

		CLARIFICATIONS
1	For S/S where the RTU should be extended, is the number indicated in Volume 2: "Table 1.1 Summary of Scope" just the I/O's to be extended or the total number needed in the S/S.	These are the I/Os to be extended
2	Is it expected that each RTU should be supplied in a standalone panel or can it be loose supplied and be installed in any existing panel?	For those stations with existing RTUs, the existing RTU panels can be used but the contractor must ensure that 25% spare capacity is maintained. However if bidder supplies standalone RTU, this shall be in one panel.
3	To receive measurements mA transducers are needed. Is it acceptable to use existing transducers, or shall transducer modules part of RTU?	where Transducers are existing they can be used, else transducers must be supplied
4	To upgrade the S/S for remote control, command relays are needed. As the schematic diagrams of the existing S/S are not available, it is unsure how the control scheme look like. Shall the supplier consider 48V-DC relays to interface with the existing scheme?	Yes
5	Please specify in which S/S an update of an existing SAS is needed. From the table only RTU's are indicated.	Limuru S/S
6	Please confirm that all RTU's shall be supplied with IEC 101 and 104 interface to Remote control centers.	Yes
7	Is it needed to integrate existing protection relays serially? If so which protocol is available (e.g. IEC103, Modbus,...).	For SAS stations like Limuru we have IEC 61850
8	The interface from Protection relays to the RTU shall be hardwired?	Yes
9	Is there a signal list per S/S available?	For most substations they are in attachment 1 to be provided
10	Single lines and schematic diagrams are not available yet. When KPLC will make them available?	For most substations they are in attachment 1 to be provided
11	Please indicate under the number of commands, how many single commands and how many double commands are needed.	they are indicated in the signal list
14	For Scope of RTUs and Data in table 2.4 , can you provide us with existing RTU information for No. 7 in Lot 1 Nairobi region?	There is no existing RTU at this site i.e Steel Billets
15	For Scope of RTUs and Data in table 2.4 , can you explain why both existing and new RTU are checked in No. 5 in lot 1 mount Kenya Region?	There is no existing RTU at this site i.e Ndarugu S/S
16	For project chapter 1.1 (Volume2), its written as below - integration of all the station RTUs to the existing KPLC's central SCADA/EMS system. Scope of Bidders work is only to send the data from RTU to existing SCADA system which is ABB product.Is there some cooperation testing wether data is properly sent from RTU to SCADA system?	Final testing and commissioning must be witnessed by KPLC engineers, and these include point to point tests from the control centre to the RTU and to the process data at switchgear
19	For the communication network design we ask for geographical coordinates and altitude and if mast exists for all locations and substations.	Attachment 1 shall be provided
20	Layout of the existing fiber optic backbone	
21	What is required for station which the value in the column " Scada Installation" is "YES" and in the column " Existing Scada in station" there is a name of Scada system? Does it mean that the substation has an existing Scada system which requires expansion?	Yes , and the bidder may choose to use the existing installation or provide their solution which meets the specifications
22	What is required for station which the value in the column " Scada Installation" is "No" and the column " Existing Scada in station" is empty?	Yes means , scada installation is required in that station. No means, there is scada already installed in that station
23	Does the number of signals in the "Indications", "Alarms", " Commands", "Measurands" and "Energy Meters" columns indicate the total required signals, or the required additional signals?	For stations without scada means the total required, for stations with existing scada is the required additional signals
24	Is the number of alarms indicated in the "Alarms" column includes also the alarms required for the 48VDC system (paragraph 4.2.6.3)?	For scada purpose, the required alarms have been listed per station. See attachment 1
25	The bidder is required to submit The following specific drawings with the Bid:	
26	<input type="checkbox"/> Single Line Diagram for each station	This is provided where available but the contractor must verify these by visiting site
27	<input type="checkbox"/> Room layout proposals for each station	This is provided where available but the contractor must verify these by visiting site

28	As we expect to receive the original Single Line Diagram and Room layout of each of the substation from the Employer (allowing optimal design):	
