz
Rated short time current	65 kA
Rated Short circuit current withstand	65 kA, 1 seconds
Auxiliary D.C. voltage for closing and tripping coils	24 V DC
Auxiliary a.c. voltage	240V AC, 50Hz
Tripping/closing coil auxiliary voltage	24 V DC
Spring charging motor supply	240 V AC
Rated normal Current	6000/2500/1600A

10.19.2 Current Transformers for Generator incomer Panels

Rated Short time current (STC) withstand	25 kA for 3 seconds
Rated Voltage of the CT	600 V
One minute power frequency withstand voltage	3kV
Impulse withstand voltage	8 kVp
Rated maximum continuous current	2500Amps/1600 Amps

Ratio and class:

(i) Incomer Panels:

Core 1:	C.T Ratio	: 2500-1600/1 A
	Class	:5P10
	VA	:10VA

Core 2:	C.T Ratio	:2500-1600/1 A
	Class	:0.5
	VA	:10VA

(ii) Generator panels:

Core 1:	C.T Ratio	: 2500-1600/1(Turns-ratio)
	Class	: 0.5
	Imag	:<0.02 A
	Vk	: >250 V
	Rct	:10 Ohms

10.20.0 Tests

All switchgear shall be tested in accordance with the requirement of IEC 60298. Tests shall be carried out on the circuit breakers as per the requirement of IEC 60947. Current transformers shall be tested in accordance with the requirement of IEC 60044-1.

10.20.1 Schedule of Tests to be carried out at the Manufacturer's plant

- (a) Test on Complete 415 V AC Switchgear Board
 - (i) Power frequency Withstand Test
 - (ii) Megger Test
 - (iii) Contact resistance test of Primary joints
 - (iv) Power frequency Withstand Test on secondary Wiring
 - (v) Dimensional Checks
 - (vi) Operational/Functional Tests
 - (vii) Primary Injection Tests
 - (vii) Calibration Tests on Relays and Instruments.
- (b) 600 V AC Air Circuit Breaker
 - (i) Routine tests.
 - 1. Operation test.
 - 2. High Voltage test, dry. 3kV Power frequency Voltage test on controls and auxiliary circuits.
 - 3. Measurement of resistance of the main circuit.
 - (ii) Type Tests: Submit copies of Type test Reports and Certificate
 - 1. Mechanical endurance test
 - 2. Temperature rise test.
 - 3. Impulse voltage test
 - 4. Interrupting Capacity test.

NB: Copies of Type Test Certificates for similar rated Circuit Breakers and Certified by National Standards and Testing Authority body or Reputable Third Party Test Laboratory shall be submitted with the Tender for Evaluation Purposes.

(c) Current Transformer

Type and routine tests shall be carried out at the manufacturer's plant as per the requirement of IEC 60044-1, as listed below.

- (i) Polarity Test and Verification of terminal markings
- (ii) Ratio and phase angle error test (accuracy class composite error test)
- (iii) Power frequency Tests on Primary and secondary windings

10.30.0 Protection Relays, Controls And Measuring Devices

10.30.1 General Requirements

Protection against electrical faults and abnormal conditions on 415 V AC Switchboard shall be conducted by the protective relays and associated switchgear. The Protection schemes shall be designed to ensure detection of all faults, fast discriminative fault clearance in order to ensure safety of personnel, equipment and continuity of Electric Power Supply.

10.30.2 Specific Requirements

(a) Generator Incomer Panels

Each Incomer Panel shall be equipped with the following Protection Relays, Measuring and indicating devices, Controls and other Accessories.

- (i) Three phase overcurrent and earth fault.
- (ii) Combined Earth Fault and sensitive Earth Fault Relay.
- (iii) Three Ammeters with MDI with face plates available for both CT ratios. The Ammeter shall indicate both the instantaneous Load current and also the Maximum Demand Load current since the last reset.
- (iv) Energy Meter
- (v) Voltmeter and Voltage Selector Switch, Circuit breaker control switch (Close, Open & Neutral), with a mechanical Lock, to prevent unintended tripping of the Circuit Breaker.
- (vi) Sensitive Earth Fault (SEF) mechanical isolation link or switch.
- (vii) Circuit Breaker ON(red) and OFF(green) Indication lamps.
- (viii) Anti-condensation Heater.
- (ix) Hygrostat with separate Humidity and Temperature control Setting.
- (x) Door switch Operated Lighting point and Bulb.
- (xi) 3 Pin - Square Power Socket Outlet with red neon indicator.
- (xii) Suitably rated MCBs for Auxiliary 24V DC and for 240 V AC supplies.

(b) Common Alarm System

A common Alarm System shall be supplied equipped with the following:

- (i) Urgent Alarm relay
- (ii) Non-urgent Alarm relay. NB: The urgent and non-urgent Alarm relays will be separate Relays.
- (iii) 16 window Annunciator relay.
- (iv) Hooter.
- (v) Suitably rated MCBs for Auxiliary 24V DC and 240 V AC supplies.

10.31.0 Protection Relays And Control Devices
Reference Standards IEC 60255: Electrical Relays

10.31.1 General Requirements

- (a) The electrical Measuring protective relays shall be of Numeric Design. The Protective Relays and Auxiliary Relays shall operate successfully for any value of the DC supply voltage between 85% and 125% of the rated voltage of 24 V DC without exceeding the temperature rise limits for the operating coils.
- (b) Each Measuring protection relay shall be of the Panel flush mounted, back connected, type with rectangular case. Each relay shall have a removable transparent cover or cover with a transparent window making the front of the relay visible. It is preferred that each measuring relay shall be of a withdrawable type from the front of the panel with sliding contacts, without opening the current transformer secondary circuits, disturbing external circuits or requiring disconnection of leads on the rear of the panels.
- (c) Each protection relay shall be equipped with adequate electrically independent contacts, of adequate rating for Trip and alarm functions.
- (d) Relays contacts shall be suitable for making and breaking the maximum currents, which they may be required to control in normal service. Where contacts of the protective relays are unable to deal directly with the tripping currents, Auxiliary Trip relays shall be provided. This will ensure safety for the protection relays output contacts.
- (e) Relays contacts shall make firmly without bounce and the whole of the relay mechanism shall be as far as possible unaffected by vibration or external magnetic fields.
- (f) Relays shall be provided with clearly inscribed labels on the surface of the panel describing their application in words e.g., “Three Overcurrent & Earth Fault Relay” in addition to the IEC numbering and outside.
- (g) The Numerical Relays will be equipped with an RS232 Communication Port to facilitate connection to a Laptop. Also a communication port shall be provided on each Numerical Relay for Remote Interrogation and Programming of the Numerical Relays.
- (h) The Relays will also have an MMI with LCD screen and Keypad to facilitate manual Relay programming and Data access.

- (i) Relay Operation due to system fault, shall be indicated by a Red L.E.D. and the fault details (flags) shall be displayed on the MMI. Both the Relay Fault flags and Red L.E.D shall be reset via Reset push buttons without opening the Relay Cover.

10.31.2 Detailed Specifications For Relays, Measuring And Indicating Instruments, Control Switches And Other Accessories

These specifications indicate the required performance characteristics for each of the Protection Relays and are in accordance with IEC 60255.

(a) Three phase overcurrent and earth fault relay

Should incorporate the following Features:

- (i) Relay must be of Numerical Design.
- (ii) Shall be suitable for mounting on the panel front.
- (iii) Current setting range for overcurrent relay 0.2In-2.4In.
- (iv) Current setting range for earth fault relay 0.05In-0.8In.
- (v) I.D.M.T characteristics according to BS142 or IEC255 i.e. SI, VI, EI, LTI, including definite time for the high-set Elements.
- (vi) Time setting multiplier 0.05 - 1.0.
- (vii) Broken conductor protection feature
- (viii) Highest Element for both overcurrent and earth fault with.
- (ix) Protection, with a setting range of 1-30In and a definite time delay setting of 0 - 60 Seconds.
- (x) Drop off /pickup ratio >90%.
- (xi) Low transient overreach < 10%.
- (xii) LCD screen where the Settings and Measurands can be read.
- (xiii) Keypad for manual programming of settings and data access Serial RS232 Port for Programming of the Relay and Access of Data using a Laptop Computer on the front surface of the Relay.

(b) Earth Fault Relay

Should incorporate the following Features:

- (i) Relay must be of Numerical Type.
- (ii) Current setting range 0.05In-0.8In.
- (iii) I.D.M.T characteristics according to BS142 or IEC255 i.e. SI VI, EI, LTI, including definite time for the high-set Elements.
- (iv) Time setting multiplier 0.05 - 1.0.
- (v) Highest Element with a setting range of 1-30In.
- (vi) Circuit Breaker Maintenance.
- (vii) Drop off /pickup ratio >90%.
- (viii) Low transient overreach < 10%.

- (ix) LCD screen where the Settings and Measurands can be read.
- (x) Keypad for manual programming of settings and data access Serial RS232 Port for Programming of the Relay and Access of Data using Laptop Computer on the front surface of the Relay.

(c) Sensitive Earth Fault Relay

Should incorporate the following Features:

- (i) Relay must be of Numerical Type.
- (ii) Current setting range for earth fault relay 0.010In- 0.8In.
- (iii) Definite time delay characteristic; setting range, 0- 30 Seconds.
- (iv) Drop off /pickup ratio >90%.
- (v) Low transient overreach < 10%.
- (vi) LCD screen where the Settings and Measurands can be read.
- (vii) Keypad for manual programming of settings and data access.
- (viii) Serial RS232 Port for Programming of the Relay and Access of Data using a Laptop Computer on the front surface of the Relay.

(d) Reverse Power Relay

Should incorporate the following Features:

- (i) Relay must be of Numerical design.
- (ii) Directional Power setting range, 0.2 to 20%.
- (iii) Definite time Delay; 0.4 to 10 seconds in suitable steps.
- (iv) LCD screen where the Settings and Measurands can be read.
- (v) Keypad for manual programming of settings and data access Serial RS232 Port for Programming of the Relay and Access of data using a Laptop Computer on the front surface of the Relay.

(e) Biased differential protection for a Generator

This should incorporate the following Features

- (i) Relay Must be of Numerical design.
- (ii) Pick up setting range, 0.1 to 0.5In.
- (iii) Should incorporate a high-set Element with a setting range of up to 20In.
- (iv) Magnetizing current inrush restraint.
- (v) Integral CT ratio compensation (0.1-2) and vector group compensation.
- (vi) Measurement and indication on the MMI, of phase, differential and bias currents.

- (vii) Storage of Fault records and Event records; the Fault flags should be accessible on the relay LCD screen without opening the relay cover.
- (viii) Overfluxing restraint on the differential function.
- (ix) Separate function that performs overfluxing protection with alarm and trip functions.
- (x) 5th harmonic restraint feature on the differential Element.
- (xi) Appropriate Dual Bias characteristic to ensure relay stability for heavy through faults.
- (xii) Should incorporate a disturbance recorder feature.
- (xiii) Red L.E.D to indicate Tripping.
- (xiv) Relay Self diagnostic and Alarm feature.
- (xv) Ability to Latch output contacts to prevent TX re-energization before carrying out investigations.

NB; High Impedance Differential Protection Relay to be offered as an option, in place of Biased differential Protection Relay.

(f) Annunciator Relay Unit

- (i) Shall have Silence, Accept and Reset, push buttons, to control the Alarms.
- (ii) Shall be equipped with At Least 16 separate alarm Elements.
- (iii) Each of the elements shall be freely assigned to one of two common output.
- (iv) Alarms; Urgent and NON-urgent Alarm.
- (v) Each Alarm Element shall have a Red L.E.D. to indicate ON status. It shall also have provision for fixing of Identification Label changeable on site. A flashing Alarm element shall be clearly visible.
- (vi) The Urgent and Non-Urgent common Alarms Shall be freely configurable to the output Relays.
- (vii) High Immunity against Electrical interference.
- (viii) Relay output for audible alarm and for self supervision shall be provided.
- (ix) Integrated event register to provide analysis of the latest sixteen (16) events.

(g) Circuit breaker Close/Open control Switch

The switch shall have a mechanical interlock to prevent accidental operation of the switch. It shall have a close, Neutral and Open positions engraved on the switch. After an operation, the switch shall return to the neutral Position by spring Action.

(h) Indicating Instruments, Directly connected

ALL the instruments shall be of Moving Iron type

- (i) The IP Protection Class shall be IP54.
- (ii) Accuracy class shall be 1.5, with maximum tolerated error of $\pm 1.5\%$ of final scale value.
- (iii) Overload withstand shall be at least 20% continuous.
- (iv) All instruments shall be suitable for continuous operation under Tropical Climatic conditions.

(v) Ammeter Instrument with MDI 2500– 1600A

Indicating Range, 0 –25000- 1600 A for current input of 0 – 1A

Full Scale Deflection, 1600 A

Black Scale on white background

Dimensions 96 mm x 96 mm

Shall have a resettable maximum demand indicator having a different color from the normal pointer as well as the normal instantaneous demand pointer.

Shall be Suitable for Flush Mounting on the panel.

(vi) Voltmeter Instrument - 415 V AC

Indicating Range, 0 – 500 V AC

Black Scale on white background

Dimensions, 96X96 mm.

Suitable for Flush Mounting on the panel

(vii) Signaling Hooter

The actuator system shall consist of a strong, non polarized electromagnet with an impact resistance sturdy casing.

Rated frequency 50 HZ.

Rated voltage shall be 240V AC; $\pm 6/-10\%$

Protection degree shall be IP 55

Operating mode continuous

Volume approximately 108 dB(A) 1 ¼ m

Connection terminals shall be 2.5 mm²

(viii) Anti-condensation Heater

The heater should be suitable for mounting inside a Protection or Control panels with Protection Relays and other measuring and control devices. The Heater shall be rated at 200W or other suitable rating and 240V AC and should be suitable for preventing condensation within the panels. The heater shall have terminals suitable for connection of 2.5 mm² conductor. The heater shall be suitable for mounting on a DIN rail inside the panel.

(ix) Indicating Lamps

Shall be suitable for mounting on the front of the panel.

The bulb shall be supplied together with the mounting base.

The Lamp Indicators should be rated for 30V DC and equal or less than 2.5W rating.

The bulb should be designed for continuous operation and give a long life of at least 10 Years.

The bulb shall be easily replaceable without using a special tool.

NB: LED Indicators are preferred

5.7.10.10 Detailed Specifications For The Energy Meters

NB: These energy meters are for tariff metering similar to those used by Utilities

These specifications are for energy meters to be installed on the switchgear panels for purposes of Recording delivered Electrical Energy, and are in accordance with IEC 61334-4-4-1(DLMS Standard protocol).

- (j) The CT and VT ratios shall be programmable. The meters shall have an accurate internal quartz controlled clock. It should be possible to reset the clock without loss of billing data. The supplier shall show proof of ISO 9000 and ISO 14000 standards compliance by attaching copies.
- (k) The meters shall be provided with adequate sealing facilities to prevent tampering. The nameplate and meter details shall be clearly marked using materials and colors that are durable and indelible.
- (l) In addition to requirements of IEC 687 the name-plate shall carry the following particulars:
The inscription “ The property of KPLC”
Owner’s serial numbers as directed with a minimum 5mm figure height.
Year of manufacture.
- (m) The meter base cover shall be of non-metallic, non-hygroscopic, flame retardant, polished material having high impact-resilience and low dirt absorption properties. The front cover may be of translucent material with a clear transparent front. The meter shall have a minimum of three sealing - provisions for the meter body, terminal cover and front cover (where applicable).
- (n) The meter terminal cover shall be the normal short length with provisions of easy bottom breakage for cable entry. The terminals shall be of bottom entry, and the arrangement shall be:

**L1 L 1: L2 L2: L3 L3: N or
I1 V1 I1: I2 V2 I2: I3 V3 I3: N**

The accuracy shall be Class 0.5. The meter errors shall comply with the requirement IEC 687 and shall be adjusted at the manufacturer’s works and shall exhibit good stability. The meter shall have a warranty against any defects, which may develop due to faulty material, calibration, transportation or workmanship for a period of not less than eighteen months from the date of delivery. All defective meters shall be replaced at the supplier’s cost.

- (o) The following drawings and information shall be required with the tender:
 - i. Meter drawing giving all the relevant dimensions.
 - ii. Wiring diagrams.
 - iii. Description leaflet including details of programming of the meters
 - iv. User’s and service manuals.

PART III - SPECIFICATIONS FOR 11KV AC METAL-CLAD SWITCHGEAR BOARD

10.32.0 Detailed Specifications For 11KV Ac Metal-Clad Indoor Switchgear Panels

10.32.1 SCOPE

- a) This Specification covers the basic requirements in respect of 11 kV, 25 kA (with highest system voltage of 12 kV) indoor switchgear integrated with associated indoor control and relay panels for installation at Mander Power station. Clause 5 of the Specification covers the requirements of indoor switchgear with relays & controls. The control and relay panel should form integral part of the switchgear (i.e. should be physically integrated into one unit).
- b) The equipment offered shall be complete with all parts necessary for their effective and trouble-free operation. Such parts will be deemed to be within the scope of the supply irrespective of whether they are specifically indicated in the commercial order or not.
- c) The respective drawing along with notes and specification attached hereto form an integral part of this specification for all purposes.
- d) It is not the intent to specify herein complete details of design and construction. The equipment offered shall conform to the relevant standards and be of high quality, sturdy, robust and of good design and workmanship complete in all respects and capable to perform continuous and satisfactory operations in the actual service conditions at site and shall have sufficiently long life in service as per statutory requirements. In actual practice, notwithstanding any anomalies, discrepancies, omissions, incompleteness, etc. in these specifications and attached drawings, the design and constructional aspects, including materials and dimensions, will be subject to good engineering practice in conformity with the required quality of the product, and to such tolerances, allowances and requirements for clearances etc. as are necessary by virtue of various stipulations in that respect in the relevant Standards, IEC standards, BS. Rules, Act and other statutory provisions.
- e) The Tenderer/supplier shall bind himself to abide by these considerations to the entire satisfaction of the employer and will be required to adjust such details at no extra cost to the employer over and above the tendered rates and prices.

