

Notice to all Bidders

RE: ADDENDUM NO. 3: AMENDMENT OF BIDDING DOCUMENT

Contract Title: Design, supply, installation and commissioning of the 400/220 kV Kimuka Substation and Associated Transmission Lines

Contract No.: KE-KETRACO-416094-CW-RFB

In accordance with the Instructions to Bidders ITB 8 [Amendment of Bidding Document], the Employer, *Kenya Electricity Transmission Company Ltd. (KETRACO)* has amended the following sections/parts of the issued Bidding Document:

1. Bid Data Sheet, clause ITB 11.2(i), item 5 which reads as shown below:

ITB 11.2 (i)	<p>5. Copies of Type Test Reports and technical documents (catalogues, brochures, drawings) of each major equipment offered shall form part of the bid. Copies of Type Test Reports shall meet the following requirements:</p> <ol style="list-style-type: none">a. All equipment being supplied shall conform to Type Tests as per Technical Specifications. Type test reports shall be carried out by an accredited laboratory independent from the manufacturer based on ISO/IEC Guide 25/17025 and the test reports submitted shall be of the tests conducted within last10 (ten) years to the date of bid opening.b. Results of type tests shall have been conducted within the last seven years prior to the date of tender submission. The bidder shall submit contact details (Title, email and fax) of certifying laboratory.c. Testing materials and equipment in Type Test Reports shall have the same code/ country/ manufacturer and technical parameters as offered materials and equipment. Type tests of non-conforming materials/equipment shall not be accepted.d. Type test reports shall include all items tested and results confirming that they meet the requirements of applied standards as stipulated in Tender Documents
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has been revised as follows:

ITB 11.2 (i)	<p>5. Copies of Type Test Reports and technical documents (catalogues, brochures, drawings) of each major equipment offered shall form part of the bid. Copies of Type Test Reports shall meet the following requirements:</p> <ul style="list-style-type: none"> a. All equipment being supplied shall conform to Type Tests as per Technical Specifications. Type test reports shall be carried out by an accredited laboratory independent from the manufacturer based on ISO/IEC Guide 25/17025 and the test reports submitted shall be of the tests conducted within last10 (ten) years to the date of bid opening. b. Results of type tests shall have been conducted within the last ten years prior to the date of tender submission. The bidder shall submit contact details (Title, email and fax) of certifying laboratory. c. Testing materials and equipment in Type Test Reports shall have the same code/ country/ manufacturer and technical parameters as offered materials and equipment. Type tests of non-conforming materials/equipment shall not be accepted. d. Type test reports shall include all items tested and results confirming that they meet the requirements of applied standards as stipulated in Tender Documents
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2. Section III – Evaluation and Qualification Criteria, item 2 - Evaluation of Technical Bid, Factor 1: Specific Experience of the Bidder, first bullet point under ‘Evaluation’ which reads as shown below:

- Number of contracts involving design of substations of voltage level of substation with 150 MVA and above, using technologies similar to those of this Bid, that have been successfully completed by the Bidder.

has been revised as follows:

- Number of contracts involving design of substations of voltage level of 400 kV substation with 150 MVA and above, using technologies similar to those of this Bid, that have been successfully completed by the Bidder.

3. Section III – Evaluation and Qualification Criteria, item 2 - Evaluation of Technical Bid, Factor 2: Efficiency of the transformer losses guaranteed by the Bidder, section to note under ‘Load Loss Evaluation’ which reads as shown below:

Note: All values will be obtained from the filled Schedule of Technical Information. The Load Loss values used in this evaluation shall be the sum of the transformer copper loss plus auxiliary loss at rated power and principal tapping.

has been revised as follows:

Note: All values will be obtained from the filled Schedule of Technical Information. The Load Loss values used in this evaluation shall be the sum of the transformer copper loss plus auxiliary loss at rated power and principal

tapping. In the case where a Bidder has proposed several manufacturers who have qualified, the highest losses among the manufacturers will be used.