29	When can we expect to receive the single line diagrams and room layouts of the existing equipment of the substations?	Attachment 1 shall be available on the KPLC website
30	Which additional information the Employer expects the bidder to add to the original Single Line Diagram and Room layout drawings?	The bidder is required to visit site to verify and amend where applicable/necessary
	Regarding paragraph: "2.1.2 New RTUs"	
31	Synchrocheck relays and voltage selection logic have to be installed under the project for stations where separated networks / generation could be switched under none-synchronous conditions – Please indicate what are the stations which meet this description.	Tie lines and Generating stations. In this scope we have only Turkwel S/S
	Regarding paragraph: "2.1.2.1.2 Voltage control / voltage regulation"	
32	Remote control of all on-load tap changers for all 33/11 kV, 66/11 kV, 66/33 kV transformers, as well as for selected 220/11kV, 132/11 kV and 132/33 kV transformers – Please indicate the selected such transformers.	Turkwel S/S which is 220/11kV station and Kisumu S/S which is 132/33kV station
	Regarding paragraph: "2.1.2.1.3 Status Indications"	
33	Position indication of on-load tap changers of all 66/11 kV, 66/33kV and 33/11 kV transformers, as well as selected 132/11 kV and 132/33 kV transformers – Please indicate the selected such transformers.	Turkwel S/S which is 220/11kV station and Kisumu S/S which is 132/33kV station
	Regarding paragraph: " 2.1.3.2 Functional requirements for new RTUs"	
34	The new RTUs are required to support IEC 61850 protocol for process communication. As far as we know, and according to our experience, IEC-61850 protocol is used for the substation's SAS internal communication – Please explain the role you expect the IEC 61850 protocol to fulfill in the Scada system.x	This is to cater for future expansion, the RTU shall be capable of supporting IEC 61850
	Regarding paragraph: "2.2.2 Data Population "	
35	Who is responsible to edit/reconfigure the Scada EMS data base?	It is in the scope of the contract
	Regarding paragraph: "I. Installation of Aerial Fibre Cable" (page 73)	
36	"The cable installation shall be aerial on existing power lines. These lines are on wooden structures and on Concrete Poles and the ADSS cable shall be installed below the power line." Can you confirm that the wooden structures and Concrete Poles will bear the load of the additional fiber optic cable and automatic installation process?	In the recent years KPLC has installed more than 2000 km of ADSS on the existing network. Where a pole is found not to be in good condition during installation preparations, this shall be replaced, but experience has shown this is less than 1 %.
38	Please Clarify the Terms of Payments as those in the PC and in Contract Forms are different	Please use Terms in PC. Updated Tender Forms attached.
39	Is there any site information available to assist bidders?	Site reports for various substations are attached.
40	Please give the pre-bid Agenda	Attached
41	Updated price schedules are attached to include Mai Mahiu substation.	
44	Does the Siemens SCADA & HMI software that we need to interface with support the IEC 61850 protocol or only the 60870-5-101 / 104 protocol? If possible the software version revision no, as that will inform us what 101 / 104 driver implementation was used, so we know if there is any limitations / compatibility issues.	Stations with Siemens RTUs, conform with both IEC 60870-5-101/104 as well as IEC61850 protocols
45	Will it be possible to supply us the model / type no of the following RTU's so that we can ensure the 101 / 104 protocol implementation used is 100% compatible with today's standards, as each vendor typically implement a protocol to his discretion, especially earlier years due to processing constraints: ASEA Collector RTU 400 ,EFACEC RTU, Spretec RTU	IEC 101/104 is a current international standard and all RTUs must conform with this irrespective of the vendor
46	In the specification for the new RTU's there is a requirement stated as follows: automatic re-starting function (p125). What is meant by this from KPLC's viewpoint so that we understand and not make any assumptions regarding this function?	please note page 125 , refers to the 48V dc Monitoring system and not the RTU
47	(From 2.1.2, page 26) "In such stations, additional synchrocheck relays and voltage selection logic have to be installed"	

	Can you provide an estimation of the number of synchrocheck relays and voltage selection logic to be installed?	This is in one station Turkwel, the number shall be confirmed during the site survey
48	(From 2.1.2.1.1, page 27) "Remote reset of master-trip relays" Can you clarify this requirement? It involves just sending a control command or additional tasks must be carried out?	Control command and its associated indication no other tasks
