

Our Ref: KE-KETRACO-413024-CW-RFB

18 June 2025

Notice to all Bidders

Clarification No. 2

RE: Clarification No. 2 to the Bid Document for the Design, supply, installation and commissioning of STATCOMs and shunt devices on the KETRACO Network at Suswa and Rabai Substations (Lot 1 - Suswa 400/220 kV Substation & Lot 2 - Rabai 220/132 kV Substation) (KE-KETRACO-413024-CW-RFB)

Find herein the responses to the clarifications requested by Bidders consisting of 21 pages with attachments.



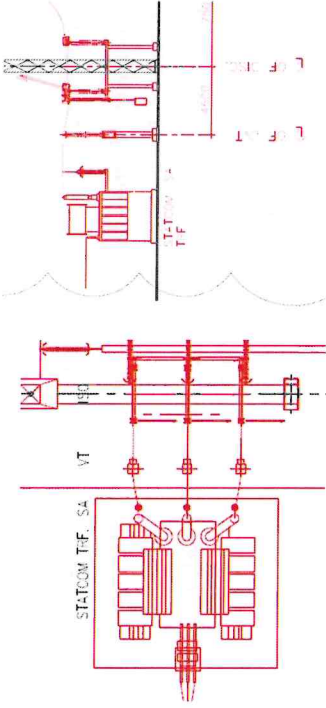
Ag. SENIOR MANAGER, SUPPLY CHAIN

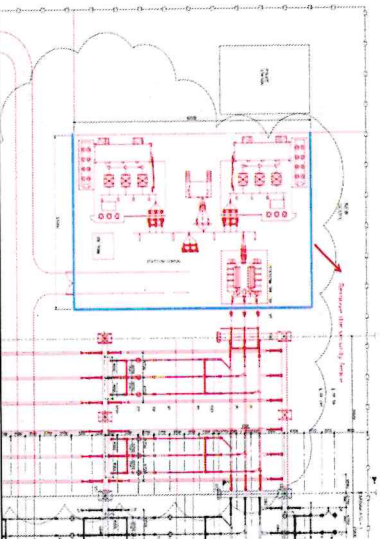
Attachments:

1. Gantry structural drawings – Suswa substation

Clarification No. 2

Item No.	Request for clarification	KETRACO Response
1.	With reference to Schedule 1B_SS/4.7 Auxiliary transformers including auxiliary supply system with chop over facilities, we note that the STATCOM requires a 200 kW, 400 V AC power supply. Please confirm the preferred supply scheme: Can this be sourced from the existing 220 kV substation? If not, can the adjacent substation meet the requirement? Alternatively, is it feasible to tap from the 11 kV or 33 kV busbar at this or a nearby substation and install an 11 kV/0.4 kV or 33 kV/0.4 kV transformer on-site?	Refer to Part D, Sections 2.12 of the Employer's Requirements, the auxiliary supply system of the STATCOM shall consist of two main incomers with a chop over facility. The incomers shall be supplied from dual MV auxiliary transformers on the STATCOM MV system.
2.	In relation to Part 1, Section I-1. General-4.3 conflict of interest, if the OEM bid as contractor, can they still work as the subcontractor/manufacture to another Bidder?	Yes, refer to ITB 4.3 that allows participation of a bidder as a subcontractor in another bid and ITB 4.2 on what constitutes conflict of interest.
3.	In Part 1, Section IV, Bidding Forms, Price Schedules_Rabai 4.6 Fire Protection System: is a complete system installation required, or is a fire control host already on site, with only smoke detectors and related equipment needed?	A complete fire protection system is to be installed with all related fire detection and protection elements (that meets regulatory and fire standards). This system shall be connected to a separate fire annunciation system clearly identifying the zone. Please refer to Part D, Section 2.11 (Fire protection) of the Employer's Requirements. Please refer to previous Clarifications No 1, Item No 66, 67, 68, 69 and 70.
4.	Part 1, Section IV, Bidding Forms, Price Schedules_Rabai/ Part 2-B_Bid_Drawings: Neither the BOQ nor the drawings show any 220 kV surge arresters. Could you please confirm if 220 kV surge arresters require to be installed on site?	Yes, surge arresters are part of the scope of works. The drawing does show the 220 kV surge arrestors (please see below an extract from the drawing). Also the Price Schedules also include these surge arrestors under line item 4.9.1. However, Bidders are to note that the drawings are indicative and for reference only. The Bidders are responsible for delivering a compliant and optimised system design based on sound engineering principles and applicable standards.

		
5.	<p>In Part 2-C, Schedules of Technical Information 2.11 220kV Busbars and Connectors/Page No.278, it specifies normal current rating at 40 °C of 220kV flexible busbar and 220kV tubular busbar is 4000A. Bid Drawings shows that the 220kV busbar conductor is AL TUBE (100x5) and flexible conductor is 2xAAC NARCISSUS which current carrying capacity can't reach 4000A. We prefer to provide the flexible and tubular busbar as per bid drawing (AL TUBE (100x5) for tubular busbar and 2xAAC NARCISSUS) for flexible busbar), please kindly confirm.</p>	<p>Bidders shall match the existing busbar conductor and tubes when extending busbars.</p>
6.	<p>In Part 2-C, 2.19 132kV Busbars and Connectors/Page No.303, Regarding the requirement for normal current rating at 40°C of the 132kV flexible and tubular busbar, Table D-40 stipulates 4000A while schedules of technical information specify 3150A. The on-site investigation revealed that the existing equipment's were connected with single conductors, and their current carrying capacity failed to reach 3150A. Additionally, rated normal current of 132kV circuit breaker required 2000A, therefore, We prefer to provide the 132kV flexible and tubular busbar with a normal current rating at 40°C of 2000A, please kindly confirm.</p>	<p>The correct rating should be 3150A however the Bidders shall match the existing busbar conductor and tubes when extending busbars.</p>
7.	<p>In Part 2-C, Schedules of Technical Information, we note that this covers a very comprehensive range of equipment and materials. The schedules include items not</p>	<p>This is acceptable only if the case is so for a bidder.</p>