10.32.2 TOLERANCES:

Tolerances on all the dimensions shall be in accordance with provisions made in the relevant standards and in these specifications. Otherwise the same will be governed by good engineering practice in conformity with required quality of the product.

10.32.3 SERVICE CONDITIONS:

- a) System particulars:

1	Nominal system voltage	11kV
2	Corresponding highest system voltage	12kV
3	Frequency	50 Hz \pm 3%
4	Number of phases	3
5	Neutral earthing	Solidly grounded
6	Short Current Rating	25 kA

- b) Equipment supplied against the specification shall be suitable for satisfactory operation under the following tropical conditions:-

a	Max. ambient air temperature	50°C
b	Max. relative humidity	100 %
c	Max. annual rainfall	1450 mm
d	Max. wind pressure	150 kg/sq.m.
e	Max. altitude above mean sea level	1000 mtrs.
f	Isoceraunic level	50
g	Seismic level(Horizontal acceleration)	0.3 g.
h	Climetic condition	Moderately hot , humid and dusty tropical climate conductive to rust.
i	Reference Ambient Temperature for temp. rise	50°C

The climatic conditions are prone to wide variations in ambient conditions and hence the equipment shall be of suitable design to work satisfactorily under these conditions.

- c) Auxiliary supplies available at Mandera Power stations are as follows:-

i.	A. C. Supply	240 volts with \pm 10% variation
ii	D.C. Supply	30 V DC with +10% to – 15% variation
iii	Frequency	50 Hz with \pm 3% variation

10.33.0 CODES AND STANDARDS

10.33.1 The design, manufacture and performance of the equipment shall comply with all currently applicable statutes, regulations and safety codes. NOTHING IN THIS SPECIFICATION SHALL BE CONSTRUED TO RELIEVE THE TENDERER OF THIS RESPONSIBILITY.

10.33.2 Unless otherwise specified, the equipment offered shall confirm to the latest applicable, IEC, British or U.S.A Standards and in particular, to the following:-

a.	BS	High Voltage Alternative current circuit breaker
b.	BS	High-Voltage Switchgear and Control gear Standards
c.	IEC 694	Common clauses for switchgear
d.	BS	A.C. Metal Enclosed Switchgear and Control gear

e.	BS	Voltage transformers
f.	BS	Current transformers.
g.	BS	Hollow Insulators for use in electrical equipment
h.	BS	Porcelain Post Insulators
i.	BS	MCB
j.	BS	Degree of protection provided for enclosures for electrical equipment.
k.	BS	Colours for ready mixed paints and enamels.
l.	BS	Marking of insulated conductor.
m.	BS	Guide for Uniform System of Marking and Identification of Conductors and Apparatus Terminals
n.	BS	Indicating instruments.
o.	BS	Energy meters
p.	BS	Control switches.
q.	BS	Electrical Relays for Power System Protection.
r.	BS	Static protective relays.
s.	BS	Push button.
t.	BS	High Voltage Fuses
u.	BS	Indoor post insulator of organic material

10.33.3 In the event of offered equipment conforming to standards other than the above, the salient points of comparison between the standard(s) adopted and the relevant standards shall be indicated in the technical offer. Copies of the standard adopted shall be invariably furnished with the offer.

10.34.0 GENERAL TECHNICAL REQUIREMENTS:

10.34.1 11KV INDOOR SWITCHGEAR :

Switchgear for Indoor installation shall be metal clad, draw-out type and fully compartmentalised having 25 kA short time current rating. All panels shall be of unitized construction providing facility for extensions on both sides. Three types of switchgear panels are required, viz. the incomer panel, the bus section panel and the feeder (outgoing) panel.

All these shall be housed in a 40 feet ISO (CSC certified) steel container which be partitioned to incorporate 11KV switchgear room, DC system battery bank and the supervisory desk control room .

The steel container shall be new, factory tested and have protective painting of 2 coat RAL9001 epoxy and polyurethane so as to withstand normal atmospheric conditions for the tropics without requiring any housing.

The 40 feet container shall bare the following specifications;

A. It shall be portioned in three sections

- 1. Section 1- To house 11KV switchgear panels (600.096 * 2400 *2400mm Approx.)**
- 2. Section II – To house the DC battery bank. (1800 *2400 *2400mm Approx.)**
- 3. Section III – To house the supervisory control desk. (4200*2400 *2400mm Approx.)**

The partition shall be of plastic glass wall with through doors from supervisory desk to the 11KV switchgear section .

An extractor fan shall be installed at the battery bank section.

B. The minimum requirements for the supervisory desk control room container shall be as follows:

- i. Sound proof by insulation panel
- ii. Air Conditioning sufficient for the control room
- iii. Door with anti-panic bar
- iv. Lighting with fluorescent tube 1 x 40w
- v. 2 Power socket 10/16 amps + Earth British Type
- vi. 1 extinguisher 9 kg CO2
- vii. 1 office desk
- viii. 2 executive high back chairs
- ix. 2 office chairs with arm rests
- v. Integration of cabinet

C. The minimum requirements for the 11KV Switchgear room of the container shall be as follows:

- i. Sound proof by insulation panel
- ii. Air Conditioning sufficient for the switchgear section.
- iii. Door with anti-panic bar
- iv. Lighting with fluorescent tube 2 x 40w
- v. 2 Power socket 10/16 amps + Earth British Type
- vi. 1 extinguisher 9 kg CO2

D. The minimum requirements for the Battery Bank system room of the container shall be as follows:

- i. Sound proof by insulation panel
- ii. Air Conditioning sufficient for the switchgear section
- iii. Extractor Fan sufficient for the room
- iv. Lighting with fluorescent tube 1 x 40w
- v. 1 extinguisher 9 kg CO2

- 10.34.2 Circuit Breakers used shall be VCBs of specified rating for the various types.
The design of the breaker truck shall be such that there will be flexibility of interchanging between incomer breaker/isolator, bus-section and feeder trucks, where similar rated breakers are offered.

10.34.3 Bill of materials :

Bill of materials for the incomer, bus section and feeder panels shall be as follows :

10.34.4 Incomer panel

- i. 2 fixed Isolators with fuse of rating of 800 Amps, complete with operating mechanism and accessories.
- ii. Two mechanical ON/OFF indicator

10.34.5 Bus-section panel

- i. One draw-out type vacuum circuit breaker having 630 Amps continuous current rating and 25 kA for 3 sec. short time current rating, complete with operating mechanism and accessories.
- ii. Remote-local switch for circuit Breaker.
- iii. One mechanical ON/OFF indicator
- iv. One mechanical 'spring charged' indicator
- v. Three nos. space heaters with thermostat control, one each for the breaker chamber, bus bar chamber and the CT/cable chamber along with a common MCB mounted inside the L.T. control cubicle.
- vi. Set of MCBs, stud type terminals, and control wiring.
- vii. Fuse and link for Motor Starter

10.34.6 Feeder (outgoing) panel

- i. Draw-out type vacuum circuit breaker having 630 Amps continuous current rating and 25 kA for 3 sec. short time current rating, complete with operating mechanism and accessories.
- ii. CTs of ratio 400-200/5-5 A
- iii. Remote-local switch for circuit Breaker.
- iv. One mechanical ON/OFF indicator
- v. One mechanical 'spring charged' indicator
- vi. Three nos. space heaters with thermostat control, one each for the breaker chamber, bus bar chamber and the CT/cable chamber along with a common MCB mounted inside the L.T. control cubicle.
- vii. Set of MCBs, stud type terminals, and control wiring.
- viii. Fuse and link for Motor Starter
- ix. All Relay and instruments etc. as per clause 5.7

10.35.0 **BUSBAR:**

10.35.1 11 kV bus bars shall be of electrolytic copper and shall be rated for 2000 Amps continuous current. Cross sectional area shall not be less than 1250 sq.mm. Current density of 1.6Amps/sq. mm shall be considered for the bus bars. The bus bar edges/ ends shall be rounded off/ chamfered so that there will not be any sharp edges/projections.

10.35.2 11kV bus support insulators and other equipment insulators shall have a

minimum creepage distance of 127 mm. These insulators shall be of solid core porcelain or epoxy resin cast, with suitable petticoat design. Insulators shall have a cantilever strength of not less than 1200 KgF.

10.35.3 All fasteners (Nuts Bolts) used for bus bar connections shall be of non magnetic stainless steel. Only belleville type washers shall be provided for each nut bolt. If the fasteners used are not of stainless steel the tenderer shall state in their offer the material used and confirm that the same is non-magnetic and is superior to stainless steel.

10.35.4 The bus bars alongwith their supporting insulators etc. shall have a short time current rating of 25 KA for 3 sec. This shall be confirmed by the tenderers in their technical offer.

10.35.5 Clearances between phases and between phase and earth shall be kept liberally so as to obtain high reliability. However minimum clearances as shown below shall be kept.

Sr. No.		Busbar Chamber	Breaker Chamber
1.	Phase to Phase	127 mm	127 mm
2.	Phase to earth	77 mm	77 mm

10.35.6 If any special insulating material is proposed to achieve the effect of above clearances details of the same shall be furnished in the technical offer.

10.35.7 Test certificate of bus bar for rated STC rating shall be submitted, alongwith offer, otherwise necessary confirmation shall be given in the offer for submitting the same for approval of C.E.(Distribution) prior commencement delivery.

10.36.0 DRAWOUT CIRCUIT BREAKERS:

The circuit breakers offered shall be Vacuum Circuit Breakers and of horizontal draw out Horizontal Isolation type. Breakers shall be of 3 pole design for use in 11 kV indoor switchgear.

10.36.1 The circuit breaker shall have 25 kA for 3 sec. short time current rating. The circuit breaker for incomer and bus section shall have 800 Amps. continuous current rating and for feeders shall have 400 Amps continuous rating. Circuit breaker shall be suitable for rapid reclosing cycle i.e., O-0.3 sec.-CO-30 sec.-CO.

10.36.2 The circuit breaker shall be provided with motor operated spring charged closing. Spring charging motor shall be suitable for 24V- DC. **Suitable rating starter shall be provided for Motor protection.** Spring release coil for closing shall be suitable for 30V DC. Provision shall be available for charging the springs manually as well, and to close CB mechanically.

10.36.3 Tripping of the circuit breakers shall be through "Shunt trip" coils rated for 30V DC auxiliary supply. It shall be possible to trip the breaker manually in case of necessity.

10.36.4 All circuit breakers shall have mechanical ON/OFF indicator and spring charge indicator. These shall be visible from the front without opening the panel door. Also there shall be provision for mechanical (manual) tripping and also for manual charging of the springs.

10.36.5 Each operating mechanism of the circuit breaker shall be provided with adequate number of Cam/Snap type auxiliary switches of normally open and normally closed contacts for the control and operation of the equipment with continuous current rating of 10 Amp. The Breaking capacity of the contacts shall be minimum 2 A with circuit time constant less than 20 milli seconds at the rated D.C. voltage. Normal position of auxiliary switches refers to contact position when circuit breaker is open.

10.36.6 Adequate numbers of “NO/NC” contacts of the C.B. shall be wired upto the terminal block for connection to the remote supervisory desk for indication. Interlocks, etc., as described under Cl.5.8 of this specification. Following contacts shall be wired up to the terminals and clearly marked up in the relevant drawings.

- a. Terminal for remote indication of breaker ON/OFF.
- b. Terminal for remote indication of spring charge.
- c. Terminal for remote indication of trip ckt. Healthy (Pre close and post close)

Minimum 4 pair each of “NO/NC” contacts shall be available as spare for use in the remote control desk for various/interlocks, voltage selection etc.

10.36.6 Insulation level of auxiliary contacts shall be 1100 volts, 2.5 kV for 1 min.

10.36.7 Safety shutters which close automatically to prevent accidental contact with the live bus after withdrawal of the C.B. shall be provided.

10.36.8 The tenderer shall offer suitable earthing trolleys to facilitate earthing of outgoing feeder circuits. Unit prices of earthing trolleys shall be quoted, per set two earthing trolleys are required.

10.36.9 Electrical anti pumping device shall be provided for breaker.

10.36.10 Principal parameter for the circuit breaker will be

- i. Rated voltage : 12 kV
- ii. Rated insulation level : 12/28/75 kV
- iii. T.R.V peak value : 20.6 kV
- iv. Rated symmetrical current breaking : 25 kA
- v. Rated making current (Peak) : 62.5 kA
- vi. Short time current rating : 25 kA for 3 second

10.36.11 Circuit breaker operation Tools

A rack in/out tool and necessary transportation Trolley for the breaker.

10.37.0 CIRCUIT BREAKERS CONTROL SWITCH:

- 10.37.1 Circuit Breakers Control Switches should have finger touch proof terminals. For the convenience of maintenance, screw driver guide should be from top/bottom of the switch and not from the side. Terminal wire should be inserted from the side of the switch terminal.
- 10.37.2 Terminal screws must be captive to avoid misplace during maintenance.
- 10.37.3 One contact to close in each position of Trip and Close. Contact not required in Neutral position. Contact rating shall be 12 A at 30 V DC.

10.38.0 PROTECTIVE RELAYS:

- 10.38.1 Static based relays shall be suitable for the station auxiliary supply (30 V d.c.) and shall have facility of a test push button to test the relay functioning.
- 10.38.2 The O/C & E/F relay and High speed Trip Relay should be of draw-out type.
- 10.38.3 For each incomer, bus section and feeder, non-directional IDMT over current and earth fault relays shall be provided for protection. One three element relay having two O/C elements and one E/F element shall be provided for this purpose. All these relays shall be of 3 seconds IDMT characteristics, the O/C elements having current setting variable from 50% to 200% of CT secondary ratings, and the E/F elements having current setting variable from 10% to 40%.
- 10.38.4 For each incomer Bus coupler and feeder, high speed tripping relay shall be provided. Over current & Earth fault relay shall be connected to trip coil through high speed trip relay.
- 10.38.5 All the relays shall be suitable for flush mounting, with only the flanges projecting on the front and connections at the back. Relays shall have dust-proof covers removable from the front. Protective relays shall have built-in test terminals.
- 10.38.6 Trip circuit supervision scheme shall be such that testing of trip circuit healthiness is possible irrespective of whether the C. B. is in the closed or open position. The Trip Circuit Healthy LED should glow continuously in CB 'ON' Position and on demand in C.B. 'OFF' position. The rating of dropping resistance in series with Trip Circuit Healthy LED shall be such that the Trip Coil should not get damaged because of continuous current flowing through it.
- 10.38.7 Test terminal blocks used in metering circuit shall be suitable for 3 phase 4 wire type connections.

10.39.0 CURRENT TRANSFORMERS:

- 10.39.1 The C.Ts. being prone to failure due to various reasons, the quality and reliability of the CTs are of vital importance. C.T. shall be rated for 25 kA for 3 sec. short time current. Insulation used shall be of very high quality, details of which shall be furnished in the technical offer.
- 10.39.2 The instrument security factor for metering core shall be low enough but not greater than 5 at lower ratio. This shall be demonstrated on metering core in accordance with the procedure specified in relevant IS/IEC

10.39.3 Primaries shall be wound or bar type, rigid, high conductivity grade copper conductor. Unavoidable joints on the primary conductor shall be welded type, preferably lap type. The current density at any point shall not exceed 1.6 A/sq. mm.

10.39.4 Suitable insulated copper wire of electrolytic grade shall be used for CT secondary winding. Multi ratio in CT shall be achieved by reconnection of secondary winding tapping.

10.39.5 Secondary terminal studs shall be provided with at least three nuts, two plain and two spring washers for fixing leads. The stud, nut and washer shall be of brass, duly nickel plated. The minimum outside diameter of the studs shall be 6 mm. The length of at least 15 mm shall be available on the studs for inserting the leads. The space clearance between nuts on adjacent studs when fitted shall be atleast 10mm.

10.39.6 The CTs shall be resin/epoxy cast. Contact tips on primary terminals shall be silver plated. Correct polarity shall be invariably marked on each primary and secondary terminal.

10.39.7 Details of CT

i	BS: 2705 or IEC 185		
ii	Insulation level :	12/28/75 kV	
iii	Class of Insulation:	E	
iv	Short time current :	25 kA for 3 sec.	
v	CT Details	Bus coupler	Feeder
		400-200/5-5 A	400-200/5-5A
vi	Class of accuracy		
	a. Core I	0.5	0.5
	b. Core II	5P10	5P10
vii	Purpose of each core		
		a. Core I	Metering
		b. Core II	Protection
viii		Burden	
		a. Core I	20VA
		b. Core II	20VA

10.40.0 POTENTIAL TRANSFORMER:

10.40.1 Potential transformers shall be single phase units connected to the line side in the respective incomer. H.V side shall be connected in star formation and L.V. side in star/open delta formation. Three numbers of HRC fuses of suitable rating shall be

provided for HV side.

