REPUBLIC OF KENYA

MINISTRY OF LANDS, PUBLIC WORKS, HOUSING AND URBAN DEVELOPMENT

State Department for Housing and Urban Development
Urban Development Department

Second Kenya Urban Support Program (KUSP 2)

Project No.: P177048
Credit No.: 7349-KE; 7350-KE; IDA Grant Number E208-KE?

Terms of Reference

for

Consulting Services for Preparation of System Design Requirements, Technical Requirements, Procurement Documents and Supervision of Implementation of Kenya Urban Observatory

(FIRM SELECTION)

CONTRACT NO: KE-MOTI-554786-CS-QCBS

Client:

Principal Secretary
State Department for Housing and Urban Development
P.O. Box 30119-00100
6th Floor, Ardhi House, 1st Ngong Avenue
Nairobi, Kenya
Tel: +254-02-2729200
E-mail: www.housingandurban.go.ke

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1.0 BACKGROUND & CONTEXT

The Government of Kenya, through the Kenya Urban Support Program II (KUSP II), is committed to strengthening urban institutions, enhancing service delivery and resilience, promoting private sector engagement, and advancing integrated urban development across participating urban areas. A key priority under the program is to enhance the use of data and digital systems to support evidence-based planning, informed decision-making, and effective urban governance.

Rapid urbanization in Kenya has significantly increased the demand for reliable, integrated, and accessible urban data systems to support urban planning and policy formulation, infrastructure investment decisions, and the monitoring and evaluation of urban development outcomes. However, existing urban data systems remain fragmented across institutions and levels of government, characterized by inconsistent standards, limited interoperability, and constrained accessibility. These challenges have resulted in duplication of efforts, inefficiencies in data management, and limited use of data in decision-making processes.

Preparatory Technical Assistance (TA) undertaken in 2024, including a Municipal Spatial Data Infrastructure (MSDI) assessment across eight urban areas; Bomet, Ahero, Kitale, Kakamega, Kwale, Mavoko, Juja, and Nakuru confirmed these systemic challenges. The assessment revealed that spatial and non-spatial data are often siloed across institutions, outdated or manually maintained, and lacking standardized metadata and interoperability frameworks. The absence of centralized data repositories and formal data-sharing protocols further contributes to inefficiencies, reduced data quality, and limited coordination among stakeholders.

In addition, the assessment highlighted significant disparities in human and technical capacity across local governments. While some municipalities have made progress, most lack adequately trained personnel, appropriate infrastructure, and institutional mechanisms to effectively manage and utilize spatial data. Institutional mandates and governance arrangements remain unclear, with overlapping roles between county governments and national agencies further constraining coordination and data sharing.

These challenges collectively limit the ability of national and county governments to undertake integrated, data-driven urban planning and management, underscoring the need for a coordinated, scalable, and sustainable solution.

To address these gaps, the Government of Kenya intends to establish a **Kenya Urban Observatory (KUO)**, an integrated national urban data platform (hereafter referred to as *the Platform* or *the System*) to serve as a centralized, interoperable, and scalable system for urban data management, analysis, and dissemination. The Platform is envisaged as a core tool under KUSP II's component on *Integrated Planning for Inclusive and Resilient Urban Areas*, enabling improved coordination among stakeholders, enhanced data accessibility and usability, and strengthened transparency and accountability in urban governance.

The development of the Platform will adopt a phased implementation approach to ensure technical robustness, institutional alignment, and value for money.

Stage I: Focuses on establishing a comprehensive and implementation -ready foundation for the Kenya Urban Observatory Platform through detailed system and planning. This phase

involves translating diagnostic findings into a coherent technical and institutional framework that will guide subsequent development and deployment of the system.

Components such as data ingestion, storage, processing, analytics, and visualization layers, while ensuring interoperability with existing national and municipal systems. It also entails the preparation of detailed functional and technical specifications that clearly define system requirements, performance standards, integration protocols, and compliance with relevant legal and regulatory frameworks.

In addition, this phase will develop institutional and governance frameworks that define roles, responsibilities, data custodianship, access controls, and coordination mechanisms across stakeholders to ensure sustainable platform management. It will also include the preparation of cost estimates, implementation timelines, and resource requirements to support informed decision-making.

Stage2: Development and Operationalization: of Kenya urban observatory platform will be carried out under a separate procurement process. This will rely on the outputs from this consultancy, including system design and technical specification

The current consultancy focuses only on design and preparation, and advisory during execution.

