KENYA CIVIL AVIATION AUTHORITY

efficiently managing air safety

KCAA/CONF/1010/3/VOL.61 (188) **5th June 2026**

TO ALL INTERESTED BIDDERS

ADDENDUM AND THE FIRST AND FINAL CLARIFICATIONS OF THE TENDER FOR THE SUPPLY, DELIVERY, INSTALLATION, TRAINING, TESTING AND COMMISSIONING OF AIRSPACE DESIGN AND PLANNING TOOL AND RELATED EQUIPMENT (AUTOMATIC FIRE SUPPRESSION SYSTEM FOR JKIA, MIA, EIA, WIA, PORORR RADAR STATION)– LOT 1 AND 2; TENDER NUMBER KCAA/032/2025-2026.

Reference is made to the above tender advertised by Kenya Civil Aviation Authority (KCAA) on Tuesday 19th May 2026 which you have expressed interest to participate. Reference is also made to the pre-bid meeting held on 3rd June 2026 at KCAA headquarters in Aviation House.

The Authority has received various requests for clarification on the above stated tender from interested candidates.

In accordance with the provisions of Instructions To Tenderers (ITT) section 9 and 10 and the Tender Datasheet ITT 8.2 of the tender document which was issued or obtained from KCAA website, the Authority has prepared an addendum and the first set of response to various requests for clarification received and as stated in the tender document. The preparation of the addendum and the first set of response to the request for clarifications has been necessitated by the request for clarifications sought by some of the bidders.

Attached herein is the addendum with the revised technical specifications and the responses to the clarifications requested.

Please note that this addendum and the clarifications shall be read and construed as part of the bidding document issued to you earlier.

The deadline for requesting additional clarifications is **5th June 2026** at 17:00 Hours.

The deadline for tender closing / submission is hereby extended from **11th** to **12th June 2026** at **11:00 Hours, East African Time.**

We wish you the best as you prepare to submit your bids.

William Kitum
FOR: DIRECTOR GENERAL
Encl.

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NO	REQUEST FOR CLARIFICATIONS FROM BIDDERS	KCAAS RESPONSES
		Submit evidence that your firm will be able to raise capital of Kenya Thirty Million Shillings for the project in lot 1 and Kensy shillings ten million for the project in lot 2
7.	Able to display and edit any airspace or route, and supports the validation of all airspaces and en-route tracks attributes against aeronautical data => Please refine the scope of what validation criteria you require.	- The system shall allow users to create, view, and edit all airspace volumes and ATS route structures and shall automatically validate all associated attributes, geometry, altitude constraints, identifiers, and navigation references against the authoritative aeronautical database, and provide alert on any inconsistencies.
8.	Capability to import/export and integrate Instrument Flight Procedures (IFPs) design data from Geotitan system into the Airspace Design tool/system for integrated analysis of the airspace, air routes and the IFPs under one view. => Will you require the supplier to pull data from Geotitan and in which case will you provide a Geotitan API to allow us to acces the required data OR will the user prepare a package of information to be imported by the airspace tool.	Bidders shall be responsible for the importation of data. KCAA shall not provide any API for the Design System.
9.	Provides tools for spatial analysis of Navaid coverage of the critical DME infrastructure for routes/tracks using ground-based sensors DME/DME RNAV operations. => What is meant by critical DME in this context and how is the requirement different from item 17	Support analysis of optimum location of DME stations configuration in Nairobi FIR that can support RNAV DME/DME navigation. To identify the number and optimal location of DME locations in Nairobi FIR that will meet RNAV DME/DME navigation constellation requirements, in terms of angles and distances requirements.
10.	Able to analyze critical DMEs for DME/DME RNAV navigation designs of procedures. => See above	When designing an RNAV route, the system should be able to check, in case the navigation infrastructure selected in is RNAV DME/DME, be able to check if the available DME infrastructure can support the RNAV DME/DME route.
11.	Spatial analysis of en-route track conformance to minimal separation rules, as defined by the user to correspond to the Airspace concept developed/designed. => What elements of the separation rules will you expect the user to be able to manually change	-The route separation analysis should be based on ICAO Doc 4444 and PANS-Ops 8168 Vol II criteria.

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RESPONSE TO FIRST CLARIFICATIONS SOUGHT BY INTERESTED BIDDERS VIA EMAIL AND DURING A MANDATORY PRE-BID MEETING FOR SUPPLY, DELIVERY, INSTALLATION, TRAINING, TESTING AND COMMISSIONING OF AIRSPACE DESIGN AND PLANNING TOOL AND RELATED EQUIPMENT. (RE-TENDERING): TENDER NUMBER KCAA/032/2025-2026:

NO	REQUEST FOR CLARIFICATIONS FROM BIDDERS	KCAAS RESPONSES
	AIRSPACE DESIGN AND PLANNING TOOL UNDER LOT 1	
1.	Clarification on the tender tittle for this project.	KCAA team clarified that the tender was for the Supply, Delivery, Installation, Training, Testing and Commissioning of Airspace Design and Planning Tool and Related Equipment (Automatic Fire Suppression System For JKIA, MIA, EIA, WIA, Poror Radar Station. Bidder were informed that the Automatic Fire Suppression System includes MUA Hills Radar Station as indicated in the technical specifications.
2.	Mandatory requirements Highlights.	KCAA highlighted and explained all the individual item requirements under mandatory criteria requirements.
3.	Will there be site surveys for LOT 1 & LOT 2 at the radar stations?	The meeting agreed that **a non-mandatory site survey** will be done as follows; **LOT 1** – ANS Headquarters – Friday, 5th June 2026 at 10:00am. **LOT 2 -** Wednesday,4th June 2026 at 10:00am. The contact persons were given to the bidders for the purpose of site visits.
4.	Exclusion of some items from the initial specifications and further clarification on some scope of delivery.	KCAA Team clarified that there were some exclusions in the initial technical specifications issued and therefore and addendum is issued **(referenced as Annex -I).** **Areas with amendments:** • Obstacle Management • Airport Interoperability • Clarity on page 94 – **ANS Mlolongo site** • It was clarified that the database indicated in blue in the specifications is already existing.
5.	What about the specs for chair and tables? Page 96.	The addendum herein attached includes the technical specifications for the ergonomics.
6.	Clarify on the preliminary requirement No. 29.	The requirement should read as follows:

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Nairobi

NO	REQUEST FOR CLARIFICATIONS FROM BIDDERS	KCAAS RESPONSES
12.	Scenario Information Manager (SIM) – automatically builds scenarios containing ATS data including airspace, routes and flight plan data to be used in fast time simulation tools. => SIM depends on the availability of historical data. Does Kenya have access to this?	The **Airspace Design and Planning Tool/software** should provide capabilities to support strategic airspace planning, air traffic flow management, and operational performance analysis, such as: -Automatically generates and manages simulation scenarios using operational ATS data. -Integrates airspace structures, sector configurations, ATS routes, waypoints, navigation aids, and flight plan data into a unified scenario database. -Provides comprehensive **air traffic simulation** for evaluating current and future airspace operations. • Enables assessment of existing and proposed route structures, sectorization schemes, traffic flows, and operational procedures. • Supports analysis of traffic complexity, controller workload, delays, conflicts, and airspace utilization.
13.	Inclusion of Digital Terrain Model (DTM) files for the whole world within the database, with capability of additional ones being added. => Why do you require a DTM for the whole world? Is the supply of this data within the scope of the tender. Customers normally source this data themselves.	-Inclusion of up-to-date Digital Terrain Model (DTM) for covering **Nairobi FIR**.
14.	Capability of air traffic simulation and analysis. => Please refine the scope the simulation and analysis and define the expected outcomes. How does this differ from requirement 22?	Provides comprehensive air traffic simulation for evaluating current and future airspace operations • Enables assessment of existing and proposed route structures, sectorization schemes, traffic flows, and operational procedures. • Supports analysis of traffic complexity, controller workload, delays, conflicts, and airspace utilization.
15.	Capability of airspace demand and capacity analysis. => Please refine the scope of the demand and capacity analysis. How does this differ from requirement 18?	-Evaluates sector demand against declared capacity based on airspace sectors and traffic to identify potential bottlenecks, that may require re-sectorization. -Provides sector loading, occupancy counts, and peak traffic analysis.
16.	**AUTOMATIC FIRE SUPPRESSION SYSTEM FOR JKIA, MIA, EIA, WIA, POROR RADAR STATION UNDER LOT 2**	

