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Stima Plaza, Kolobot Road

Our Ref: KP1/6A.1/PT/1/18/A69

26th July, 2018

Dear Sir/ Madam

**CLARIFICATION No.4 OF BIDDING DOCUMENT FOR ICB NO: KP1/6A.1/PT/1/18/A69
PROCUREMENT OF DESIGN, SUPPLY, INSTALLATION AND COMMISSIONING OF
TRANSMISSION SUBSTATION AND LINES (AFD) PROJECT DATED 10TH APRIL, 2018.**

1. CLARIFICATION TO BID DOCUMENT

The following responses are made to clarifications sought on various issues in the bidding document for procurement of transmission substations and lines and associated attachments.

No	Bidder Query/Comment	KPLC Response
1	132kV line protection relay and control panel- as per 34.1 Scope of supply, item 11, qty of panel is 1, for one 132kV OHL, and this shall be also the quantity of price schedule item MBA-011 - 132kV line protection relay and control panel , which is now 3. Please revise Price Schedule item MBA-11 accordingly.	This shall be as specified in the issued bidding document price schedule No.1 and clarifications 1, 2 and 3.
2	132kV transformer protection relay and control panel- as per 34.1 Scope of supply, item 10, qty of panel is 2 , for 2 PTs , and this shall be also the quantity of price schedule item MBA-010 - 132kV transformer protection relay and control panel , which is now 4. Please revise Price Schedule item MBA-10 accordingly.	This shall be as specified in the issued bidding document price schedule no.1 Volume 1 and clarifications No.1, 2 and 3.
3	As per item 39.16.1, 132kV line protection shall contain the following relays- distance and differential relays, as separate IEDs, while back up protections (OC, EF, sensitive EF,..) could be combined at the one IED. At item 39.16.2 it is specified that only very long 132kV lines shall require distance protection. As line Kipevu- Mbaraki is short line, only 6.5km long, we conclude that distance protection is not required. Please confirm	Refer to clarification No.2, item no.34
4	At the Amendment 1 you provide particular technical specification for differential relay, where one of Differential relay function shall be -Line distance protection option switched by communication failure of main protection. Please confirm that it means that 132kV line protection shall consists of one	The line differential and distance shall be provided in separate IEDs. Main and backup protection shall be in different panels as per issued bidding document.

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	differential relay (IED) having distance protection function and second IED with all back up protections and it is valid for both 132kV line ends- Kipevu and Mbaraki.	
5	At the price schedule item MBA-045 - 132kV distance & back up and differential protection – 2 pcs is required together with 132kV line control panel- 1 pcs. Please confirm if it can be understood as one IED with differential protection and distance function, and other IED with back- up protection for 132kV line, and one IED for line control, all 3 IEDs located at the same panel.	This shall be as specified in the issued bidding document price schedule no.1 of Volume 1 and clarifications No.1,2 and 3
6	In the Amendment 1 it is specified that separate BF protection shall be provide for CBs, and price schedule item MBA-056 132k Circuit breaker failure protection panels- 2pcs are required. Please note that there are only 3 CBs 132kV in Mbaraki SS, and if required to have separate BF protection relays, than 3 BFP relays can be located inside one panel, why 2 panels are required? Please check and correct!	One panel is for Kipevu take off bay and one for Mbaraki Substation
7	33kV line protection – at the item 37.4.9.1 is specified that each MV panel shall be supplied complete with numeric protection relay and control units. Maximum of two protection functions can be combined in one unit. Please clarify this- is it means that one IED for Control is required and the separate IED for protection of 33kV SWG bays, or it is allowed to combine control and protection functions within one IED.	Separate protection and control panels are required even if the protection IEDs have control functions
8	33kV feeder protection- please specify which protection functions are required for 33kV GIS outgoing feeders.	This shall be as per issued bidding document and clarifications No.1,2 and 3
9	Clause 18.2 Scope and Extend of Definite Work. We understand from the above lines that ACFR conductor is required to be used for the purpose of crossing the creek. Accordingly, ACFR conductor should be strung between Take-off Tower and AP1. Kindly clarify if AP2 has been erroneously mentioned in place of AP1.	The ACFR conductor starts from Take-off to AP2 tower (at AA Transporters company), as per amendment No.1
10	Volume II: Clause 10.2.4 The factor of safety to be considered for erection and maintenance case has not been specified in the point (c) Clause 10.2.4. We assume the Factor of Safety for erection and maintenance to be 1. Please confirm.	Design to meet required specifications in the issued bidding document, Clarifications, Internationally accepted standards and best engineering practice.
11	Volume II: Clause 36.1.6 (pg no. 421). The information under the heading “36.1.6 Clearances and Spans” seems to be missing. Please provide the requisite information.	No information missing under sub clause 36.1.6. All clearance have been provided in the issued bidding document and clarifications
12	The pages 189-192 referred in Clarification No. 2 pt. no. 48 contain single line diagrams and reference lines. However, no drawings are given in pages 609-610. Please provide the requisite drawings.	Refer to Dwn. 01: Kipevu proposed 132kv Line Bay and Dwn. 02: Proposed 2x45Mva 132/33Kv Substation on page 610 and 611 respectively