This phased approach ensures a clear separation between system design and implementation, reduces procurement risks, enhances quality assurance, and provides a strong technical and institutional foundation for successful deployment and long-term sustainability.

This Terms of Reference (ToR) therefore outlines the requirements for consultancy services under Phase I, focusing on translating the diagnostic findings into an implementation-ready framework for the Kenya Urban Observatory Platform.

The scope of the assignment will initially cover the State Department for Housing and Urban Development (SDHUD) and five selected urban areas (three municipalities and two cities), with a structured approach to ensure scalability to additional urban areas nationwide. The Platform, to be hosted at SDHUD, will adopt a phased rollout that prioritizes core datasets and services, incorporates a tiered capacity development model, strengthens coordination across national and county institutions, and supports the identification and development of a National Urban Observatory Champion to guide long-term institutionalization and scale-up.

The Platform is expected to address key functional requirements, including:

- **Integrated Planning & Decision Support**: Provide tools and data for better urban planning and management in the selected areas;
- **Data Standardization & Interoperability**: Ensure data consistency and the ability to link information across different sources and stakeholders within the selected areas, by implementing standardized APIs, comprehensive metadata, and open geospatial standards, while aligning with national standards (e.g., Survey of Kenya requirements).
- **Service Delivery Improvement**: Support the modernization of key municipal services by leveraging spatial data, initially focusing on fundamental data sets such as urban boundaries; urban development monitoring indicators (e.g. urban population, access to services such as SWM, Water and Sanitation, Roads, NMT, Housing, informal settlements footprint and

upgrading), E-permits and revenue collection in the selected urban areas.

- **Transparency & Accountability**: Disseminate information to strengthen accountability in the selected areas.
- **Capacity Building**: Enhance the skills of technical staff and stakeholders in the selected urban areas in data management and analysis.
- **Scalability Planning**: Develop a clear roadmap for expanding the platform's coverage and functionality.

2.0 OBJECTIVES

The overall objective of the assignment is to establish a functional, scalable, and integrated national urban data platform through the design and implementation of the Kenya Urban Observatory, supported by clear system requirements, technical specifications, and procurement and implementation frameworks, to enhance data-driven decision-making in urban planning and management at the SDHUD and within the five pilot urban areas**.**

Specific objectives include to:

i) Define the overall design requirements for a secure, scalable and interoperable Kenya Urban Observatory Platform ensuring compliance with Kenyan legal requirements on data sharing and privacy, initially focusing on selected datasets and the five pilot urban areas—

ii) Define the platform architecture and functional requirements for the dashboards, GIS/spatial tools, data management systems, and reporting interfaces to support urban planning, monitoring, and decision-making.

iii) Define data integration and interoperability requirements, including API architecture, data exchange protocols, and system integration specifications to enable seamless and automated data flows from participating urban areas.

iv) Define governance, user access, and data management requirements, including institutional roles, access controls, permissions, and operational procedures to ensure secure and accountable platform use.

v) Prepare a comprehensive System Requirements Specification (SRS) and technical design documentation, including functional and non-functional requirements, system architecture, data models, integration framework, and implementation roadmap to guide system development. Framework, and implementation roadmap to guide system development.

vi) Prepare procurement documentation for system development, including technical specifications, cost estimates, and bidding documents including Preparation of complete Request for Bids document based on the appropriate World Bank's Standard Procurement Document (SPD)

vii) Assess stakeholder capacity and define capacity requirements, including identification of technical and institutional gaps and recommendations to support system adoption and sustainability.

viii) Define cybersecurity and data protection requirements, ensuring confidentiality, integrity, and availability of data in line with national regulations and international best practices

ix) Define system scalability and rollout requirements, ensuring the platform can support phased expansion from pilot cities to all municipalities, including increasing users, data volumes, and additional functional modules.

3.0 SCOPE OF THE CONSULTING SERVICES AND SPECIFIC TASKS

3.1 Scope of the Consulting Services-Lump-sum

The assignment is structured into five (5) interrelated workstreams covering development of system design requirements, technical specifications, and implementation framework under a lump sum arrangement, with an additional time-based component for advisory support for the establishment of the Kenya Urban Observatory Platform.