4. Section III – Evaluation and Qualification Criteria, item 2 - Evaluation of Technical Bid, Factor 2: Efficiency of the transformer losses guaranteed by the Bidder, section to note under 'No Load Loss Evaluation' which reads as shown below:

Note: All values will be obtained from the filled Schedule of Technical Information.

has been revised as follows:

Note: All values will be obtained from the filled Schedule of Technical Information. In the case where a Bidder has proposed several manufacturers who have qualified, the highest losses among the manufacturers will be used.

5. Section VII - Employer's Requirements- A - Scope of Supply, Clause 30.2 - Living Accommodation for use by KETRACO During Operation, under bullet point titled "Armoury" which reads as shown below:

- **Armoury**

Each unit of security staff housing shall have a permanently fixed and lockable armoury as per the requirements of the Critical Infrastructure Protection Unit.

has been revised as follows:

- **Armoury**

One of the security staff housing units shall be fixed with a tamper proof brick box for storing weapons.

6. Section VII - Employer's Requirements - B – Specifications, clause 18.23.13. – Fencing and Gates which reads as shown below:

18.23.13. Fencing and Gates

This section specifies fixed chain link fencing. This type of fencing shall be used for the entire substation site boundary of 3 meters high. This shall also apply to the fencing of the Switchyard land and staff housings of 2 meters high. The provisions and installation of the chain link fence shall be in accordance with the requirements of BS 1722 Part 10 "Specification for anti-intruder fences in chain link and welded mesh" except where varied by this Specification.

has been revised as follows:

18.23.13. Fencing and Gates

This section specifies fixed chain link fencing utilizing precast reinforced concrete posts cranked at the top and spaced at no more than 2.5m c/c. The total height shall be 3.0m inclusive of the cranked top of 300mm. This type of fencing shall be used for the entire substation site boundary, the switchyard land and the staff housing section.

The provisions and installation of the chain link fence shall be in accordance with the requirements of BS 1722 Part 10 "Specification for anti-intruder fences in chain link and welded mesh" except where varied by this Specification.

7. Section VII - Employer's Requirements - B – Specifications, clause 18.23.13.5. – Posts which reads as shown below:

18.23.13.5. Posts

Intermediate posts for chain link fencing shall be circular hollow sections in accordance with Table 2 of BS 1722 Part 10. The post size shall be 60.3 mm o.d x 4 mm for supporting 'heavy duty' mesh. Material properties, protective treatments tolerances on size etc. shall conform with the recommendations of BS 1722-10 Section 5. Straining posts for chain link fencing shall be circular hollow sections in accordance with Table 2 of BS 1722 Part 10. The post size shall be 89.2mm o.d x 4mm x 3.2m length for supporting 'heavy duty' mesh panels. Material properties, protective treatments, tolerances on size etc. shall conform with the recommendations of BS 1722-Part 10, Section 5. Struts for chain link fencing shall comprise circular hollow sections in accordance with Table 2 of BS 1722-Part 10. The strut size shall be 48.3mm o.d x 3.2mm x 3.2m lengths for supporting 'heavy duty' mesh panels. Material properties, protective treatments, tolerances on size etc. shall conform with the recommendations of BS 1722 Part 10, Section 5.

has been revised as follows:

18.23.13.5. Posts

Fencing posts for the chain-link fencing shall be pre-cast reinforced concrete posts with cranked tops angled outwards to support electric fencing. The posts shall be placed at intervals not exceeding 2.5m. The total post height shall be 3m inclusive of a cranked top of 300mm. The posts shall be set in concrete foundations of class 25 or higher and shall have their edges chamfered accordingly. Material properties, protective treatments, tolerances on size etc shall conform with the recommendations of BS 1722-10 .

The straining posts and struts shall be of pre-cast reinforced concrete and the Material properties, protective treatments, tolerances on size etc. shall conform with the recommendations of BS 1722-Part 10.