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13	Clauses 25.2.3 and 25.2.4 As per Clause 25.2.3, the maximum working tension for conductor is 22500 N and as per Clause 25.2.4 the Factors of Safety for normal condition and broken wire condition are 3 and 1.5 respectively. Hence the ultimate load acting on the tip of the insulator in broken wire condition shall be 1.5 X 22500 i.e. 33750 N (33.75kN). Please confirm.	Design to meet required specifications in the bidding issued document, Clarifications, Internationally accepted standards and best engineering practice.
14	The Maximum Design Cantilever Load is specified as 4.875 kN in Clause 3-Table 3: Particular technical specifications 132KV Composite Insulators of Appendix III, which is less than the load acting on the insulator in broken wire condition. Please confirm the value of Maximum Design Cantilever Load.	Maximum calculated design load shall apply considering given design load & condition, safety factors and international accepted standards
15	As per Appendix III, Clarification 01, Submarine cable specifications do not contain the Guaranteed Technical Schedule for the submarine cable. Please provide us the same.	Has been Provided in the amendment no.4
16	Submarine Cables: In order to carry out the calculations for current carrying capacity of the submarine cables, we request you to kindly provide us the following inputs: <ul style="list-style-type: none"> • Burial depth for sea portion • Burial depth for land portion • Seabed temperature • Air temperature • Soil thermal resistivity Sea portion • Soil thermal resistivity Land portion 	For installation refer to clarification no.1, item no.2. The minimum depth where cable burying is required shall be 800mm. Seabed and Air temperature, Soil thermal resistivity is in the design scope of the contractor
17	Submarine Cables: As per the information gathered from the site visit, out of total cable length of 1.5km, around 1 km cable will be on land. Please provide us the details like coordinates of substation and beach manhole (if any) in order to estimate the cost of shore end works.	There is no beach manhole. Bidders shall use information provided during pre-bid site visit to estimate seashore distance.
18	Considering the fact that Likoni Channel is a busy waterway and anchoring and dredging activities are common in this area, we propose a burial depth of 3m. Please confirm if it is acceptable. Also provide us with more details about the seabed.	This shall be as per issued bidding document, amendment and clarifications no.1
19	We understand that there are other power cables laid across the Likoni Channel. Kindly let us know protection system considered for the same.	Protection for the proposed 33KV feeders shall be as per issued bidding document and clarifications No.1,2 and 3
20	Please clarify whether marine survey or desk assessment is also there in the scope of works.	Route Survey and design works is in contractors' scope as per issued bidding document
21	Section III: Wherever a Bidder is required to state a monetary amount, Bidders should indicate the USD equivalent. Please confirm as foreign currency to be used in price schedule is Euro.	Refer to issued bidding document and clarifications No.1,2 and 3
22	Letter of Bid; Please confirm if prices to be declared in letter of bid shall be excluding taxes.	Refer to clarification no.1
23	3.5.2 The Employer may waive the requirements for type tests on submission by the Contractor/supplier of the requisite number of test certificates, either certified by an independent	This shall be as per issued bidding document and clarifications