Each workstream is designed to address a specific aspect of the platform development lifecycle, ensuring a comprehensive and integrated approach to system design and implementation readiness.

i) Inception, Diagnostics, and Stakeholder Alignment

This workstream focuses on understanding the existing urban data ecosystem through a review of previous studies and consultations with key stakeholders. It includes mapping institutional roles, identifying data sources, and assessing legal and regulatory requirements to ensure alignment and stakeholder ownership.

ii) Platform Conceptualization and System Design

This component defines the overall system architecture and design of the Kenya Urban Observatory Platform. It includes the development of functional modules, system requirements, and compliance with national legal and regulatory frameworks to ensure a robust, scalable, and interoperable platform.

iii) **Governance and Data Management Framework Design**

This workstream establishes the institutional and governance structures required for effective platform management. It defines roles and responsibilities, coordination mechanisms, and data governance protocols, including standards, data sharing, access control, and quality assurance

iv) Technical Specifications, Costing, and Procurement Documentation

This work-stream translates the system design into detailed technical specifications and procurement-ready documents. It includes cost estimates, implementation timelines, resource requirements, and preparation of bidding documents in line with applicable procurement standards.

v) Technical Advisory and Quality Assurance Support (Time-Based)

This work-stream provides ongoing technical advisory and quality assurance during system development, testing, and initial deployment phases. The consultant will ensure that implementation aligns with approved designs and standards, while identifying risks and recommending corrective actions. This component is advisory in nature and will be delivered under a time-based contract aligned with the system development schedule.

3.2 Specific Tasks

The key tasks per work-stream /phase are detailed below.

3.2.1 Inception, Diagnostics & Stakeholder Alignment (Lump-Sum)

Objectives	**Understand the existing urban data environment and secure stakeholder alignment across national and local levels.**
Key Activities	○ Review previous studies, assessments, and diagnostic reports, including the preassessment report that established the rationale for the urban observatory. This includes analysis of legal and policy frameworks governing spatial data, smart cities, urban governance, and data privacy in Kenya, to validate identified issues, recommendations, and highlight existing data gaps. ○ Evaluate the institutional arrangements, existing information systems, and ICT infrastructure at both national and urban area levels. ○ Map stakeholders across national and county levels and conduct structured consultations (Focus Group Discussion (FGDs), Key Informant Interviews) to identify platform requirements. ○ Benchmark global best practices in urban data platform implementation and assess applicability to the Kenyan context. ○ Develop a stakeholder engagement and communication strategy tailored to the five selected pilot urban areas.
Expected Outputs	○ **Inception Report Including background information** clearly defining the key issues to be addressed by the assignment and the approach, legal and policy alignment, stakeholders to be engaged and timelines for the assignment.

Platform Conceptualization & System Design

3.2.2 Platform Conceptualization and System Design requirements (Lump-Sum)

Objectives	**Develop the design architecture, data framework, and implementation strategy requirements for the Kenya Urban Observatory Platform.**
Key Activities	The consulting firm will be responsible for defining and documenting the system requirements to guide subsequent development. Key activities will include: - Undertaking business process mapping (current and future workflows) for housing, urban infrastructure, and service delivery systems

	- Defining functional requirements, including system modules such as project tracking, GIS mapping, data management, and reporting dashboards - Identifying and defining user roles, access levels, and governance structures for system use and management - Developing data requirements, including data types, standards, formats, ownership, and governance protocols - Defining system integration requirements with existing platforms (e.g., GIS systems, land information systems, county systems, housing databases) - Specifying non-functional requirements such as system security, scalability, performance, and usability - Defining GIS and spatial data requirements to support urban planning, infrastructure mapping, and decision-making - Developing reporting, monitoring, and analytic requirements aligned with program M&E frameworks - Prepare wireframes, mock-ups, and user interface concepts to illustrate system functionality - Validating requirements with stakeholders through workshops and consultations - Defining and documenting system requirements, including functional and non-functional specifications; including workflows, data architecture, and implementation road-map - Developing a scalability framework outlining how the system will accommodate more users, additional municipalities, expanded datasets, and new functional modules over time in line with the program's phased roll-out
Expected Outputs	Urban Observatory System Design requirements report
	○

3.2.3 Governance and Data Management Framework Design (Lump-Sum)

Objectives	**Propose the Establishment a sustainable and a functional governance structure**
Key Activities	○ Develop the institutional requirements for the establishment and management of the National Urban Observatory, including governance structures, roles and responsibilities across national and county levels, data custodianship and access protocols, coordination mechanisms, standard operating procedures, data governance frameworks, legal and policy compliance, and sustainable financing arrangements to support effective, secure, and coordinated operation of the platform. ○
Expected Outputs	Governance and Data Management Framework Design