NO	REQUEST FOR CLARIFICATIONS FROM BIDDERS	KCAAS RESPONSES
17.	Clarification on the scope of work under lot 2	Bidder were informed that the Automatic Fire Suppression System includes MUA Hills Radar Station as indicated in the technical specifications.
18.	Could you clarify about the power supply system and Batteries?	Bidder should provide the backup batteries as required in page 109 0f 214 of the tender documents.
19.	Clarifications on training	For lot 2, bidder will be required to provide training as indicated in the tender document.
20.	Specifications for the Automatic Fire Suppression System for JKIA, MIA, EIA, WIA, Poror Radar Station	For avoidance of doubt, the specifications for the Automatic Fire Suppression System for JKIA, MIA, EIA, WIA, Poror Radar Station remains as provided in the tender document.
21.	Extension of tender closing/submission date	Due to budgetary absorption restrictions as explained to bidders during the pre-bid meeting, the deadline for submission of tender will remain as **Friday 12th June 2026 at 1100hours EAT.**

Deputy Director Supply Chain Management
FOR: DIRECTOR GENERAL

Date: 5th June 2026

ANNEX 1: (ADDENDUM)

TECHNICAL SPECIFICATIONS FOR AIRSPACE DESIGN AND PLANNING SYSTEM

1.0 Introduction

In the KCAA strategic plan 2022/23-2027/28 one of the targets is to undertake a review of both the terminal and en-route airspace sectors to address inherent issues of safety, efficiency, capacity, carbon emission while also addressing controller and cock-pit workload for sustained safety within the Nairobi Flight Information region (FIR).

Airspace design, review and creation of new Air Traffic Services (ATS) airspaces, terminal control areas (TMAs) and control zones (CTRs) including Special Use Airspaces (SUAs), Temporary Segregated Airspaces (TSA) and the air routes is a continuous process conducted by Air Traffic Service (ATS) in KCAA.

The design and planning of airspace sectors require an automated airspace design and planning tool that can simulate the current traffic patterns/volumes for system analysis to provide the most optimal ways of planning the en-route and terminal airspace sectors that adequately address the four main ICAO concerns.

There is need to continuously redesign both the en-route and terminal airspaces through data-oriented simulation using system analysis tool to establish optimized sectors that will address current and forecasted traffic volumes and flow pattern.

Currently KCAA does not have any automated Airspace Design and Planning System.

In the FY2024/25 KCAA plans to acquire Airspace Design and Planning Tool including the following specifications:

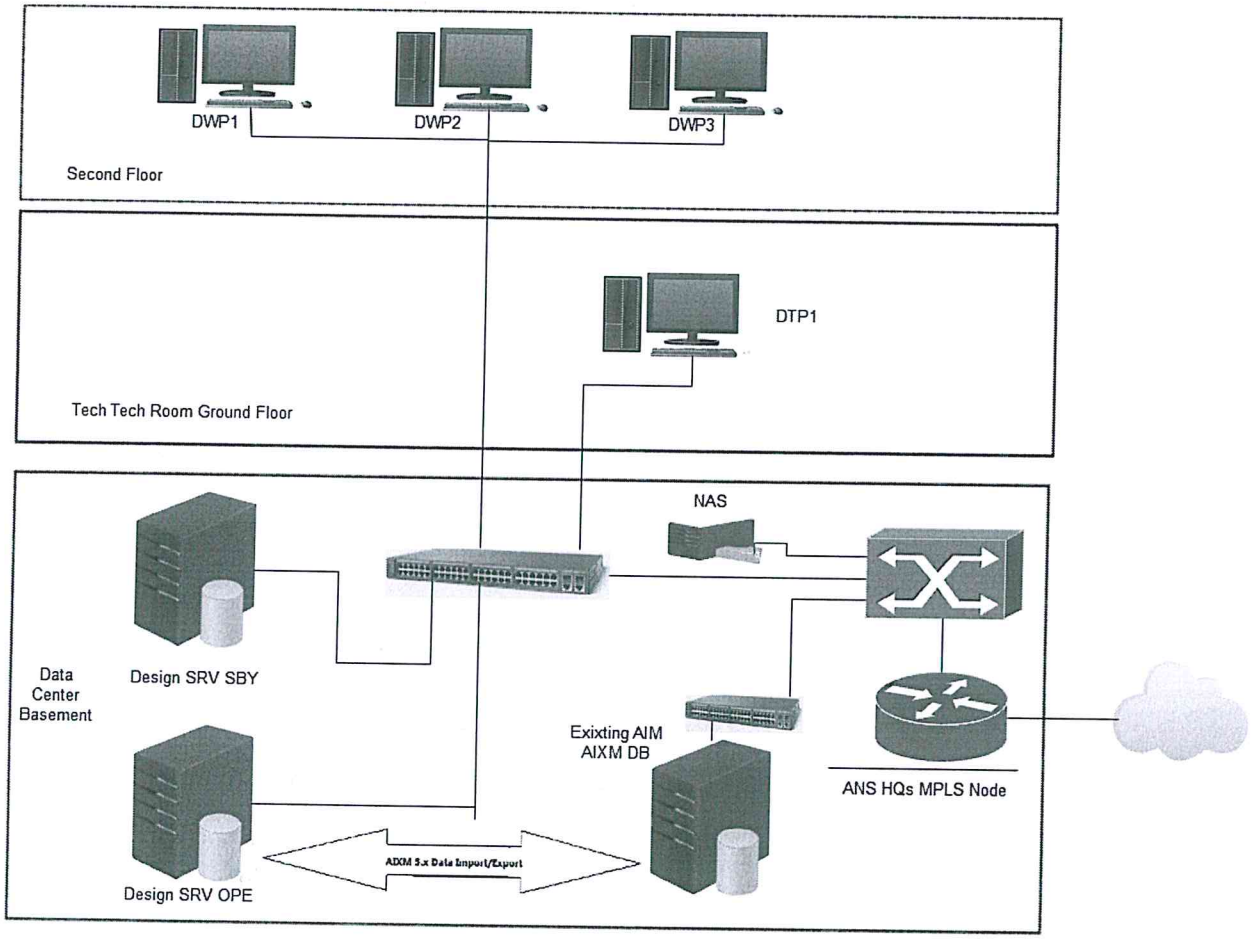
1.1 System Backup

1. The system shall be integrated with the NAS system at DRC for backup of all software components for the Servers and the technical position.
2. The bidder shall supply, install and configure a Network Storage System, NAS as specified in Annex 1 herein.
3. The backups shall be clearly separated for the operational software products and the operating system and server software in the configuration of NAS.

1.2 IP Scheme & Integration

i. The contractor shall configure all hardware and software to align with the KCAA IP addressing scheme.
ii. KCAA shall provide IP scheme for the configuration of the system to the contractor.