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	quality assurance organization, or undertaken by an internationally acknowledged independent testing organization, showing that the component had successfully passed the type tests specified in this specification. Type test conducted on equipment on last how many years are acceptable, is not mentioned	
24	Monitoring of Quality assurance agreement The Contractor/supplier shall provide all facilities including access (including their suppliers or sub-contractors) which may be required by the employer for monitoring activities. Please provide No. of visits, per DIEM and class of travel.	The monitoring and supervision shall be throughout the entire project implementation period and shall be as per issued bidding document
25	Please provide Particular Technical Specification of Telecommunication equipment.	Refer to clarification no.1, item no. 185, the telecommunication equipment model is provided.
26	Section III–Evaluation Criteria: Please provide information and documents regarding Manufacturer’s warranty as stipulated in Section III–Evaluation Criteria.	The correct section of reference is Section VIII–General condition clause 11. Amended Manufacturer’s authorisation has been provided in this amendment no.4
27	Appendix 5.A3 Vehicle Specifications: At least one (1) no. 4-Wheel Drive vehicles (DOUBLE CABIN, 4X4, LWB, 2700 - 3200cc, DIESEL). These shall be used by the Employer’s representatives for Project Monitoring and Evaluation during the whole period of project implementation, and will revert to the ownership of the Employer at the end of the project. Please confirm contractor will not have to bear the expenses related to vehicle running, driver etc.	The requirement is provision of transport services to the employers supervision team for the entire project period by way of availing a vehicle as specified in appendix 5.A3. Driver and all vehicle running expenses shall be borne by the contractor until handover of the project. The vehicle shall not be handed over to the employer upon completion of the project.
28	Please confirm if the voltage below or above 132 kV is applicable or not. Such as 110 kV, 115 kV, 138 kV and 220 kV voltage levels.	Refer to clarification No.1, item No.41
29	Qualification Criteria: Please confirm if we can use AIS and GIS both types of substations for Eligibility and Qualification Criteria in Form 4.2 (a), Form 4.2(b) for both Lot 1 and Lot 2.	Follow as specified in the issued bidding document and clarifications.
30	40.31 Electrical Installation: As per mentioned clause in Lighting sr no “i”, kindly clarify regarding security lights with solar backup system requirement. Whether street light is to be provided with solar backup for new substation?? Kindly clarify the exact requirement.	Solar backup not required in both lots (1 and 2)
31	Metering core accuracy class is for CTs and CVTs. Kindly clarify whether metering core of CT and CVTs is to be provided with 0.5 or 0.2 accuracy class.	Metering accuracy class is 0.2 as per clarification No.3 amendment No.1