8. Section VII - Employer's Requirements - B – Specifications, clause 18.23.13.6. – Barbed wire which reads as shown below:

18.23.13.6. Barbed wire and Electric Fence

Barbed wire with electric shock security for use on substation site chain link fence (as well as on all boundary walls) shall only be provided as follows:

- a. Barbed wire for chain link fence shall comprise 3 Nos straight strings, equally spaced, shall be fixed on each supporting arm.
- b. Barbed wire for gates shall consist of 5 rows of "straight" strings, equally spaced.
- c. Each string of barbed wire shall consist of two strands of 2.5mm dia (12 gauge) wire with 2.0 mm dia (14 gauge) four pointed barbs spaced approximately 125 mm apart along the wire. The wire shall be galvanized in accordance with ASTM A121 to produce a minimum zinc coating of 0.244kg/m² of surface area on 2.5mm dia (12 gauge) wire and 0.198kg/m² of surface area on 2.0mm dia (14 gauge) wire.

Barbed wire shall conform to BS EN 10223-1.

has been revised as follows:

18.23.13.6. Barbed wire and Electric Fence

Barbed wire with electric shock security for use on substation site chain link fence (as well as on all boundary walls) shall only be provided as follows:

- a. Barbed wire for chain link fence shall comprise 3 Nos straight strings, equally spaced, shall be fixed on each supporting arm.
- b. Barbed wire for gates shall consist of 5 rows of "straight" strings, equally spaced.
- c. Each string of barbed wire shall consist of two strands of 2.5mm dia (12 gauge) wire with 2.0 mm dia (14 gauge) four pointed barbs spaced approximately 125 mm apart along the wire. The wire shall be galvanized in accordance with ASTM A121 to produce a minimum zinc coating of 0.244kg/m² of surface area on 2.5mm dia (12 gauge) wire and 0.198kg/m² of surface area on 2.0mm dia (14 gauge) wire.

Barbed wire shall conform to BS EN 10223-1.

The electric fence shall be a wall- top electric fence to be installed on the cranked top. The electric fence should use a minimum of 2.5 mm gauge wire with all required strainer posts/brackets, strainer insulators, grounding rods and Danger/Warning signs to be installed in every interval. The electric fence should use an energizer with an output voltage of not less than 9000V.

9. Section VII - Employer's Requirements- B – Specifications, clause 2.3.8. - Suspension and Tension insulators which reads as shown below:

2.3.8. Suspension and Tension insulators

Disc insulators may be of ceramic material or toughened glass, and together with their metal fittings shall comply with the requirements of IEC 60383. Their mechanical characteristics and dimensions shall comply with IEC 60305, whilst the ball and socket couplings, retaining pins and locking devices shall comply with IEC 60120 and IEC 60372. The locking pins shall be of phosphor bronze.

The locking devices shall be formed such that when they are set only extreme deformation of the retaining pin or locking device will allow separation of the insulator units or fittings or cause any risk of the retaining pins or locking devices being accidentally displaced. Their design shall allow easy removal or replacement of the insulator units or fittings. When in position the retaining pins or locking devices shall be independent of the degree of opening applied to the retaining pin or locking device after insertion. A common design of retaining pin or locking device shall be used for each complete insulator set.

All ball and socket joints of insulator sets shall be lightly coated with grease.

has been revised as follows:

2.3.8. Suspension and Tension insulators

Disc insulators may be of ceramic material or polymer type, and together with their metal fittings shall comply with the requirements of IEC 60383. Their mechanical characteristics and dimensions shall comply with IEC 60305, whilst the ball and socket couplings, retaining pins and locking devices shall comply with IEC 60120 and IEC 60372. The locking pins shall be of phosphor bronze.

The locking devices shall be formed such that when they are set only extreme deformation of the retaining pin or locking device will allow separation of the insulator units or fittings or cause any risk of the retaining pins or locking devices being accidentally displaced. Their design shall allow easy removal or replacement of the insulator units or fittings. When in position the retaining pins or locking devices shall be independent of the degree of opening applied to the retaining pin or locking device after insertion. A common design of retaining pin or locking device shall be used for each complete insulator set.