3.2.4 Technical Specifications, Costing, and Procurement Documentation(Lumpsum)

Objectives	Prepare detailed technical specifications and comprehensive bidding documents to guide the procurement, development, and deployment of the Kenya Urban Observatory Platform, ensuring clarity, compliance, and alignment with national and international standards.
Key Activities	▪ Translate the platform architecture, functional and technical requirements, and implementation framework into detailed technical specifications suitable for procurement. ▪ Prepare comprehensive bidding documents, including: - Scope of work for system developers - Functional and technical requirements - Deliverables, timelines, and performance standards - Evaluation criteria for procurement ▪ Ensure alignment of technical specifications with Kenyan legal requirements, KNSDI standards, and international best practices for urban data platforms. ▪ Incorporate cost estimates and resource requirements to support informed procurement decisions. ▪ Validate documents with relevant stakeholders, including national agencies, municipal authorities, and technical experts.
Expected Output	Technical Specifications, Costing, and Procurement Documents

3.2.5 Technical Advisory, Quality Assurance Support, Capacity Building& Training (Time-Based)

Objectives	During System Design- Provide independent technical advisory and quality assurance support throughout the system development, testing, and initial deployment phases of the Kenya Urban Observatory, ensuring that the platform is implemented in accordance with approved designs, technical specifications, and relevant standards while maintaining quality, functionality, and performance.
Key Activities	o Provide technical advisory support to the implementing team during system development, testing, and initial deployment. o Review and validate system design, architecture, and development outputs for compliance with approved specifications and standards. o Conduct quality assurance assessments, including review of testing protocols, system performance, and data integrity. o Identify technical gaps, risks, and implementation challenges, and recommend corrective actions. o Support user acceptance testing (UAT) and provide

	recommendations for system improvements prior to deployment. o Prepare periodic technical advisory and quality assurance reports to inform decision-making.
	B. Capacity Building & Training
	The Consultant shall design and deliver capacity-building initiatives to ensure effective adoption, operation, and sustainability of the platform. Key activities shall include: • Develop and deliver structured training programmes for national and local stakeholders, supported by training manuals and tailored curricula. • Prepare comprehensive documentation, including user manuals, administrative procedures, and system maintenance guidelines. • Facilitate system handover through workshops, demonstrations, and knowledge transfer sessions. • Develop a sustainable capacity-building framework, including: - Tiered training approach (basic, technical, and strategic levels) - Alignment with national training institutions (e.g., Kenya School of Government, Kenya Institute of Surveying & Mapping) - Certification pathways to support long-term institutional capacity
	C. **Post-Deployment Support Framework** • Propose mechanisms for ongoing technical support and maintenance for the pilot urban areas. • Provide recommendations for institutional arrangements to ensure sustainability and continuous system improvement.
Expected Output	Technical Advisory and Capacity Building Reports

3.3 Conditions for the Execution of Key Tasks

1. The platform design, implementation framework, and all Phase I deliverables must comply with relevant Kenyan national strategies, standards (e.g., Survey of Kenya geospatial standards, e-Government standards), and legal frameworks (e.g., Data Protection Act) as detailed in Annex 1: Standards Reference Table. Alignment with

Kenya National Spatial Data Infrastructure (KNSDI) initiatives is essential, and compliance with these standards must be clearly demonstrated in all outputs, including system architecture, functional specifications, and governance frameworks.

2. The platform design and implementation requirements **must** adopt and promote open standards and open-source tools wherever feasible, including compliance with international interoperability standards, and the use of open-source geospatial technologies to enhance sustainability, reduce vendor lock-in, and ensure long-term scalability.
3. The analysis of stakeholder requirements, existing data, and institutional capacities (legacy systems) at the national level agencies and within the 5 selected urban areas* must be completed early in the project to inform the development of the platform design and data requirements.
4. The system design must prioritize interoperability, facilitate data linkage and share between relevant organizations and systems where appropriate. Use of open standards and open-source software is highly recommended to enhance sustainability and reduce recurring costs.
5. The design must be scalable to accommodate future expansion (more data layers, more users from additional municipalities/cities, additional functionalities) according to international technical standards. This scalability must be explicitly addressed in the design and verified in the expansion plan.
6. The technical specifications developed must be sufficiently detailed to guide the subsequent system development scope and functions.
7. Propose a structure for an Urban Data Platform Steering Committee, with representation from SDHUD, Ministry of Lands, ICT Authority, Kenya Space Agency, Council of Governors, and selected counties
8. Technical specifications developed must comprehensively define scope, functionalities, modules, integration requirements, performance standards, governance structures (including roles and decision-making mechanisms), and support SDHUD in formalizing a national platform champion through TORs, formal endorsement, or a dedicated task force.

