



KenGen
KENYA ELECTRICITY GENERATING COMPANY PLC

KGN-ICT-006-2025
TENDER FOR SUPPLY AND INSTALLATION OF DATA ANALYTICS,
REPORTING AND BACKUP APPLIANCE.
Rfx 5000016475
(OPEN NATIONAL)

Date: 14th March, 2025

ADDENDUM NO. I

In accordance with the ‘Tender for Supply and Installation of Data Analytics, Reporting and Backup Appliance’, KenGen hereby issues **Addendum No. I** as follows:

I. NOTICE OF ADDITIONAL SITE VISITS

Further to the site visits indicated in the tender document, bidders shall be required to visit the sites as indicated below;

Station	Date	Time
Stima Plaza, Nairobi	17th March, 2025	10.00 a.m.
Ngong Power Station	18th March, 2025	10.00 a.m.
Tana Power Station	19th March, 2025	10.00 a.m.

These are Mandatory Site Visits, and Bidders are advised to keep time.
Site Visit Certificate shall be issued at the site.

2. TECHNICAL SPECIFICATIONS

- I. The below technical specification is enhanced:

SCOPE OF WORKS;

Factory Acceptance Testing (FAT)

Factory Acceptance Training (FAT) for six (6) staff to prove and validate the solutions functionality and performance before actual installation at the Factory. The bidder shall simulate a virtual KenGen environment during FAT to ascertain the functionality of the solution. The bidder shall configure the OT/IT environment in the simulated environment and demonstrate the integration between the two networks, with the necessary security controls. The FAT shall have a knowledge transfer component to ensure that KenGen technical teams shall be able to understand the delivered solution and have the capacity to participate in the project implementation process. The FAT and the knowledge transfer component shall be carried out before the site works commence for at least 2 Weeks for the team to competently participate in the installation works.

The training shall cover but not limited to:

- i. Introduction to the Data Analytics System
- ii. Data Analysis Techniques, and Data Exploration and Visualization
- iii. Trend analysis and anomaly detection
- iv. User Access and Security
- v. Backup and disaster recovery strategies
- vi. Log analysis and troubleshooting
- vii. Performance tuning and resource allocation
- viii. Scalability considerations
- ix. Data Integration and ETL Processes
 - x. Connecting data sources (SCADA, DCS, IoT devices, etc.)
 - xi. Managing data pipelines
 - xii. Working with time-series data and industrial data historians
 - xiii. Optimizing database performance
 - xiv. Machine Learning and AI Integration, Anomaly detection using AI
 - xv. Predictive maintenance models and Data preprocessing for ML models
 - xvi. Developing Custom Analytics and Reports
 - xvii. Writing SQL queries for data extraction, Developing Python or R scripts for advanced analytics
 - xviii. Automating reporting workflows
 - xix. Industrial cybersecurity best practices and Compliance Considerations and Data governance policies

The bidder shall submit a comprehensive training program and content for client's review and approval. All the above shall form part of the evaluation requirement. The client reserves the right to vary the training quantities during award.

KenGen shall meet the cost of the round-trip air tickets, accommodation and allowances of the trainees. Local official transport costs and any other associated costs shall be borne by the bidder.

The project shall be implemented in the following phases:

Phase I: Geothermal Region-Installation, configuration, testing and commissioning

Phase II: Eastern Region and Turkwel-Installation, configuration, testing and commissioning

Phase III: Thermal and wind-Installation, configuration, testing and commissioning

Phase IV: Western Region-Installation, configuration, testing and commissioning

II. The below technical specifications is expunged from the tender document;

SCOPE OF WORKS;

Supply Install, and configure Backup Appliance

~~The successful bidder shall be responsible for **supplying, installation, and configuration of a backup appliance** designed to store and protect operation backup data and systems within our Operational Technology (OT) infrastructure. The successful bidder shall:~~

- ~~I. Supply a Backup Appliance~~
- ~~II. Install the Backup Appliance~~
- ~~III. Configure the Backup Appliance~~