49	(From 2.1.3.2, page 40) "Database and parameter setting by menu-controlled dialogues from a local PC and remotely from the corresponding control centre with downloading function" Database and parameter setting functionality can be carried out with RTU in off-line mode or must be carried out with RTU in operation/on-line mode?	Both shall be applicable
50	(From 2.1.3.2, page 40) "Shall support IEC 61850 protocol for process communication"	
51	Can you clarify if it is requesting the availability of a IEC61850 client for communication with IEC61850 IED? In such case, it must be included GOOSE, MMS or both?	The IEC 61850 shall not be availed under this contract, but the RTU shall be capable of communicating with IEC 61850 protocol
52	(From 2.1.3.2, page 40) "Analog setpoint control" Can you clarify if it is mandatory? It is not defined in Table 1-1 Summary of scope	Only where indicated on the station signal list
53	(From 2.1.3.2, page 43) "Transfers of the accumulated counts into a storage area shall be initiated every 1 minute by the RTU clock. In case of a failure to scan, e.g. due to failure of the telecommunication system, 1-minutes integrated totals over a period of not less than 1 day shall be stored at the RTU" Which should be the procedure once the telecommunication system is recovered? Transfer all the stored 1-minute integrated totals by IEC 60870-5-101 or IEC 60870-5-104 protocol ASDUs?	yes
54	(From 2.1.3.2, page 44) "In the RTU there shall be a digital output from which time synchronization messages can be forwarded to external devices" Can you clarify which time synchronization protocol should be forwarded to external devices? (IRIG-B, DCF77, 1per10,1PPS, NMEA, etc..)? (From 2.1.3.2, page 44) "The Contractor shall provide all details and parameter settings used under the IEC 60870-5-101 and IEC 60870-5-104 protocols. KPLC shall be authorized to disclose the RTU protocol to third party suppliers" Can you confirm that you are just requesting IEC 60870-5-101 and IEC 60870-5-104 interoperability profile?	yes
55	(From 2.2, page 63) "There are available workstation equipment that serve as maintenance and training/operator console at the NCC and all other control centres. These workstations also have the data engineering software which the contractor's expert may use for the required database population and station displays and reports" Will KPLC provide DE400 application software package to Contractor or any work related to database population of SCADA/EMS system must be carried out at KPLC sites?	These shall be carried out at KPLC site,
56	Does the Siemens SCADA & HMI software that we need to interface with support the IEC 61850 protocol or only the 60870-5-101 / 104 protocol? If possible the software version revision no, as that will inform us what 101 / 104 driver implementation was used, so we know if there is any limitations / compatibility issues.	Stations with Siemens RTUs, conform with both IEC 60870-5-101/104 as well as IEC61850 protocols
57	Will it be possible to supply us the model / type no of the following RTU's so that we can ensure the 101 / 104 protocol implementation used is 100% compatible with todays standards, as each vendor typically implement a protocol to his discretion, especially earlier years due to processing constraints: ASEA Collector RTU 400 ,EFACEC RTU, Spreetec RTU	IEC 101/104 is a current international standard and all RTUs must conform with this irrespective of the vendor
58	In the specification for the new RTU's there is a requirement stated as follows: automatic re-starting function (p125). What is meant by this from KPLC's viewpoint so that we understand and not make any assumptions regarding this function?	please note page 125 , refers to the 48V dc Monitoring system and not the RTU

59	Instead of having a single RTU panel with all the copper cable connections to the C&P panels, will it be accepted to have Sub-RTU's in the dedicated C&P panels, which has a benefit of just one Ethernet cable between Main and Sub RTU?	Standalone RTU panel shall be used
60	Will it be acceptable for KPLC to have beside 48V as well 110V-DC in the RTU panel?	The standard is that RTUs shall be supplied from 48V-DC separate from the station 110V-DC
61	Can you provide a table, how many feeders/panels are installed per S/S?	the attachment, containing information per station is downloadable from KPLC website
62	Are all 11kV S/S outdoor or indoor type?	Most are indoors but there are few with outdoor, details from the individual station reports
63	Is it necessary to make all signals (alarms and position indications potential free via auxiliary relays or is it acceptable to use Diode modules to split one signal to two indicators (new RTU and local panel).	All alarms and position indicators contacts shall be acquired via auxiliary relays