4.0 Duration and Location of the Assignment

4.1 Duration of the Assignment

The assignment for the development and implementation of the Kenya Urban Observatory (Integrated National Urban Data Platform) shall be **twelve (12) calendar months**, commencing from the date of contract signing.

The work will be implemented in **two main stages**:

- **Stage I – System Design, Technical Specifications, and Procurement Preparation (Months 1–6):** This stage involves preparing all implementation-ready documentation, including system design requirements, technical specifications, governance frameworks, and procurement documents.
- **Stage 2 – Technical Advisory, Quality Assurance, and Pilot Deployment (Months 7–12):** The Consultant will provide technical advisory and quality assurance support to

the service provider/system developer during system development, testing, and initial deployment. This stage also includes pilot deployment in the five urban areas, system validation, and preparation of a strategic roadmap for national scale-up. This stage will be time-based Contract.

4.2 Location of the Assignment

The primary duty station for the assignment is Nairobi, where most coordination and technical activities will be based. The Consultant will be required to travel to the five pilot urban areas and other relevant locations as necessary to support implementation oversight and technical validation; Stakeholder consultations and engagement and System testing, deployment, and capacity-building activities

The Consultant's travel and on-site presence will be aligned with the system development and implementation timelines to ensure effective support throughout all stages of the assignment.

5.0 Reporting requirements and timelines for submission of deliverables

The overall assignment duration is 12 months. The Consultant will provide a detailed Gantt chart in the Inception Report covering all project activities, milestones, and deliverables within the provided timeline. The Gantt Chart will be updated regularly in progress reports to reflect assignment realities. The consultant shall propose a results-based monitoring framework with clear indicators aligned to key deliverables, including system uptime, user adoption rates, data completeness benchmarks, and training effectiveness. The consultant will provide the following deliverables, which will be subjected to review before final approval.

Table 1: **Reporting requirements and timelines for submission of deliverables for Stage 1 (Lump Sum Contract)**

Deliverable	**Description**	**Timelines of submission of Reports from contract commencement date**
Inception Report	Review of needs assessment, legal and policy frameworks, stakeholder mapping, and project initiation plan	Month 1
System Requirements Specifications	Detail system requirements specifications (SRS)	Month 2
Governance framework	Standard Operating Procedures (SOPs) roles, policies	Month 3
Draft Procurement Documents	Draft Bidding documents prepared based on the World Bank's Standard Procurement Documents (SPD)	Month 4
Draft Final reports	Draft reports with consolidated system design, technical specifications, architecture, governance frameworks, and supporting materials required to	Month5

	guide implementation and deployment of the platform.	
Procurement Documents	Complete Bidding documents prepared based on the World Bank's Standard Procurement Documents (SPD)	Month 5
Final Report & Handover Documentation	Submission of consolidated system design, technical specifications, architecture, governance frameworks, and supporting materials required to guide implementation and deployment of the platform.	Month 6

Table 2: **Reporting requirements and timelines for submission of deliverables for Stage 2 (Time-based Contract)**

S. No.	**Reports/Deliverable**	**Timeline for Submission**	**Copies**	
			Hard Copies	Electronic Copy**
1.	Monthly Progress Reports	Within six (6) calendar days after the end of the reporting month	3	2
2	Training Materials and Capacity-Building Documentation	Within one (1) month after commencement of stage2	3	2
3.	Technical advisory and quality assurance report	Month Three (3) and Six 6	3	2
4.	System Handover and Training Completion Report	Month Six (6)	3	2

All reports shall be addressed to the Client at the following address:

Principal Secretary
State Department for Housing and Urban Development
P.O. Box 30119-00100
6th Floor, Ardhi House, 1st Ngong Avenue
Nairobi, Kenya
Tel: +254-02-2729200

E-mail: www.housingandurban.go.ke
Attention: KUSP2 National Coordinator.

Upon submission of every report, the consultant is expected to make a presentation of the submitted report to the Client in a scheduled meeting. The acceptance of the report shall be recorded in the minutes of the meeting. All reports shall be accepted by written confirmation by Client.

5.0 Payment Schedule

The assignment shall be structured as a hybrid contract, comprising a Lump Sum component for Phase I (system design, technical specifications, and procurement documentation) and a Time-Based component for Phase II (technical advisory, quality assurance, capacity building, and support during system development and deployment).

This approach ensures efficient delivery of clearly defined outputs in Phase I, while allowing flexibility for advisory services in Phase II where the level of effort cannot be precisely determined in advance.