All ball and socket joints of insulator sets shall be lightly coated with grease.

10. Section VII - Employer's Requirements- B – Specifications Clause 11.3.3.1 - General Design Requirements which reads as shown below:

11.3.3.1. General Design Requirements

The 110V DC service equipment shall be designed, supplied and installed to provide high availability, reliable and safe supply for control, protection, alarm and indication devices, tripping and closing circuits, emergency power and emergency lighting.

The 110 V battery system shall comprise 2 x 1000% rated duty (Ni-Cd) type battery units and 2 x 100% rated duty float/boost charger units. These shall be arranged such that under normal conditions both float chargers are operating to supply the specified DC load via two busbars operated independently and at the same time each automatically float charging its associated battery to keep it fully charged within the specified voltage limit for the correct operation of equipment.

It shall be possible to switch either charger out of service leaving the remaining charger and batteries to carry the full DC load requirement and at the same time provide the full battery float charge requirements. It shall not be possible to switch off more than one charger at one time.

It shall also be possible to switch either battery out of service leaving the remaining chargers and batteries to carry the full DC load requirement and at the same time provide the full battery float charge requirements. In this case the normally independent DC supply busbars shall be coupled through a bus section switch.

The system shall be such that either battery may be connected to the chargers through changeover contactors, which shall be mounted in the DC Switchboard.

Under boost charge conditions the charger shall be capable of supplying the full boost charge requirement, taking care not to exceed the maximum permissible battery voltage. Only one battery unit (100% of total battery capacity) shall be on boost charge at any one time and means shall be provided to automatically limit the voltage applied to the loads connected to the DC bus during the boost charge period to a value no greater than the float charge value.

In case of loss of AC supply during boost charging, the charger shall return automatically to the float charge position upon restoration of AC supply and the battery automatically reconnect to the DC busbar. The charger shall continue to operate in float charge mode unless manually re-selected to boost charge.

The second 100% charger shall continue to operate normally in float charge mode with the second battery and continue to supply its own DC load requirement.

Selection of the boost charge shall be by manual means. Each charger shall be rated to be capable of boost recharging each battery from the discharge condition to 100% of fully charged capacity in a time not exceeding 8 hours. The control of the boost charge condition shall be such that the charging rate is reduced as the battery approaches full charge to avoid excessive gassing.

When selected to "Boost charge" mode, the battery condition shall be monitored and on achieving a fully charged condition, the rectifier shall automatically regulate the charging current and change over to the float charge mode. The maximum period of boost charging shall be controlled automatically by a preset timing switch which will return the charger to float mode.

The 110-volt battery system shall be centre point earthed through a limiting resistance to limit earth fault D.C. current to maximum 10 mA. A suitable D.C. centre zero milli-ammeter shall be provided for the detection and clearing of 110 volts D.C. faults. A suitable battery earth fault scheme shall be provided, which shall be capable of detecting, in the event of an earth fault, whether the positive or negative pole is earthed. Earth-fault alarm shall be initiated locally and remotely via the SCS.

has been revised as follows:

11.3.3.1. General Design Requirements

The 110V DC service equipment shall be designed, supplied and installed to provide high availability, reliable and safe supply for control, protection, alarm and indication devices, tripping and closing circuits, emergency power and emergency lighting.

The 110 V battery system shall comprise 2 x 100% rated duty Nickel-Cadmium (Ni-Cd) type battery units and 2 x 100% rated duty float/boost charger units. These shall be arranged such that under normal conditions both float chargers are operating to supply the specified DC load via two busbars operated independently and at the same time each automatically float charging its associated battery to keep it fully charged within the specified voltage limit for the correct operation of equipment.

It shall be possible to switch either charger out of service leaving the remaining charger and batteries to carry the full DC load requirement and at the same time provide the full battery float charge requirements. It shall not be possible to switch off more than one charger at one time.