Schematic diagram of the proposed system



2.1 Software requirements.

1. Able to perform automated design and management of airspace structures, en-route paths/routes, in accordance with ICAO Annex 11 and ICAO Doc 8168 volume 2 the ICAO doc. 9906 Vol. III, Quality Assurance Manual for both PBN Airspaces & Routes and Conventional Airspaces & Routes.
2. Perform automatic assessment of the Digital Terrain Model (DTM) and computation of the Minimum Obstacle Clearance Altitude (MOCA) for each defined route segment or Airspace sector from the DTM and surveyed obstacles data in the database.

3. Automatic creation of obstacle protection areas for all types of airways and routes including Standard Arrival Routes (STARs) and Standard Instrument Departures routes.

4. Capability of manual construction/definition of the route segments and airspaces based on Flexible Design Tools (FDT) with possibility of DTM and Surveyed obstacle data analysis for Minimum Obstacle Clearance.

5. The Airspace and en-route specific analysis to conform to Obstacle Assessment Clearance design criteria as per ICAO Doc 8168 volume 2, ICAO Doc 9992, ICAO 9931 and ICAO 9993.

6. The System range of the design of at least 1200 NM to cover slightly beyond the Nairobi Flight Information Regions (FIRs).

7. Able to display and edit any airspace or route, and supports the validation of all airspaces and en-route tracks attributes against aeronautical data;

8. Capability for automated definition of Aerodrome Obstacle Limitation Surfaces (OLS) for DTM and Surveyed Obstacles analysis based on Annex 14 OLS requirements criteria.

9. Capabilities such as database access, aeronautical data formats (AIXM4.5, AIXM5.1, ARINC424,) interoperability with GIS features and geographical data formats compliance.

10. Capability to import/export and integrate Instrument Flight Procedures (IFPs) design data from Geotitan system into the Airspace Design tool/system for integrated analysis of the airspace, air routes and the IFPs under one view.

11. Colored visualization of the different airspace sectors and different areas for secondary and primary protection areas using a color scheme which is customizable.

12. GIS viewer able to export aeronautical features such as Airspace extent and en-route nominal track including the protection areas in KML format.

13. A 3-D Visualization using internal 3D viewer and KML export for Google Earth visualization

14. Airspace modelling of vertical and horizontal dimensions of airspaces by means of the combination of several airspace volumes, each volume encoding its own vertical and horizontal limits.
15. Ability of creation of en-route segments from chosen en-route navigation points or PBN waypoints.
16. Provides tools for spatial analysis of Navaid coverage of the critical DME infrastructure for routes/tracks using ground-based sensors DME/DME RNAV operations.
17. Able to analyze critical DMEs for DME/DME RNAV navigation deigns of procedures.
18. Spatial analysis of en-route track conformance to minimal separation rules, as defined by the user to correspond to the Airspace concept developed/designed.
19. Automatic detection of overlaps between route protection areas to detect potential infringement of restricted, military, or danger area airspaces.
20. A clear interface between an en-route segment point, the start of a Standard Instrument Arrival (STARs) and the end of Standard Instrument Departure (SIDs) procedures, during joint terminal airspace IFPs and en-route design process.
21. Allows the design and management of temporal airspaces, temporary segregated airspace (TSA), parachuting activities, Unmanned Aerial Systems (UAS) operating corridors/areas etc.
22. ~~Scenario Information Manager (SIM) – automatically builds scenarios containing ATS data including airspace, routes and flight plan data to be used in fast time simulation tools.~~
23. Inclusion of Digital Terrain Model (DTM) files for the whole world within the database, with capability of additional ones being added.
24. ~~Capability of air traffic simulation and analysis.~~
25. ~~Capability of airspace demand and capacity analysis.~~

For Director General
Kenya Civil Aviation Authority
P.O. Box 30163 - 00100,
Nairobi

26. Regular updates: Airspace Design and Planning tool is continually updated ensuring that all calculations are in accordance with current criteria and applicable annexes and changes thereof.

27. Bidders shall give an offer for technical details of Module(s) to perform the following functions: -

    a. Scenario Information Manager (SIM) – automatically builds scenarios containing ATS data including airspace, routes and flight plan data to be used in fast time simulation tools.
    b. Capability of air traffic simulation and analysis.
    c. Capability of airspace demand and capacity analysis

    Modules for the above services shall be costed and the cost shall remain unchanged for a period of three years. The cost of the modules **shall not be included in the bid price**.

28. The vendor shall provide as part of the system an extension to the database management tool for obstacle assessment. The extension tool shall be dedicated to Obstacles management and Obstacle Limitation Surfaces (OLS) assessment and automated report generation including current OLS and new OLS regulation from ICAO. The extension shall be able to import the data from the existing AIM System database of the data provider in AIXM 5.1, CSV etc format. The bidder shall give a detailed explanation of the tool to be provided.

29. The Airspace Design System shall be interoperable with the available AIM Database Management Systems using standard AIM data formats such as AIXM 5.x. The system shall be able to export and import data into the existing AIM systems. During imports sessions, the Airspace Design System shall not make any alterations to the existing database. Bidders to give the technical details of the import process in the bid offer

Note all applications requiring licensing shall be provided and it should be perpetual licenses.

2.2 Hardware Requirements

2.2.1 Servers.

1. The system shall consist of two (2) servers, operated in main/hot standby mode. Each of the servers shall be equipped with a redundant disk array (RAID 6 configuration).
2. The servers shall be installed in a single 19" 42U equipment rack sharing an appropriate KVM console.
3. Each server shall have two (2) power supply units for redundancy.
4. The cabinets should have cooling fans.

The minimum requirements for the servers shall be as follows.

Processor Options	Intel Xeon Scalable processors, supporting multiple cores for high performance. Processor number - 2 Processor core available - 8 Cores/16 Threads Processor Base Frequency - 2.60 Hz
Memory	Memory type, DDR4 Smart memory Memory capacity, 8.1 TB - RDIMM (4 TB per processor), 11.2 TB - LRDIMM and Intel Optane (5.6 TB per processor with 8x LRDIMM and 8x 512 GB Intel Optane) Memory slots, 32

Storage	Supports various storage configurations including HDDs and SSDs to meet the 10 GB minimum disk space requirement.
Server form factor	Form factor 2U rack.
Network	Flexible network options with 1 GbE, adapters.
Manageability	Integrated Lights-Out (iLO) for remote management and monitoring
CPU	2 x Intel Xeon Silver 4214R (12-core, 2.40 GHz, 16.5 MB L3 cache)
RAM	64 GB (expandable to meet specific needs)
Storage	2 x 1.2 TB 10K SAS HDD
RAID Controller	Smart Array P408i-a SR Gen10
Network	4 x 1GbE + Optional 2 x 10GbE SFP+ ports
Power Supply	Dual hot plug redundant 1 + 1 800W Flex Slot
Server Cooling	System fan features, Hot-plug redundant fans, standard

2.2.2 Working positions

1. There shall be 4 working positions, four (3) of which shall be operational positions and one technical/monitoring position.
2. Three operational positions shall be located at ANS building at KCAA ANS MLOLONGO.
3. The technical position shall be located at KCAA ANS MLOLONGO Data Center

4. All positions shall have 24-inch display screen to be used as multi-screen/extended to existing screens including the necessary adaptation and drivers.

The minimum requirements for the working positions shall be as follows.