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32	There is a clause in the specification that each panel must have a multifunctional Protection unit as per 4.1.2.4.2.2. We do not have the section they are referring to. Please advice. I am concerned that we do not have all of the specifications.	This is a typographical error; " clause 4.1.2.4.2.2" is none existence and should be ignored
33	Some of the panel description and BOM ask for a protection panel and then a separate Control Panel and some do not. Do they really require separate control And protection panels?	The query is not on a specific clause or item. Follow as per issued bidding document, clarifications and amendment
34	There is no clear specification on what the 33kV Bus Section, incomers or line protection should have. I need clarification on if the 33kV Line protection require any differential or distance relays? Is it okay if we allowed for a Bay controller, Different relay and Multifunctional protection unit.	Refer to issued bidding document clause 29: on 33kv feeder bay Gas insulated switchgear, Sub clause 29.8.4.2.3
35	In Page 1 Technical specification 2 References: Query: Requesting you to kindly modify is following, The following standards contain provisions which, through reference in this text constitute provisions of this specification. Unless otherwise stated, the latest editions (including amendments) apply and shall be complied with by the manufacturer/ supplier. ISO 10119, IEEE 738, ASTM B857, ASTM B609 or any other applicable standards	This shall be as specified in the issued bidding document, clarifications and amendments
36	In Page 2 Technical specification 4.2.2) References - The carbon fiber composite cable used in the construction of the conductor core shall be of medium toughness bismaleimide (BMI) resin reinforced with five-harness (5H) satin standard modulus carbon fiber fabric as per ISO 10119 and ABS 5354 standards. Query: We request you to kindly modify it as, For composite material, the materials shall be of such proven quality that its properties are not adversely influenced by the normal operating conditions of a 132 kV transmission line in tropical environment conditions these lines will be exposed to as detailed in Scope. The bidder shall provide adequate details including specifications/ test reports/operating experience details/performance certificates etc. in support of the suitability of the offered materials along with the bid	This shall be as specified in the issued bidding document, clarifications and amendments
37	In Page 2 Technical specification 4.2.3) References - 4.2.3. The carbon fiber core shall be formed through a pultrusion (uni-directional) process whereby all the fibres (carbon and fibreglass) shall run parallel so as to offer the required tensile strength suitable for overhead conductors used for long span distances over highways, rivers and between mountain peaks. Query: Requesting you to kindly modify the process as per established process of manufacturer, but however the material should have minimum properties that which are required to meet the application or technical specification.	This shall be as specified in the issued bidding document, clarifications and amendments

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38	<p>In Page 3 Technical specification 4.4) Conductor sizes and characteristics - The sizes for the aluminium and carbon fiber core used in the construction of the conductors and their sizes shall be as shown in Table 1:</p> <p>Query: Requesting you to kindly modify it as following that the manufacturer can supply same design or better design in terms of performance</p>	<p>This shall be as specified in the issued bidding document, clarifications and amendments</p>
39	<p>In Page 4 Technical specification Table 1 Technical data for the conductor as per ASTM B857 and ASTM B609 - In Page 4 Technical specification Table 1 Technical data for the conductor as per ASTM B857 and ASTM B609</p> <p>Query: Requesting to change the minimum requirements as per Annexure C GTP queries. Continuous operating temperature (Deg C) - 90 Deg C</p>	<p>Continuous operating temperature (°C) for ACFR conductor shall be 90°C as per issued amendment 1</p>
40	<p>In Page 4 Technical specification Table 5 Tests & Inspection - 5.3</p> <p>Query: Requesting you to kindly modify it as Type Tests on Stranded Conductor/ Stranded wire</p> <p>The following tests shall be conducted once on sample/samples of conductor from each manufacturing facility: Type tests specified under table 2 shall not be required to be carried out if a valid test certificate is available for the offered design, i.e., tests conducted earlier should have been conducted in accredited laboratory (accredited based on ISO/IEC guide 25/17025 or EN 45001 by the National Accreditation body of the country where laboratory is located) or witnessed by the representative of any utility.</p>	<p>This shall be as specified in the issued bidding document, clarifications and amendments</p>
41	<p>In Page 4 Technical specification Table 5 Tests & Inspection - 5.3 Copies of type test reports for the conductor to be submitted with the tender (by bidder) for evaluation shall be as stated in table 2</p> <p>Query: Requesting you kindly modify list of tests as per attached annexure B</p>	<p>This shall be as specified in the issued bidding document, clarifications and amendments</p>
42	<p>In Page 4 Technical specification Table 3: Routine tests - 5.4</p> <p>Query: Requesting you to kindly modify the list of tests as mentioned in the annexure D</p> <p>5.4 The following tests shall be done at the manufacturer's works in the presence of KPLC Engineers (2) and in accordance with ASTM B857, ASTM B609, ISO 10119, IEEE 738 and ABS 5354 standards and this specification as in Table 3.</p>	<p>This shall be as specified in the issued bidding document, clarifications and amendments</p>
43	<p>Please provide the specifications for 33kV Surge Arresters.</p>	<p>Refer to amendment no.3</p>
44	<p>Suppliers are asking about General Condition's clause No. 28 to issue Manufacturer Authorization, which is missing in tender document. We request you to kindly provide General Condition Clause no. 28.</p>	<p>Refer to amendment 4 of clarification no.4, item no.26</p>