	covered in the Bidder's proposal, such as 132kV suspension/tension insulators and MV cabling. Please confirm if marking these as "N/A" is acceptable.	
8.	With reference to Part 2-A, Scope_Supply_Specification, 32 Software and equipment to be procured for use by KETRACO/Page No.69, Please confirm how many valid licenses for the PSSSE desktop software are needed?	The Bidders shall provide two (2) PSSSE desktop software licences. Refer to Clarification No 1, Item No 24 for more details.
9.	Please confirm if the following three (3) projects meet the experience requirements in the Bidding Documents: (i) A 2100MW solar park substation having 400kV, capacity of Statcom is 36MVar started operation in 2023. (ii) A 102MW wind farm substation having 220kV, capacity of Statcom is 33MVar started operation in 2021. (iii) A 246MW solar park substation having 132kV, capacity of Statcom is 30MVar started operation in 2019.	All projects submitted by the Bidders to demonstrate experience will only be reviewed and verified during the Bid Evaluation stage to determine compliance with the qualification criteria specified in the Bidding Documents.
10.	With reference to Part 2-B, Bid_Drawings: Installing an internal security fence between the STATCOM coupling transformer and 220kV equipment may affect safety compliance. We recommend removing the fence in the marked area, please confirm if this is acceptable for KETRACO.	Fencing of the STATCOM area is considered necessary. Bidders shall note that the drawings provided as part of the Bidding Documents are indicative and for reference only. The Bidders are responsible for delivering a compliant and optimised system design. Any modification to the fencing layout must maintain full compliance with KETRACO's safety, operational access, and substation zoning requirements. Final approval will be subject to detailed review during design development.
11.	With reference to Part E (Civil and Structural Works Specification), Clause 2.9.7 (Roof Structure) of the Employer's Requirements: 	A steel truss structure with IBR sheet roofing is acceptable, provided it meets all structural, safety, insulation, and performance requirements

	<p>Due to structural safety and cost-efficiency concerns, a reinforced concrete flat roof is not suitable for the STATCOM valve hall, which requires large spans and significant height. A steel truss structure with IBR sheet roofing is recommended instead. Please confirm if this approach is suitable.</p> <p>In Part1, Section IV, Bidding Forms, Price Schedules_Rabai, Schedule 1B_SS, item 4.7 and Part 2 of Scope_Supply_Specification, 2.12 STATCOM Auxiliary Power Supply/Page No.137:</p> <p>The Bidding Documents specify two auxiliary transformers for system stability, only one STATCOM MV system with a single busbar is included in the scope. As both transformers would connect to the same busbar and fail during a busbar outage, having two does not enhance stability. It is suggested that one station service transformer is sufficient. Please confirm or clarify if additional considerations apply.</p>	<p>outlined in the Bidding Documents. The proposed design will be subject to the Employer's review and approval during the detailed design stage.</p>
12.		<p>Not acceptable. The requirement for two auxiliary transformers is intended to provide redundancy for a transformer failure and therefore Bidders are required to provide this as part of their design.</p>
13.	<p>In Part 2-B, Bid Drawings, ESP-001-RAB-003, CT10 and CT11 are both equipped with protective coil (1500/800A/1A, 5P20/5P20/5P20/5P20/5P20/5P20/5P20/15VA/15VA/15VA/15VA); Then, we understand the metering and measuring coil are also required. Could we offer CT10 (1500/800A/1A, 5P20/0.2/0.2/5P20/5P20/5P20, 15VA/15VA/15VA/15VA/15VA) and CT11 (1500/800A/1A, 5P20/0.2/5P20/5P20/5P20/0.2, 15VA/15VA/15VA/15VA/15VA)? Please kindly confirm it.</p>	<p>Refer to clarification no 1, item no 54.</p> <p>Bidders shall note that the drawings provided as part of the Bidding Documents are indicative and for reference only. The Bidders are responsible for delivering a compliant and optimised system design.</p> <p>The proposed design will be subject to KETRACO's review and approval during the detailed design stage.</p>
14.	<p>In reference to Part 2-C_Schedules of Technical Information,2.8 220kV Surge Arrestors/Page No.272: Rated Voltage – MOA 360kV</p> <p>Is it a clerical error that the rated voltage of the 220kV surge arrestors is stated as 360kV? Could it be changed to 198kV or some other value? Please kindly confirm it.</p>	<p>Refer to Clarification No 1, Item No 40.</p>
15.	<p>With reference to Part 2A (Voltage source converter redundancies requirement), Clause 2.8:</p> <p>Further clarification is requested regarding the following requirement:</p> <p>"The number and rating of IGBTs/IGCTs used to form the IGBT/IGCT Modules and converter assembly shall meet the overall performance requirements. The valves</p>	<p>The Bidder must design the converter with additional series levels or redundancy per arm, so that a fault/failure in a portion of the modules does not impact rated MVAr delivery.</p>