It shall also be possible to switch either battery out of service leaving the remaining chargers and batteries to carry the full DC load requirement and at the same time provide the full battery float charge requirements. In this case the normally independent DC supply busbars shall be coupled through a bus section switch.

The system shall be such that either battery may be connected to the chargers through changeover contactors, which shall be mounted in the DC Switchboard.

Under boost charge conditions the charger shall be capable of supplying the full boost charge requirement, taking care not to exceed the maximum permissible battery voltage. Only one battery unit (100% of total battery capacity) shall be on boost charge at any one time and means shall be provided to automatically limit the voltage applied to the loads connected to the DC bus during the boost charge period to a value no greater than the float charge value.

In case of loss of AC supply during boost charging, the charger shall return automatically to the float charge position upon restoration of AC supply and the battery automatically reconnect to the DC busbar. The charger shall continue to operate in float charge mode unless manually re-selected to boost charge.

The second 100% charger shall continue to operate normally in float charge mode with the second battery and continue to supply its own DC load requirement.

Selection of the boost charge shall be by manual means. Each charger shall be rated to be capable of boost recharging each battery from the discharge condition to 100% of fully charged capacity in a time not exceeding 8 hours. The control of the boost charge condition shall be such that the charging rate is reduced as the battery approaches full charge to avoid excessive gassing.

When selected to "Boost charge" mode, the battery condition shall be monitored and on achieving a fully charged condition, the rectifier shall automatically regulate the charging current and change over to the float charge mode. The maximum period of boost charging shall be controlled automatically by a preset timing switch which will return the charger to float mode.

The 110-volt battery system shall be centre point earthed through a limiting resistance to limit earth fault D.C. current to maximum 10 mA. A suitable D.C. centre zero milli-ammeter shall be provided for the detection and clearing of 110 volts D.C. faults. A suitable battery earth fault scheme shall be provided, which shall be capable of detecting, in the event of an earth fault, whether the positive or negative pole is earthed. Earth-fault alarm shall be initiated locally and remotely via the SCS.

11. Section VII - Employer's Requirements- E – Schedules of Technical Information, t) CCTV SURVEILLANCE AND ACCESS CONTROL, item 6.24 has been added as follows:

t) CCTV SURVEILLANCE AND ACCESS CONTROL	UNIT	DATA	
		REQUIRED	OFFERED
6.0	5KVA BATTERY BACKUP SUPPLY		
6.24	Battery Discharge time	Hours	Minimum 10 h

12. Section VII - Employer's Requirements- A - Scope of Supply, clause 30.3. - Design Review Meeting, the first paragraph which reads as shown below:

30.3 Design Review Meeting

The contractor shall arrange for a design review meeting at the contractor's home country's design office to be attended by a minimum of 4 KETRACO Engineers and two Employer's representatives (at least 10 days).

has been revised as follows:

30.3 Design Review Meeting

The contractor shall arrange for a design review meeting at the contractor's home country's design office to be attended by a minimum of 6 KETRACO Engineers and two Employer's representatives (at least 10 days).

13. Section VII - Employer's Requirements- A - Scope of Supply, clause 1 - Scope of work, sixth bullet on page 12 describing the scope of the water supply system which reads as shown below:

A Complete water supply system shall be provided. A borehole will be provided. The water supply for the control building, guard house and staff housings will be via an overhead tank. Main water reservoir of prestressed steel with a minimum capacity of 30,000 liters, with automatic level controls shall be provided. Also 5000 liters x 5 elevated prestressed water tanks of 6m height with automatic level controls shall be provided near the control building, guard house, warehouse, staff housings and security housing. All the necessary piping systems and pumps shall be provided and installed.

has been revised as follows:

A complete clean water supply system, with a borehole as the primary water source, shall be provided with a submersible pumping system installed. An option of connection to the existing mains water supply system shall be considered in the case of non-potability of the borehole.