10.40.2 PT may be provided in a separate compartment. The primary and secondary contacts (moving & fixed type) shall have firm grip while in service. Service position locking mechanism shall be provided and indicated by bidder in relevant drawing. Rigidity of primary stud point with earth bus in service position shall be confirmed.

10.40.3 P.T. shall be epoxy/resin cast. Contact tips of primary/secondary contacts shall be silver plated. Correct polarity shall be distinctly marked on primary and secondary terminal.

10.40.4 Secondary terminal studs shall be provided with at least three nuts, two plain and two spring washers for fixing leads. The stud, nut and washer shall be of brass, duly nickel plated. The minimum outside diameter of the studs shall be 6 mm. The length of at least 15 mm shall be available on the studs for inserting the leads. The space clearance between nuts on adjacent studs when fitted shall be at least 10 mm.

10.40.5 Details of PTs

- i. IS: 3156 or IEC 186
- ii. Insulation level : 12/28/75 kV
- iii. Class of Insulation : Class E
- iv. Rated voltage factor : 1.2 continuous & 1.5 for 30 Sec.
- v. Ratio : $\frac{11KV}{V3} / \frac{110V}{V3} / \frac{10V}{V3}$
- vi. Burden : Core I - 50 VA & Core II- 30 VA
- vii. Class of accuracy: Core I - Class 0.5 & 3P (dual purpose)
Core II- 3P
- viii. Purpose : Core I - Metering & protection
Core II - Directional protection.
- ix. Connection : Star/Star, open delta.
- x. Each secondary core will be protected by suitable MCB.

10.41.0 CUBICLE:

10.41.1 The switchgear cubicle (panel) shall be made of sheet steel of thickness not less than 2 mm and shall be free standing floor mounting indoor type. There shall be sufficient reinforcement to have level surfaces resistance to vibration and rigidity during transportation & installation. The compactness of the C.B shall be made use of by the designer to make the switchgear panels as compact as possible. Cubicle shall be dust, moisture & vermin proof, and shall provide degree of protection not less than IP4X in accordance with IS 12063/1987. The cubicle shall be designed such that in both the test and isolated position of the C.B truck, the front cover of the cubicle shall remain closed.

10.41.2 Design & construction of the switchgear panel shall be of the highest order. All sheet steel work shall be treated as per the seven tank process before applying primary coating. For the final coat (stowed) epoxy paint color shade of dove grey to shade No.694 as per IS:5 shall be used. Alternatively powder coating may also be accepted. The panels after final painting shall present an aesthetically pleasing appearance, free of any dent or uneven surface.

10.41.3 Two separate earthing terminals shall be provided in each panel and shall be connected to the earth bus within the panel. The earth bus shall be of copper and shall have adequate cross sectional area.

10.41.4 Each of the Switchgear panel shall be of unitised construction with all necessary accessories like end covers etc. However the design shall allow for extension on both sides without limit. Busbar design shall be such that panel to panel interconnection can be carried out without difficulty as and when required.

10.41.5 Explosion vents of suitable design shall be provided on the roof sheet of the busbar/cable/CT's chambers so as to enable discharge of explosive gases from inside during a flashover. However the provision of explosion vent shall not affect the degree of protection/vermin proofing of the panel.

10.41.6 Power cable Compartment

- a) Power cable compartment shall be provided at the rear of the switchgear panels and shall be suitable for cable entry from the bottom cable trenches. Rear bottom plates of the cable compartment shall be fitted with removable gland plates of adequate size for fixing the cable glands.
- b) Cable compartments for the incomer shall be suitable for terminating 3nos. of 3x400 sq.mm XLPE cables and that for feeder shall be suitable to accommodate 2 nos. of 3x400 sq.mm. XLPE cables. Copper terminator strip of suitable size shall be provided for termination of cables and shall have adequate height inside to accommodate the heat shrinkable type indoor cable termination. Cable compartment shall be robust enough & self supporting. The design shall be such that the weight of the power cable within the compartment shall not cause direct pressure on the C.T.studs. Suitable clamping arrangement shall be provided at the bottom of the cable compartment. Each power cable shall be terminated independently.

10.42.0 CONTROL WIRING :

- 10.42.1 All wiring shall be carried out with 1100 volts grade single core, multistrand flexible tinned copper wires with PVC insulation. The conductor size shall 2.5 sq mm (minimum) for circuits. Wiring trough may be used for routing the cables. Wire numberings and colour code for wiring shall be as per IS:5578/1984. The wiring diagram for various schematics shall be made on thick and durable white paper in permanent black ink and same should be encased in plastic cover, thermally sealed.
- 10.42.2 All front mounted as well as internally mounted items including MCBs shall be provided with individual identification labels. Labels shall be mounted directly below the respective equipment and shall clearly indicate the equipment designation.
- 10.42.3 Further it shall be ensured that any control wiring if at all routed through the H.T chamber is properly insulated and provided with metallic barriers to prevent damages due to heat.

10.43.0 WIRING AND CONTROL WIRING TERMINALS:

- 10.43.1 Terminal blocks shall be of clip-on design made out of non-trackable insulating material of 1100 V grade. All terminals shall be stud type, with all current carrying and live parts made of tinned plated brass. The studs shall be of min 4 mm dia brass. The washers, nuts, etc. used for terminal connectors shall also be of tinned plated brass.
- 10.43.2 The terminal connector/blocks shall be disconnecting type terminal connectors with automatic shorting of C.T. secondary terminals shall be provided in CT secondary circuit. All other terminal connectors shall be Non- disconnecting type. Terminal should be shock protected in single moulded piece. Terminal block should have screw locking design to prevent loosening of conductor.
- 10.43.3 At least 20% spare terminals shall be provided. All terminals shall be provided with ferrules indelibly marked or numbered and identification shall correspond to the designations on the relevant wiring diagrams. The terminals shall be rated for adequate capacity which shall not be less than 10 Amps for control circuit. For power circuit it shall not be less than 15 Amps.
- 10.43.4 All front mounted as well as internally mounted items shall be provided with individual identification labels. Labels shall be mounted directly below the respective equipment and shall clearly indicate the equipment designation. Labeling shall be on aluminium anodised plates of 1 mm thickness, letters are to be properly engraved.
- 10.43.5 All fuses used shall be of HRC type. The fuse base and carrier shall be plug-in type moulded case kitkat of bakelite / DMC. All current carrying and live parts shall be of tinned/nickel plated copper. No fuse shall be provided on DC negatives and AC neutrals. Tinned

copper links shall, however, be provided on DC negatives and AC neutrals.

10.43.6 All MCBs as per IS:8828/1993 (amended up to date) of adequate rating shall be used

10.44.0 CONTROL AND RELAY PORTION OF 11 kV INDOOR SWITCHGEARS:

10.44.1 Bill of materials:

10.44.2 The relays meter and equipment as described below should be provided on the switchgear for each for incomer, bus-section, and feeder as follows:-

Sr.No.	Description	Quantity		
		Incomer:	Bus-Sect.:	Feeder
1	Isolator 630A- Indoor	2 No.	-	-
2	Vacuum Circuit Breaker 12 kV, 630 Amps, 25 kA	-	1 No.	2 Nos
6.	Ammeter, 48x96 sq. mm	-	-	6 Nos
8.	Voltmeter, 48x96 sq. mm	-	-	2Nos
9.	Voltmeter selector switch.			- 2 Nos
10	Digital Frequency Meter	-	-	2 Nos
14	Indicating LED (Amber colour) for 'Trip Circuit Healthy'	-	1 No.	2 Nos
15	Push button for 'Trip circuit Healthy Test'	-	1 No.	2 Nos
16	Indicating LED (White colour) for 'spring charged'	-	1 No.	2 Nos
17	Indicating LED (Red colour) for C.B. 'ON'	-	1 No.	2 Nos
18	Indicating LED (Green colour) for C.B. 'OFF'	-	1 No.	2 Nos
20	Mimic diagram section	-	1 set	2 set
21	Triple pole non-directional combined 2 O/C+1E/F relays (IDMT 3-sec relays.)	-	-	2 set
23	Single phase Current Transformer 400-200/5-5 Amp	-	-	6 Nos.
25	Single phase Potential Transformer	-.	--	6 Nos
26	Alarm scheme consisting of alarm relay(s), indicating LED and Accept/Reset push button(s)	-	-	2set

28	Voltage selection Scheme consisting of auxiliary relays and PT-1/PT-2 fail indicating LEDs.-	-	-	2 set
29	Space heater alongwith MCB	-	-	1 set
30	Thermostat	-	-	1 No
31	Toggle switch for Heater	-	-	1 No
32	Cubicle illumination lamp alongwith door operated control switch.		1 set	2 set
33	Power plug along with control switch.		1 set	2 set
34	Wiring along with MCBs, terminal blocks and terminal connectors		1 set	2 set

10.44.3 Scheme features

10.44.4 Trip circuit supervision scheme shall be provided for each circuit breaker.

10.44.5 PT supply to all the feeder panels shall be routed through the voltage selection scheme. When one of the PTs fails, the same shall be indicated automatically by the respective PT fail indicating LED. All necessary relays/contacts for above schemes shall be accommodated in empty chamber of adopter panel inside front door.

10.45.0 SUPERVISORY CONTROL DESK:

10.45.1 The operator's supervisory control desk 415V switchgear board generally conforming to the configuration and dimension as per suppliers design , enclosed along with two revolving chairs and one side rack of steel drawers) for storage of record etc. should be provided. The design drawings shall be subject to approval by the employer.

10.45.2 The desk should include following facilities.

- i. Mimic diagram depicting the bus and positions of breakers for all the panels on both the 415vac and 11kv Switchgear Boards.
- ii. Discrepancy switches for remote closing and tripping of all the breakers on the Board.
- iii. Flasher relay for discrepancy switch suitable for 30 V DC.
- iv. Repeat annunciation system both visual and audio i.e. alarm bell with accept, reset & LED test push buttons.
- v. Electronic static power metering equipment (single units) for measurement of voltage, current. PF, kW, KVA, KVA_r, kWh, KVAh, Maximum demand in KVA for 15/30 minutes interval- one for each circuit breaker. (Metering equipment is not required for bus coupler)
- vi. All the control cables, connectors, accessories, etc. for connecting the control desk to the switchgear Board for ready connection and commissioning. (distance between the switchgear board and control desk should be 50 meters approx.)

10.46.0**ANNUNCIATORS:**

- i. 1 Nos of 21 Window annunciators suitable for the visual and audible alarm annunciation shall be provided on the supervisory control desk for following. These shall be microprocessor based units using bright LEDs.
- ii. Annunciator facia units shall have translucent plastic windows for each alarm point.
- iii. Annunciator facia plate shall be engraved in black lettering with respective alarm inscription as specified. Alarm inscriptions shall be engraved on each window in not more than three lines and size of the lettering shall be about 5 mm. The inscriptions shall be visible only when the respective facia LED is glow.
- iv. Annunciator facia units shall be suitable for flush mounting on panels. Replacement of individual facia inscription plate and LED shall be possible from front of the panel.
- v. Each annunciator shall be provided with 'Accept', 'Reset' and 'Test' push buttons, coloured red, yellow and blue respectively.
- vi. Special precaution shall be taken by the supplier to ensure that spurious alarm conditions do not appear due to influence of external magnetic fields on the annunciator wiring and switching disturbances from the neighbouring circuits within the panels.
- vii. In case 'RESET' push button is pressed before abnormality is cleared, the LEDs shall continue to glow steady and shall go out only when normal condition is restored.
- viii. Any new annunciation appearing after the operation of 'Accept' for previous annunciation, shall provide a fresh audible alarm with accompanied visual, even if the process of "acknowledging" or "resetting" of previous alarm is going on or is yet to be carried out.
- ix. Provision for testing healthiness of visual and audible alarm circuits of annunciator shall be available.

Mounting	Flush
No. of facia windows	21
No. of windows per row	4
Supply voltage	30 V DC
No. of LEDs per window	2

Lettering on facia plate	Properly engraved
--------------------------	-------------------

21 Window Annunciation Scheme to indicate following functions for gensets 5, 415 board Incomer 5 and feeder 2		
1	Main protection (O/C) Trip for 415 board incomers	5 no.
2	Main protection (E/F) Trip for 415 board incomers	5 no.
3	Main protection (O/C) Trip for 11KV board feeders	2 no.
4	Main protection (E/F) Trip for 11KV board feeders	2 no.
5	5 Nos Generator common alarm	5 no.
6	2 Nos Transformer Buchholz relay operations	2 no.

5.1.2. The operators desk be made of sheet steel of thickness not less than 2 mm. and shall be free standing floor mounting indoor type. The desk should be dust moisture and vermin proof. It should be elegant in appearance and should be treated and painted as detailed in clause No.5.1.8.2.

5.1.3. The desk should be modular in construction.

10.47.0 DC SUPPLY SYSTEM.

10.47.1 24 VDC Batteries

1 (one) Lot of 24VDC battery. The battery capacity shall be **at least 500Ah/10h**. The Batteries shall be installed in the 11KVA 40ft container Control room (separate cubicle). Building room with explosion proof extracting fan.

The capacities to be recommended by the Bidder, based upon the calculated consumption considering the total DC load in the power station.

10.47.2 24VDC Charger

1 (one) DC charger for the 24 V Battery. The Charger shall be installed in the 1KVA 40ft container (separate cubicle). The input

10.47.0 TYPE TEST

10.47.1 The equipment offered in the tender should have been successfully type tested at

10.47.2 NABL laboratories for following tests in line with the relevant standard and technical specification, within the last 5 (five) years from the date of offer. The bidder shall be

required to submit complete set of the type test reports along with the offer.

10.47.3 In case these type tests are conducted beyond five years, all the type tests as per the relevant standard shall be carried out by the successful bidder at NABL in presence of employer's representative free of cost before commencement of supply. The undertaking to this effect should be furnished along with the offer without which the offer shall be liable for rejection.

10.47.4 If above tests are carried out on higher capacity of offered equipment, then the offer is considered for placement of order. However, successful bidders have to carry out the said type tests on offered type equipment before commencement of supply at their own expense.

A. Switchgear Panel (with circuit breaker installed)

- a. Lightning Impulse Voltage withstand Test
- b. H.V. dry 1 min power frequency withstand test
- c. Short time and peak withstand current test
- d. Short circuit test with basic duties
- e. Single phase breaking capacity test.
- f. Temperature Rise test

B. Circuit Breaker

- a. Mechanical Endurance Test

C. Current Transformer

- a. Short Time Current Test
- b. Impulse Voltage Withstand Test

- c. Temperature Rise Test

D. Potential Transformer

- a. Impulse Voltage Withstand Test
- b. Temperature Rise Test

E. Control & Relay Panel

- a. IP Test

10.48.0

ACCEPTANCE AND ROUTINE TESTS:

All acceptance and routine tests as stipulated in relevant IS/IEC shall be

carried out by the supplier in the presence of employer's

representative

without any extra cost to the employer.

After finalisation of the program of type/acceptance/routine testing, the

supplier shall give three weeks advance notification to the employer, to enable him to assign his representatives for witnessing the tests.

10.49.0 INSPECTION:

The inspection may be carried out by the employer at any stage of manufacture. The successful Tenderer shall grant free access to the employer's representative/s at a reasonable notice when the work is in progress. Inspection and acceptance of any equipment under this specification by the employer, shall not relieve the supplier of his obligation of furnishing equipment in accordance with the specification and shall not prevent subsequent rejection if the equipment is found to be defective. The supplier shall keep the employer informed in advance, about the manufacturing program so that arrangement can be made for stage inspection. The employer reserves the right to insist for witnessing the acceptance/routine testing of the bought out items. The supplier shall keep the employer informed, in advance, about such testing program.

PART IV SPECIFICATION FOR 3.5MVA 0.415/11KVTRANSFORMER

10.53.0 Specifications for 3.5MVA 0.415/11kV Step-up Transformer

10.53.1 Foreword

This specification lays down requirements for 0.415/11 kV Step-up Transformer. It is intended for use in purchasing the transformers.

It shall be the responsibility of the manufacturer to ensure adequacy of the design and good engineering practice in the manufacture of the 0.415/11kV Step-up Transformer for KPLC. The manufacturer shall submit information, which confirms satisfactory service experience with products, which fall within the scope of this specification.

It is expected that manufacturers will provide energy efficient standard design that will provide high level of efficiency and significant initial cost saving.

10.53.2 Scope

This specification is for oil-immersed, air-cooled, outdoor type three phase 0.415/11 kV Step-up Transformer for ac system operated at 50 Hz.

The transformers shall be connected to an off-grid power station to step-up generator output of 415V to 11 kV distribution network.

10.53.3 References

The following documents were referred to during the preparation of this specification; in case of conflict, the requirements of this specification shall take precedence.

IEC 60076:	Power Transformers
BS 381C:	Specification for colours for identification, coding and special purposes
IEC 60296:	Specification for unused mineral insulating oil for transformers and switchgear
IEC 60354:	Loading guide for oil – immersed power transformers.
BS 6436:	Specification for Ground Mounted Distribution Transformers for Cable Box or Unit Substation Connection.

10.53.4 Terms And Definitions

For the purpose of this specification the definitions given in the reference standards shall apply.

10.53.5 Requirements

10.54.0 Service Conditions

10.54.1 Operating conditions

The transformers shall be suitable for continuous operation outdoors in tropical areas at altitudes of up to 1500m above sea level, humidity of up to 90%, average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C and heavy saline conditions along the coast.

10.54.2 System characteristics

10.53.2.1 The primary shall be 415V, 50Hz while the secondary shall be 11KV, 50Hz, three wire (the neutral solidly earthed).