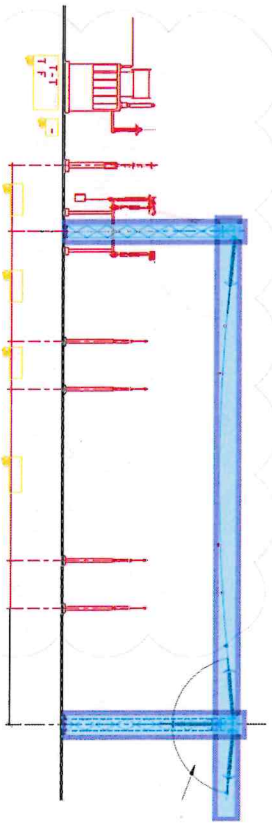
	<p>shall have sufficient margin to enable rated output to be maintained continuously with the higher of:</p> <ul style="list-style-type: none"> • 15% of the total number of series IGBT/IGCT levels in the converter short-circuited • One (1) IGBT/IGCT per power module defective" 	
16.	<p>In relation to operational experience in Part 1, Section III. We request KETRACO to revise the manufacturer requirement from having STATCOM projects operational for at least five (5) years to instead require that the projects have been commissioned within the last one (1) year, still supported by end-user certificates for both lots.</p>	<p>In relation to operational experience in Part 1, Section III, the requirement is revised to:</p> <p>For Lot 1</p> <p>Experience of manufacturing and/or supplying STATCOMs (of a rating 50 MVar and above) with an application voltage level of 400 kV or above to at least two (2) projects in the last ten (10) years that have been commissioned for at least four (4) years cumulatively, with each project having been commissioned and in operation for at least one (1) year, supported by end-user certificates/letters from the utilities/clients/EPC contractors with comprehensive contact details.</p> <p>For Lot 2</p> <p>Experience of manufacturing and/or supplying STATCOMs (of a rating 50 MVar and above) with an application voltage level of 220 kV or above to at least two (2) projects in the last ten(10) years that have been commissioned for at least four (4) years cumulatively, with each project having been commissioned and in operation for at least one (1) year, supported by end-user certificates/letters from the utilities/clients/EPC contractors with comprehensive contact details.</p>

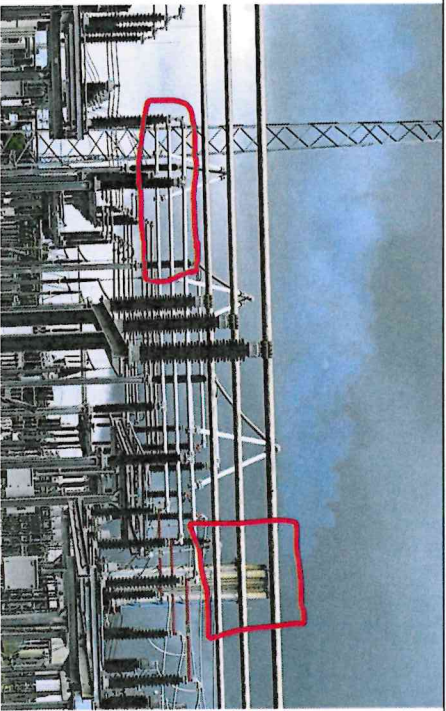
17.	With reference to the STATCOM Converter. The STATCOM converter with 35 levels/phase (TBC) and 15% redundancy implies N-6, is uncommon. We propose N-2 redundancy in line with standard TSO practice requirements; please confirm.	Not acceptable.
18.	With reference to Part 2-C (Schedules of Technical Information), 2.1, this is a meshed-network type SVG with technical limitations. It cannot meet the requirement. The manufacturer's response: 1.1 times overcurrent can run continuously; 1.2 times overcurrent can run for no less than 30 seconds.	The Bidders shall design their system with an overload capability of 300% for 3 seconds as required in the Bidding Documents.
19.	In Section: PART 2-C: Schedules of Technical Information Reference: 2.11.1 220kV Flexible Busbar / 5.1 Normal current rating at 40°C 4000A Clarification: The 220kV flexible conductor cannot meet the 4000A current-carrying requirement at 40°C. Can 2x(LGJ-630/45) be used to meet the 1900A current-carrying requirement at 40°C?	Refer to response provided for Item 5 & 6 of this clarification
20.	In Section: PART 2-C: Schedules of Technical Information Reference: 2.19.1 132kV Flexible Busbars / 5.1 Normal current rating at 40°C 4000A Clarification: The 132kV flexible conductor cannot meet the 3150A current-carrying requirement at 40°C. Can LGJ-630/45 be used to meet the 950A current-carrying requirement at 40°C?	Refer to response provided for Item 5& 6 of this clarification
21.	With reference to Part 2-C (Schedules of Technical Information), 2.3, may a loss requirement of 0.2-0.3w/kvar be provided as a <0.1w/kvar loss level cannot be achieved.	Not accepted. The Bidders shall meet the loss requirement of <0.1w/kVar as required in the Bidding Documents.
22.	As per Clause 26.2 of the PCC in section IX, liquidated damages are set at 0.5% of the Contract Price per week, capped at 10%. Can we reduce the weekly rate from 0.5% to 0.1%?	Not accepted.
23.	In reference to PART 1 – Bidding Procedures Section IV - Bidding Forms Method Statement (Pg. 84 of 338) Form PER-1 (Pg. 98 of 338) As per the requirements for Method Statement under Technical Proposal, Bidder is asked to submit method statement, management strategies, implementation plans and innovations, to manage cyber security risks. Further, as per form PER-1, a Cyber security Expert was asked to provide suitably qualified personnel to meet the specified requirements stated in Section VII. However, there are no scope requirements for such Cyber Security in this STATCOM project.	<p>The Bidder will use Form PER-1 and Form PER-2 as templates to provide information for the Contractor's Representative and other Key Personnel.</p> <p>The qualification requirements for the Contractor's Representative and key personnel are detailed in the Employer's Requirements.</p> <p>The Bidder may also propose other key personnel that the Bidder considers appropriate and present their details using Form PER-1 and Form PER-2.</p> <p>Bidders are to note that there is no cyber security scope on either Lot 1 or Lot 2, therefore Bidders are not required to provide details of Cyber Security Experts.</p>