LOT II : BACKUP APPLIANCE (QTY=1)

The successful bidder shall be responsible for supplying, installation, and configuration of a backup appliance designed to store and protect operation backup data and systems within our Operational Technology (OT) infrastructure. The successful bidder shall:

- I. ~~Supply a Backup Appliance: Provide a backup solution as per technical specification and tailored to the needs of OT systems.~~
- II. ~~Install the Backup Appliance: Conduct the physical installation of the backup appliance, and ensure it integrates seamlessly with the existing Operation Infrastructure and the Information Technology Infrastructure, including secure network and power connections.~~
- III. ~~Configure the Backup Appliance: Set up the backup appliance with the necessary settings and schedules to ensure timely backups, optimal performance, security, and reliability. These will include configuring automated backups, encryption, monitoring, and disaster recovery features.~~

The successful bidder will be responsible for ensuring the appliance meets the required specifications, adheres to Operation Technology security standards, and delivers a seamless integration with existing infrastructure. The bidder shall provide post installation support, including testing, troubleshooting, and validation to guarantee the solution's effectiveness in backing up and restoring OT systems.

STAGE 2: TECHNICAL EVALUATION ON CAPAITY TO DELIVER THE CONTRACT

Technical Evaluation will be based on YES/NO parameter

No	Description	Bidders response (YES/ NO)
1	Compliance to technical requirements as per Backup Appliance technical requirements	
2	Network certificate for purpose of network integration. (Attach certification proof for at least one engineer)	
3	Professional storage certificate for the proposed solution (Attach certification proof for at least one engineer)	
5	Demonstrate that the bidder has successfully deployed similar implementation (attach proof of successful implementations)	
6	Prove of partnership with manufacturer.	

BACKUP TECHNICAL SPECIFICATIONS

No	SPECIFICATION	MINIMUM REQUIREMENTS	TENDERER'S OFFER
1	Architecture	Nodes and controllers should work in active-active mode, balancing service loads among all controllers Should support backup storage replication to/from existing backup storage	

2	Controller interconnection protocol	The high-speed multi-controller (all controllers) interconnection architecture should be used. The controller interconnection protocol must be PCI-E/IB/RDMA, not Fibre Channel or IP federation.	
3	Zero service interruption	If one out of two controllers on a node fails, backup services must be switched to the normal controller within seconds, ensuring zero service interruption.	
4	Controller scalability	Controllers must be scalable. Number of controllers supported must be more than two	
5	Controller configuration	The backup storage should have two active-active controllers configured, balancing service loads between the controllers	
6	Supported protocols	Support both File and Block protocols	
7	Cache capacity	The total cache capacity in the system must be minimum of 384GB or higher	
8	Type of front-end host ports	Each node (dual controllers) supports a maximum of 10 front-end slots.	
9	Disk configuration	The backup storage must be configured with 40TB useable capacity Must be scalable to at least 1.8PB useable capacity	
10	RAID	The storage should support RAID 10, RAID 5, RAID 6, and Triple parity (RAID-TP), tolerating simultaneous failure of three disks.	
11	Deduplication and compression	The minimum deduplication Ratio should be 68:1 or higher	
12	Physical bandwidth	The minimum physical bandwidth of each node should be 54 TB/hour or higher	
13	Backup software support	The backup storage appliance should support mainstream backup software, such as Networker, Veritas, NetBackup, Commvault, and Veeam or equivalent.	
14	Warranty	Three-year NBD Support from the Manufacturer.	
15	Upgrades	The storage should support online nondisruptive upgrade of firmware and hardware components. Future controller and disk enclosure upgrades should be done without any data migration	
16	Ransomware Protection	Storage must support inbuilt ransomware detection and analysis	

17	Frontend ports	Required: 4* 10G SFP+ ports, 4 * 25G SFP+ ports 1x Mgm't port Bidder must include Cables and Transceivers for the solution.	
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3. PRICE SCHEDULE:

The price schedule is amended as follows;

DETAILED PRICE SCHEDULE LOT I

No	Description	Unit of Measure	Quantity	Unit Price	Total Price
1	Data Platform Architecture Designs & FAT OT/IT Pre-design, Platform Design Completion and approval and Factory Acceptance (FAT).	Lot	1		
2	Delivery of Laptops i) Hardware delivery (7) Laptops ii) Software delivery iii) Software Installation & Configuration. iv) License Activation.	Each	(7)		
3	Delivery of 5 screens	Each	5		
4	OT/IT Data Integration i) Fetching data from OT to IT ii) Data Integration-combining data from different sources into a unified view. iii) Implementation of the Data Intelligence Platform	Lot	1		
5	Data Analytic, Artificial Intelligence and Training i) Data Analytics, Visualization, Reporting & Dashboard. ii) Artificial Intelligence and Machine Learning Models development.	Lot	1		
6	Onsite Hands-on training on the implemented end to end solution at the Procuring entity premises. a) Thirty (30) General User 5 days b) Twenty (20) Technical User 5days c) Ten (10) Developers 5 days	Lot	1		
Sub-Total					

No	Description	Unit of Measure	Quantity	Unit Price	Total Price
	Other Charges (Bidder to Specify)				
	16% VAT				
	GRAND TOTAL				
	Currency				

TENDER'S NAME:

TENDERER'S SIGNATURES:

COMPANY'S STAMP:

Lot II is expunged as follows;

DETAILED PRICE SCHEDULE LOT II

No	Description	Unit of Measure	Quantity	Unit Price	Total Price
1	Delivery of Backup Appliance	Lot	1		
2	Installation of Backup Appliance at designated Locations	Lot	1		
3	Configuration of Backup Appliance at designated Locations	Lot	1		
4	Onsite Hands-on training at the Procuring entity premises for Ten (10) users in ten (10) days.	Lot	1		
	Sub-Total				
	Other Charges (Bidder to Specify)				
	16% VAT				
	GRAND TOTAL				
	Currency				

4. SPECIAL CONDITIONS OF CONTRACT

Payment terms is amended as follows;

Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract																														
SCC.12 Payment terms	<p>The method and conditions of payment to be made to the Supplier under this Contract shall be as follows: a)The payment for this tender shall be structured with the following milestones: LOT 1</p> <table border="1" data-bbox="483 349 1469 1688"> <thead> <tr> <th data-bbox="483 349 699 421">MILESTONE (S)</th> <th data-bbox="699 349 1203 421">SCOPE</th> <th data-bbox="1203 349 1469 421">PERCENTAGE (%)</th> </tr> </thead> <tbody> <tr> <td data-bbox="483 421 699 524">1</td> <td data-bbox="699 421 1203 524">OT/IT Pre-design, training, Platform Design Completion and approval and Factory Acceptance (FAT).</td> <td data-bbox="1203 421 1469 524">15</td> </tr> <tr> <td data-bbox="483 524 699 801">2</td> <td data-bbox="699 524 1203 801"> Delivery of Software and hardware. i) Hardware delivery (5 Laptops & 5 screen s) ii) Software delivery iii) Software Installation & Configuration. iv) License Activation. </td> <td data-bbox="1203 524 1469 801">35</td> </tr> <tr> <td data-bbox="483 801 699 1323">3</td> <td data-bbox="699 801 1203 1323"> Phase I: Geothermal Region-Installation, configuration, testing and commissioning Phase II: Eastern Region and Turkwel-Installation, configuration, testing and commissioning Phase III: Thermal and Wind-Installation, configuration, testing and commissioning Phase IV: Western Region-Installation, configuration, testing and commissioning </td> <td data-bbox="1203 801 1469 1323">20</td> </tr> <tr> <td data-bbox="483 1323 699 1469">4</td> <td data-bbox="699 1323 1203 1469"> i) Data Analytics, Visualization, Reporting & Dashboard. ii) Artificial Intelligence and Machine Learning Models development. </td> <td data-bbox="1203 1323 1469 1469">15</td> </tr> <tr> <td data-bbox="483 1469 699 1688">5</td> <td data-bbox="699 1469 1203 1688"> i) Onsite Handson training on the implemented end to end solution at the Procuring entity premises. a) Thirty (30) General User 5 days b) Twenty (20) Technical User 5days c) Ten (10) Developers 5 days </td> <td data-bbox="1203 1469 1469 1688">5</td> </tr> </tbody> </table> <p>LOT 2</p> <table border="1" data-bbox="483 1760 1469 2002"> <thead> <tr> <th data-bbox="483 1760 699 1832">MILESTON E (S)</th> <th data-bbox="699 1760 1230 1832">SCOPE</th> <th data-bbox="1230 1760 1469 1832">PERCENTAG E (%)</th> </tr> </thead> <tbody> <tr> <td data-bbox="483 1832 699 1883">1</td> <td data-bbox="699 1832 1230 1883">Delivery of Backup Appliance</td> <td data-bbox="1230 1832 1469 1883">30</td> </tr> <tr> <td data-bbox="483 1883 699 1955">2</td> <td data-bbox="699 1883 1230 1955">Installation and Configuration of Backup Appliance at designated Locations</td> <td data-bbox="1230 1883 1469 1955">40</td> </tr> <tr> <td data-bbox="483 1955 699 2002">4</td> <td data-bbox="699 1955 1230 2002">Training</td> <td data-bbox="1230 1955 1469 2002">30</td> </tr> </tbody> </table>	MILESTONE (S)	SCOPE	PERCENTAGE (%)	1	OT/IT Pre-design, training, Platform Design Completion and approval and Factory Acceptance (FAT).	15	2	Delivery of Software and hardware. i) Hardware delivery (5 Laptops & 5 screen s) ii) Software delivery iii) Software Installation & Configuration. iv) License Activation.	35	3	Phase I: Geothermal Region-Installation, configuration, testing and commissioning Phase II: Eastern Region and Turkwel-Installation, configuration, testing and commissioning Phase III: Thermal and Wind-Installation, configuration, testing and commissioning Phase IV: Western Region-Installation, configuration, testing and commissioning	20	4	i) Data Analytics, Visualization, Reporting & Dashboard. ii) Artificial Intelligence and Machine Learning Models development.	15	5	i) Onsite Handson training on the implemented end to end solution at the Procuring entity premises. a) Thirty (30) General User 5 days b) Twenty (20) Technical User 5days c) Ten (10) Developers 5 days	5	MILESTON E (S)	SCOPE	PERCENTAG E (%)	1	Delivery of Backup Appliance	30	2	Installation and Configuration of Backup Appliance at designated Locations	40	4	Training	30
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Number of GC Clause	Amendments of, and Supplements to, Clauses in the General Conditions of Contract
	<p>Payment Terms and Conditions</p> <p>Local Suppliers Payment shall be thirty (30) days upon delivery, Inspection, and acceptance and receipt of invoice. Local suppliers shall be paid through Electronic Funds Transfer (EFT).</p> <p>There shall be a retention of 10% to be paid after DLP</p> <p>Advance Payment Advance payment is not applicable.</p>

5. EXTENSION OF TENDER

The tender has been extended as follows;

INITIAL TENDER CLOSING DATE	REVISED TENDER CLOSING DATE
closing date 18th March, 2025 at 10.00 a.m.	closing date 2nd April, 2025 at 10.00 a.m.
opening date 18th March, 2025 at 10.30 a.m.	opening date 2nd April, 2025 at 10.30 a.m.

BIDDER’S ACKNOWLEDGEMENT OF ADDENDUM NO. I

We, the undersigned hereby certify that the addendum is an integral part of the tender document and the alterations set out in addendum has been incorporated in the tender Proposal.

Signed

Bidder

Date