1. **Processor**
   a. Intel® Core™ Ultra 9 processor family
   b. Intel® Core™ Ultra 9 285K with Intel® Graphics (3.2 GHz E-core base frequency, 3.7 GHz P-core base frequency, up to 4.6 GHz E-core Max Turbo frequency, up to 5.5 GHz P-core Max Turbo frequency, 36 MB L3 cache, 8 P-cores and 16 E-cores, 24 threads) or equivalent
2. **Chipset**

   Intel® W880
3. **Form factor**

   Small form factor for the operational positions

   The technical position shall be 19" rack mountable
4. **Memory**

   128 GB DDR5-5600 MT/s ECC; 192 GB DDR5-5600 MT/s non-ECC Transfer rates up to 5600 MT/s.
5. **Memory Slots**

   4 UDIMM
6. **Internal Storage**

   1 TB up to 2 TB HP Z Turbo Drive PCIe® Gen5 NVMe™ Opal 2 M.2 SSD
7. **Graphics**

   NVIDIA RTX PRO™ 2000 Blackwell Generation (16 GB GDDR7 dedicated)
8. **Audio**

   Realtek ALC3252 codec, universal audio jack with CTIA and OMTP headset support
9. **Expansion Slots**

   2 M.2 2280 PCIe 4 x4; 1 M.2 2230 for WLAN; 1 PCIe 5 x16; 1 M.2 2280 PCIe 5 x4; 1 PCIe 4 x4
10. **Ports and Connectors**
    a. Front: 2 USB Type-C® 20Gbps signaling rate; 4 USB Type-A 10Gbps signaling rate; 1 headphone/microphone combo

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Kenya Civil Aviation Authority
P.O. Box 30163 - 00100,
Nairobi

b. Rear: 2 USB Type-A 10Gbps signaling rate; 2 DisplayPort™ 1.4; 1 RJ-45; 1 audio line-in/line-out; 3 USB Type-A 480Mbps signaling rate ; Optional Ports: Flex IO left side –1 GbE LAN–1GbE Fiber LC NIC.; Serial Port kit

11. Input Devices

HP USB 320K Keyboard, HP Wired 320M Mouse.

12. Communications

Intel® I350-T4 4-port 1GbE NIC ;

13. Software

a. HP Support Assistant ;
b. HP UEFI BIOS Certification Level 2.7B;
c. HP PC Hardware Diagnostics Windows;
d. HP Manageability Integration Kit ;
e. HP Notifications;
f. HP Desktop Support Utilities;
g. HP Documentation; myHP ;
h. WPS Office;
i. Touchpoint Customizer for Commercial

14. Operating System and Operational Software

a. Windows 11 Pro
b. MS Office 365

15. UPS

750 VA Ups

2.2.3 Networking requirements

All applicable networking and interface devices/components including Cisco switches and routers shall be supplied by the bidder Integration with the ANS MPLS which shall be done by the bidder shall exploit the MPLS Node equipment already deployed at the ANS HQs site.

The supplier shall be responsible for all the interconnections and cabling works from the server room to all the working positions.

The supplier shall be responsible for all the network configurations in liaison with KCAA project implementation team.

2.2.3.1 Air Space Design : LAN Design

There shall be a LAN in ANS DRC, Mlolongo to run the system

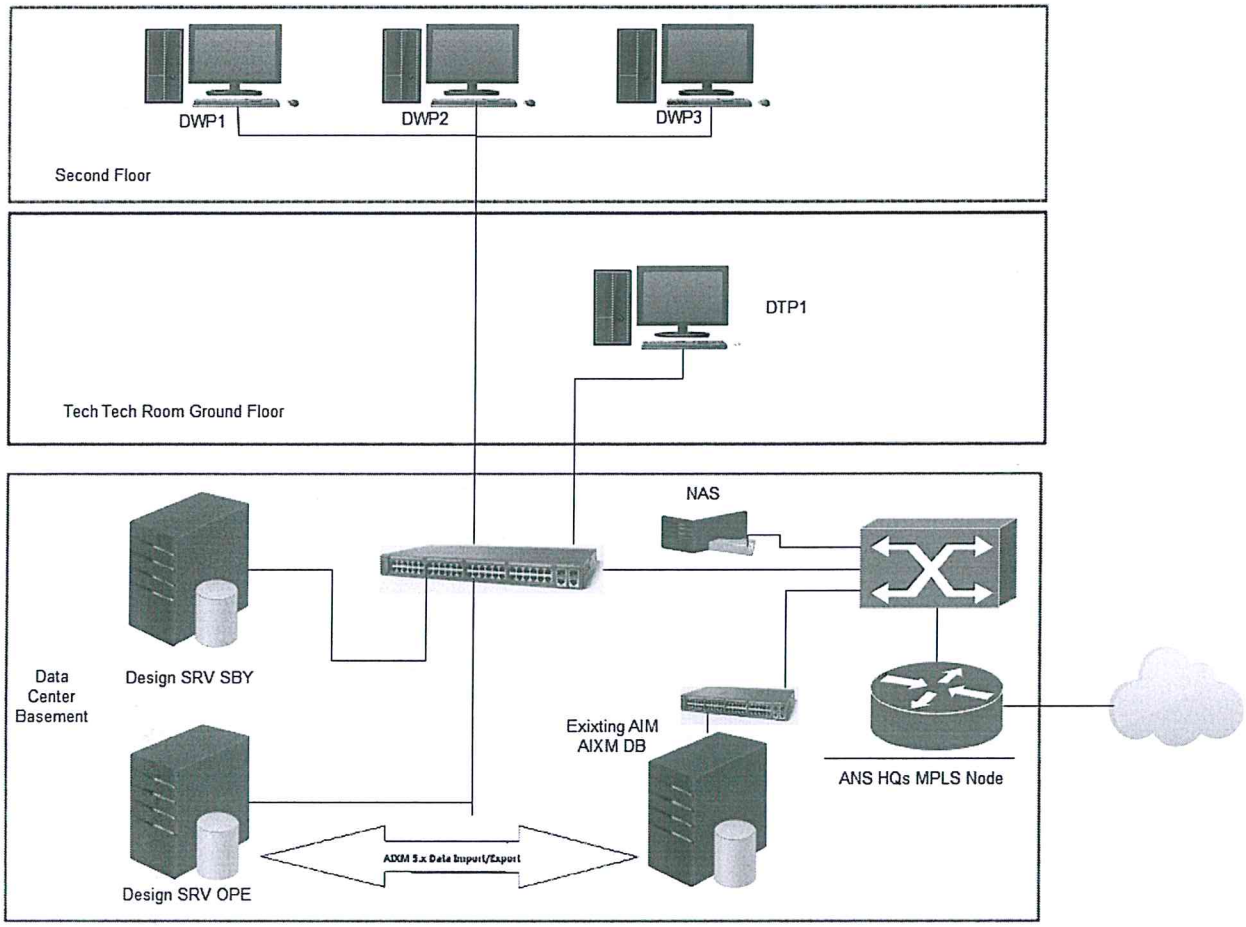

Fig.1 LAN schematic at ANS HQs Data Center

The servers shall be installed on a 42U cabinet. The two servers shall be installed in a Hot/Standby Cluster with an appropriate KVM Console. A 3kVA UPS shall be deployed to ensure the system has stable power.

All the equipment in the Data Center shall be mounted on a 42-U rack. The rack shall be supplied and installed by the bidder.

