

TERMS OF REFERENCE (TOR)

INDIVIDUAL CONSULTANCY SERVICES FOR CUSTOMER AND ASSET MAPPING FOR KAKAMEGA WATER AND SANITATION COMPANY

Population Services International (PSI) is in partnership with Kakamega Water and Sanitation Company (KACWASCO) looking for an individual consultant to support Customer Identification Survey and asset mapping. Through the project funded by Xylem with an objective to improve operational efficiency by reduction in Non-Revenue Management and increasing service access.

A. Background

Kakamega County Water and Sanitation Company Limited (KACWASCO) is mandated to provide water and sanitation services within Kakamega County. The Company operates a piped water network, a sewer reticulation system and a range of water points including intakes, boreholes, springs, storage tanks and water kiosks.

The Company last carried out a comprehensive GIS mapping exercise in 2013/14, when it had 8,400 registered connections. Since then, the customer base has grown to 38,511 accounts (as at April 2026). Of these, 30,770 connections have been mapped with coordinates, leaving 7,741 registered connections without any spatial reference. Concurrently, substantial pipeline extensions and upgrades have been constructed by the Company and by development partners; these are not fully reflected in the existing asset database.

The current position of the asset and customer databases is summarized below:

Measure	Position	Comment
Registered customer accounts (April 2026)	38,511	SULIS/CIS customer database
Connections mapped with coordinates	30,770	Built up since 2013/14
Registered connections without coordinates	7,741	Unmapped water & sewer connections
Water pipeline mapped	463 km	Excludes recent extensions
Sewer pipeline mapped	24.75 km	Excludes recent extensions
Recorded coverage area	348.96 km ²	Expected to increase once extensions are mapped

B. Specific objectives of assignment

The overall objective is to establish a complete, accurate and geo-referenced register of KACWASCO's water and sewer assets and customer connections, and to hand over to the Company the tools, procedures and trained staff required to keep that register current.

The specific objectives of the consultancy are to:

1. Establish the true water and sanitation coverage area of the Company.
2. Geo-reference the 7,741 registered connections that currently have no coordinates and reconcile them with the SULIS/CIS billing database.
3. Verify the 30,770 connections already mapped and correct any errors found.

4. Map all gravity and rising mains, distribution pipelines and off-takes, including extensions not previously recorded.
5. Map all water points, including intakes, boreholes, springs, storage tanks, appurtenances and water kiosks.
6. Map the sewer reticulation system and manholes.
7. Record the status, size, material, class, year of installation and condition of pipes and appurtenances.
8. Identify and report water losses arising from theft, leaks and bursts, and refer them for immediate repair.
9. Reconcile disparities between field data and the existing GIS and SULIS/CIS databases.
10. Train designated KACWASCO staff in spatial data collection, validation and GIS maintenance so that the database remains current after handover.

C. Scope Of Assignment

The scope covers the following ten components. Most of the work is verification and updating of existing records rather than mapping from a blank sheet:

1. Water network mapping – gravity and rising mains, distribution pipelines and off-takes of assorted sizes.
2. Water point mapping – intakes, boreholes, springs, storage tanks, appurtenances and water kiosks.
3. Sewer network mapping – sewer reticulation system, manholes and connected pipe run.
4. Customer connection verification (CIS) – geo-referencing of the 7,741 unmapped connections and verification of those already mapped, with matching to SULIS/CIS account and meter numbers.
5. Asset attribute capture – status, size, material, class, year of installation and condition.
6. Water loss identification – recording of theft, leaks and bursts, with same-day referral for repair.
7. Data reconciliation – matching field data against the existing GIS layers and the SULIS/CIS customer and billing database.
8. Analysis of disparities – investigation and resolution of differences between the datasets according to agreed rules.
9. Reporting – findings, quality statistics, NRW hotspot identification and recommendations.

Capacity building and handover – training of Company staff, delivery of standard operating procedures, and transfer of all field equipment and data systems

D. Roles of the Consultant

The Consultant shall be responsible for the full technical delivery of the assignment, including but not limited to:

- Preparing and submitting an inception report covering objectives, methodology, zone and route allocation, form design, equipment configuration and reporting formats.
- Designing, testing and deploying offline-first mobile data collection forms for each asset class (pipeline, water point, manhole, customer connection).