64	In some of the S/S Synchrocheck function has to be implemented. As this is an independent IED, can you please indicate in which S/S it is needed?	Turkwel S/S
65	To interface the new RTU to the existing C&P panels a detailed engineering work has to be done. Will KEABB provide the necessary information's according suppliers RTU interface table?	These shall be obtained from KPLC
66	Will it be part of contractor to identify all interface terminals in the existing panels? If so, kindly provide schematic diagrams of each panel.	Yes
67	Cables to be pulled between the RTU and the C&P panels will be part of KPLC work?	This is part of the scope of contract
68	For S/S where the RTU should be extended, is the number indicated in Volume 2: "Table 1.1 Summary of Scope" just the I/O's to be extended or the total number needed in the S/S.	For stations with existing Scada, it indicates the additional signals
69	Is it expected that each RTU should be supplied in a standalone panel or can it be loose supplied and be installed in any existing panel?	The RTU should be supplied in a standalone panel
70	To receive measurements mA transducers are needed. Is it acceptable to use existing transducers, or shall transducer modules part of RTU?	Where transducers are existing, they may be used otherwise they shall be supplied
71	To upgrade the S/S for remote control, command relays are needed. As the schematic diagrams of the existing S/S are not available, it is unsure how the control scheme look like. Shall the supplier consider 48V-DC relays to interface with the existing scheme?	Yes
72	Please specify in which S/S an update of an existing SAS is needed. From the table only RTU's are indicated.	Limuru S/S
73	Please confirm that all RTU's shall be supplied with IEC 101 and 104 interface to Remote control centers.	Yes
74	Is it needed to integrate existing protection relays serially? If so which protocol is available (e.g. IEC103, Modbus,...).	the station with SAS e.g Limuru uses IEC 61850 protocol otherwise all others shall be hardwired, any other may be confirmed during the station site surveys
75	The interface from Protection relays to the RTU shall be hardwired?	Yes
76	Is there a signal list per S/S available?	Available on KPLC website
77	Single lines and schematic diagrams are not available yet. When KPLC will make them available?	Available on KPLC website
78	Please indicate under the number of commands, how many single commands and how many double commands are needed	This is indicated on individual station signal list
79	Will any price preference be allocated if the RTU's are assembled locally ?	No
80	What will be the price preference allocated in case of a JV between a foreign bidder and a local citizen and alt. non-citizen contractor?	None
81	Are spare parts to be quoted on CIF Mombasa by sea basis?	All prices shall be quoted DDP (delivered and Duty Paid)
82	Is pricing to be offered on CIP basis ?	All prices shall be quoted DDP (delivered and Duty Paid)
83	Can we get a single line diagram of each substation ? Also the whole network so we can see the links of the substations for the multiplexer installations.	The SLDs are provided where available but the contractor must verify these by visiting site
84	What is the minimum ports do they really need on the RTU ? only 2	Minimum is 2
85	What protocol does the ABB master station use ? is it IEC 870-5-101	All RTUs shall be capable of communicating to the Master station on IEC 60870-5-101 &/104
86	What protocol does the regional control center use ? IEC 870-5-104 ?	All RTUs shall be capable of communicating to the Master station on IEC 60870-5-101 &/104
87	What is the IEC 61850 training for ?	It is considered that expansion of these stations in the future is inevitable thus the requirement that the RTUs supplied shall be capable of communicating on IEC 61850 protocol, and as well the users must then be able to integrate these via IEC 61850
88	We note that there is a requirement for transducers..for measurands sourced out from CT/PT, instead of transducers, can we use electronic meters with protocol interface ?	Use of other devices instead of Transducers ia acceptable but they must cnform with the required communication protocols

89	Which substation requires a syncheck relay, is it really just one substation on the 220kv level ?	This scope has only Turkwel S/S
90	The requirement for 25% additional spares for each point is stated on the table 1-1 "summary of scope". Having 25% spares for each RTU is different from 25% spares overall. Which should be followed ?	25 % spares per RTU