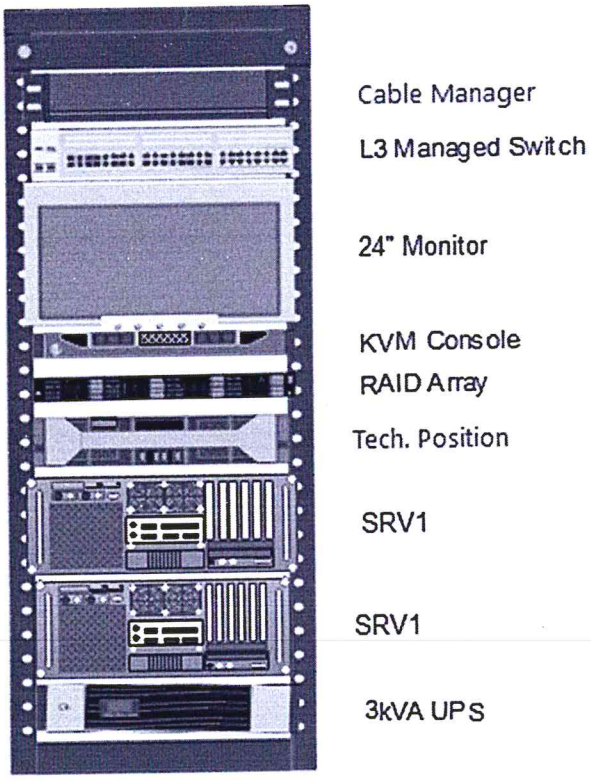

Fig. 2 Rack equipment in Data Center

The KVM Console shall be able to support both the Hot-Standby servers and the technical position.

2.2.3.2 Network switches

The supplier shall provide two (2) 19′ rack mountable Layer 3 (L3) switches

The minimum requirements for the switches are ashall be.

1. Support dual redundant power supplies

2. Built-in fans for cooling

Item	Description and Minimum Technical specifications
Ports	24ports UPOE+, 4x 1G Multigigabit
Power supply	Support Dual power supplies
Fans	Built-in fans for cooling
PoE Capability	Leading PoE capabilities with multiple ports of PoE per stack.
Intelligent Power Management	Intelligent Power Management to provide power stacking among members for power redundancy
Hardware	x86 CPU complex with 8-GB memory, and 16 GB of flash and external USB 3.0 SSD plug-gable storage slot to host containers. USB 2.0 slot to load system images and set configurations. Plug and Play (PnP) enabled.
Stack-able switching bandwidth	Minimum of 480 Gbps of local stack-able switching bandwidth
Network Modules license	Support different types of uplink modules
Multigigabit Uplink	Flexible and dense multigigabit uplink offerings with 1G, Multigigabit, 10G, 25G, and 40G
Multigigabit Downlink	Flexible multigigabit downlink options with 1G and Multigigabit links

Uplink Configuration	Modular uplink
Interfaces	Total 10/100/1000, Multigigabit copper or SFP fibre
SD-Access	SD-Access support with at least 256 Virtual Networks. Support Policy-based automation, Simplified segmentation and micro-segmentation, Network assurance
Flexible NetFlow	Line-rate, hardware-based Flexible NetFlow (FNF), delivering flow collection of at least 64,000 flows
IPV6 Support	IPv6 support in hardware, providing wire-rate forwarding for IPv networks
Dual stack	Dual-stack support for IPv4/IPv6 and dynamic hardware forwarding table allocations, for ease of IPv4-to-IPv6 migration
IEEE 802.1ba AV Bridging (AVB)	IEEE 802.1ba AV Bridging (AVB) built in to provide a better audio and video experience through improved time synchronization and QoS
Licensing	Perpetual Network Advantage

2.2.4 Ergonomics

Suitable chairs and tables shall be supplied for every working position (apart from the technical position).

The supplier in liaison with KCAA project implementation team shall setup the working environment as deemed comfortable by both parties. Proper cable management shall be done by the supplier. Details of the furniture are attached in Annex 1 herein attached.

2.2.5 UPS

The proposed UPS shall be an online rack mount UPS of minimum capacity of 3KVA with a remote management capability.

Specification	Minimum Requirements
Input	
Nominal Input Voltage	230V AC
Input Frequency	50/60 Hz
Input Voltage Range	220 – 240 VAC
Input Connection	C14, C20, or Hardwired
Output	
Power Capacity	At least 3kVA
Nominal Output Voltage	230V AC
Output Frequency Range	50/60 Hz (battery mode)
Topology and Output Waveform	Double conversion on-line
Transfer Time	0ms
Output Connections	IEC C13 and/or C19
Battery	
Battery Type	Sealed lead-acid
Typical Recharge Time	4 hours
Runtime Estimates at Full Load	At least 5 minutes
Runtime Estimates at Half Load	At least 15 minutes
Full Load Runtime	At least 5 minutes
Half Load Runtime	At least 15 minutes
Battery Connector	Detachable
System	
Efficiency Rating	At least 90%

Surge Protection and Filtering	Yes
Surge Energy Rating	At least 550 Joules
Automatic Voltage Regulation	Yes
Cold Start	Yes
Noise Level	Less than 50 dB
System	
Packaging	Rack mountable
Adjustable Mounting Rails	Yes
Support for Multiple Rack Depths	Yes
Remote Management Capability	SNMP/network compatibility
Control Panel and Audible Alarms	LED indicators, audible alarms
Management Software	Compatible with manufacturer's software and Windows, Linux or Mac OS
Warranty	At least 2 year
Standards and Regulatory Conformance	CE, RoHS, ISO9001, ISO14001, IEC62040
Emergency Power Off (EPO)	Yes
Modularity	Yes
Redundancy	N+1 or better
Scalability	Yes
Hot Swappability	Yes
Flexibility	Yes

Parallel Operation	Yes
Fault Tolerance	Yes
Maintenance Bypass	Yes
Battery Management	Yes

Note

All hardware supplied shall have a warranty of at least three (3) years and should be supplied with the applicable licenses installed.

2.3 Remote Support Services

i. The system shall include a remote maintenance support facility enabling the supplier to remotely log in to the system and perform system checks when necessary.

ii. The software shall allow all users to work remotely without local software installation.

iii. KCAA shall provide and manage a VPN service for the remote access of the system

2.4 Quality Plan

The supplier shall be responsible for the quality assurance, configuration management, and acceptance testing being in accordance with the agreed procedures.

2.5 Training Plan

1. The supplier shall provide a training plan and course syllabus for approval by KCAA.
2. The syllabus shall be submitted to KCAA two (2) months prior to the factory training for approval. KCAA shall communicate acceptance or alteration of the syllabus at least one (1) month prior to the actual training. Upon successful completion of the course trainees shall be issued with certificates.
3. There shall be Factory training and site training.

4. The training shall cover all aspects of the supplied system management (application(s), operations, administration and system maintenance).
5. The Supplier shall bear all the costs associated with the training as follows.
    a. Cost for airfare to and from Nairobi KENYA (economy class),
    b. Travel medical insurance
    c. Applicable Visa fees
    d. Terminal transportation (airport to hotel and return)
    e. Transportation costs during factory training and FAT (Training venue to hotel and back)
    f. Daily subsistence allowance of USD 450.

7. The training shall be conducted in English language

2.5.1 Factory training

1. There shall be ten (10) days factory training for both the technical and the user personnel.
2. The trainees shall comprise two (2) technical personnel and (4) user/operational personnel.
3. Factory acceptance tests shall be conducted immediately after factory training.
4. Two (2) technical personnel and two (2) user/operational personnel shall remain at the factory to conduct the factory acceptance tests.

2.5.2 Factory Acceptance Test (FAT)

1. The factory acceptance tests shall be at the supplier's premises for three (3) days, for all hardware/software deliverables.
2. The supplier shall submit for approval a detailed FAT plan at least two (2) weeks before the beginning of the FAT.