10.53.2.2 The 11 kV overhead system is of unearthed construction (i.e. without aerial earth wire).

10.54.3 Design And Construction

10.54.3.1 General

- (a) The transformer shall be three phase, oil immersed type, air cooled, core type, outdoor and shall be designed, manufactured and tested as per IEC 60076 and this specification.
- (b) The transformer shall be free breathing type provided with a conservator and a dehydrating breather (cobalt free). The conservator shall be in such a position as not to obstruct the electrical connections to the transformer and shall have oil gauge at one end marked with oil levels. The conservator shall have a feed valve.
- (c) The complete transformer shall be painted and protected against corrosion, and the final colour of the exterior surface shall be Dark Admiralty Grey colour No. 632 as per BS 381C. The inside of the tank shall be coated with oil resisting varnish or paint so that oil cannot come into contact with tank or metal at any point.

- (d) Each transformer shall be suitable for ground mounting (on a plinth).
- (e) Drawings and documentation for the transformer offered shall be given, clearly detailing important dimensions, clearances, accessories, fittings, internal assembly, material details and any special features of the offered design.

10.54.3.2 **Tank**

- (a) The transformer tank shall be constructed of mild steel plates. Tank thickness shall be stated in the Technical Particulars (Annex A).
- (b) The transformer tank shall be sealed by means of suitable gasket and be fitted with earthing terminals. Eight (8No.) non-standard shearing bolts to deter unauthorised opening shall be used on bolted corners and centres of sides of the top cover. Relevant tools for unbolting the transformer shall be delivered with the transformer.

10.54.3.2 **Core**

- (a) The cores shall be constructed of high quality low loss grain oriented electrical steel laminations. The design shall ensure no hot sections due to overfluxing or circulating currents across the laminations. The flux density at any point shall not exceed 1.65 Tesla.
- (b) The cores shall be clamped effectively with metal cross-arms and be fitted with core lifting lugs. The manufacturer shall demonstrate experimentally or via a previous test report, that the whole structural frame-work supporting the transformer windings and the core can definitely withstand repeated transformer short-circuits.

10.54.3.3 **Windings**

- (a) The windings shall be of electrolytic copper capable of sustaining short circuit forces on the transformer.
- (b) The primary windings shall be of full coil copper wires as opposed to segmented winding and the secondary windings shall be coil or foil of copper.
- (c) The HV and LV windings shall be separated so as to allow for cooling and ease of repair. Insulating sleeves for the transformer tapplings shall be in crepe paper or better.

10.54.3.4 **Tapping**

- (a) The secondary winding (11 kV) shall have tappings at $\pm 2 \times 2.5\%$ operated by an off-circuit self-positioning tapping switch with marked position indicators. Tapping details shall be included on the transformer name plate.
- (b) Switch position No. 1 shall correspond to maximum plus tapping. The make contacts of the tap changer shall be robust and of sufficient surface area.

10.54.3.5 **Vector Group**

- (a) The three-phase transformer shall be wound to IEC vector reference dYN1.
- (b) The star point of the secondary winding shall be brought out to a neutral bushing.

10.54.3.6 **Cable Boxes, Bushings and Clearances**

- (a) The transformer shall be fitted with cable box on the primary side (LV) and have open bushings on the secondary side (11 kV).
- (b) The LV cable box shall be unfilled type and suitable for terminating up to 7No. single core PVC cables of 600 mm² on a clamp pad, cables entry from bottom.
- (c) The 11 kV bushings shall be open and shall have outdoor brown glazed weatherproof bushings provided with external stud for conductor sizes from 7.8 mm to 18.2 mm diameter mounted on the tank top cover.
- (d) Clamp connector shall be provided on each bushing.
- (e) bushings shall be constructed, arranged and fitted in such a manner as to be changed without opening the transformer.
- (f) Each bushing shall be fitted with adjustable double-gap arcing horns set at $2 \times 25\text{mm}$ gaps.
- (g) The minimum external electrical clearances and minimum creepage distances of the 33 kV bushings shall be as indicated below:

Nominal System Voltage between Phases		11 kV
Minimum clearances between phase to earth	mm	300
Minimum Clearances between phases	mm	250
Creepage distance	mm	350

10.54.3.7 Oil and Cooling

Each transformer shall be dispatched filled with oil to the correct level and ready for service. The oil shall be new (unused), uninhibited mineral insulating oil class I as per IEC 296. The oil shall be PCB-free.

10.54.3.8 Fittings and Accessories

- (a) No drain valve shall be fitted.
- (b) Oil gauge shall be provided on each transformer and shall be of dial or floater type. The oil gauge shall be clearly readable by an operator standing at a distance of 5 meters away from the transformer. The maximum and minimum oil level marks shall fall within 50% of the full range of the gauge with the nominal oil level being at the centre of the range.
- (c) Each transformer shall be complete with an oil temperature thermometer in a visible and secure position.
- (d) Each transformer shall be complete with a pressure relief device fitted in a visible and secure position. No part of the pressure relief device shall extend to a height greater than the HV bushings.

10.54.3.9 Rating

- (a) The transformer shall be capable of carrying its full normal rated current continuously under the tropical conditions stated (maximum ambient temperature of 40°C) and at any tapplings without the temperature rise in the hottest region exceeding 55°C and 60°C in oil and winding respectively. Documents to support this shall accompany the tender.

(b) The transformer shall be capable of sustaining a three-phase symmetrical short circuit on the secondary side with power maintained on the primary side without damage or distress for 2 seconds.

(c) The transformer shall be rated 3500KVA

(d) The rated withstand voltages for the transformers shall be as follows:

	Rated short duration power frequency withstand voltage (r.m.s.)	Rated lightning impulse withstand voltage (peak)
0.415/11kV Transformers	38kV	95kV

10.54.3.10 Impedance Voltage

The impedance voltage measured at the principal tap shall not exceed 5.0%.

10.54.3.11 Losses and Capitalisation

(a) The guaranteed transformer losses, measured at full load operation, unity power factor and rated voltage shall be submitted with the tender. The loss measurements (no-load and full-load) shall be adjusted to 75 degree Celsius and submitted for evaluation.

(b) Evaluation will be carried out to establish the capitalized values of no-load losses and load losses at nominal rating of a transformer. This cost will be added to the bid price (landed cost) of the tender.

(c) Transformer losses shall be capitalized at the following rates:

Full load (winding) Losses	US\$ 1902 per kW for 15 years
No load (core) Losses	US\$ 4504 per kW for 15 years

(d) Where tenders are being compared, losses will be capitalised at the above rate and added to the bid price according to the formula below:

$$\text{Gep} = \text{Gbp} + \text{G}(\$), \text{Gep} = \text{Bid evaluation price,} \\ \text{Gbp} = \text{Bid price}$$

$G(\$)$ = Adjustment for the cost of the operation and maintenance for 15 years

And is obtained by using the following formula

$$G(\$) = 1902 \times \text{full load winding losses(kW)} + 4504 \times \text{no load losses(kW)}$$

10.54.4 Tests And Inspection

- (a) Type tests and routine tests shall be done in accordance with the requirement of IEC 60076 and this specification. It shall be the responsibility of the manufacture to perform or to have performed all the tests specified.
- (b) Certified true copies of previous type test reports by the relevant International or National Testing/Standards Authority of the country of manufacture (or ISO/IEC 17025 accredited laboratory) shall be submitted with the offer for evaluation (all in English Language). A copy of accreditation certificate for the laboratory shall also be submitted.
- (c) Routine test reports for the transformer to be supplied shall be submitted to KPLC for approval before shipment/delivery. KPLC shall witness routine tests as well as impulse withstand voltage and temperature rise tests at the factory before dispatch.

10.54.5 Marking And Labelling

- (a) Each transformer shall be provided with a rating plate of weatherproof material, fitted in a visible position, showing the appropriate details listed in IEC 76. The entries on the plate shall be indelibly marked (either by etching, engraving or stamping).
- (b) In addition, the name plate shall include load and no load losses for the highest, lowest and principle tap positions, temperature class of insulation, connection diagram and the inscription 'PROPERTY OF KENYA POWER' all marked indelibly as in (a)

PART V – SPECIFICATIONS FOR 650KVA GENERATOR POWER CABLES

10.55.0 Specifications For 650kva Generators Power Cables

10.55.1 Lv Single Core COPPER Cables (PVC)

10.55.2 Foreword

- (a) This standard lays down specification for LV single core PVC insulated cables.
- (b) This specification is intended for procurement of materials and does not include provision of contract.
- (c) This specification is based on IEC 502 and BS 6346. It is subject to revision as and when required.
- (d) This specification supersedes all specifications for LV single core PVC insulated cables

10.55.3 Scope

- (a) This specification is for single core, stranded aluminum conductors, polyvinyl chloride (PVC) insulated, armoured, PVC outer sheathed power cables for operation up to and including 600 volts to sheath and 1000 volts between conductors.
- (b) 400 sq. mm copper conductor PVC insulated single core cable.

10.55.4 Materials And Construction

- (a) The cable shall be made from circular stranded compact plain Aluminium conductor as per IEC 228.
- (b) The insulation shall be polyvinyl chloride (PVC) complying with the requirement of IEC 502 for type PVC/A.
- (c) The insulation shall be applied by extrusion process and shall form a compact homogeneous body. The insulation shall concentrically cover the conductor
- (d) Extruded over-sheath shall be of black polyvinyl chloride (PVC).

- (e) The cable shall be clearly and permanently embossed with the following information throughout the length of the over-sheath. Letters and figures raised and consist of upright block characters.
Minimum size of characters not less than 15% of average overall cable diameter. E.g.
Year of manufacture
600/1000 VOLTS PVC CABLE
(Example: '600/1000 VOLTS PVC CABLE 1996')

10.55.5 Standard Sizes And Characteristics

- (a) The characteristics of the cables shall comply with the following table

Item	Characteristics		
Conductor resistance	Not more than the value indicated		
A.C. withstand voltage	To withstand the indicated value for 5 min.		
Insulation resistance	Not less than the value indicated.		
Tensile strength	PVC	Tensile strength, minimum	12.5N/mm (1.27
Ageing requirement*	PVC	Elongation, Minimum percentage of unaged value	150% 75 - 125%
Treatment	PVC	Temperature	100-20°C
		Duration	168 Hrs

- (b) The cable shall conform with the following requirements

(i)	Cable size	400 sq. mm
(ii)	Nominal sectional area	400 sq. mm
(iii)	Thickness of insulation	2.4 mm
(iv)	Thickness of outer sheath	2.2 mm
(v)	Nominal overall diameter	28.0 mm
(vi)	Approximate net weight	3100 kg/km
(vii)	Test voltage	3kV/5min
(viii)	Maximum conductive resistance	0.0120 ohms/km

10.55.6 Tests

The cable core, sheath and completed cable shall be tested in accordance with the requirements of BS 6346.

10.55.7 Packing

- (a) The cable shall be wound on wooden drums such as to prevent damage during transportation. The wooden drums shall be made from treated timber resistant to termite attack.
- (b) The following description shall be marked on one flange of the reel

- (i) Direction of rotation of the reel
- (ii) Type of cable
- (iii) Number of conductors and size
- (iv) Length
- (v) Net weight and gross weight
- (vi) Manufacturer's name
- (vii) Year of manufacture

10.55.8 References

- (a) The following documents were referred to during the preparation of this specification.

Unless otherwise specified, the latest revision, edition and amendments shall

IEC 502(1983): Extruded solid dielectric insulated power cables for rated voltages from 1 kV up to 30 kV.

IEC 228(1978): Conductors of insulated cables.

BS 6346 PVC insulated cables for electricity supply

PART VI- SPECIFICATIONS FOR 1250KVA GENERATORS POWER CABLES

10.56.0 Specifications For 1250kva Generator Power Cables

10.56.1 Lv Single Core COPPER Cables (PVC)

10.56.2 Fore Word

- (a) This standard lays down specification for LV single core (XLPE) insulated cables.
- (b) This specification is intended for procurement of materials and does not include provision of contract.
- (c) This specification is based on IEC 502 and BS 6346. It is subject to revision as and when required.
- (d) This specification supersedes all specifications for LV single core (XLPE)insulated cables

10.56.3 Scope

This specification is for single core, stranded aluminum conductors, polyvinyl chloride

- (a) ((XLPE)) insulated, armoured, (XLPE) outer sheathed power cables for operation up to and including 600 volts to sheath and 1000 volts between conductors.400 sq. mm copper conductor PVC insulated single core cable.
- (b) This specification is for following cable sizes: Double 400 sq. mm copper conductor PVC insulated single core cable per phase.

10.56.4 Materials And Construction

- (a) The cable shall be made from circular stranded compact plain Aluminium conductor as per IEC 228.
- (b) The insulation shall be polyvinyl chloride ((XLPE)) complying with the requirement of IEC 502 for type (XLPE)
- (c) The insulation shall be applied by extrusion process and shall form a compact homogeneous body. The insulation shall concentrically cover the conductor
- (d) Extruded over-sheath shall be of black polyvinyl chloride ((XLPE)).

- (e) The cable shall be clearly and permanently embossed with the following information throughout the length of the over-sheath. Letters and figures raised and consist of upright block characters.
Minimum size of characters not less than 15% of average overall cable diameter. E.g.
Year of manufacture
600/1000 VOLTS (XLPE) CABLE
(Example: '600/1000 VOLTS PVC CABLE 1996')

10.56.5 Standard Sizes And Characteristics

- (a) The characteristics of the cables shall comply with the following table

Item		Characteristics	
Conductor resistance		Not more than the value indicated	
A.C. withstand voltage		To withstand the indicated value for 5 min.	
Insulation resistance		Not less than the value indicated.	
Tensile strength	PVC	Tensile strength, minimum	12.5N/mm (1.27
Ageing requirement*	PVC	Elongation, Minimum percentage of unaged value	150% 75 - 125%
Treatment	PVC	Temperature	100-20°C
		Duration	168 Hrs

	(b)	The cable shall conform with the following requirements	
		Cable size	Double 400 sq. mm per phase
		Nominal sectional area	Double 400 sq. mm per phase
		Thickness of insulation	2.4 mm
		Thickness of outer sheath	2.2 mm
		Nominal overall diameter	28.0 mm
		Approximate net weight	3100 kg/km
		Test voltage	3kV/5min
		Maximum conductive resistance	0.0120 ohms/km
	10.56.6 Tests		
		The cable core, sheath and completed cable shall be tested in accordance with the requirements of BS 6346.	
	10.56.7 Packing		
	(a)	The cable shall be wound on wooden drums such as to prevent damage during transportation. The wooden drums shall be made from treated timber resistant to termite attack.	
	(b)	The following description shall be marked on one flange of the reel	
		(i)	Direction of rotation of the reel
		(ii)	Type of cable

	(iii)	Number of conductors and size
	(iv)	Length
	(v)	Net weight and gross weight
	(vi)	Manufacturer's name
	(vii)	Year of manufacture
	10.56.8 References	
	(a)	The following documents were referred to during the preparation of this specification.
	(b)	Unless otherwise specified, the latest revision, edition and amendments shall apply
	(c)	IEC 502:(1983): Extruded solid dielectric insulated power cables for rated voltages from 1 kV up to 30 kV.
	(d)	IEC 228(1978): Conductors of insulated cables.
	(e)	BS 6346 (XLPE) insulated cables for electricity supply

PART VII SPECIFICATIONS FOR MV POWER CABLES FOR 3.5MVA TRANSFORMERS.