91	It indicates on the TOR that the RTU should support 61850. What does support mean ? Does it mean that the RTU should be already be equipped with 61850 ? The reason for the question is because the proposed RTU, for it to be equipped with 61850, would require adding a separate HW module on the RTU. So, should it be already equipped with 61850 or just, as the context states, "support" for 61850.	The RTU should be capable of communicating on IEC 61850 protocol, the scope does not include equipping
92	Also, if it states support for 61850, does it also mean connecting devices downstream (meters, relays, etc.) or connecting the RTU upstream to a master station using 61850-MMS ?	It should support both downstream (to relays etc) and up stream (to Station Control & Monitoring system)
93	Again, instead of providing transducers for each analog/measurand (MW/Mvar, V, A, etc.), can we provide an IED meter with protocol interface instead. Each meter with say, Modbus or IEC 870-5-103 interface can provide at least 10-20 analog points for each. This concept provides more analog/measurands for lesser cost, and smaller inventory.	Provision of measurement via transducers is the minimum requirement , a solution better and cheaper as long as it meets the specifications is acceptable
94	Can we get a single line diagram of each substation ? Also the whole network so we can see the links of the substations for the multiplexer installations.	Attached
95	The installation team shall undergo authorization interviews conducted by KPLC to ascertain their competence in working on live high voltage lines. No work shall commence until this competence is ascertained.1. is this mean that KPLC will specify subcontract? 2. could you provide KPLC authorization standard? 3. could you provide some team list which can do this installation in kenya market?	The need for Authorization is to ascertain that staff nominated by Contractor to do installation are aware of work requirements working near high Voltage lines. The bidder is responsible for choosing their desired subcontractor.
96	Item 1.3,Summary of Scope, Lot 3, Item 17. Telecommunication solution for Nyahururu 33/11 KV SS	Omit ADSS fiber to Rumuruti from tender scope. It shall be available from a different project
97	Item 1.3,Summary of Scope, Lot 2, Item 6 and item 11. Scada & Telecommunication solution for Kaloleni and Mwatate 33/11 KV SS	Omit from the scope
98	Item 1.3,Summary of Scope, Scada & Telecommunication solution for Mariakani 33/11 KV SS	ADSS from Mariakani 132kv station shall be provided, RTU shall be provided
99	CLARIFICATIONS IX	
100	Single line diagrams	Please check on our website
101	what protocol is used for communicating with meter	Modbus
102	What is the need for supplying spare cable for telecommunications?	kindly supply as required
103	Could you tell us if there is IED communicating with RTU?	Available on the website
104	Where do we get site survey reports?	Available on the KPLC website
105	Is ADSS required for Shanzu and Kisii?	ADSS is required for both Shanzu and Kisii
106	confirm the wind speed and span of the ADSS	The power poles span range between 95m(concrete poles) and 100m on wooden poles
107	Is mounting of poles in the scope of contract?	The ADSS shall run on existing power line poles
108	Is there any requirement for the type of vehicle	4wd preferred
109	Is there allowance required for the Engineers attending the FAT and Training?	No
110	Kindly clarify on advance payment	None see Terms of Payment
111	Can the ODF be installed in the RTU panel if spare is enough	No
112	we need to understand details of the existing central scada system at RCC.So please provide us technical details of existing central scada system at RCC	The central scada system is an ABB scada system known as the Network Manager release 3.8. All communications to the central scada is via IEC standard 60870-5-101/104
113	We have understood that the data from the new locations need to be integrated with the respective regional control centres. Do we understand it correctly?	Except for stations with 132/220 kv voltage levels which should integrate with both National and the respective regional control centres, all others shall integrate with the respective control centres.
114	We assume that all circuit breakers/isolators are motorized and available for remote control. Is this our right understanding?	Most of them are, and the reason fro the site survey was for the bidder to ascertain this
115	Are relays ready to communicate on protocol 103?	Most shall be hardwired
116	Please confirm wether SAS is required at each station	No SAS required in any station
117	Please confirm which protocol is required in RTU	IEC 101 & or 104 shall be provided in the station depending on the mode of communication applied. It shall however be possible to change to either protocol at no additional cost to the employer