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45	<p>Following the receipt of your clarifications and amendments, we understand that: Items NRK- 022 Materials for transfer and or relocation of 33/11KV existing Overhead line fittings and conductor: 30 km</p> <ul style="list-style-type: none"> Your answer to question N ° 155 of clarifications N ° 1: This line (33KV) will no longer be carried out within the scope of this tender and will be replaced by the achievement of item NRK-026 subject of amendment N °1, <p>We kindly ask you to confirm our understanding.</p>	Transfer or relocation of existing 33/11kv lines not required as per clarification no.1
46	<p>33KV Lines with single 150mmsq ACSR conductor per phase and single with hardware, Concrete poles, fittings, insulators and all other necessary materials:10km</p> <ul style="list-style-type: none"> * Please send us the complete route of the line 33kv 10 km * To specify us the starting point and the point of arrival. * is the underwater crossing part of the line 33kv 10 km 	Refer to issued clarifications and amendments no 2. The 33kv line design and route survey is in the contractors' scope.
47	<p>Materials for transfer of 11/0.43KV Overhead line fittings and conductor to the new 33kv overhead line :</p> <ul style="list-style-type: none"> * what is the type of existing cable 11kv and 0.43kv 	The material anticipated in Lot 2 for transfer of existing 11/0.43Kv don't have cable requirement
48	<p>In the amendment N°1, it is mentioned that the following relays specifications are included in appendix N°3. Would you please note that they are not included? The missing specifications are Particular technical specification for line differential. Breaker fail protection, and ü Bus bar differential protection.</p>	Refer to clarification no.3 amendment no.3
49	<p>In clarification N°1, it is mentioned in point N°46 that new equipment and integration are required. Please confirm that the new SAS will include only new bays and it will behave as a slave to the existing GE/DIGI grid SAS.</p>	The item no.46 is not for SAS equipment requirement SAS is for the new bay and shall be able to integrate and operate as an hot spot of existing GE/DIGI grid SAS
50	<p>The existing bus bar protection (HID+F650) interfaces with CT's of 5A. The new bays compromise CT's of 1A. The bus bar protection may not work properly.</p>	Clarification No.1 Item No.189 has be revised as follows; 132V & 33KV Bus Bar Protection for both lots (1 and 2) shall be Centralized Low Impedence differential except for Kipevu 132kv bay that shall be High impedance differential Centralized . CT's secondary is 1A.
51	<p>Could you please describe how to interface the new bus bar protection with the existing one in NAROK and BOMET (HID+F650)?</p>	Design and integration is in contractors' scope of work
52	<p>Could you please describe how to interface the new bus bar protection with the existing one in KIPEVU (RADHA)?</p>	Design and integration is in contractors' scope of work