- Training enumerators and field supervisors in asset identification, GPS capture, photography standards, attribute recording and safety.
- Conducting a pilot in one zone and refining forms and procedures before full deployment.
- Deploying field teams to systematically visit every water and sewer asset and every customer connection within the assigned zones.
- Enforcing capture-time validation (minimum GPS accuracy of 5 m, mandatory fields, dropdown lists, mandatory photograph).
- Performing daily supervisor spot-checks (5–10 % of records), same-day re-visits of flagged records, and adjudication of conflicts.
- Running a repeatable data-cleaning pipeline that de-duplicates, filters by accuracy, reconciles against SULIS/CIS and existing GIS layers, and imports validated data into the master QGIS database.
- Escalating leaks, bursts and suspected illegal connections to the relevant Operations and Maintenance office on the same day.
- Preparing the updated GIS database, verified customer connection layer, asset register, reconciliation report, NRW hotspot analysis, final technical report and standard operating procedures.
- Training designated KACWASCO staff and handing over all equipment (phones and tablets), forms, cleaning procedures and documentation.

E. Deliverables and Timelines

The assignment will be spread over a **three-month period** (approximately 12 weeks).

Fieldwork will be concentrated in Weeks 3–9, with Mondays reserved for data review and planning.

F. Qualification and experience

The individual consultant shall demonstrate:

- A minimum of five (5) years' proven experience in GIS mapping, asset inventory and customer database verification for water utilities or similar infrastructure entities.
- Successful completion of at least three (3) comparable assignments involving field GIS data collection, mobile data capture platforms and reconciliation with billing/customer information systems within the last five years. Reference letters or completion certificates must be attached.
- Demonstrated expertise in open-source GIS tools (QGIS, QField/Mergin Maps) and offline mobile data collection platforms (KoBoToolbox, ODK Collect or equivalent).
- Familiarity with Kenyan water sector institutional arrangements, Non-Revenue Water concepts and the operational realities of county water service providers.
- Ability to supply, configure and hand over field devices (smartphones and tablets) as part of the assignment.

G. Reporting and supervision:

- The Consultant will report to the Project Technical Advisor, WASH, who will sign off authority on deliverables.
- Day-to-day technical liaison will be with the Technical Services Manager, KACWASCO. A Project Steering Committee chaired by the Managing Director will provide strategic oversight, resolve escalated issues and monitor progress against the approved work plan.

- Weekly progress and quality reports shall be submitted every Monday. An inception report is due at the end of Week 1. The final draft report is due at the end of Week 11 and the final report, presentation and all handover items at the end of Week 12.

H. Evaluation Criteria

Technical evaluation will be based on a point - system out of a **maximum 80**. Only proposals that score at least 70 points at this stage of evaluation will proceed to the next stage. Scores will be awarded as per the matrix below:

No.	Evaluation Criteria	Max Points
1	Understanding of the assignment / interpretation of the TORs and proposed methodology	20
2	Relevant experience – evidence of at least three similar consultancy assignments in the last five years (attach references)	20
3	Qualifications and experience of the proposed key personnel (Lead Consultant, GIS Integration Officer, Field Supervisors)	15
4	Work plan, team deployment strategy, quality assurance approach and risk mitigation	15
5	Approach to data reconciliation with CIS/SULIS and sustainability of the GIS database after handover	10
	TOTAL	80

I. Technical proposal

Bidders shall submit a technical proposal that addresses, as a minimum, the following:

- Clear understanding of the assignment / interpretation of the TORs and the methodology to be used for field data collection, validation, cleaning and GIS–CIS reconciliation.
- Evidence of undertaking similar consultancy work during the last five years; attach at least three (3) reference letters or completion certificates.
- Detailed curriculum vitae showing relevant qualifications and experience.
- Description of the mobile data collection platform, accuracy and validation controls, and the data-cleaning / harmonisation pipeline.
- Quality assurance framework, including capture-time controls, supervisor spot-checks and conflict adjudication rules.
- Approach to sustainability – how the Company will maintain the database after handover (forms, procedures, training, equipment).
- Risk analysis and mitigation measures.

J. Financial Proposal

Provide a competitive fixed fee in **Kenya Shillings (KES)** to deliver the entire assignment, inclusive of all professional fees, field allowances, equipment (phones and tablets that will revert to KACWASCO), transport and all applicable taxes.

K. Application Guidelines

Interested applicants should apply **online** by submitting the technical and financial proposal as single file in PDF Format by **28th August 2026 at 0900hrs EAT**. Only shortlisted candidates will be contacted.

PSI Regional Office (Nairobi) reserves the right to accept or reject any proposal and to annul the procurement process at any time prior to contract award without thereby incurring any liability to the affected bidder(s).