	<p>We request the Employer to clarify on the need for technical proposal on Cyber security risks method statement and Cyber Security risk in PER-1 forms and confirm these are not required for subject Lot-1 & Lot-2 STATCOM tender.</p>	
24.	<p>In reference to PART 1 – Bidding Procedures Section IV - Bidding Forms, Form PER-1 (Pg. 98, 99 & 100 of 338) Contractor's Representative and Key Personnel (Pg 165, 166 & 167 of 338). As per form PER-1, Bidder was asked to provide suitably qualified personnel to meet the specified requirements stated in Section VII for following positions.</p> <ol style="list-style-type: none"> 1. Contractor's Representative, 2. Environmental Specialist, 3. Health and Safety Specialist, 4. Social Specialist, 5. Sexual Exploitation, Abuse and Harassment Expert, 6. Cyber security Expert/s <p>However, as per Pages 165/166/167 of 338, the Bidder was asked to provide suitably qualified personnel for the below-mentioned 13 positions which is contradicted with the above PER-1 form requirements.</p> <ol style="list-style-type: none"> 1. Project Manager / Contractor's Representative 2. Resident Site / Construction Manager(s) 3. Substation Electrical Engineer(s) 4. Control and Protection Engineer 5. Civil/Structural Engineer 6. Safety Engineer (2) 7. Quality Engineer 8. Social Safeguards Specialist 	<p>Refer to response provided for Item 23 of this clarification</p>

	<p>9. Environmental, Health and Safety (EHS) Specialist</p> <p>10. Project Planner</p> <p>11. Telecommunications Engineer</p> <p>12. Commissioning Engineer</p> <p>13. SCADA Systems Engineer</p> <p>We request the Employer to clarify on above discrepancies and confirm the exact requirement of Contractor's Representative and Key Personnel to be provided in PER-1 forms for subject Lot-1 & Lot-2 STATCOM tender. Kindly confirm on the same.</p>	
25.	<p>With reference to Part 2-C (Schedules of Technical Information), technical data is requested for 400kV insulators, MV equipment, LVAC/DC switchgear, and auxiliary supplies under Lot-1 (400kV Suswa SS) & Lot 2 (Rabai SS). These are not part of the current supply scope, please clarify the discrepancy and confirm the required technical submissions for Lot-1 & Lot 2.</p>	<p>Schedules of Technical information are provided separately for Lot 1 and for Lot 2 and the details and requirements are different for each lot. The Bidder is responsible for delivering a compliant and optimised system design that meets the requirements of the Bidding Documents. Equipment that will not be supplied should be marked as "NA"</p>
26.	<p>With reference to Part 2-A (Employer's Requirement), there is a discrepancy regarding the type of 220kV disconnectors specified across different documents:</p> <p>Technical Specification (Table D-28) refers to Double Side Break disconnectors. Bid Drawing (Part 3 - Bid drawing pg15 of 26) indicates Vertical Break disconnectors which aligns with the existing installation.</p> <p>May this vertical break disconnector be used even though it has not been given as an option in Part 2-C (Schedule of Technical Information) which allows for Horizontal Centre Break, Double Break, or Pantograph types.</p>	<p>The Vertical Break 220 kV disconnectors is also acceptable provided all the required clearances are met.</p>
27.	<p>Part 2-B_Bid_Drawings (Pg. 15 of 26) As per the Bid Drawings, the type of 220kV Disconnectors is indicated as Vertical Break Disconnector which is matching with existing disconnector type.</p> <p>Hence, we are following Vertical Break Disconnector to match with the existing disconnector. Please confirm the bidder understanding is correct.</p>	<p>Refer to response provided for Item 26 of this clarification.</p>