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53	It is mentioned that the new bus bar protection should support 8 feeders: 4 existing and 4 in future. Please define the 4 existing feeders.	Bidders to use information acquired during pre-bid site meeting in addition to issued bidding document
54	The recommended value for the earthing network is 120 mm ² , however the short circuit is 40 kA; please clarify	120mm ² conductor is minimum. Contractor shall use this value if the calculated design value is lower than 120mm ²
55	Lot 1: Confirm the value and specification of the connection cable between HV equipment.	The question is not clear which equipment is being referred to.
56	Confirm the type of isolator for HV equipment is it porcelain or silicon composite in substations	Inside substations Porcelain post insulators are applicable
57	<p>Lot 1. Power Transformer: We have no information about the continuous maximum rating with ONAN/ ONAF cooling? We have no information about the tapping ranges from principal tapping (number and steps in % of rated voltage) Please clarify the short circuit impedances value , and which reference power ONAN or ONAF?</p>	<p>There is no power transformer requirement in Lot 1. For lot 2, refer to issued bidding document, clarifications and amendments.</p>
58	<p>The Clause 2 of Particular Technical Specifications -ACFR Conductor implies that the conductor must conform to the following standards. ISO 10119, IEEE 738, ASTM B857, ASTM B609. Kindly confirm if for ACFR, we could adopt IEC & BS 50540 Standards.</p>	This shall be as specified in the issued bidding document, clarifications and amendments.
59	<p>The clause 4.2.2 of: Particular Technical Specifications-ACFR Conductor states that: "The carbon fiber composite cable used in the construction of the conductor core shall be of medium toughness bismaleimide (BMI) resin reinforced with five-harness (5H) satin <i>standard modulus carbon fiber fabric as per ISO 10119 and ABS 5354 standards.</i>" We propose to use alternative materials having such proven quality so that its properties are not adversely influenced by the normal operating conditions of a 132kV transmission line in tropical environment conditions which these lines will be exposed to as per the Scope.</p>	This shall be as specified in the issued bidding document, clarifications and amendments.
60	<p>The clause 4.2.3 of Appendix III: Particular Technical Specifications -ACFR Conductor states that: "The carbon fiber core shall be formed through a pultrusion (uni-directional) process whereby all the fibers (carbon and fiberglass) shall run parallel so as to offer the required tensile strength suitable for overhead conductors used for long span distances over highways, rivers and between mountain peaks."</p>	This shall be as specified in the issued bidding document, clarifications and amendments.

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	We propose to use alternative manufacturing processes. However, the specified minimum characteristics shall be strictly complied with. Please confirm if it is acceptable.	
61	Please clarify whether in place of the parameters given in Table 1 of Appendix III: Particular Technical Specifications -ACFR Conductor – Clause 4.4, we can propose alternate parameters which will be having superior design & would be better in terms of performance. Kindly confirm.	This shall be as specified in the issued bidding document, clarifications and amendments.
62	We request you to modify the characteristics given in Table 1 of Appendix III: Particular Technical Specifications -ACFR Conductor – Clause 4.4 as per Annexure C. Please confirm.	ACFR conductor Particular technical specifications are different from those of Lynx ACSR conductor in annexure C1.
63	The Table 2 of Appendix III: Particular Technical Specifications - ACFR Conductor enlists the type tests to be included in the type test report to be submitted by the bidder. We propose to submit the type test report as per Annexure B, which is in line with CIGRE and sufficient to prove that the conductor can withstand all conditions. Please confirm if it is acceptable.	Declined. This shall be as specified in the issued bidding document, clarifications and amendments.
64	The Table 3 of Appendix III: Particular Technical Specifications - ACFR Conductor enlists the routine tests to be carried out by the manufacturer. We propose to carry out the routine tests as per Annexure D, which is in line with CIGRE and sufficient to prove that the conductor can withstand all conditions. Please confirm if it is acceptable.	Declined. This shall be as specified in the issued bidding document, clarifications and amendments.
65	We presume that Type Tests on samples of conductor as listed in Table 2 of Appendix III: Particular Technical Specifications -ACFR Conductor shall not be required to be carried out if a valid Type Test Certificate (tests conducted in ISO/IEC guide 25/17025 or EN 45001 accredited laboratory or witnessed by the representatives of any utility) is available for the offered design. Please confirm.	This shall be as specified in the issued bidding document, clarifications and amendments
66	Through asking ABB, the type of 33kV GIS is gas insulated cabinet which integrates circuit breaker, disconnecter, earthing Switch, protection device etc. And its enclosure is not aluminum alloy, there is no independent LCC.	This shall be as specified in the issued bidding document, clarifications and amendments
67	please clarify whether the PLC and Radio communication is needed in Kipevu substation extension and new Mbaraki substation	Refer to clarifications and amendments. PLC and Radio not required, however telecommunications shall be via optic fibre
68	Please provide the route of 10.0kms 33kv O/H line, 10.0kms 33kv Underground cable and 0.8kms Submarine Underground cable (Already updated to 1.2km), and provide number of their circuits and terminal point.	10Kms is an aggregate length of the 10 feed outs as explained in Clarification and amendment no.2