10.57.0 MV Single Core COPPER Cables (XLPE)					
10.57.1 Fore Word					
	(a)	This standard lay s down specification for LV single core (XLPE) insulated cables			
	(b)	This specification is intended for procurement of materials and does not include provision of contract.			
	(c)	This specification is based on IEC 502 and BS 6346. It is subject to revision as and when required.			
	(d)	This specification supersedes all specifications for MV single core (XLPE) insulated cables			
10.57.2 Scope					
	(a)	This specification is for single core, stranded copper conductors, (XLPE) insulated, armoured, (XLPE) outer sheathed power cables for operation up to and including 11000 volts to sheath and 12000 volts between conductors.			
	(b)	This specification is for following cable sizes:			
		400 sq. mm copper conductor (XLPE) insulated single core cable			
10.57.3 Materials And Construction					
	(a)	The cable shall be made from circular stranded compact plain copper conductor as per IEC 228.			
	(b)	The insulation shall (XLPE)complying with the requirement of IEC 502 for type (XLPE)			
	(c)	The insulation shall be applied by extrusion process and shall form a compact homogeneous body. The insulation shall concentrically cover the conductor			
	(d)	Extruded over-sheath shall be of black (XLPE) or any other applicable colour			
	(e)	The cable shall be clearly and permanently embossed with the following information throughout the length of the over-sheath. Letters and figures raised and consist of upright block characters. Minimum size of characters not less than 15% of average			
		11000/12000 VOLTS (XLPE)CABLE			
		Year of manufacture			
		(Example: ‘11000/12000 VOLTS (XLPE) CABLE 1996’)			
10.57.4 Standard Sizes And Characteristics					
	(a)	The characteristics of the cables shall comply with the following table			
		Item	Characteristics		
		Conductor resistance	Not more thank the value indicated		
		A.C. withstand voltage	To withstand the indicated value for 5 min.		
		Insulation resistance	Not less than the value indicated.		
		Tensile strength	PVC	Tensile strength, minimum	12.5N/mm (1.27 Kg/mm)

		Ageing requirement*	PVC	Elongation, Minimum percentage of unaged value	150% 75 - 125%
		Treatment	PVC	Temperature Duration	100 - 20°C 168 Hrs

	(b)	The cable shall conform with the following requirements	
		Cable size	Double 400 sq. mm per phase
		Nominal sectional area	Double 400 sq. mm per phase
		Thickness of insulation	2.4 mm
		Thickness of outer sheath	2.2 mm
		Nominal overall diameter	28.0 mm
		Approximate net weight	3100 kg/km
		Test voltage	3kV/5min
		Maximum conductive resistance	0.0120 ohms/km
10.57.5 Tests			
		The cable core, sheath and completed cable shall be tested in accordance with the requirements of BS 6346.	
10.57.6 Packing			
	(a)	The cable shall be wound on wooden drums such as to prevent damage during transportation. The wooden drums shall be made from treated timber resistant to termite attack.	
	(b)	The following description shall be marked on one flange of the reel	
		(i)	Direction of rotation of the reel
		(ii)	Type of cable
		(iii)	Number of conductors and size
		(iv)	Length
		(v)	Net weight and gross weight
		(vi)	Manufacturer's name
		(vii)	Year of manufacture
10.57.8 References			
	(a)	The following documents were referred to during the preparation of this specification.	
	(b)	Unless otherwise specified, the latest revision, edition and amendments shall apply	
	(c)	IEC 502:(1983): Extruded solid dielectric insulated power cables for rated voltages from 1 kV up to 30 kV.	
	(d)	IEC 228(1978): Conductors of insulated cables.	
	(e)	BS 6346 (XLPE) insulated cables for electricity supply	

PART VIII –SPECIFICATIONS FOR CABLE TRAY

10.58.0

Foreword

Route the cable trays to cause minimum amount of obstruction.
Independent cable trays shall be provided for power and communication cables. Obtain approval of the route and fixing method before erecting cable trays.

a) Power cable trays

Extra heavy duty return flange; gauges shall be a minimum of 1.5mm over 600mm and Flange height shall be a minimum of 75mm.

b) Communication cable trays

Gauges shall be a minimum of 1mm for tray up to 225mm, 1.2mm between 225-300mm, and 1.5 mm above 300mm. flange height shall be a minimum of 12mm.

c) Cable trays general.

All cable trays shall be manufactured from pre-galvanized mild-steel to BS EN101442 and BS EN 10143:2006 with a minimum coating weight of 275g/m².

- (a) Cable tray and cable fitting shall be fully perforated, slot sizes shall be 20mm x 7mm (or similar) running parallel to the length of the cable tray and 13.5 x 11.0 (mm) (or similar) running perpendicular to the length of the cable tray.
- (b) Cable trays shall be supported on purposely made suitably treated mild steel supports which shall permit easy adjustments and modification or by suitable channel, brackets and accessories to BS 6946 at intervals necessary to provide a rigid fixing in accordance with manufacturers recommended fixing centers.
- (c) The Channels shall be manufactured to BS 6946 from 2.5mm materials conforming to BSEN10142:2000 and BSEN 10143:2006.
- (d) The Brackets shall be manufactured to BS6946 from 6mm mild steel, 40mm wide, hot dip galvanized after manufacture to BSEN ISO 1461 and shall have a hole size of 14mm dia. to accept M12 setscrews
- (e) The cable trays shall be capable of carrying without undue deflection, the total weight of the cables likely to be inserted regardless of the location of the joints.

- (f) Ventilated Cable tray covers shall be provided to all external trays and shall be secured using proprietary clips and fixing in accordance with manufacturers recommendations.
- (g) Cables shall be fixed to the trays by means of copper or brass saddles and clips. All saddles, clips, straps etc. shall be fixed to the trays by means of brass screws or bolts or nuts.
NB. Steel wire or PVC tie-wraps of any description will not be permitted.
- (h) Earth continuity connectors shall be fitted between each length of cable tray to ensure compliance with BS 7671

PART IX– SPECIFICATIONS FOR LAPTOP COMPUTOR

10.59.0 Supply a rugged branded portable laptop with the following specifications

- (a) Processor i5 or higher; RAM 8GB; HDD 320GB; 5400rpm Hard drive.
- (b) Carry bag.
- (c) OS- Windows 10, fully licensed MS Office installed; Anti-virus. Wireless, Bluetooth capability.
- (d) Install the diesel generators configuration and diagnostic software and soft copy manuals if available.
- (e) Supply ECM adapter and connection cable.

SECTION X - PERFORMANCE GUARANTEES**2 Nos. 1250kva And 3 Nos.650kva Enclosed Containerised Diesel Generator****– Mandera and Lodwar Power Station**

The performance guarantees and ratings shall be based on the site conditions

below:- Inlet air temperature: 35⁰ C average maximum

Mean humidity: 34% to 60%

Height above sea level: 582 M

	Percentage of Maximum Continuous Rating (MCR)			
	100	85	50	25
ISO Rating- Brake Test				
Power output at brake coupling KW (b)				
Specific fuel consumption kg/kwh kJ/kwh				
Site Rating				
Power output at a.c. generator terminals at 0.85 power factor KW (e)				
Power output at unity power factor KW (e)				
Specific fuel consumption kg/kwh Kj/kwh				
Lubricating oil consumption l/h				
A.C Generator Efficiency At Site				
1. At unit power factor %				
2. At 0.85 power factor %				

I certify that the above information is correct.

.....

SECTION XI - STANDARD FORMS

- (i) Tender Form
- (ii) Confidential Business Questionnaire
- (iii) Tender Security Form (Bank Guarantee)
- (iv) Tender Security Form (Institutions)
- (v) Tender Security Form (Letter of Credit)
- (vi) Manufacturers Authorisation Form
- (vii) Manufacturer's Warranty Form
- (viii) Declaration Form
- (ix) Letter of notification of award
- (x) Letter of notification of regret
- (xi) Contract Agreement Form
- (xii) Performance Security Form (Bank Guarantee)
- (xiii) Performance Security Form (LC)
- (xiv) Letter of Acceptance
- (xv) Qualification Information Forms
- (xvi) Details of Proposed Sub-Contractors
- (xvii) Site Visit Form
- (xviii) Manufacturers Authorisation Form
- (xix) Supplier Performance Rating Form

(i) - TENDER FORM

Date:.....

Tender No.....

To:

The Kenya Power & Lighting Company Limited,
Stima Plaza,
Kolobot Road, Parklands,
P.O Box 30099 – 00100,
Nairobi, Kenya.

Ladies and Gentlemen,

1. Having read, examined and understood the Tender Document including all Addenda, the receipt of which is hereby duly acknowledged, we, the undersigned Tenderer, offer to supply, deliver, install and commission *(the latter two where applicable)* *(insert goods description)* in accordance and conformity with the said tender document for the sum of*(total tender amount inclusive of all taxes in words and figures)* or such sums as may be ascertained in accordance with the Price Schedule attached herewith and made part of this Tender.
2. We undertake, if our Tender is accepted, to deliver, install and commission the goods in accordance with the delivery schedule specified in the Schedule of Requirements.
3. If our Tender is accepted, we will obtain the performance security of a licensed commercial bank in Kenya in a sum equivalent to ten percent (10%) of the contract price for the due performance of the contract, in the form(s) prescribed by The Kenya Power & Lighting Company Limited.
- 4.* We agree to abide by this Tender for a **period of 180 days** from the date fixed for tender opening as per the Tender Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
5. This Tender, together with your written acceptance thereof and your notification of award, shall not constitute a contract, between us. The contract shall be formed between us when both parties duly sign the written contract.

6. We understand that you are not bound to accept any Tender you may receive.

Yours sincerely,

Name of Tenderer

Signature of duly authorised person signing the Tender

Name and Designation of duly authorised person signing the Tender

Stamp or Seal of Tenderer

***NOTES:**

1. KPLC requires a validity period of at least One hundred and eighty (180) days.
2. This form must be duly completed, signed, stamped and/or sealed.

(ii) - CONFIDENTIAL BUSINESS QUESTIONNAIRE FORM

All Tenderers are requested to give the particulars indicated in Part 1 and either Part 2 (a), 2 (b) or 2 (c), whichever applies to your type of business. You are advised that it is a serious offence to give false information on this form.

Part 1 – General

Business Name.....

Location of business premises.....

Plot No.Street/ Road

Postal Address Postal Code

Tel No.....

Facsimile.....

Mobile and/ or CDMA No.....

E-mail:.....

Nature of your business

Registration Certificate No.....

Maximum value of business which you can handle at any time KSh.....

Name of your BankersBranch... ..

*Names of Tenderer's contact person(s)

Designation of the Tenderer's contact person(s)

Address, Tel, Fax and E-mail of the Tenderer's contact person(s)

.....

Part 2 (a) Sole Proprietor

Your name in full

NationalityCountry of origin

*Citizenship details.....

Part 2 (b) Partnership

Give details of partners as follows: -

Names	Nationality	*Citizenship Details	Shares
1.....			
2.....			
3.....			
4.....			
5.....			

Part 2 (c) Registered Company

Private or Public

State the nominal and issued capital of company-

Nominal KSh.....

Issued KSh.....

Give details of all directors as follows

Name	Nationality	*Citizenship Details	Shares
1.....			
2.....			
3.....			
4.....			

Part 2 (d) List of Associated Companies Participating in this Tender

Give details as follows: -

Name of Company	Country of Registration	Directors	Shares (%)
1.....			
2.....			
3.....			
4.....			

Name of duly authorized person to sign for and on behalf of the Tenderer

Designation of the duly authorized person.....

Signature of the duly authorized person.....

***NOTES TO THE TENDERERS ON THE QUESTIONNAIRE**

1. *The address and contact person of the Tenderer provided above shall at all times be used for purposes of this tender.*
2. *If a Kenyan citizen, please indicate under “Citizenship Details” whether by birth, naturalization or registration.*
3. *The details on this Form are essential and compulsory for all Tenderers. **Failure to provide all the information requested shall lead to the Tenderer’s disqualification.***
4. *For foreign Tenderers please give the details of nominal and issued share capital in the currency of the country of origin of the Tenderer.*

(iii) - TENDER SECURITY FORM – (BANK GUARANTEE)

(To Be Submitted On Bank's Letterhead)

Date:

To:

The Kenya Power & Lighting Company Limited,
Stima Plaza,
Kolobot Road, Parklands,
P.O Box 30099 – 00100,
Nairobi, Kenya.

WHEREAS (*name of the Tenderer*) (*hereinafter called "the Tenderer"*) has submitted its Tender dated for the supply, installation and commissioning of..... (*please insert KPLC tender no. and name*) (*hereinafter called "the Tender"*);

KNOW ALL PEOPLE by these presents that **WE**.....ofhaving our registered office at.....(*hereinafter called "the Bank"*), are bound unto The Kenya Power and Lighting Company Limited (*hereinafter called "KPLC" which expression shall where the context so admits include its successors-in-title and assigns*) in the sum of for which payment well and truly to be made to the said KPLC, the Bank binds itself, its successors, and assignees by these presents.

We undertake to pay you, upon your first written demand declaring the Tenderer to be in breach of the tender requirements and without cavil or argument, the entire sum of this guarantee being (*amount of guarantee*) as aforesaid, without you needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This tender guarantee will remain in force up to and including thirty (30) days after the period of tender validity, and any demand in respect thereof should reach the Bank not later than the date below.

This guarantee is valid until theday of.....20.....

EITHER

SEALED with the)
COMMON SEAL)

of the said **BANK**)
thisday)
of20....)

BANK SEAL

in the presence of :-)

)

and in the presence of:-)

)

OR

SIGNED by the **DULY AUTHORISED**
REPRESENTATIVE(S)/ ATTORNEY(S) of
the **BANK**

Name(s) and Designation of duly authorised representative(s)/ attorney(s) of the Bank

Signature(s) of the duly authorised person(s)

NOTES TO TENDERERS AND BANKS

1. *Please note that no material additions, deletions or alterations regarding the contents of this Form shall be made to the Tender Security to be furnished by the Tenderer. If any are made, the Tender Security shall not be accepted and shall be*

rejected by KPLC. For the avoidance of doubt, such rejection will be treated as non-submission of the Tender Security where such Security is required in the tender.

2. *It is the responsibility of the Tenderer to sensitize its issuing bank on the need to respond directly and expeditiously to queries from KPLC. The period for response shall not exceed three (3) days from the date of KPLC's query. Should there be no conclusive response by the Bank within this period, such Tenderer's Tender Security shall be deemed as invalid and the bid rejected.*
3. *The issuing bank should address its response or communication regarding the bond to KPLC at the following e-mail address – “guarantees@kplc.co.ke”*
4. *The Tender validity period is one hundred and eighty (180) days as set out in the Invitation to Tender (at Section I of the Tender document) or as otherwise may be extended by KPLC. Therefore the Tender Security must at all times be valid for at least 30 days beyond the tender validity period.*

(iv)

TENDER SECURITY FORM (SACCO SOCIETY, DEPOSIT TAKING MICRO FINANCE INSTITUTIONS, WOMEN ENTERPRISE FUND & YOUTH ENTERPRISE FUND)

(To Be Submitted On Institutions Letterhead)

Date:

To:

The Kenya Power & Lighting Company Limited,
Stima Plaza,
Kolobot Road, Parklands,
P.O Box 30099 – 00100,
Nairobi, Kenya.

WHEREAS.....(hereinafter called “the Contractor”) has undertaken, in pursuance of your Tender Number.....(*reference number of the Tender*) and its Tender dated(*insert Contractor’s date of Tender taken from the Tender Form*) to supply(*description of the Works*) (hereinafter called “the Contract);

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with an Institution’s guarantee by an acceptable Institution for the sum specified therein as security for compliance of the Contractor’s performance obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor a Guarantee;

THEREFORE WE HEREBY AFFIRM that we are Guarantors and responsible to you, on behalf of the Contractor, up to a total of..... (*amount of the guarantee in words and figures*) and we undertake to pay you, upon your first written demand declaring the Contractor to be in default under the Contract and without cavil or argument, any sum or sums within the limits of (*amount of guarantee*) as aforesaid, without you needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until theday of.....20....

EITHER

SEALED with the)
COMMON SEAL)
of the said **INSTITUTION**)

)

thisday)

)

INSTITUTION SEAL

of20....)

in the presence of :-)

)

_____)

)

and in the presence of:-)

)

_____)

OR

SIGNED by the **DULY AUTHORISED**
REPRESENTATIVE(S)/ ATTORNEY(S) of
the **INSTITUTION**

Name(s) and Designation of duly authorised representative(s)/ attorney(s) of the
Institution.

Signature(s) of the duly authorised person(s)

NOTES TO SUPPLIERS AND INSTITUTIONS

1. *Please note that no material additions, deletions or alterations regarding the contents of this Form shall be made to the Tender Security to be furnished by the Tenderer. If any are made, the Tender Security shall not be accepted and shall be rejected by KPLC. For the avoidance of doubt, such rejection will be treated as non-submission of the Tender Security where such Security is required in the tender.*
2. *It is the responsibility of the Tenderer to sensitize its issuing institution on the need to respond directly and expeditiously to queries from KPLC. The period for response shall not exceed three (3) days from the date of KPLC's query. Should there be no conclusive response by the institution within this period, such Tenderer's Tender Security shall be deemed as invalid and the bid rejected.*
3. ***The issuing institution should address its response or communication regarding the Tender Security to KPLC at the following e-mail address – “guarantees@kplc.co.ke”***
4. *The Tender validity period is one hundred and eighty (180) days as set out in the Invitation to Tender (at Section I of the Tender document) or as otherwise may be extended by KPLC. Therefore the Tender Security must at all times be valid for at least 30 days beyond the tender validity period.*

(v) TENDER SECURITY – (LETTERS OF CREDIT)

The Mandatory Conditions to be included in the Letters are in two parts, A and B.

Part A

Form of Documentary credit - “Irrevocable Standby”

Applicable rules - “Must be UCP Latest Version” i.e. Uniform Customs and Practices (UCP) 600 (2007 REVISION) ICC Publication No. 600.

Place of expiry - At the counters of the advising bank.

The SBLC should be available – “By Payment”

Drafts should be payable at - “SIGHT”

Documents required -

1. Beneficiary’s signed and dated statement demanding for payment under the letter of credit no..... (*Insert LC No.*) as.....(*Name of applicant*) (hereinafter called the “Tenderer”) indicating that the “Tenderer” has defaulted in the obligations of the Tenderer as stated by the Beneficiary.
2. The Original Letter of Credit and all amendments, if any.

Additional Conditions -

1. All charges levied by any bank that is party to this documentary credit are for the account of the applicant.
2. There should be no conditions requiring compliance with the specific regulations or a particular country’s Law and regulations.

Charges - All bank charges are for the account of the applicant.

*Confirmation instructions – (See notes below)

Part B

The proceeds of these Letters are payable to KPLC -

- a) if the Tenderer withdraws its Tender after the deadline for submitting Tenders but before the expiry of the period during which the Tenders must remain valid.
- b) if the Tenderer rejects a correction of an arithmetic error
- c) if the Tenderer fails to enter into a written contract in accordance with the Tender Document

- d) if the successful Tenderer fails to furnish the performance security in accordance with the Tender Document.
- e) if the Tenderer fails to extend the validity of the tender security where KPLC has extended the tender validity period in accordance with the Tender Document.