3. The FAT plan shall consist of a set of functional and performance tests aiming at validating the compliance of the system with this specification.
4. The vendor shall provide all means necessary to perform the FAT including suitable traffic simulators to validate the system functionality and performance.
5. Electronic support shall be provided to perform the FAT (e.g. test messages are pre-recorded for input by a single command).
6. Each test executed at the FAT shall be described on one single page including at least the following information:

i. Test identifier and title,
ii. The procedure to follow for performing the test,
iii. The system configuration required for the test,
iv. The expected result(s) of the test,
v. The way to control whether the test has succeeded or not,
vi. Comments where appropriate.

2.5.3 Site training

There shall be site training for ten (10) days at KCAA premises.

The site training shall comprise of five (5) technical personnel and ten (10) user personnel.

2.5.4 Site Acceptance Test (SAT)

The supplier shall submit for approval a detailed SAT plan at least two (2) weeks before the beginning of the SAT.

The SAT plan shall consist of a subset of functional tests specified in the FAT plan, plus specific tests considering the site environment (e.g. connection to networks and systems that could not be verified at factory, accommodation of real traffic).

2.6 Maintenance Plan

1. The tenderer shall present a plan on how to conduct maintenance services during the defects liability period and during the life cycle of the system.

2. The plan shall include: -
   i. Repair/replacement of defective hardware components for the 3-year warranty period.
   ii. Software maintenance and upgrade during the 3-year warranty period.
   iii. Repair/replacement of defective hardware components during the system life cycle.
   iv. Software maintenance and upgrade during the system life cycle.
   v. Remote maintenance and web support services
   vi. Management of the obsolescence of components.
3. Bidders shall propose a five (5) year maintenance plan/ SLA upon expiration of the defects liability period The plan/SLA shall be costed. However the cost of the maintenance plan/SLA shall not be included in the bid price but must remain unchanged during the entire period of post warranty maintenance.

2.7 Scope of Delivery and Works

1. Supply and delivery all hardware requirements.

No	Description	Quantity	Remarks/Notes
1.	Servers	2	Configured in Hot/Standby cluster
2.	Workstations	4	3 Operational and 1 technical
3.	LAN Switches	2	L3 Managed with Perpetual Network Advantage License
4.	LAN Cabling and accessories	Lot	Cabling Standard CAT6
4.	Raid Array	1	5 x 3.84TB SDD drives. Four configured and 1 spare
5.	KVM Console complete with 24' inch display	1	Able to support 3 systems
6.	UPS System	3kVA	
7.	Documentation	Set	

2. Supply of ALL Software Licenses:-
   i) Server Software Licenses
   ii) Workstation Licenses including MS Office Licenses

iii) ALL Licenses shall be perpetual on-premise with a three-year (or the contract term as necessary) subscription catering updates where necessary

3. Installation and configuration of Local Area Network and Integration of LAN with KCAA ANS NMS and MPLS. Integration of the Airspace System (**System Installation**)

No.	Description	Notes
1.	LAN Installation iv) in the Data center v) Extension of LAN to operational room vi) Integration with NMS at JKIA and vii) IPMPLS	
2.	System Installation i) Server installation ii) Workstation Installation iii) Airspace NAS Backup Installation iv) Systems configuration	Installation and configuration of all systems for the Airspace Design including the backup system

4. Integration of the airspace design tool with the Geotitan system
5. System backup with NAS. Installation and configuration of AirSpace NAS System
6. Factory Training for technical and operational personnel
7. Factory acceptance tests
8. Site training for both technical and operational personnel
9. Site acceptance tests
10. Documentation (user and technical manuals)
11. Commissioning

2.8 Documentation

Supplier shall deliver the following documents in both soft and hard copies to KCAA:

i. 2 sets of operations manual

ii. 2 sets of maintenance manual,

iii. 2 sets of administrator's manual,

iv. 2 sets of equipment inventory

v. Installation 'as built' documentation including technical drawings

ANNEX 1

NAS Technical Specifications

Hardware

CPU	
CPU Model	AMD Ryzen V1780B
CPU Quantity	1
CPU Core	4
CPU Architecture	64-bit
CPU Frequency	3.35 (base) / 3.6 (turbo) GHz
Hardware Encryption Engine	Yes

Memory	
System Memory	8 GB DDR4 ECC UDIMM
Memory Module Pre-installed	8 GB (8 GB x 1)
Total Memory Slots	2
Maximum Memory Capacity	32 GB (16 GB x 2)

Storage	
Drive Bays	12 (minimum)
Drive Type	2.5" SATA SSD
Hot Swappable Drive	Yes

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Storage Capacity	4 x 3.84 configures in RAID and 1 x 3.84 spare drive
External Ports	
RJ-45 1GbE LAN Port	2
RJ-45 10GbE LAN Port	2
USB 3.2 Gen 1 Port	2
PCIe	
PCIe Expansion	1 x Gen3 •8 slot (x4 link)
Physical	
Form Factor (RU)	1U
Size (Height x Width x Depth)	44 mm x 481.9 mm x 555.9 mm
Weight	8.3 kg
Rack Installation Support	4-post 19" rack (Synology Rail Kit — RKS—01)
Power	
AC Input Power Voltage	100V to 240V AC
Power Frequency	50/60 Hz, Single Phase
Environmental	
Operating Temperature	0°C to 35°C (32°F to 95°F)
Storage Temperature	—20°C to 60°C (—5°F to 140°F)
Operating Humidity	8% to 80% RH
Storage Humidity	5% to 95% RH

Software Application Specifications

Storage Management	
Maximum Single Volume Size	• 200 TB (32 GB memory required) • 108 TB
Maximum Internal Volume Number	256
SSD Read/Write Cache (Determining cache size)	Yes
Supported RAID Type	RAID F1,Basic,JBOD,RAID 0,RAID 1,RAID 5,RAID 6,RAID 10

File System	
Internal Drives	Btrfs,ext4
External Drives	Btrfs,ext4,ext3,FAT32,NTFS,HFS+,exFAT

File Services	
File Protocol	SMB,AFP,NFS,FTP,WebDAV,Rsync
Maximum Number of SMB Connections (FSCT-Based)	700
Windows Access Control List (ACL) Integration	Yes
NFS Kerberos Authentication	Yes

Virtualization	
VMware vSphere	ESXi 8.0 U2, ESXi 8.0 U1, ESXi 8.0, ESXi 7.0 U3, ESXi 7.0 U2, ESXi 7.0 U1, ESXi 7.0, ESXi 6.7 U3, ESXi 6.7 U2, ESXi 6.7 U1, ESXi 6.7, ESXi 6.5 U3, ESXi 6.5 U2, ESXi 6.5 U1, ESXi 6.5
Microsoft Hyper-V	Windows Server 2022
Citrix XenServer	XenServer 8, Citrix Hypervisor 8.2 LTSR CU1
OpenStack	Cinder

Security

Firewall, encryption shared folder, SMB encryption, FTP over SSL/TLS, SFTP, rsync over SSH, login auto block, Let's Encrypt support, HTTPS (customizable cipher suite)

General Specifications

Supported Protocols	SMB1 (CIFS), SMB2, SMB3, NFSv3, NFSv4, NFSv4.1, NFS Kerberized sessions, iSCSI, Fibre Channel, HTTP, HTTPs, FTP, SNMP, LDAP, CalDAV
Supported Browsers	Chrome,Firefox,Edge,Safari
Supported Language	English,