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69	Please confirm whether the three core i.e. 3×630mmsq Cu Submarine cable can be adopted.	This shall be as specified in the issued bidding document, clarifications and amendments
70	The 11kV switchgear is not observed in MBARAKI substation, so please clarify whether the 11kV overhead line is included this bidding scope.	The scope for Lot 2 shall be as per issued bidding document, clarifications and amendments
71	Please clarify that the relay protection and control system is used in existing equipment or new equipment for Kipevu substation extension? If used existing equipment, please provide some drawings such as bus protection, fault record panel, meter drawing etc.	Refer to issued bidding document, clarifications and amendments.
72	Please clarify that the double circuit 33kV line is from 33kV switchgear feeder of Kipevu substation to 33kV switchgear incomer of Mbaraki substation or from Mbaraki 33kV feeder to Kipevu substation. Please inform both sides terminal point of the double circuit 33kV line.	33Kv double circuit line on monopole is a new line
73	Please provide the relevant documents and drawings for the new MBARAKI substation: a.The hydrology and soil investigation information. b.The editable topographic drawings. c.The single line drawing and layout drawing.	Refer to issued bidding document, clarifications and amendments
74	<ul style="list-style-type: none"> • Please kindly provide the detailed list format of civil works. • Kindly provide the plot detail at Mbaraki. • Please clarify whether the cable trench are all concrete types. • Please clarify that the piling is required or not. 	Refer to issued bidding document, clarifications and amendments
75	<p>Power Transformer: There is not mentioning the Load losses and No-load in the specification or Schedule vii -1A technical guarantees, power transformers, please clarify and provide the details for our complying</p> <p>35.2.2.9 Bushings Please specify the number required for bushing's current transformer. Bushings shall be fitted to the equipment as specified in Scope of Works. Bushings for 66 kV and above shall be of the condenser type. Other bushings may be of solid porcelain. Please specify the type details request for the above bushing type.</p> <p>35.2.1.7 Insulation Levels The insulation test levels are given in Project Specific Data. All transformers shall be designed for full insulation on all terminations also the neutral termination.</p>	<p>Refer to issued clarifications and amendments</p> <p>This shall be as per issued bidding document, clarifications and amendment</p> <p>This shall be as per issued bidding document, clarifications and amendment</p>

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	Please specify the Insulation level for HV neutral.	
76	<p>132kV Current transformer and Voltage transformer We have review the GTP form in VOL II (2)-WORKS REQUIREMENTS for voltage transformer, unfortunately there is No. specified GTP for this part, please verify and provide us.</p> <p>For the voltage transformer, we have reviewed the Particular Specifications- 132KV current transformers in the Appendix III to amendment No. 1 and we noted 4.3 part mentioned four types of CT with ratio, please clarify which type and the quantity should we use for this substation.</p> <p>We noted the 4.1.1 item of Particular Specifications- 132KV current transformers in the Appendix III TO AMENDMENT No. 1 specified site condition is altitude up to 2200 m above sea level. But you also mentioned site condition is Altitude or Terrain: 0 – 500m a.s.l. in the 18.3 specification. Please confirm which one we should comply.</p>	Refer to issued bidding document, clarifications and amendment 2&3

Yours faithfully,
For: KENYA POWER & LIGHTING COMPANY LIMITED.


Joyce Ochieng
AG. GENERAL MANAGER, SUPPLY CHAIN