NOTES TO TENDERERS AND BANKS

1. *Please note that should the Tender Security (LC) omit any of the above conditions the LC shall not be accepted and shall be rejected by KPLC. For the avoidance of doubt, such rejection will be treated as non-submission of the LC where such LC is required in the Tender.*
2. *It is the responsibility of the Tenderer to sensitize its issuing bank on the need to respond directly and expeditiously to any queries from KPLC. The period for response shall not exceed three (3) days from the date of KPLC's query. Should there be no conclusive response by the Bank within this period, such Tenderer's Tender Security shall be deemed as invalid and the bid rejected.*
3. *The issuing bank should address its response or communication regarding the bond to KPLC at the following e-mail address – “guarantees@kplc.co.ke”*
4. *The Tender validity period is one hundred and eighty (180) days as set out in the Invitation to Tender (at Section I of the Tender document) or as otherwise may be extended by KPLC. Therefore the Tender Security must at all times be valid for at least 30 days beyond the tender validity period.*
5. *All Guarantees issued by foreign banks must be confirmed by a local bank in Kenya.*

(vi) - MANUFACTURER'S AUTHORIZATION FORM

(To Be Submitted On Manufacturer's Letterhead)

To:

The Kenya Power & Lighting Company Limited,
Stima Plaza, Kolobot Road, Parklands,
P.O Box 30099 – 00100,
Nairobi, Kenya.

WHEREAS WE(*name of the manufacturer*) who are established and reputable manufacturers of
(*name and description of the goods*) having factories at(*full address and physical location of factory(ies) where goods to be supplied are manufactured*) do hereby confirm that
(*name and address of Supplier*) is authorized by us to transact in the goods required against your Tender (*insert reference number and name of the Tender*) in respect of the above goods manufactured by us.

DATED THIS..... DAY OF.....20.....

Signature of duly authorised person for and on behalf of the Manufacturer.

Name and Designation of duly authorised person signing on behalf of the Manufacturer

NOTES TO TENDERERS AND MANUFACTURERS

Only a competent person in the service of the Manufacturer should sign this letter of authority.

(vii) - MANUFACTURER'S WARRANTY FORM

To Be Submitted On Manufacturer's Letterhead)

To:

The Kenya Power & Lighting Company Limited,
Stima Plaza, Kolobot Road, Parklands,
P.O Box 30099 – 00100,
Nairobi, Kenya.

RE: MANUFACTURER'S WARRANTY FOR GOODS REQUIRED UNDER

TENDER NO TO BE SUPPLIED BY(
indicate your name or the supplier you have authorized)

WE HEREBY WARRANT THAT:

- a) The goods to be supplied under the contract are new, unused, of the most recent or current specification and incorporate all recent improvements in design and materials unless provided otherwise in the Tender.
- b) The goods in the Tenderer's bid have no defect arising from manufacture, materials or workmanship or from any act or omission of the Tenderer that may develop under normal use of the goods under the conditions obtaining in Kenya.

This warranty will remain valid for the period indicated in the special conditions of contract after the goods, or any portion thereof as the case may be, have been delivered, installed and commissioned at the final destination indicated in the contract.

DATED THIS..... DAY OF.....20.....

Signature of duly authorised person for and on behalf of the Manufacturer.

Name and Designation of duly authorised person signing on behalf of the Manufacturer

NOTES TO TENDERERS AND MANUFACTURERS

1. *Only a competent person in the service of the Manufacturer should sign this letter of authority.*
2. *Provide full contact details including physical address, e-mail, telephone numbers and the website on the Warranty.*

(viii) - DECLARATION FORM

Date _____

To:

The Kenya Power & Lighting Company Limited,
Stima Plaza,
Kolobot Road, Parklands,
P.O Box 30099 – 00100,
Nairobi,
KENYA.

Ladies and Gentlemen,

The Tenderer i.e. (full name and complete physical and postal address)

_____ declare the following: -

- a) That I/ We have not been debarred from participating in public procurement by anybody, institution or person.
- b) That I/ We have not been involved in and will not be involved in corrupt and fraudulent practices regarding public procurement anywhere.
- c) That I/We or any director of the firm or company is not a person within the meaning of paragraph 3.2 of ITT (Eligible Tenderers) of the Instruction to Bidders.
- d) That I/ We are not insolvent, in receivership, bankrupt or in the process of being wound up and is not the subject of legal proceedings relating to the foregoing.
- e) That I/ We do hereby confirm that all the information given in this Tender is accurate, factual and true to the best of our knowledge.
- f) That I/ We are not associated with any other Tenderer participating in this tender

Yours sincerely,

Name of Tenderer

Signature of duly authorised person signing the Tender

Name and Designation of duly authorised person signing the Tender

Stamp or Seal of Tenderer

(ix) - LETTER OF NOTIFICATION OF AWARD

To:

(Name and full address of the Successful Tenderer).....

Dear Sirs/ Madams,

RE: NOTIFICATION OF AWARD OF TENDER NO.

We refer to your Tender dated..... and are pleased to inform you that following evaluation, your Tender has been accepted as follows: -

.....
.....

This notification does not constitute a contract. The formal Contract Agreement, which is enclosed herewith shall be entered into upon expiry of fourteen (14) days from the date hereof pursuant to the provisions of the Public Procurement and Asset Disposal Act, 2015 *(or as may be amended from time to time or replaced)*.

Kindly sign, and seal the Contract Agreement. Further, initial and stamp on all pages of the documents forming the Contract that are forwarded to you with this letter. Thereafter return the signed and sealed Contract together with the documents to us within fourteen (14) days of the date hereof for our further action.

We take this opportunity to remind you to again note and strictly comply with the provisions as regards the Tender Security, Signing of Contract and Performance Security as stated in the Instructions to Tenderers.

We look forward to a cordial and mutually beneficial business relationship.

Yours faithfully,

FOR: THE KENYA POWER & LIGHTING COMPANY LIMITED

GENERAL MANAGER, SUPPLY CHAIN

Enclosures

(x) - LETTER OF NOTIFICATION OF REGRET

To: *(Name and full address of the Unsuccessful Tenderer)*.....

Date:

Dear Sirs/ Madams,

RE: NOTIFICATION OF REGRET IN RESPECT OF TENDER NO.

..... We refer to your Tender dated..... and regret to inform you that following evaluation, your Tender is unsuccessful. It is therefore not accepted. The brief reasons are as follows:-

1.
2.
3. etc...

The successful bidder was _____.

However, this notification does not reduce the validity period of your Tender Security. In this regard, we request you to relook at the provisions regarding the Tender Security, Signing of Contract and Performance Security as stated in the Instructions to Tenderers.

You may collect the tender security from our *Legal Department (Guarantees Section)*, on the 2nd Floor, Stima Plaza, Kolobot Road, Parklands, Nairobi only after expiry of twenty five (25) days from the date hereof on Mondays and Wednesdays ONLY between 9.00 a.m to 12.30 pm and 2.00p.m to 4.00p.m.

It is expected that by that time KPLC and the successful bidder will have entered into a contract pursuant to the Public Procurement and Asset Disposal Act, 2015 (*or as may be amended from time to time or replaced*). When collecting the Security, you will be required to produce the original or certified copy of this letter.

We thank you for the interest shown in participating in this tender and wish you well in all your future endeavours.

Yours faithfully,

FOR: THE KENYA POWER & LIGHTING COMPANY LIMITED

GENERAL MANAGER, SUPPLY CHAIN

(xi) - CONTRACT AGREEMENT FORM

THIS AGREEMENT made this.....day of.....**20.... BETWEEN THE KENYA POWER & LIGHTING COMPANY LIMITED**, a limited liability company duly incorporated under the Companies Act, Chapter 486 of the Laws of Kenya, with its registered office situated at Stima Plaza, Kolobot Road, Parklands, Nairobi in the Republic of Kenya and of Post Office Box Number 30099-00100, Nairobi in the Republic aforesaid (*hereinafter referred to as “KPLC”*) of the one part,

AND

..... (*Contractor’s full name and principal place of business*) a duly registered entity according to the laws of..... (*state country*) and of Post Office Box Number.....(*full address physical and postal of Contractor*) in the Republic aforesaid, (*hereinafter referred to as the “Contractor”*) of the other part;

WHEREAS KPLC invited tenders for certain works, that is to say for (*KPLC Supply Chain – Procurement Department insert description of Works*) under Tender Number..... (*KPLC Supply Chain – Procurement Department insert tender number*)

AND WHEREAS KPLC has accepted the Tender by the Contractor for the services in the sum of (*KPLC Supply Chain – Procurement Department _ specify the total amount in words which should include any payable taxes, duties and insurance where applicable e.g. Value Added Tax*) (*hereinafter called “the Contract Price”*).

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS: -

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract and the Tender Document.
2. Unless the context or express provision otherwise requires: -
 - a) reference to “this Agreement” includes its recitals, any schedules and documents mentioned hereunder and any reference to this Agreement or to any other document includes a reference to the other document as varied supplemented and or replaced in any manner from time to time.

- b) any reference to any Act shall include any statutory extension, amendment, modification, re-amendment or replacement of such Act and any rule, regulation or order made thereunder.
 - c) the Official Purchase Order shall also mean the Official Order or Local Purchase Order.
 - d) words importing the masculine gender only, include the feminine gender or (as the case may be) the neutral gender.
 - e) words importing the singular number only include the plural number and vice-versa and where there are two or more persons included in the expression the "*Contractor*" the covenants, agreements obligations expressed to be made or performed by the Contractor shall be deemed to be made or performed by such persons jointly and severally.
 - f) where there are two or more persons included in the expression the "*Contractor*" any act default or omission by the Contractor shall be deemed to be an act default or omission by any one or more of such persons.
3. In consideration of the payment to be made by KPLC to the Contractor as hereinbefore mentioned, the Contractor hereby covenants with KPLC to perform and Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract provide the services and remedy any defects thereon in conformity in all respects with the provisions of the Contract.
4. KPLC hereby covenants to pay the Contractor in consideration of the proper performance and provision of the services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
5. The following documents shall constitute the Contract between KPLC and the Contractor and each shall be read and construed as an integral part of the Contract:
-
- a) this Contract Agreement
 - b) Letter of Acceptance dated
 - c) General Conditions of Contract
 - d) Special Conditions of Contract
 - e) Official Purchase Order where applicable
 - f) Technical Specifications
 - g) Drawings

- h) Bill of Quantities/Schedule of Requirements
 - i) Implementation Plan (work methods and schedule)
 - j) KPLC's Notification of Award dated.....
 - k) Tender Form signed by the Contractor
 - l) Declaration Form signed by the Contractor/ successful Tenderer
 - m) Warranty
6. In the event of any ambiguity or conflict between the contract documents listed above, the order of precedence shall be the order in which the contract documents are listed in 5 above except where otherwise mutually agreed in writing.
7. The Commencement date shall be the working day immediately following the fulfillment of all the following: -
- a) Execution of this Contract Agreement by KPLC and the Contractor.
 - b) Issuance of the Performance Bond by the Contractor and confirmation of its authenticity by KPLC.
 - c) Issuance of the Official Order by KPLC to the Contractor.
 - d) Where applicable, Opening of the Letter of Credit by KPLC.
8. The period of contract validity shall begin from the Commencement date and end at the expiry of the Defects Liability Period.
Provided that the expiry period of the Warranty shall be as prescribed and further provided that the Warranty shall survive the expiry of the contract.
9. It shall be the responsibility of the Contractor to ensure that its Performance Security is valid at all times during the period of contract validity and further is in the full amount as contracted.
10. Any amendment, change, addition, deletion or variation howsoever to this Contract shall only be valid and effective where expressed in writing and signed by both parties.
11. No failure or delay to exercise any power, right or remedy by KPLC shall operate as a waiver of that right, power or remedy and no single or partial exercise of any other right, power or remedy.
12. Notwithstanding proper completion of performance or parts thereof, all the provisions of this Contract shall continue in full force and effect to the extent that

any of them remain to be implemented or performed unless otherwise expressly agreed upon by both parties.

13. Any notice required to be given in writing to any Party herein shall be deemed to have been sufficiently served, if where delivered personally, one day after such delivery; notices by electronic mail shall be deemed to be served one day after the date of such transmission and delivery respectively, notices sent by post shall be deemed served seven (7) days after posting by registered post (*and proof of posting shall be proof of service*), notices sent by courier shall be deemed served two (2) days after such receipt by the courier service for Local contractors and five (5) days for Foreign contractors.
14. For the purposes of Notices, the address of KPLC shall be Company Secretary, The Kenya Power & Lighting Company Limited, 7th Floor, Stima Plaza, Kolobot Road, Post Office Box Number 30099-00100, Nairobi, Kenya. The address for the Contractor shall be the Contractor's address as stated by it in the Confidential Business Questionnaire provided in the Tender Document.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Kenya the day and year first above written.

SIGNED for and on behalf
of **THE KENYA POWER & LIGHTING COMPANY LIMITED**

MANAGING DIRECTOR & CEO

and in the presence of:-

COMPANY SECRETARY

SEALED with the **COMMON SEAL**
of the **CONTRACTOR**
in the presence of:-

DIRECTOR

Affix Contractor's Seal here

DIRECTOR'S FULL NAMES

and in the presence of:-

DIRECTOR/ COMPANY SECRETARY

DIRECTOR/ COMPANY SECRETARY'S FULL NAMES

DRAWN BY: -

Awuor Owiti

Advocate,

C/o The Kenya Power & Lighting Company Limited,

7th Floor, Stima Plaza,

Kolobot Road, Parklands,

Post Office Box Number 30099-00100,

NAIROBI, KENYA,

Telephones: + 254-20-3201000/ 731

Facsimile: + 254-20-3514485/ 3750240

(xii) PERFORMANCE SECURITY FORM (BANK GUARANTEE)

(To Be Submitted On Bank's Letterhead)

Date:

To:

The Kenya Power & Lighting Company Limited,
Stima Plaza,
Kolobot Road, Parklands,
P.O Box 30099 – 00100,
Nairobi, Kenya.

WHEREAS.....(hereinafter called “the Contractor”) has undertaken, in pursuance of your Tender Number.....(*reference number of the Tender*) and its Tender dated(*insert Contractor's date of Tender taken from the Tender Form*) to supply(*description of the works*) (hereinafter called “the Contract);

AND WHEREAS it has been stipulated by you in the said Contract that the Contractor shall furnish you with a bank guarantee by an acceptable bank for the sum specified therein as security for compliance of the Contractor's performance obligations in accordance with the Contract;

AND WHEREAS we have agreed to give the Contractor a guarantee;

THEREFORE WE HEREBY AFFIRM that we are Guarantors and responsible to you, on behalf of the Contractor, up to a total sum of..... (*amount of the guarantee in words and figures*) and we undertake to pay you, upon your first written demand declaring the Contractor to be in default under the Contract and without cavil or argument, any sum or sums within the limits of (*amount of guarantee*) as aforesaid, without you needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until theday of.....20....

EITHER

SEALED with the)
COMMON SEAL)

of the said **BANK**)
)

thisday) _____
) **BANK SEAL**

of20....)
in the presence of :-)

)
_____)

)
and in the presence of:-)

)
_____)

OR

SIGNED by the **DULY AUTHORISED**
REPRESENTATIVE(S)/ ATTORNEY(S) of
the **BANK**

Name(s) and Designation of duly authorised representative(s)/ attorney(s) of the Bank

Signature(s) of the duly authorised person(s)

NOTES TO CONTRACTORS AND BANKS

1. *Please note that no material additions, deletions or alterations regarding the contents of this Form shall be made to the Performance Security Bond (the Bond) to be furnished by the successful Tenderer/ Supplier. If any are made, the Bond may not be accepted and shall be rejected by KPLC. For the avoidance of doubt, such rejection will be treated as non-submission of the Bond where such Bond is required in the tender and Contract.*
2. *KPLC shall seek authentication of the Performance Security from the issuing bank. It is the responsibility of the Contractor to sensitize its issuing bank on the need to respond directly and expeditiously to queries from KPLC. The period for response shall not exceed three (3) days from the date of KPLC's query. Should there be no*

conclusive response by the Bank within this period, such Contractor's Performance Security may be deemed as invalid and the Contract nullified.

3. ***The issuing Bank should address its response or communication regarding the bond to KPLC at the following e-mail address – “guarantees@kplc.co.ke”***

(xiii) -PERFORMANCE SECURITY (LC)

Mandatory Conditions that should appear on the Performance Security (LC).

Form of Documentary credit - “Irrevocable Standby”

Applicable rules - “Must be UCP Latest Version” i.e. UCP 600 (2007 REVISION) ICC Publication No. 600.

Place of expiry - At the counters of the advising bank.

The SBLC should be available – “By Payment”

Drafts should be payable at - “SIGHT”

Documents required -

1. Beneficiary’s signed and dated statement demanding for payment under the letter of credit no..... (*Insert LC No.*) as.....(*Name of Applicant*) (hereinafter called the “Contractor”) indicating that the “Contractor” has defaulted in the performance and adherence to and performance of the contract between the Beneficiary and the Contractor.
2. The Original Letter of Credit and all amendments, if any.

Additional Conditions -

1. All charges levied by any bank that is party to this documentary credit are for the account of the Applicant.
2. (Include) that there should be no conditions requiring compliance with the specific regulations or a particular country’s laws and regulations.

Charges - All bank charges are for the account of the Applicant.