28.	With reference to PART 2-A (Employer's Requirements), Clause 6, the 400kV circuit breakers shall be single-pole with single-pole auto-reclose for line breakers, and gang-operated with three-pole auto-reclose for transformer/reactor breakers. Please confirm if this is correct.	Not correct. The 400 kV CB shall all be single pole. Refer to Part 2-A, Part D clause 6.2.1 for transformer and reactor applications, the single pole breakers shall employ ganged operation.
29.	PART 2-A (Employer's requirements), Clause 8, Capacitor Voltage Transformers (CVT) (Pg 232 of 434). We understand the following CVT short circuit current ratings are to be followed. 1) 400kV – 40kA for 1 Sec 2) 220kV – 31.5kA for 1 Sec, 3) 132kV – 31.5kA for 1 Sec Please confirm if the understanding is correct.	Please refer to Part 2-C (Schedules of Technical Information) for short circuit current ratings that the Bidders are required to comply with.
30.	In reference to Part 2-A (Employers Requirements), 2.12, please confirm the requirements of the surge arrester counter.	We confirm that the Bidders shall provide the surge arrester counter. Refer to Part 2-A, Part D clause 12.3 of the specification for surge arrester counter requirements.
31.	In reference to PART 2-A – EMPLOYER'S REQUIREMENTS Clause: 2.12 STATCOM Auxiliary Power Supply (Pg 137 of 434) As per the specification, two numbers of MV auxiliary transformers are mentioned. However, in the provided STATCOM layout, only one transformer is indicated. Kindly confirm whether two auxiliary transformers are required as per the specification?	Refer to response provided for Item 12 of this clarification
32.	With reference to Part 2-A (Employer's Requirements), 16 LV Cabling and accessories, please confirm if the existing cable trench has sufficient space available to install new cables.	Bidders are responsible for assessing and confirming the adequacy of the existing trenches for their proposed cable layout. Bidders are encouraged to visit site and verify trench dimensions and routing and to account for any necessary modifications or extensions in their technical and commercial Bids. Refer to clarification 1 item no 46 and 49.
33.	As per Part 2-B (Bid Drawings), Pg. 2 of 26, the section drawing indicates the existing 400kV line uses 2 x ACSR Lapwing conductors. We propose using the same for Lot-1 at Suswa Substation; please confirm if this is correct	For bay/object conductors Bidders are required to select conductors to suit the rating of the equipment provided or other equipment ratings in the bay. Bidders to also match existing busbar conductor and tubes when extending busbars.

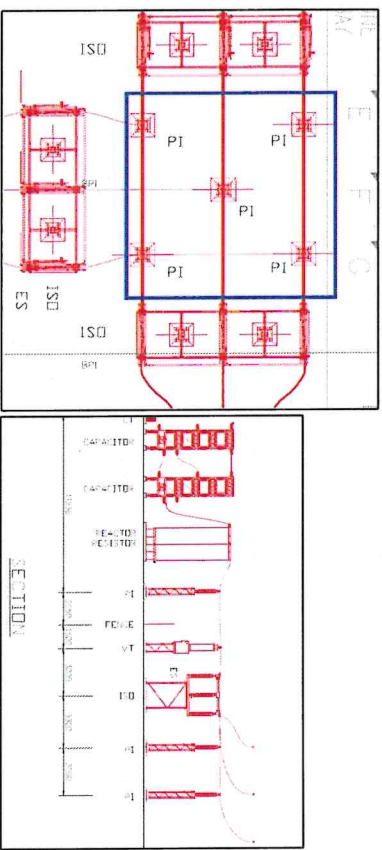
34.	As per Part 2-B (Bid Drawings), Pg. 4 of 26, the section drawing suggests a 250/226 aluminium alloy tubular conductor is used for the existing 400kV line. We plan to use the same for Lot-1 at Suswa Substation; please confirm if this is correct.	For bay/object conductors Bidders are required to select conductors to suit the rating of the equipment provided or other equipment ratings in the bay. Bidders to also match existing busbar conductor and tubes when extending busbars
35.	In reference to PART 2-A – EMPLOYER'S REQUIREMENTS Part 2-B_Bid Drawings (Pg. 15 & 17 of 26) Kindly confirm whether the existing cable trench in 220/132kV Rabai substation has adequate space to accommodate the new power and control cables included in the current scope of works. Kindly confirm the bidder understanding is correct.	Refer to Clarification No. 1, Item No. 49.
36.	As per Part 2-B (Bid Drawings), Pg. 15 & 17 of 26, we assume the proposed area at Rabai Substation already has an earth mat, and only risers are required. Please confirm if this understanding is correct	This is not correct. Earth mat does not exist in the areas under the scope of work. Refer to clarification no. 1, item no 38 for 220 kV side that shows there is no existing earth mat in the area of scope of works. For 132 kV side, new earthing in the area is in the scope of works.
37.	As per the equipment layout (Part 2-B (Bid Drawings), Pg. 15/26), a new tower and stringing are shown, but this area doesn't appear to be within the current scope (Pg. 16/26), based on the highlighted section in the referenced. Please confirm the actual requirement. 	Bidders are to note that the drawings are indicative and for reference only and not all sectional drawings have been provided. The gantries, beams and stringing conductors as indicated in the layout drawings are required. Bidders are responsible for providing all gantries, beams and stringing conductors required to connect the new equipment to the existing substation. The Bidders are responsible for delivering a compliant and optimised system design. The final design will be subject to KETRACO's review and approval during the detailed design stage.
38.	With reference to Part 2-B (Bid Drawings), Pg.16/26, kindly clarify why the above post insulator and dropper connection is included in the current scope.	We confirm that the insulator and dropper is not required to be included as part of the scope.