5. 1 Payment Schedule for Stage 1 (Lump Sum Contract)

Payment will be made in four instalments, subject to approval of deliverables as outlined below:
Table 3: Payment Schedule for Stage 1 (Lump Sum Contract).

Table 3: Payment Schedule for Stage 1 (Lump Sum Contract)

	Tranche	**Percentage of Contract Amount**	**Deliverable**
1.	First Payment	10%	Inception Report
2.	Second Payment	25%	1. Detailed system requirements 2. Standard Operating Procedures (SOPs)
3	Third Payment	35%	1. Draft procurement Documents 2. Draft report
4.	Fourth payment	30%	1. Final procurement documents 2. Final Report and Handover of Documentation.

5.2 Payment Schedule for Stage 2 (Time-Based Contract)

The Client shall pay to the Consultant remuneration that shall be determined on the basis of time actually spent by each Expert in the performance of the Services after the date of commencing of Services or such other date as the Parties shall agree in writing; and reimbursable expenses that are actually and reasonably incurred by the Consultant in the performance of the Services.

6.0 Minimum Requirement for Consulting Firm's Qualifications and Experience

The assignment requires a consulting firm or consortium of firms with a multi-disciplinary team of professionals possessing strong academic qualifications and extensive practical experience. The shortlisting criteria for the consulting firm shall include:

6.1 Core Business and Years in Business

The firm shall be registered/incorporated as a consulting firm with core business in ICT systems development, geospatial systems, data management, urban planning systems, or related fields for a minimum period of ten (10) years.

6.2 Relevant Experience

The firm shall demonstrate having successfully executed and completed at least two (2) assignments of similar nature, complexity, and in a similar operating environment within the last eight (8) years.

The assignments should demonstrate experience in areas in similar nature and complexity.

Details of similar assignments, including name and address of the clients, scope, value, and period, should be submitted with the proposal/Expression of Interest.

6.3 Technical and Managerial Capability of the Firm

The firm shall demonstrate in its submitted profile the requisite technical and managerial capacity to undertake the assignment

7.0 Team Composition, Qualifications and Experience of Key Experts

7.1 Stage 1

a) Team Leader / Project Management Specialist

i) A minimum of a Master's Degree in Management Information Systems (MIS), Systems Development, Computer Science, or a related field from a recognized university.

ii) A minimum of ten (10) years of general experience in managing large and complex IT or geospatial projects.

iii) A minimum of five (5) years of specific experience in project leadership roles involving system design, digital platforms, or e-government solutions, including multi-stakeholder coordination. Experience in Kenya or Africa will be an added advantage.

iv) Demonstrated experience in planning for scalability and phased implementation of digital systems.

b) Urban Planning Expert

i. A minimum of a Master's degree in Regional and Urban Planning or a related field.

ii. A minimum of ten (10) years' general experience in Kenyan urban planning processes, regulations,

iii. A minimum of five (5) years of specific experience in urban data systems.

iv. Valid registration with a professional body recognized in Kenya and holding a current practicing license.

c) **Legal/Policy (Data Governance) Expert**

i) A minimum of a Bachelor of Laws (LLB) degree from a university recognized in Kenya.

ii) A minimum of ten (10) years of experience aligning national frameworks with regional and global data governance standards.

iii) A minimum of five (5) years of specific experience in data protection laws, spatial data policies

iv) Valid registration as an Advocate of the High Court of Kenya with a current practicing certificate.

d) **Land Surveying Expert**

i. A minimum of a Bachelor's degree in Land Surveying or a related field from a recognized institution.
ii. A minimum of ten (10) years' experience in land surveying standards, land administration and mapping
iii. A minimum of five (5) years of specific experience in cadastral systems and geo spatial data acquisition in Kenya
iv. Licensed Surveyor or equivalent, with valid registration and practicing license in Kenya.

e) **GIS and Remote Sensing Expert**

i. A minimum of a diploma or Bachelor's degree in GIS, Geomatics, or a related field from a recognized institution.
ii. A minimum of seven (7) years of general experience in GIS application and processing.
iii. A minimum of five (5) years of specific experience in GIS applications, spatial database design (e.g., PostGIS), spatial analysis, and remote sensing data processing.
iv. Demonstrated proficiency in both open-source and commercial GIS platforms, and metadata standards.

f) System Architecture and Development Expert.

i. A minimum of a Bachelor's degree in Computer Science, Software Engineering, Information Systems, or a related field.
ii. A minimum of seven (7) years of general experience in system design and development.
iii. A minimum of five (5) years of specific experience in n designing scalable web-based system architectures and digital platforms.
iv. Demonstrated expertise in database management (SQL and NoSQL), programming (e.g., Python, Java, JavaScript), API development, and system integration.