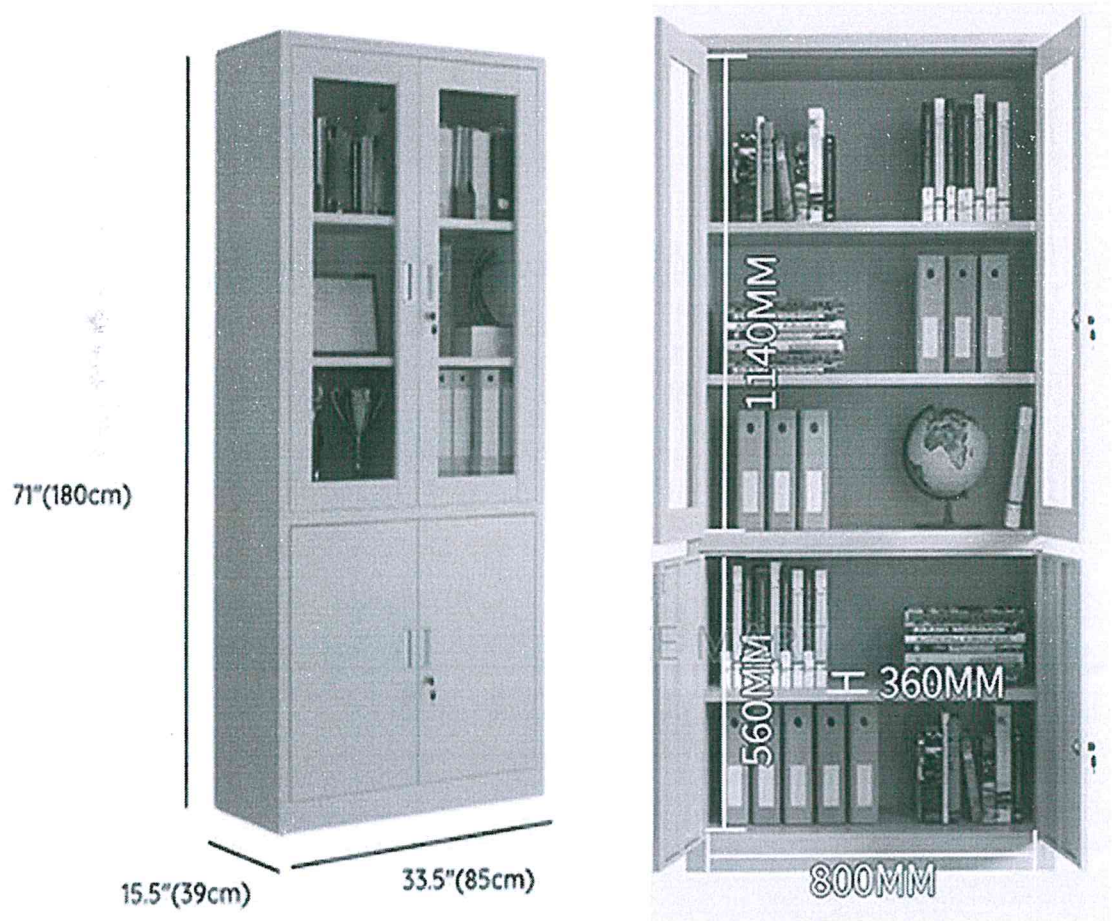
Warranty

3 Years

Notes	The warranty period starts from the date of Site Acceptance

- Desk: (w) 1400mm x (x) 1200mm x (y) 600mm x (d) 800mm
- Pedestal: (w) 426mm x (d) 600mm x (h) 725mm
- Commercial grade
- Multiple wood finishes
- Choice of metal leg colours
- 10 year warranty.

2. CABINET

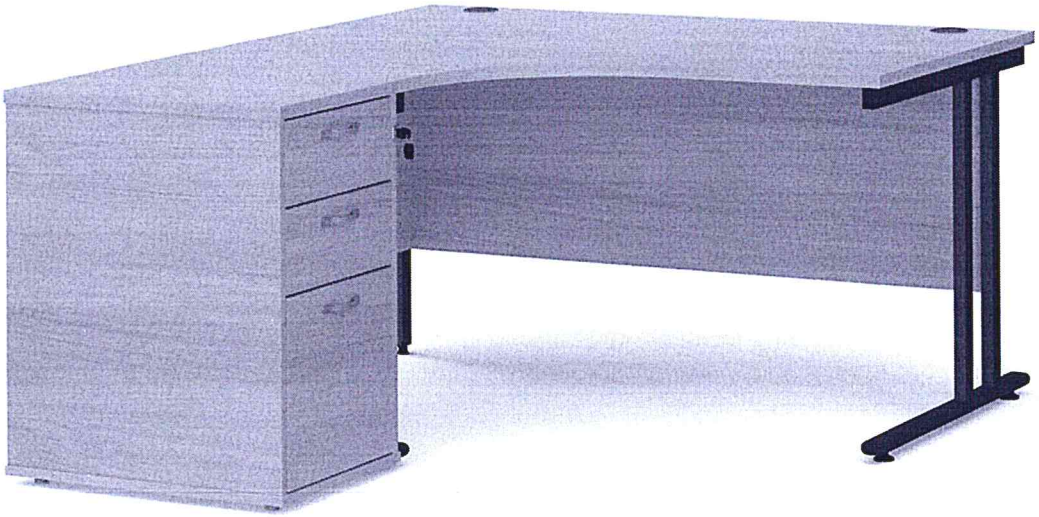


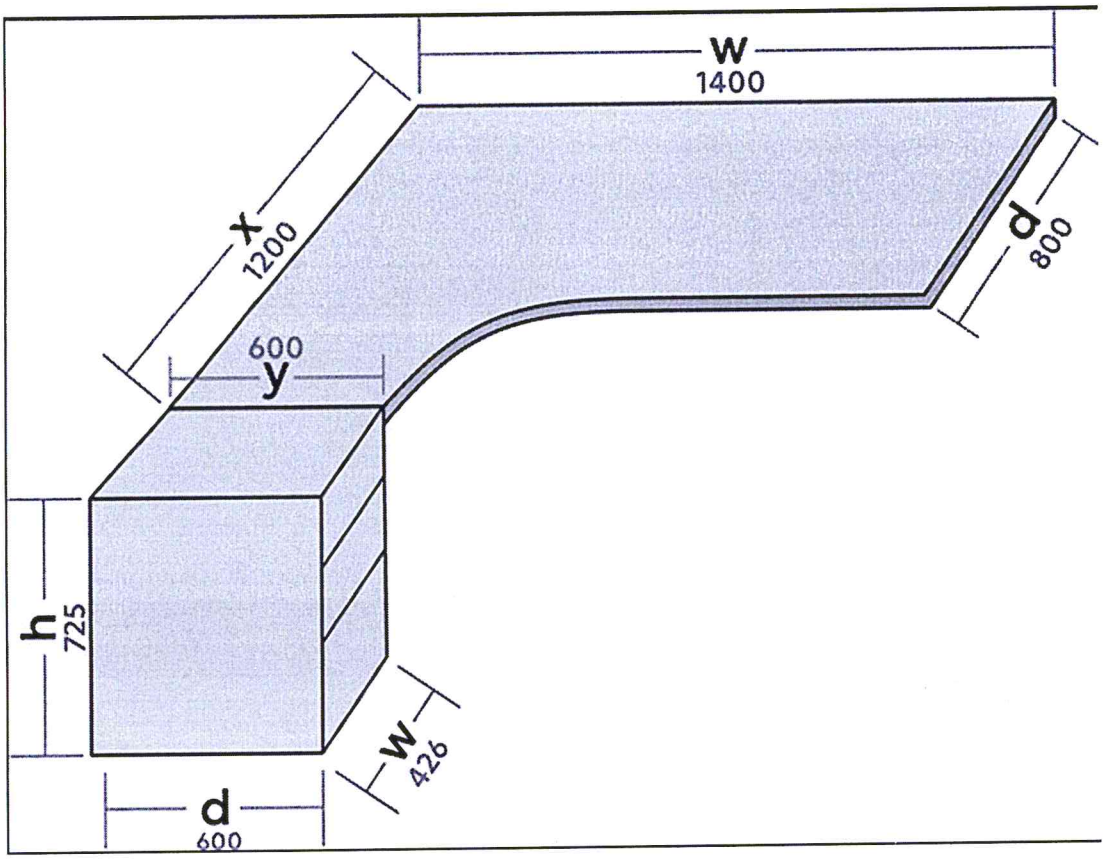
Made of high quality cold

- The metal 4 door +2 drawer display storage cabinet is a stylish and practical solution for office environment. There are two drawers conveniently positioned in the middle which are ideal for storing smaller items and other office supplies. The metallic system features a superior tubular

Annex 1 Ergonomics

1. **Table**





- Separate desk and pedestal bundle
- 25mm heat and stain resistant MFC desktop

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cam-lock comes with 2 compatible keys and the internal shelving is easily adjustable to suit your needs.