With reference to Part 2-B (Bid Drawings), Pg 17/26. As per the equipment plan, there are 5 nos. of Post insulators indicated between two disconnectors. However, the same quantity of Post insulators is not indicated in the section drawings. We request the employer to kindly clarify the exact requirement of Post insulators.

The quantity will be dependent on the Bidders design subject to the approval of the Employer. There is a relevant line item in the price schedules, and this shall be deemed to be inclusive of all the required quantities.

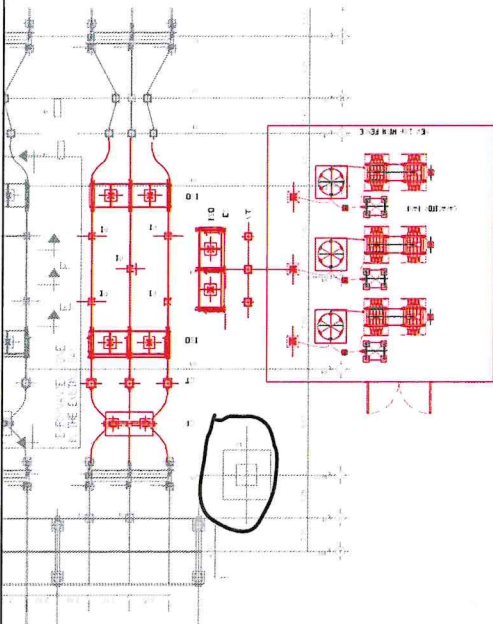
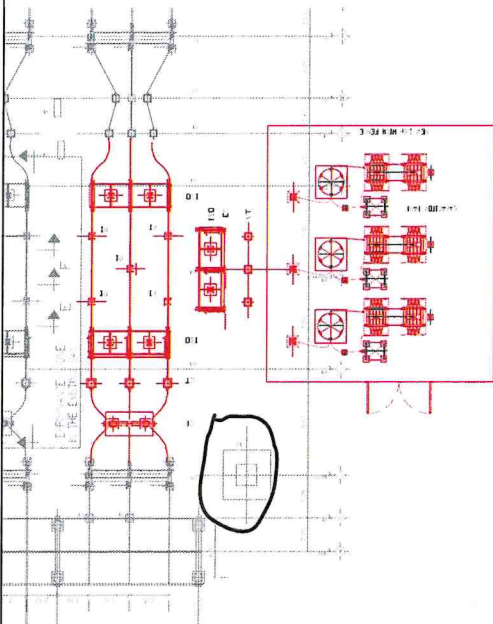
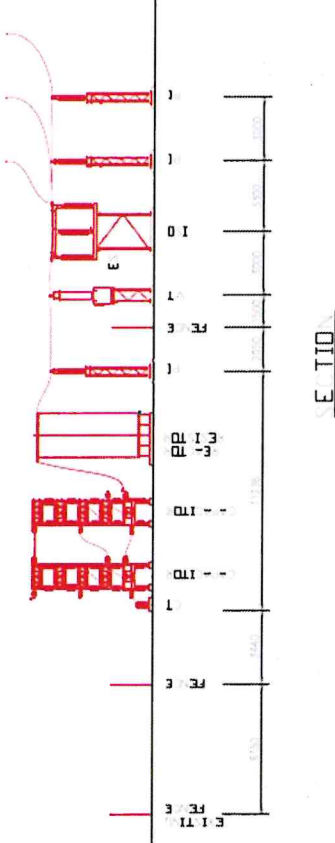
41.

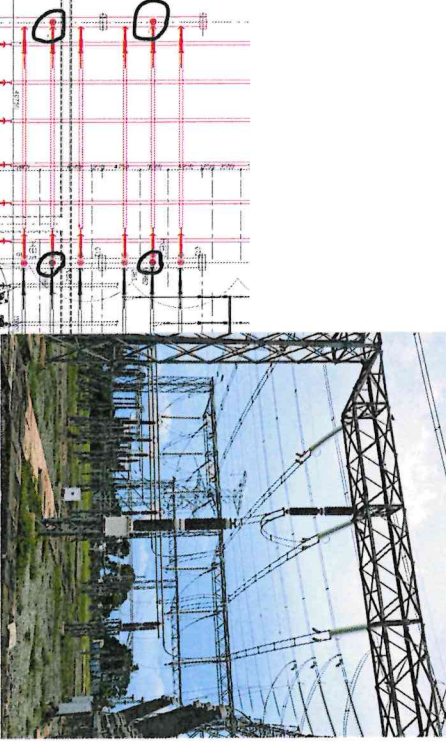


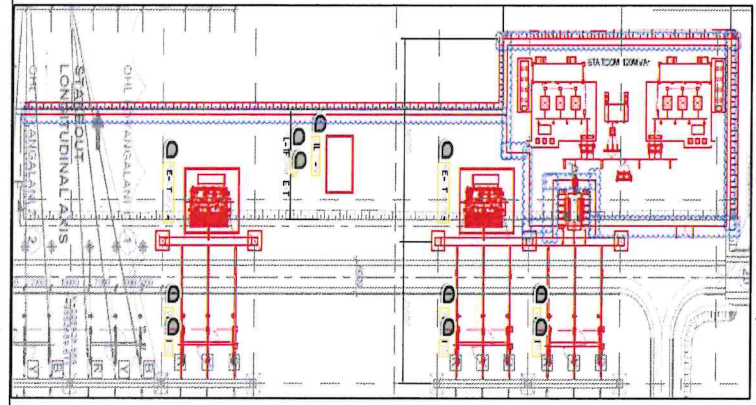
42.