i. **g) Data Scientist / Data Analyst.**

i. A minimum of a Master's degree in Data Science, Statistics, Economics, Mathematics,

or a related quantitative field.

ii. A minimum of seven (7) years of general experience in complex data analysis,

iii. A minimum of years 5 years of specific experience in data analysis, statistical modelling, and data management.

iv. Demonstrated experience in urban data analytics, indicator development, and/or urban growth modelling.

h) **Institutional Development and Capacity Building Expert**

i. A minimum of a Master's degree in Public Policy, Development Studies, Organizational Development, or a related field.

ii. A minimum of five (7) years of general experience in institutional capacity assessment and development.

iii. A minimum of years 5 years of specific experience in public sector institutional development and capacity building for system training

iv. Demonstrated experience in designing and delivering training programmes, particularly within government or public sector contexts.

i) **Financial Analysis / Costing Expert**

i) A minimum of a Master's degree in Finance, Economics, Accounting, or a related field.

ii) A minimum of ten (10) years of general experience in financial analysis and costing

iii) A minimum of five (5) years' experience in financial analysis and costing of large-scale IT or infrastructure projects.

iv) Demonstrated experience in preparing cost estimates for system development, including scaling and expansion phases.

7.2 Stage 2

a) Team Leader / Project Management Specialist

i. A minimum of a Master's Degree in Management Information Systems (MIS), Systems Development, Computer Science, or a related field from a recognized university.

ii. A minimum of ten (10) years of general experience in managing large and complex IT or geospatial projects.

iii. A minimum of five (5) years of specific experience in project leadership roles involving system design, digital platforms, or e-government solutions, including

b) System Architecture and Development Expert.

i. A minimum of a Bachelor's degree in Computer Science, Software Engineering, Information Systems, or a related field.

i. A minimum of five (5) years' experience in designing scalable web-based system architectures and digital platforms.

ii. A minimum of years 5 years of specific experience in similar assignment.

iii. Demonstrated expertise in database management (SQL and NoSQL), programming (e.g., Python, Java, JavaScript), API development, and system integration.

c) Institutional Development and Capacity Building Expert

i. A minimum of a Master's degree in Public Policy, Development Studies, Organizational Development, or a related field.
ii. A minimum of five (5) years' experience in institutional capacity assessment and development.
iii. A minimum of years 5 years of specific experience in similar assignment
iv. Demonstrated experience in designing and delivering training programmes, particularly within government or public sector contexts.

8.0 Estimated Time Inputs for Key Experts

Table 4: Estimated Time Inputs for Stage 1 (Lump Sum Contract)

S/No	Key and Support Staff	No.	Time-inputs (staff-months)
1	Team Leader	1	4
2	Urban Planner	1	6
3	Land Surveying	1	3
4	GIS and Remote Sensing	1	6
5	System Architecture & Development	1	6
6	Data Science/Analysis	1	4
7	Institutional Development & Capacity Building	1	2
8	Legal/Policy Analysis (Data Governance):	1	2
9	Financial Analysis/Costing:	1	1

Table 5: Estimated Time Inputs for Stage 2 (Time-Based Contract)

S/No	Key and Support Staff	No.	Time-inputs (staff-months)
1	Team Leader	1	3
2	System Architecture & Development	1	6
3	Institutional Development & Capacity Building	1	6

7.0 Management and Accountability

The State Department for Housing and Urban Development is the client for this assignment. The consulting firm will undertake the assignment under the direction of the KUSP2 Program

Coordinator, while the Head of Component 2 will oversee the day-to-day implementation of the consultancy.

8.0 Obligations of the Client

The State Department for Housing and Urban Development (SDHUD) will facilitate introductions to key stakeholders at the national level and within the selected five urban areas, and will provide access to relevant documents and data.

During Stage 2 of the assignment, the client will provide a suitable working environment and any additional support necessary for effective execution of the assignment.

9.0 Obligations of the Consultant

The consulting firm shall be accountable for the performance of its team members and the timely submission of deliverables as outlined in this Terms of Reference.

The Consultant shall be responsible for providing all resources necessary for the effective and efficient execution of the assignment, including computer equipment with requisite software, transport, accommodation, insurance, communication, and any other associated costs for its team.

The Consultant is expected to undertake all activities in a manner that ensures outputs are consistent with applicable professional standards and legal requirements.