- Powder- coated in grey
- Ultra secure tubular cam-lock and key design
- 2 unique keys per lock
- 2 drawers for storing smaller items
- Quality steel construction
- Holds up to 20kg per shelf
- Reinforced doors
- Scratch resistance and easy to clean.
- Colour: GREY
- Powder Coated: yes
- Materials: steel
- Keys: 2 unique per locker

Dimensions

- Length: 950mm
- Height :1850mm
- Width: 400mm

3. OFFICE CHAIR

Office Chair: Ergonomic Office Chair with Flip-Up Arms for Small Space

REVISED EVALUATION CRITERIA FOR SUPPLY, DELIVERY, INSTALLATION, TRAINING, TESTING AND COMMISSIONING OF AIRSPACE DESIGN AND PLANNING TOOL AND RELATED EQUIPMENT (AUTOMATIC FIRE SUPPRESSION SYSTEM FOR JKIA, MIA, EIA, WIA, POROR RADAR STATION) (RETENDERING). TENDER NO. KCAA/032/2025-2026

PRELIMINARY EVALUATION CRITERIA

No.	Mandatory documents/requirements to be submitted
1.	**Ineligibility** - Bidders and their associated firms who have existing ongoing contracts with KCAA which have delayed beyond the original scheduled completion period in the contract without proper justification or who according to KCAA records, have failed in performance of previous contracts, have been served with written notice of nonperformance or have had their previous contracts terminated for non-performance are not eligible to participate.
2.	The tender is signed by the person with power of attorney, without material deviation, reservation or omission. Attach a copy of letter granting power of attorney.
3.	**Project commitment/plan** – Bidders MUST attach sample project plan/work program.
4.	Provide documentary evidence of the company's registration details /certificate of incorporation (legal structure) by a recognized body in the domiciled Country (including for members of joint venture where applicable).
5.	Provide copy of the company Valid Tax Compliance certificate issued by the Kenya Revenue Authority for firms registered in Kenya only.
6.	The bidder shall provide two hard copies comprising **1 original document** and **1 copy document and a soft copy in USB drive (searchable).**
7.	Provide a tender security of Kenya Shillings One Million Two Hundred Only (KES 2,000,000.00) for lot 1 and Kshs 400,000 for lot 2 valid for 119 days
8.	Provide a duly filled and signed Form of Tender for the respective lot
9.	Duly filled and signed Price Schedules completed in accordance with ITT 14 and ITT 19 (Schedule No. 1 to 5) for the respective lot
10.	Tenderer's eligibility – duly filled and signed confidential business questionnaire
11.	Validity of bid tender, for a period of 91 days
12.	Duly signed sworn Anti-corruption affidavit signed by commissioner of oaths
13.	Ensure serialization of all pages of the bid submitted
14.	Submit copies of all technical brochures for the proposed equipment in English language
15.	Submit a valid copy of NCA registration certificate and license for lot 2

For Director General
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18.	**Financial Resources** The bidders shall submit the latest three years (2025, 2024 and 2023) audited financial statements.
19.	Submit a statement in the letterhead of the bidder indicating that the company has adequate financial resources to supply the equipment if awarded a contract. (Attach evidence)
20.	Duly filled Certificate of Independent Tender Determination
21.	Submit a statement in the letterhead of the bidder indicating that the company is not insolvent, in receivership, bankrupt or in the process of being wound up
22.	Tenderer, member of the joint venture or sub-contractor is not debarred by PPRA or any other Authority. Submit a duly filled and signed Form SD1
23.	Self-declaration that the person/tenderer will not engage in any corrupt or fraudulent practice. Submit a duly filled and signed Form SD2
24.	Attach certificate of registration for the installer (Class T3) and the license from EPRA as electrical contractor license in class C1 for lot 2
25.	**Experience for Lot 1** The bidder or the manufacturer of the equipment shall: - i Provide proof that the bidder has specific experience in the Supply, delivery, installation, training, testing and commissioning of Airspace Design and Planning Tool for three (3) Air Navigation Service Providers (ANSPs) or Civil Aviation Authorities (CAAs) each of a value of Kenya shillings. seventy million or more within the last Seven (7) years. ii Proof that they have supplied, installed and commissioned similar equipment in Two areas outside domicile Country/Sate of manufacture. iii Provide copies of Contracts with their requisite completion certificates/ recommendation letters/user acceptance documentation for the three projects. iv The project must be complete and operational. Evidence of all previously and successfully accomplished integration services undertaken for a similar system.
26.	**Experience for Lot 2** The bidder or the manufacturer of the equipment shall: - i Provide proof that the bidder has specific experience in the Supply, delivery, installation, training, testing and commissioning of Automatic Fire Suppression System each of a value of Kshs. ten million or more within the last Seven (7) years. ii Provide copies of Contracts with their requisite completion certificates/ recommendation letters/user acceptance documentation for the three projects. iii The project must be complete and operational.
27.	Submit a due diligence Consent Authorization Letter in the bidder's letter head signed by holder of the power of attorney to obtain information from your clients as per the bidder's contracts attached.

28.	Bidders MUST have an annual turnover for each of the last three years of at least Kenya Shillings thirty million
29.	Submit evidence that your firm will be able to raise capital of Kenya Thirty Million shillings for the project in lot 1 and Kensy shillings ten million for the project in lot 2
30.	**Spares parts** - The supplier shall provide a list of all critical system spares which will be supplied with the equipment to sustain the system during the three-year warranty period. The cost should be part of the bid price submitted.
31.	Attach certified CVs and professional certificates for key technical staff who will be assigned to this project if successful.
32.	Provide evidence that you are an Authorized dealer / agent of the Manufacturer of the system by attaching a Manufacturer Authorization Certificate.
33.	Composition of joint venture where applicable. Attach a copy of the Joint Venture Agreement entered in to by all members or a Form of intent to execute a Joint Venture Agreement together with a copy of the proposed Agreement. All members of joint venture MUST submit a duly filled Party to JV Information Sheet (where applicable). Incase of a joint venture, indicate the lead bidder
34.	The bidders shall provide a proposed service and maintenance agreement for the system with a proposed commencement at the end of the three (3) year warranty period. This maintenance agreement should be for a five (5) years period and should be costed separately as appropriate. This costing shall be considered during the financial evaluation for comparison purposes but shall not be included in the bid price. **The quoted maintenance price shall remain firm and fixed for the stated period** (FOR LOT 1 AND 2)
35.	The bidders shall provide a service and maintenance agreement for the Air Traffic Contol Tower with a commencement date at the end of the maintenance. This maintenance agreement should be for a three (3) years period and should be costed as appropriate. This costing shall be included in the bid price. **The quoted maintenance price shall remain firm and fixed for the stated period** (FOR LOT 3 ONLY)
.	**REMARKS**

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