With reference to Part 2-B (Bid Drawings), Pg.17/26, kindly provide the height of existing lightning mast as indicated in the above picture to verify the lightning protection for the new area.

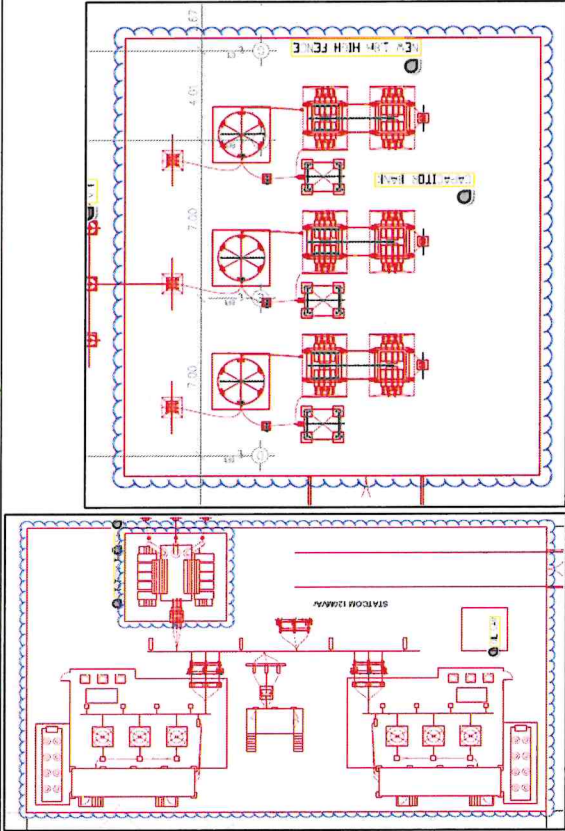
The final lightning design is based on a detailed lightning study and subject to the Employers approval. Any new lightning protection requirements is deemed to be part of the Bidders scope.

		
43.	 <p>Kindly confirm the bus height dimensions as shown in the section drawings provided in the Bidding documents, to enable alignment with the existing bay configuration.</p> 	<p>This information is not available. Bidders are encouraged to visit site to collect data as required</p>
44.	<p>As observed in the referenced images, existing bus CVTs are currently installed on the bus, which may complicate the bus extension. Therefore, we propose to relocate the existing CVT to the end of the busbar, as illustrated in the attached image.</p> <p>Kindly confirm if this proposed relocation is acceptable.</p>	<p>The Employer's preference is for this to remain as is, as it impacts the existing protection and control applications and will require additional outages for its relocation. However, this may be considered during detailed design and subject to the Employer's approval.</p>

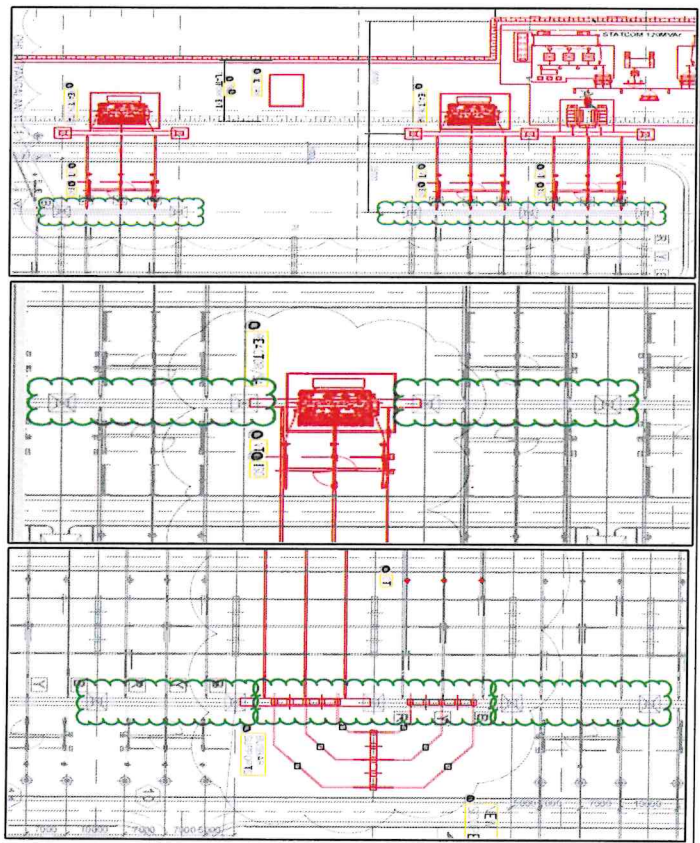
		
45.	<p>As per the referenced picture, it appears that the bus for the current scope is already available, and only the feeder needs to be added. However, based on the layout and site photos, we understand that the existing bus requires extension to accommodate the new feeder.</p> <p>Could you please confirm if this understanding is correct?</p>	<p>We confirm that the busbar should be extended by the Bidders in order to accommodate a new 220 kV bay.</p>


<p>As per Part D, Clause 1.7.11 from of the specifications, kindly confirm if the fence and gate in the Bidder's scope is considered to be around the proposed bay extension area as per Bid Drawing no. ESP-001-SUS-001 sheet 01 of 4" titled "OVERALL GENERAL LAYOUT" "ESP-001-RAB-001 sheet 01 of 02" titled "GENERAL LAYOUT" & ESP-001-RAB-002 sheet 01 of 01" titled "LAYOUT & SECTION"</p> <p>Fence locations of Bidder scope are marked in blue, refer to the image below.</p> 	<p>Yes, we confirm that the fence and gate are to be implemented in the areas as indicated in the drawings.</p>
--	---

47.