Confirmation instructions – (See notes below)

NOTES TO CONTRACTORS AND BANKS

1. *Please note that should the Performance Security (LC) omit any of the above conditions the LC shall not be accepted and shall be rejected by KPLC. For the avoidance of doubt, such rejection will be treated as non-submission of the LC where such LC is required in the tender and Contract.*

2. *KPLC may seek authentication of the Performance Security (LC) from the issuing bank. It is the responsibility of the Contractor to sensitize its issuing bank on the need to respond directly and expeditiously to queries from KPLC. The period for response shall not exceed three (3) days from the date of KPLC's query. Should there be no conclusive response by the Bank within this period, such Contractor's Performance Security (LC) may be deemed as invalid and the Contract nullified.*
3. *The issuing bank should address its response or communication regarding the bond to KPLC at the following e-mail address – “guarantees@kplc.co.ke”*
4. *All Guarantees issued by foreign banks must be confirmed by a local bank in Kenya.*

(xiv) - LETTER OF ACCEPTANCE

[Letter-head paper of the Employer]

_____ [date]

To: _____
[name of the Contractor]

[address of the Contractor]

Dear Sir,

This is to notify you that your Tender dated _____
for the execution of _____
[name of the Contract and identification number, as given in the Tender documents] for
the Contract Price of (Indicate Currency) _____ [amount in
figures] (Indicate Currency) _____ (amount in words)] in
accordance with the Instructions to Tenderers is hereby accepted.

You are hereby instructed to proceed with the execution of the said Works in accordance
with the Contract documents.

Authorized Signature

Name and Title of Signatory

Attachment : Agreement

(xv) - QUALIFICATION INFORMATION**1. Individual Tenderers or Individual Members of Joint Ventures**

- 1.1 Constitution or legal status of tenderer (attach copy or Incorporation Certificate)

Place of registration: _____

Principal place of business _____

Power of attorney of signatory of tender _____

- 1.2 Total annual volume of construction work performed in the last three years

Year	Volume	
	Currency	Value
Year 1		
Year 2		
Year 3		

- 1.3 Work performed as Main Contractor on works of a similar nature and volume over the last three years. Also list details of work under way or committed, including expected completion date.

Project Name	Name of Client and contact person (Address & Telephone No.)	Type of Work performed and year of completion	Value of contract

- 1.4 Major items of Contractor's Tools & Equipment proposed for carrying out the Works. List all information requested below. (Attach evidence of ownership or lease)

Item of Tools & Equipment	Description, Make and age (years)	Condition(new, good, poor) and number available	Owned, leased (from whom?), or to be purchased (from whom?)

- 1.5 Qualifications and experience of key personnel proposed for administration and execution of the Contract as required by Subsection 3.20 of the Instructions to Tenderer, Attach biographical data.

Bidders should provide the names of suitably qualified personnel.

1.	Title of position*
	Name
2.	Title of position*
	Name
3.	Title of position*
	Name
4.	Title of position*
	Name

Resumé for **each** Proposed Personnel

The data on their experience should be supplied using the Form below for each candidate.

Position		
Personnel information	Name	Date of birth
	Professional qualifications	
Present employment	Name of employer	
	Address of employer	
	Telephone	Contact (manager / personnel officer)
	Fax	E-mail
	Job title	Years with present employer

[illegible]

1.6 Proposed Subcontractors for works

As per the requirements of Clause 3.20 of Conditions of Contract, following is a list of subcontractors and the portions of the Work to be subcontracted:

The following Subcontractors and/or manufacturers are proposed for carrying out the item of the facilities indicated. Bidders are free to propose more than one for each item

Sections of the Works	Value of Subcontract	Subcontractor (name and address)	Experience in similar work

- 1.7 Financial reports for the last three years: balance sheets, profit and loss statements, auditor's reports, etc. List below and attach copies of audited financial statements.

- 1.8 Evidence of access to financial resources to meet the qualification requirements: cash in hand, lines of credit, etc. List below and attach copies of supportive documents.

- 1.9 Name, address and telephone, telex and facsimile numbers of banks and/or institution that may provide reference if contacted by the Employer.

- 1.10 Statement of compliance with the requirements the Instructions to Tenderers.

- 1.11 Proposed program (work method and schedule) in compliance with requirement in the Instructions to Tenderers. Descriptions, drawings and charts, as necessary, to comply with the requirements of the tendering documents.

2 Joint Ventures

- 2.1 The information listed in 1.1 – 1.10 above shall be provided for each partner of the joint venture.
- 2.2 The information required in 1.11 above shall be provided for the joint venture.
- 2.3 Attach the power of attorney of the signatory(ies) of the tender authorizing signature of the tender on behalf of the joint venture
- 2.4 Attach the Agreement among all partners of the joint venture (and which is legally binding on all partners), which shows that:
- a) all partners shall be jointly and severally liable for the execution of the Contract in accordance with the Contract terms;

- b) one of the partners will be nominated as being in charge, authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the joint venture; and
- c) the execution of the entire Contract, including payment, shall be done exclusively with the partner in charge

SECTION XII - SUPPLIER EVALUATION FORM

(This form is for information only and not to be filled in by any bidder. It is for official use by KPLC to evaluate performance of Suppliers during the contract period)

Name of Firm.....Date.....

Category of Product/Service (e.g. Marine Spares

Period of evaluation.....

1. COST OF SERVICE/PRODUCT	Rating guidelines				Supplier Score	Procurement Score	User Score	Comments	Totals
	Did the vendor assist in or advice on ways of reducing the costs?	YES: 4	PARTIAL LY:2	NO: 0					10
	How closely did your final costs correspond to your expectation at the beginning of the project/tender?	YES: 2	PARTIAL LY:1	NO: 0					10.00%
	Did the company stick to the agreed transaction/contract rates?	YES: 4	PARTIAL LY:2	NO: 0					
									Totals
2.ON TIME DELIVERY OF PRODUCT OR SERVICE	Did the vendor perform work in compliance with contract terms and agreements?	YES: 6	PARTIAL LY:3	NO: 0					10
	Was the vendor prompt and effective in correction of situations and conditions?	YES: 2	PARTIAL LY:1	NO: 0					10.00%
	Are you able to track service level agreements and determine duration of incidents from the vendor?	YES: 2	PARTIAL LY:1	NO: 0					
3. FLEXIBILITY TO RESPOND TO UNEXPECTED DEMAND OF SERVICE	Rating guidelines								Totals
	Was the vendor willing to change their product/service on special needs?	YES: 6	PARTIAL LY:3	NO: 0					6
									6.00%
4. QUALITY	Rating guidelines								Totals
	When performing their duties, was there - rework or returns caused by non-conformance to quality?	NO:6	PARTIAL LY:3	YES: 0					14
	Was the quality of service delivered equal to KPLC minimum requirements?	YES: 8	PARTIAL LY:4	NO: 0					14.00%
5.RESPONSIVENESS	Rating guidelines								Totals
	Was the vendor well responsive to information requests, issues, or problems that arose in the course of service?	YES: 2	PARTIAL LY:1	NO: 0					14
	Was the vendor open to feedback on low quality of service levels and willing to act on this?	YES: 6	PARTIAL LY:3	NO: 0					14.00%
	Is it easy to reach staff members of suppliers in case of a request or query? (are communication channels clear?)	YES: 6	PARTIAL LY:3	NO: 0					
6. CUSTOMER SUPPORT	Rating guidelines								Totals

	Did the vendor offer effective customer support?	YES: 10							
	In case of reported problems/issues, were there follow ups by the vendor to ensure the problem is fully resolved during support?	YES: 8	PARTIAL PARTIAL LY:4	NO: NO: 0					18 18.00%
7. COMMUNICATION SKILLS	Rating guidelines								Totals
	Are you satisfied with the attitude, courtesy, and professionalism of this vendor's staff? Written or spoken?	YES: 2	PARTIAL LY:1	NO: 0					6
	Are the vendor's staff well equipped and skilled in handling requests / issues? Are you rotated too much among staff on an issue?	YES: 4	PARTIAL LY:2	NO: 0					6.00%
8. DOCUMENTATION AND ACCOUNTING	Rating guidelines								Totals
	Are you satisfied with how the Vendor presents documentation (invoices & licenses etc) when required to do so, to necessitate finalization of contract renewals and payments?	YES: 6	PARTIAL LY:3	NO: 0					10
	Was problem documentation (incident reports) presented promptly by the vendor and was it complete?	YES: 4	PARTIAL LY:2	NO: 0					10.00%
9. VALUE ADD	Rating guidelines								Totals
	Did the vendor go over and above in optimizing service delivery process for effective services delivery?	YES: 6	PARTIAL LY:3	NO: 0					12
	Did the vendor go over and above and offer training or knowledge to assist with better systems support?	YES: 6	PARTIAL LY:3	NO: 0					12.00%
									Totals
Totals									Score: 100.0
Maximum Score							100.0		100.00%
VENDOR'S TOTAL SCORE									
VENDOR'S PERCENTAGE SCORE									
ISSUES FOR FOLLOW UP -									
Evaluation Done by: _____ Name _____ Department _____ Date _____									
Checked/Validated by _____									

Score in Percentage %

PERFORMANCE LEVEL DEFINATION:

≥75% - KP1 GREEN

50% - KP2 AMBER

25% - KP3 YELLOW

≥25% - KP4 RED

RATING: 75% - V Good, 50% - Good, 25% - Fair, Below 25% - Poor

RECOMMENDATION

		Status	Tick as appropriate
1	Grant supplier preferred status	KP1	
2	Work with supplier or develop and improve supplier	KP2 & KP3	
3	Abandon / switch suppliers	KP4	

Name:.....Sign:.....Date:.....

Name:.....Sign:.....Date:.....

Name:.....Sign:.....Date:.....

SECTION X11 – GURANTEED TECHNICAL PARTICULARS (G.T.P.)

Mandatory Requirements General			
No	Description	KP requirements	compliance
1	National Construction Authority (NCA) Certificate of registration Category 4 and above in Generating Plants and Control panels.	Attach Copy	
2	Manufacturer's letter of authorization, A) Generators B) 415V Switchgear panel C) 11KV switchgear panel D) Transformers E) Power and Control cables	Attach Copy	
3	Manufacturer's Warranty A) Generators B) 415V Switchgear panel C) 11KV switchgear panel D) Transformers E) Power and Control cables	Attach Copy	
4	Manufacturers Quality Management System ISO 9001:2015; Scope of certification- Design, Assembly, Sales and Technical Support and Warranty of Gensets and Accessories	Attach Copy	
5	The 1250KVA and 650kVA gensets Enclosed in respectful standard (40ft or 20ft) steel container.	Attach catalogue or sample photo of genset to be supplied	
6	Noise level test certificate	Less than 85dB at 1m from enclosure	
7	Exhaust system super silenced with a height of 6 metres above the ground. The exhaust should consist of spark arrester and rain cup assembly. The exhaust should be fitted with insulation and heat shield to prevent heat contact with high temperature exhaust	Attach design Drawing or photo showing extended height.	

8	Work plan	Attach proposed Program for supply, installation and commissioning for each site in days after signing of contract.	
9	Submission of Detailed design Drawing on systematic working principle and arrangement of all Equipment's from Initial Point to the final point for each station	Attach Proposed design drawing that reflect understanding of working principle of the system and Equipment's layout arrangements for each station	
10	Submission of Detailed explanation of the working principle of the system from the initial point to the final point for each Station.	Attach Proposed Detailed explanation of the working principle of the system from the initial point to the final point for each Station.	
	REMARKS		

GUARANTEED TECHNICAL PARTICULARS (GTP) – GENERATOR SETS

No.	Description	K.P requirements	compliance
	Manufacturer's letter of authorization	State and attach	
1	Containerized Generating set manufacturer brand/ Make or Model. Manufacturer/Make/Model/Type a) 1250kva Genset b) 650kva Genset	State and attach catalogue	
2	Manufacturer's name for engine and Engine Model type a) 1250kva Genset b) 650kva Genset	State and attach catalogue/ brochure	
3	Manufacturer's name for alternator and Alternator Model. a) 1250kva Genset b) 650kva Genset	State and attach catalogue	
4	Container Acoustic Rockwool covered with G.I. perforated sheets cover. Any kind of foam material will not be acceptable	Attach letter from supplier Confirming Material and a photo for the same.	
5	The engine should be Turbocharged – after cooled, pressure lubricated, 4-stroke diesel engine, RPM 1500	Confirm by attaching Catalogue that illustrates this requirement. Clearly Highlight these features on the catalogue	
6	Governor Type - Electronic	Attach catalogue and Clearly Highlight this feature on it	

7	Starting system	24V battery system with fitted isolator and appropriate charging system.	
8	Engine cooling system	<ul style="list-style-type: none"> -Which consist of pump, thermostat, and heater and radiator assembly. -Cooling fluid is fed frm radiators through the pump whci is belt driven from engine pulley -The riadator is mounted in front of the container in a separate compartment with fun mounted on container roof 	
9	Engine control and protection system	Should consist of a system capable of monitoring engine parameters and initiating appropriate safety mechanism	
10	Generator Earthing	Resistance earthing to be provided or the supplier to provide/design any other alternative appropriate earthing methods subject to approval by project manager.	
11	Operation and Maintenance Manual	Confirm availability by letter from supplier	
13	Workshop and Service Manual	Confirm availability by letter from supplier	
14	Spares Catalogue	Confirm Availability by letter from supplier	
15	Special Tools	Confirm by Letter availability to supply as per Workshop Manual	
	REMARKS		

7.2.1.3 Fuel tank and Other Auxiliaries (Mandatory Requirements)

	DESCRIPTION	KPLC'S REQUIREMENT	COMPLIANCE
1	Fuel day tank -3500 Litres minimum Capacity, rectangular carbon steel tanks complying with requirements of BS 799: part 5, to be fitted with a ball valve, gate valve at the lowest level for daily water draining.	Attach Drawing/Catalogue	
2	Hand Pump, Bypass Day Tank feed and Fuel flow meter.	Attach catalogue and Provide design sketch showing bypass feed to day tank and Fuel flow meter connection from Service	
3	Hand pump, Lubrication oil drain	Attach catalogue or photo showing integrated pump To provide design schematic showing fittings connections.	
4	Fuel piping with flanges for all steel pipe connections with gaskets to ensure no leakages. Threading will not be accepted	Attach catalogue or photo showing integrated pump To provide design schematic showing fittings and position of flanged	
	REMARKS		

7.2.1.4 Air Circuit Breaker 1250KVA Generator (Mandatory Requirement)

	DESCRIPTION	KPLC'S REQUIREMENT	COMPLIANCE
1	Manufacturer	State and attach catalogue	
2	Type/Model	State	
3	Rating	2500-3000A	
4	Motorized	24 VDC	
5	Number of poles	4	
6	Under voltage trip coil voltage	24V	
7	Secondary trip coil voltage	24V	
	REMARKS		

7.2.1.5 Air Circuit Breaker – 650KVA Generator (Mandatory Requirement)

	DESCRIPTION	KPLC'S REQUIREMENT	COMPLIANCE
1	Manufacturer	State and attach catalogue	
2	Type/Model	State	
3	Rating	1600A- 2000A	
4	Motorized	24 VDC	
5	Number of poles	4	
6	Under voltage trip coil voltage	24V	
4	Secondary trip coil voltage	24V	
	REMARKS		

7.2.1.6 Standard Tool Compliance (Mandatory)

No	Tools and Equipment	Brand Name	Model No.	Catalogue/ brochure attached	Compliance
1	Mechanical Workshop/Factory 450+ Pieces (Cr-V) Drawer Tool Trolley (with plastic/foam modular inlay tool control system) –robust, sturdy and lockable.				
2	Socket Spanner Tool Set (Cr-V) ½ ” Drive, 12 point (bi-hexagon) heavy duty. Contained in sturdy sheet steel case.				
3	Electrical Workshop 55+ Piece Inlay Tool Set with carry case				

No	Tools and Equipment	Brand Name	Model No.	Catalogue/ brochure attached	Compliance
4	Battery Charger 12/24 Volt: Heavy Duty Portable, Automatic; Input Voltage 150-300vac; Constant/Float Charging; Max Boost 40a; Float 8a;				
5	Electric Hand Drill Chuck Capacity Of 1.5 – 13 Mm With Carry Case				
6	Angle Grinder 4 ½ ” with Carry case				
7	Wire Cup Brush Wheel for angle grinders 4’’ x 5/8- 11unc- (twist knot) – (max speed 12500 rpm)				
8	Wire Cup Brush Wheel for angle grinder, 4’’ x 5/8’’ - 11unc (fine crimped –(max speed 12500 rpm)				
9	Electric Blower 800w				
10	Gantry Crane, 5Ton; With approved certificate				
11	Electric Heat Gun With carry case				
12	Electrical Digital Multi Meter: Professional Rugged Calibrated Auto/manual range; AC/VDC : upto - 1000 Resistance: upto 200Mohms AC/DC- current : 50A Frequency: upto 100htz Temperature: upto 120 0C Diodes check feature. Capacitance : upto 50µF				

No	Tools and Equipment	Brand Name	Model No.	Catalogue/ brochure attached	Compliance
13	Electrical Clamp-On Meter. Auto/manual range; AC/VDC : upto - 1000 Resistance: upto 2M-ohms AC/DC- current : 2000A Frequency: upto 100htz Diodes check feature. Capacitance : upto 1000µF				
14	Arc Welding Machine - Single Phase - 300A				
15	Steam Water Pressure Cleaner (WF 400-800 l/hr: Pressure 30-150Pa: Temp 155/80 °C:				
16	Workshop Bench 1½ X 1 (Metres) Sheet Metal; Sturdy/Robust	Attach design if to be fabricated			
17	Bench Vice 6” – 7.5 kg heavy duty Workshop				
18	Belt Tension Dial Gauge, Universal				
19	Torque Wrench ¾ ” Drive ; Size 20: Twin Scales N.M/Ft.Lb (30 – 250 Ft..Lb)				