10.0 Confidentiality and Data Ownership

The consultancy firm shall comply with all applicable laws and regulations of Kenya relating to data protection, privacy, confidentiality, and data ownership throughout the duration of the assignment. This includes adherence to the Data Protection Act and associated regulations. The firm shall ensure the confidentiality and security of all data and information obtained during the consultancy, including information relating to participating counties, at all stages of the assignment.

All data and information generated or accessed under this contract shall remain the exclusive property of State department for Housing and Urban Development and shall be treated as strictly confidential. The consulting firm shall not disclose, publish, or share any data or information arising from this assignment with any third party without the prior written consent of the State Department.

ANNEX 1

1. Standards Reference Table

Framework / Standard	***Specific clauses / sections***	***What the system must do***	***Review Criteria***
Kenya Data Protection Act (2019)	**s.25** (principles)	Enforce lawful basis tagging; purpose limitation; minimization; accuracy; storage limits; transparency; restrict cross-border transfers without safeguards/consent.	Config flags for lawful basis; data-flow diagram w/ purposes; minimization checklist; retention schedule.
	s.26–27 (data subject rights)	Provide UI/APIs to **inform, access, rectify, erase, object**; time-bound workflows & logs.	Rights handling SOP; ticket workflow; audit log samples; SLA timers.
	s.28–29 (collection & notices)	Prefer direct collection; if indirect, meet lawful basis; present **pre-collection notices** (purpose, recipients, security, contacts).	Notice templates; consent/notice registry; proof of display & versioning.
	s.30 (lawful bases)	Block processing if no basis set (consent/contract/legal obligation/vital interests/public task/legitimate interest/research).	Validation rules; basis-to-dataset mapping; exception reports.
	s.31 (DPIA)	Require DPIA for high-risk processing (e.g., large-scale location/profiling) and submission workflow to ODPC when needed.	DPIA register; risk scoring rubric; submitted DPIAs.
	s.32 (consent)	Record granular, revocable consent; propagate withdrawals to all downstream processing.	Consent ledger; withdrawal cascade test results.
	s.33 (children's data)	Age-gating; parental/guardian consent capture and verification.	Age-check control; guardian consent records.
	s.36 (automated decisions)	Flag/limit decisions **solely** by automation; provide human review/reconsideration path.	Decision flags; manual review queue; reversal metrics.
	s.38 (portability)	Export personal data in machine-readable formats (CSV/JSON) per request.	Export endpoints; sample export files; access controls.
Kenya National Spatial Data Infrastructure (KNSDI)	**Metadata & catalog** (ISO 19115/19139)	Attach ISO-compliant metadata to every layer; sync/publish to KNSDI catalog endpoint.	Metadata profiles; validation report; catalog sync job config.

	Interoperability (Open Geospatial Consortium)	Expose OGC services (**WMS/WFS/WCS**); adopt standard feature schemas to enable federation with KNSDI nodes.	Service endpoints; conformance tests; schema dictionary.
	Custodianship & sharing	Define dataset custodians; MoUs for sharing; update cycles & versioning.	Custodian registry; MoU templates; update calendar.
Survey of Kenya (SoK) geospatial specs	**Coordinate Reference system - CRS**	Default to **WGS84/UTM 36S (EPSG:32736)** and **WGS84/UTM 37S (EPSG:32737)**; support legacy **Arc 1960** grids + accurate transforms.	CRS policy; reprojection rules; transform parameters & tests.
	Georeferencing & accuracy	Apply SoK national mapping practices for digitization, georef, and positional accuracy (cadastral/topo layers).	Accuracy statements; QA/QC checklist; sample RMSE reports.
	Submission package	Require SoK-compliant package (CRS file, metadata, schema, accuracy note) for base-map/cadastral updates.	Submission template; ingestion validator; rejection logs.
ICT Authority (e-Government) standards	**Systems & Apps Standard**	Follow gov't SDLC, change control, security baselines, config management.	SDLC plan; change logs; hardening checklist.
	Networks Standard	Align hosting/interconnect with gov't network design, segmentation, perimeter controls.	Network diagrams; firewall/segmentation rules; pen-test report.
	Interoperability & GEA/eGIF	Use open APIs (REST), canonical data models, versioned interfaces; align with Government Enterprise Architecture.	API spec (OpenAPI); versioning policy; dependency map.
	Sector exemplars (as applicable)	Mirror approved sector frameworks (e.g., KHIS Interoperability) for governance & interface lifecycle.	Crosswalk to sector framework; governance RACI; lifecycle plan.