		
48.	<p>With reference to Part 2-A, Clause 2.20 of the tender specifications, kindly confirm if the water supply to the new tank will be tapped off from the existing water pipe network near the control building and whether the water tank will be constructed below ground level or above ground level or Elevated type water tank. If elevated water tank, bidder proposes to consider PVC type water tank.</p> <p>With reference to Part 2-A, Clause 2.9.2 of the tender specifications, sulphate-resistant cement is required. However, soil reports indicate non-aggressive conditions at both Suswa and Rabai sites. Please confirm if sulphate-resistant cement is still necessary.</p>	<p>We confirm that the water supply to the new tank will be tapped off the existing clean water pipe network per design. Refer to Clarification no 1 item 61 for details of the water tank.</p> <p>The cement used throughout the works shall be best quality type conforming in every respect with BS EN 197-1. Where cement concrete may be liable to aggressive conditions such as chemical attacks sulphate resistant cement to BS4027 shall be used where approved. The costs for such special cases are deemed incorporated into the contract price.</p>
49.		
50.	<p>With reference to the tower and gantry drawings for 400kV Suswa and 220/132kV Rabai substations, the new structures will connect to existing ones for bay extensions. Please confirm the structural adequacy of the existing towers and gantries for additional loads and provide their detailed drawings and specifications. These structures are cloud-marked in green in the referenced image.</p>	<p>At Suswa Substation, the contractor shall assess the capacity of the existing structures based on the available drawings (provided in Attachment no. 1) and site conditions and implement any modifications necessary to accommodate the bay extensions.</p>

At Rabai substation, new busbar gantries towers and beams shall be installed to accommodate the scope of works.



		
51.	With reference to Part 2A of the bid, please specify the designated power supply and exact location within the 220/132kV Rabai Substation for supplying power to the fire pump house motors	There is no fire pump and fire house required for Rabai. Refer to Clarification No 1, Item No 66
52.	With reference to Part 2A of the bid, please confirm whether portable fire extinguishers are required for the capacitor area at the 220/132kV Rabai Substation.	Portable fire extinguishers are to be provided in the capacitor area at the 220/132kV Rabai Substation.
53.	With reference to Part 2-A, kindly confirm if the HVAC system for the STATCOM containers in both 400 kV Suswa Substation and 220/132kV Rabai Substation shall be in accordance with the STATCOM OEM Standards'.	The Bidder is responsible for delivering a compliant and optimised system design based on sound engineering principles and applicable standards. The final design will be subject to Employer review and approval during the detailed design stage.
54.	With reference to Part 2A, kindly confirm if the HVAC scope of work for the 400kV Suswa Substation and 220/132kV Rabai Substation is limited to the STATCOM Containers and fire pump room.	Yes, the HVAC scope shall be limited to the 400kV Suswa STATCOM building(s)/container(s) and 220/132kV Rabai Substation STATCOM Building(s)/container(s) as will be applicable.

55.	With reference to Part 2A, kindly confirm if the "Air conditioning for the fire pump room at the 220/132kV Rabai Substation shall be provided using split AC units, with 100% standby capacity".	The air conditioning for both Rabai and Suswa will only be applicable for the STATCOM building(s)/container(s). This system will require 100% standby capacity. The type of AC (split unit or otherwise) will be as per bidder's design. The Bidder is responsible for delivering a compliant and optimized system design based on sound engineering principles and applicable standards. The final design will be subject to the Employer's review and approval during the detailed design stage.
56.	With reference to Part 2A, kindly confirm if the "Ventilation for the fire pump room using Exhaust air fans, with 100% standby units, in 220/132kV Rabai Substation shall be considered".	The fire pump room is not in the scope of work.
57.	In Part 2-C, Schedules of Technical Information, 2.11 220kV Busbars and Connectors/Page No.278 specifies a 4000A rating at 40°C for 220 kV tubular and flexible busbars. However, the conductors shown in Part 2-B, Bid Drawings, ESP-001-RAB-001 —AL. TUBE (100x5) and 2xAAC NARCISSUS, do not meet this rating. We propose proceeding with the ratings in the Bid drawings, please confirm if these would be acceptable for the intended application.	Bidders shall match the existing busbar conductor and tubes when extending busbars.
58.	With reference to Part 2-C (Section 2.19, Page 303) and Part 2-A (Table D-40, Page 259), there is a discrepancy between the 4000A rating specified in Table D-40 and the 3150A rating in the technical schedule. On-site, existing equipment uses single conductors with capacity below 3150A, and the 132kV circuit breaker is rated at 2000A. We propose a 2000A rating for the busbar; please confirm."	The correct rating should be 3150A however the Bidders shall match the existing busbar conductor and tubes when extending busbars.