A ground-mounted water reservoir consisting of a pressed steel water tank with a minimum capacity of 50,000 litres shall be provided including pumping to a centrally placed elevated pressed steel water tank of 10,000 litres capacity and reticulation system provided to supply the control building, technical staff houses, security staff houses ,storage warehouse, guard house and other associated facilities. Each staff house unit shall be provided with individual water meters.

The pressed steel water tanks shall be galvanized and shall be equipped with automatic level controls and all the necessary plumbing installations shall be included.

The required elevation of the overhead water tank shall be determined based on the hydraulic pressure requirements of the water distribution system, and this shall be designed during the detailed design phase.

The supporting structure for the elevated water tank shall be adequately designed and constructed to resist wind loads, vibration, and other forces, ensuring the stability of the tank and prevent it from tipping or displacement under operational conditions. The Ground-mounted water reservoir tank shall be provided with a sufficient reinforced concrete support structure or steel grillage.

14. Section VII - Employer's Requirements- B – Specifications, Clause 18.2 - General Scope, second bullet on page 281 describing the scope of the water supply system which reads as shown below:

Complete water supply system shall be provided For water availability throughout the substation, borehole is called for. The water supply for the control building and guard house and staff housings is via an overhead tank. Main water reservoir of 30,000 liters (as minimum) capacity, adequate to serve requirements of control building, guard house, staff housings and etc. with automatic level controls shall be provided. Also 3 X 5,000 liters elevated water tanks shall be considered near the control building, guard house and staff housings with required pumps to be fed from the main water reservoir.

has been revised as indicated in item 13 above.

15. Section VII - Employer's Requirements- B – Specifications, Clause 18.2 - General scope, the minimum rebar yield point (Fy) described in the last bullet on page 282 has been revised from 4000 Kg/cm² to 500MPa.

16. The following requirements for the Forklift and Ladder have been added:

Forklift Requirements

The requirements of the forklift shall include but not be limited to:

- 5 tonnes Capacity with a displacement of 5000 cc
- Rated power of at least 90 kW with engine torque of at least 500nM
- Minimum lift height- 7 meters with 2 stage mast.
- Pneumatic tires for outdoor use, allowing for use on concrete, bitumen, compacted gravel, or paved surfaces.
- Diesel Fuel
- Adjustable operator cab
- LED energy-saving lamps for visibility, especially in dimly lit environments.

Aluminium Ladder Requirements

The requirements of the ladder shall include but not be limited to:

- The ladder shall be an Industrial Duty Top Quality
- Shall have Two sections with a closed length of 4.88meters and an extension length of 9.14 meters.
- The number of climbing steps shall be 36pcs.
- Stiles to be reinforced as standard with wire backing at lengths of over 16".
- Tapered hardwood steps set to a standard rise of 250mm (10") centers & each to have a tie – rod underneath of galvanized mild steel.

17. Drawing No 5. Kimuka-400-220kV-SS-220kV-PSLD has been revised as attached. See Attachment 1.

18. The following drawings have been added for reference purposes only (see Attachment 2):

- a. Kimuka 400kV Tower Outline-Danube Configuration
- b. Kimuka 400kV Tower Outline-Vertical Configuration

19. The Price Schedules have been revised as attached. See Attachment 2.

20. Each Solar Water Heater with backup electric heating element referenced in Item no. 15.16.10 in Schedule 4A_SS of the Price Schedules shall have a capacity of 150 Liters.

Attachments:

Attachment 1: Revised Drawing No 5. Kimuka-400-220kV-SS-220kV-PSLD

Attachment 2: Kimuka 400 kV Tower Outline Drawings

Attachment 3: Revised Price Schedules

Save as expressly stated here above, all other provisions, terms and conditions of the Bidding Document remain unchanged.



SENIOR MANAGER, SUPPLY CHAIN

Addendum No. 2 of RFB No. KE-KETRACO-416094-CW-RFB has been received and incorporated in the Tender Documents.

Name of Tenderer (*in block letters*):

Signature:

Date:

**Signed for the Tenderer by
(*Name in block letters*):**

**In the office bearer capacity
of:**