7.2.1.7 Switchgear Panel 415 Ac Switchgear

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of document and page No.
1	Manufacturers name	State			
2	Manufacturers letter of authorization	Provide copy			
3	Copy of ISO 9001/2 certificate.	Provide copy			
4	Type or designation number of Switchgear offered.	To provide			
5	enclosure [IP] class of protection	IP42			
6	Rated voltage	600 V			
7	Rated power frequency withstand	2kV			
8	Rated lighting impulse withstand	8 kVp			
9	Metal clad compartments [CB, Busbar, LV, CT& Cable] attach layout drawing	6			
10	Busbar material	Tinned copper			
11	Dimensions [WxHxD [attach layout drawing]	provide			
12	Short circuit withstand	25kV, 3 sec			
13	Lockable door with viewing glass in CB compartments.	Yes			
14	Shutters for Busbars [red] circuit, [yellow]) be provided.	Provide			
15	Anti-condensation heater	Provide			
16	Hygrostat with variable and temperature control setting	Provide			
17	Busbar rating	8000A	1 set		
18	Circuit breakers rating Generators	1600A-2500A	5 Nos		
19	Bus bar coupler	6000A	1Nos		

7.2.1.8 600V ac Draw Out Circuit Breaker

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of document and page No.
1	Manufacturers' name	State			
2	Type or designation number of circuit breaker offered	Indicate			
3	Rated circuit breaker voltage	600 V			
4	1 minute power frequency withstand	2kV			
5	Impulse withstand voltage	8kV			
6	Rated short circuit current and withstand	65kA, 1 sec			
7	Auxiliary DC voltage for closing and tripping coils	24 VDC			
8	Auxiliary AC supply	240 VAC			
9	CB mechanism	Motor wound spring			
10	Visible spring charged mechanical indication on CB as per specifications.	Provide			
11	Visible CB ON/OFF indications as per specifications	Provide			
12	Connection of CB to auxiliary panel circuits via a plug-in cable	Yes			
13	Operations counter	Provide			
14	Circuit breaker is equipped with anti-pumping device	Provide			
15	ACB Continuous Current Rating	1600 A-6000A			
16	Earth switch	Provide			

7.2.1.9 600Vac Switch Gear Panel**a) Current Transformers in 600Vac Switchgear Panel**

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of document and page No.
1	Manufacturers name	Indicate			
2	Type or designation number of CT	Indicate			
3	Rated voltage of offered CT	600 V			
4	1 minute power frequency withstand voltage	2 kV			
5	Impulse voltage withstand	8 kVp			
6	Short-circuit withstand current and duration	65kA, 1 sec			
7	Generator Panel CT details Ratio - 1600-2500/1A Core 1 - Cl.X, Uk>250 V Core 2 - 15VA, 5P10 Core3 - 15VA, cl 0.5	Yes Yes Yes Yes	5 sets		

7.2.9.10 Protection Relays, Auxiliary Relays And Control Devices On 600vac Switchgear Panel**a) 5Nos. Three Phase Overcurrent And Earth Fault Relay**

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of Document and Page No.
1	Manufacturers	State			
2	Type of designation name	State			
3	Design	Numeric			
4	Flush mounting on panel	State			

5	One time delayed element and two high set elements	Provide			
6	MMI with keypad and screen	Provide			
7	Software to be provided –	Provide			
8	2 No. connection cable from relay to laptop computer to be provided	Provide			
9	Serial RS232 port	Provide			

b) 5 Nos. Earth Fault Relay

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of Document and Page No.
1	Manufacturers name	State			
2	Type or designation name	State			
3	Design	Numeric			
4	Flush mounting on panel	State			
5	One time delayed element and two high set elements	Provide			
6	Software to be provided – name	Provide			
7	MMI with keypad and LCD screen	Provide			
8	Serial RS 232 port	Provide			

c) 5nos. Sensitive Earth Fault Relay

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT : Name of Document and Page No.
1	Manufacturers name	State	0.5		
2	Type or designation name	State	0.5		
3	Design	Numeric	1		
4	Flush mounting on panel	State	1		
5	Software to be provided – name	Provide	1		
6	MMI with keypad and LCD screen	Provide	1		
7	Serial RS 232 port	Provide	1		

d) 5 Nos. Three Phase Directional Power Relay

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT : Name of Document and Page No.
1	Manufacturers name	State			
2	Type or designation name	State			
3	Design	Numeric			
4	Directional Power Setting Range	State			
5	Flush mounting on panel	State			
6	Definite time delay	Provide			
7	Software to be provided – name	Provide			
8	MMI with keypad and LCD screen	Provide			
9	Serial RS 232 port	Provide			

e) 5 Nos. Biased Differential Relay

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT : Name of Document and Page No.
1	Manufacturers name	State			
2	Type or designation name	State			
3	Design	Numeric			
4	Relay setting range	State			
5	Magnetising Inrush feature	To provide			
6	CT ratio Compensation settings	State			
7	Flush mounting on panel	State			
8	Definite time delay	Provide			

9	Software to be provided – name	Provide			
10	MMI with keypad and LCD screen	Provide			
11	Serial RS 232 port	Provide			

f) 5nos. Annunciator Relay

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT
1	Manufacturers name	State	0.5		
2	Type or designation name	State	0.5		
3	Incorporates 16 Alarm elements	State	0.5		
4	Has RED LED for visual indication	Provide	0.5		
5	Has silence, accept and rest push buttons	Provide	0.5		
6	Alarms freely assigned to urgent or non-urgent bus-wires	State	0.5		

g) 5 Nos. Directly Connected Instruments

	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT : Name of Document and Page No.
	1 AMMETER WITH MDI-2000A				
1	Manufacturers name	State	0.5		
2	Type or designation name	State	0.5		
3	96 mm x 96 mm	State	0.5		
4	Flush panel mounting	State	0.5		
	2. FREQUENCY METERS				

1	Range	45-55hz			
2	Mounting	Flush in 48*96 sq.mm case			
	3. VOLTMETERS				
1	Mounting	Flush			
2.	Size	48 *96 sqm case			
3	Frequency	50Hz			
4	Operating voltage	415vac			
5	Dielectric strength	2kv rms for 1 min			

h) 5 Nos. Multifunctional Electricity Meter

	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT : Name of Document and Page No.
1	Class of accuracy	0.5			
2	CT ratio	1600A-2500/1A			
3	Type or designation name	State			
4	Mounting	Flush			
5	Measuring Parameter	KWh,kVAh,kVARH,instantaneous P.F,KW,KVA,supply frequency ,Phase voltage and Phase currents			
6	Display	Customized backlit liquid crystal display			

7.2.1.10 Switchgear Panel 11kv Ac Switchgear

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT : Name of document and page No.
-----	-------------	--------------------	-------	--	--

1	Manufacturers name	State			
2	Manufacturers letter of authorization	Provide copy			
3	Copy of ISO 9001/2 certificate.	Provide copy			
4	Type or designation number of Switchgear offered.	To provide			
5	enclosure [IP] class of protection	IP42			
6	Rated voltage	11K V			
7	Highest system voltage	12kV			
8	Rated lighting impulse withstand	28 kVp			
9	Metal clad compartments [CB, Busbar, MV, CT& Cable] attach layout drawing	5			
10	Busbar material	Electrolytic copper			
11	Dimensions [WxHxD [attach layout drawing]	provide			
12	Short circuit withstand	25kA, 3 sec			
13	Lockable door with viewing glass in CB compartments.	Yes			
14	Shutters for Busbars [red] circuit [yellow], and provided.	Provide			
15	Anti condensation heater	Provide			
16	Hygrostat with variable and temperature control setting	Provide			
17	Busbar rating	2000A	1 set		
18	Incomer Isolators rating	800A	2 Nos		
	Feeder circuit breaker rating	630A	2Nos		
19	Bus bar coupler	630A	1Nos		
20	Intergral Earth switch	Provide	2Nos		

a) 3 Nos 11kv Vac Drawout Vacuum Circuit Breaker

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT : Name of
-----	-------------	--------------------	-------	--	--

					document and page No.
1	Manufacturers' name	State			
2	Type or designation number of circuit breaker offered	Indicate			
3	Rated circuit breaker voltage	11kV			
4	1 minute power frequency withstand	2kV			
5	Impulse withstand voltage	28kV			
6	Rated short circuit current and withstand	25kA, 3 sec			
7	Auxiliary DC voltage for closing and tripping coils	24 VDC			
8	Auxiliary AC supply	240 VAC			
9	CB mechanism	Motor wound spring			
10	Visible spring charged mechanical indication on CB as per specifications.	Provide			
11	Visible CB ON/OFF indications as per specifications	Provide			
12	Connection of CB to auxiliary panel circuits via a plug-in cable	Yes			
13	Operations counter	Provide			
14	Circuit breaker is equipped with anti pumping device	Provide			
15	VCB Continuous Current Rating	630A			
16	Number of poles	3 Poles			
17	Operating mechanism	NO/NC			

b) 2 Nos Isolator Switch

NO.	DESCRIPTION	KP'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of document and page No.
1	Manufacturers name	Indicate			
2	Number of poles	3			
3	Rated Voltage	11KV			
4	Rated current	800A			

c) 2Sets Current Transformers On 11kv Vac For Switchgear Panel

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of document and page No.
1	Manufacturers name	Indicate			
2	Type or designation number of CT	Indicate			
3	Rated voltage of offered CT	11kV			
4	1 minute power frequency withstand voltage	2 kV			
5	Impulse voltage withstand	28 kVp			
6	Short-circuit withstand current and duration	25kA, 3 sec			
7	Feeder CT details Ratio - 600-400/1A Core 2 - 15VA, 5P10 Core3 - 15VA, cl 0.5	Yes Yes Yes Yes	2 sets		

d) 2 Sets Potential Transformers On 11kv Vac For Switchgear Panel

NO.	DESCRIPTION	KP'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of document and page No.
1	Manufacturers name	Indicate			
2	Type or designation number of PT	Indicate			
3	Rated voltage of offered PT	12kV			
4	Insulation level	12KV			
5	Impulse voltage withstand	28 kVp			
6	Insulation class	E or indicate			
7	Feeder PT details Ratio -11KV/110VAC Core 1 -50VA (metering and protection Core 2 - 30VA (Directional protection Class of accuracy 0.5 and 3P (Dual purposes Connection : Star/star ,open delta	Yes Yes Yes Yes Yes Yes	2 sets		

e) Protection Relays, Auxiliary Relays and Control Devices On 11kvac Switchgear Panel

(i) 2nos Three Phase Overcurrent And Earth Fault Relay

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of Document and Page No.
1	Manufacturers	State			
2	Type of designation name	State			
3	Design	Numeric			
4	Flush mounting on panel	State			
5	One time delayed element and two high set elements	Provide			
6	MMI with keypad and screen	Provide			
7	Software to be provided –	Provide			
8	2 No. connection cable from relay to laptop computer to be provided	Provide			
9	Serial RS232 port	Provide			
10	Auxiliary voltage	24VDC			

(ii) 2nos. Feeder Sensitive Earth Fault Relay And Three Phase Overcurrent Relay

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of Document and Page No.
1	Manufacturers name	Sate			
2	Type or designation name	State			
3	Design	Numeric			
4	Flush mounting on panel	State			
5	Software to be provided – name	Provide			
6	MMI with keypad and LCD screen	Provide			
9	Serial RS232 port -	Provide			
10	Auxiliary voltage	24VDC			

(iii) 1Nos. Annunciator Relay

NO.	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT
1	Manufacturers name	State			
2	Type or designation name	State			
3	Incorporates 8 Alarm elements	State			
4	Has RED LED for visual indication	Provide			
5	Has silence, accept and reset push buttons	Provide			
6	Alarms freely assigned to urgent or non-urgent bus-wires	State			

(iv) 2Nos. Directly Connected Instruments

	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of Document and Page No.
	1 AMMETER WITH MDI-150- 200A				
1	Manufacturers name	State			
2	Type or designation name	State			
3	96 mm x 96 mm	State			
4	Flush panel mounting	State			
	2. FREQUENCY METERS				
1	Range	45-55hz			
2	Mounting	Flush in 48*96 sq.mm case			
	3. VOLTMETERS				
1	Mounting	Flush			

2.	Size	48 *96 sqm case			
3	Frequency	50Hz			
4	Operating voltage	110vac			
5	Dielectric strength	2kv rms for 1 min			

(v) **2Nos. Tariff Energy Meter**

	DESCRIPTION	KPLC'S REQUIREMENT	MARKS	TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT: Name of Document and Page No.
1	Class of accuracy	0.5			
2	CT ratio	600A-400/1A			
3	PT Ratio	11000/110VAC			
3	Type or designation name	State			
5	Measuring Parameter	KWh, kVAh, kVARh, instantaneous P.F, KW,KVA, supply frequency ,Phase voltage and Phase currents			
6	Display	Customized backlit liquid crystal display			

7.2.1.11 Technical Requirements For Step-Up Transformers**3.5 MVA 0.415/11KV Transformer**

ITEM	DESCRIPTION		SCHEDULE 1 (KPLC'S REQUIREMENT)	TENDERER'S DETAILS/ RESPONSE [ENTER VALUE OR YES OR NO AS	EVIDENCE FROM SUPPORT DOCUMENT : NAME OF DOCUMENT AND PAGE NO.
------	-------------	--	------------------------------------	---	--

				APPROPRIATE]	
1	Quantity		4		
2	Transformer Rating	kVA	3500		
3	System Frequency	Hz	50		
4	Transformer external paint		Dark Admiralty Grey colour No. 632 as per BS 381C		
5	Corrosive environment		high		
6	Dimensions overall height overall length overall width Total mass	mm mm mm kg	State State State State		
7	Tank type		Breathing		
8	Tank sealing;		Bolted		
9	Under-base;		flat		
10	Skids and Jacking lugs for concrete plinth mounting		40 mm diameter axle holes		
11	Details of jacking pads		State		
12	Lifting lugs for cover for tank for core		To provide To provide To provide		
13	Terminations		Cable box		
14	Position of bushings		11kV: Top, LV: Cable Box		
15	Medium-voltage bushings material/colour creepage distance phase to earth clearance phase to phase clearance Low-voltage bushings material/colour creepage distance phase to earth clearance phase to phase clearance Terminal: stem & nuts or clamp	mm mm mm mm mm mm mm mm mm	Brown Porcelain 25 mm/kV Specify Specify Brown Porcelain 25 mm/kV Specify Specify Clamp pad		
16	Cooling method		ONAN		

17	Core type		Laminated stackings		
18	Core clamping		Specify		
19	HV Winding		Full coils of electrolytic copper		
20	LV Winding		Electrolytic copper coils or copper foils		
21	Primary voltage	V	415		
	Secondary voltage	V	11000		
	Number of phases;		Three phase		
22	Rating of neutral terminal		As phase terminal		
23	Tap Changer		NLTC, $\pm 2 \times 2.5\%$ Tapping range		
24	Vector symbol		dYN		
25	Losses corrected to 75°C no-load losses full load cu losses full load total losses 25% loading 50% Loading 75% Loading 125% Loading Transformer efficiency at unity power factor, rated voltage and full load (75°C)	W W W W W W W %	Specify Specify Specify Specify Specify Specify Specify		
26	Impedance voltage maximum tap nominal tap minimum tap	% % %	Specify Specify Specify		
27	Insulation level medium-voltage low-voltage	kV kV	38/95 5		
28	BIL Tests (IEC 60076)		To be done at 95kV during factory visit (clause 5.3)		

29	Temperature Rise Test (IEC 60076)		To be done during factory visit (clause 5.3)		
30	Routine Tests (IEC 60076)		To be done during factory visit (clause 5.3)		
31	Transformer Leakage Test		To be done during factory visit (clause 5.3)		
32	Tank Thickness		Specify (Not less than 8.50mm)		

(c) Technical Requirement For DC Supply System.

	DESCRIPTION	KPLC'S REQUIREMENT		TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT T: Name of Document and Page No.
1	Battery bank	24 VDC Batteries Be at least 500Ah/10h or based upon the calculated consumption considering the total DC load in the power station. OR		Confirm/Provide	
2	24VDC Charger	DC charger for the 24 V Battery. Should be able to charge a fully discharged batteries within 5 hours and still provide DC loads.		Confirm/Provide	

(d) Technical Requirement For Equipments For Earthing System

	DESCRIPTION	KPLC'S REQUIREMENT		TENDERER'S DETAILS/ RESPONSE [Enter value or Yes or No as appropriate]	EVIDENCE FROM SUPPORT DOCUMENT T: Name of Document and Page No.
1	Generator and 415V Switchgear Earthing	The earthing shall be of solid earthing or any other method which the bidder shall deem appropriate subject to approval by project Manager.		State and confirm	

2	11KVTransformer Earthing	Neutral Resistance Earthing shall be done with reference to the bidder design during installation subject to the project manager approval.		Confirm/Provide	
3	11KV switchgear Earthing	The earthing shall be of solid earthing or any other method which the bidder shall deem appropriate subject to approval by project Manager		State and confirm	

SECTION XIV - SITE VISIT FORM



CONFIRMATION OF PRE-BID SITE VISIT AT POWER STATION

Name of Tenderer..... Date

of Visit.....

Name, position and signature of the Tenderer's staff visiting the site.

Name:

Position.....

Qualification:

Signature..... Tenderer's Official Stamp.....

Site Visit conducted by Employer's Authorised Officer's

Name