

Terms of Reference for Developing Digital Revenue Management Software for Online Billing, Accounting System and Preparation of GIS Based Asset Management system for the Chhampi Water Supply System

1. Background

Chhampi Water Supply System, an integrated drinking water supply system, is being revived and upgraded with the tripartite technical and financial collaboration among the Centre for Integrated Urban Development (with financial and technical assistance from WaterAid Nepal), Godawari Municipality and Chhampi Water and Sanitation Users Committee (WSUC). This system will serve more than 1,200 households of ward number 9 of the Godawari Municipality with safe and affordable drinking water. The system will be operated and maintained by the Chhampi WSUC under the direct supervision of the ward office. As a part of the institutionalization of the system, an integrated, secure and user-friendly digital application to strengthen revenue management, billing and invoicing, financial bookkeeping, customer management, payment tracking, reporting, and infrastructure asset management of the water supply system is intended to be developed.

The proposed system will replace and significantly reduce manual and fragmented processes by establishing a centralized digital platform accessible through web browsers and optimized for Android-compatible devices. The system will provide multi-user access with role-based permissions, maintain transaction histories and audit trails, and support management decision-making through dashboards and analytical reports.

In addition to revenue and financial management, the system will incorporate a **GIS-enabled Asset Management Plan (AMP)** to spatially manage water supply infrastructures, track asset condition and maintenance, and support long-term asset replacement and investment planning.

2. Rationale

Water and Sanitation User Committees (WSUCs) play a vital role in providing safe and reliable water services at the community level. However, many user committees still rely on manual record-keeping and cash-based systems, which often lead to errors, delays, lack of transparency, and weak accountability. Inefficient revenue management reduces the capacity of WSUCs to maintain infrastructure, plan future investments, and deliver quality services.

A digital billing and accounting system will help WSUCs automate billing, track payments, and generate transparent financial reports in real time. This will not only strengthen accountability and trust with users but also improve financial sustainability, enabling WSUCs to deliver better and more equitable and timely services.

Moreover, easy access to the latest information of the water supply system components help track their condition and often lead to quick action in terms of the maintenance and other necessary responses in order to maintain the smooth and flawless service of delivering safe and adequate water to the users.

3. Overall Objective of the Assignment

The key objective for this assignment is to engage a qualified software development firm/individual consultant to design, develop, test, deploy and provide maintenance support for an integrated **Digital Revenue Management and GIS-Integrated Asset Management System** for the water supply system.

Specific Objectives

1. To prepare a GIS-based asset management system.
2. To develop a payment system by linking an online payment system, streamlining billing, revenue collection, and financial record-keeping for the CWSUC.
3. To ensure transparent financial reporting and reduce risks of mismanagement.
4. To strengthen accountability by providing real-time access to revenue and expenditure data.
5. To enhance operational efficiency by automating routine financial and service-related processes.
6. To generate data-driven insights for better planning, decision-making, and long-term sustainability of water services.
7. Enable secure access through web browsers and Android-compatible devices.
8. Establish secure backup, recovery and disaster recovery mechanisms.
9. Prepare and operationalize a comprehensive Asset Management Plan.
10. Establish a scalable platform capable of supporting additional users, customers, transactions, assets and modules in the future.

Software features

The software should have the following features

- a. Assets inventory
 - Managing system of office stock and materials.
 - Tracking provision of purchase, sales, issue, return, and minimum stock alerts.
 - The ledger system applies stock valuation methods (FIFO, LIFO, and Weighted Average).
 - Inventory related reports on closing stock and available stock.
- b. Meter reading application:
 - Collects customer information meter readings via mobile app (Android)
 - Automatically calculates water consumption charges/ tariff (Mahasul) as per the defined tariff setup.
 - Data download/upload system.
 - Online and offline meter reading facilities
- c. Billing:
 - Generates bills base on consumption/as per tariff rates
 - Supporting system having penalties, rebates and adjustments.
 - SMS notifications at the time of billing and reading
 - Reports related to customer statements, past unit consumption and payment history.
- d. Accounting:
 - Tracks daily collections, deposits, expenses, and revenues. •
 - Generates standard reports such as Trial Balance, Ledger, Balance Sheet, and Income Expenditure.
 - Integrating system with billing and accounting.
- e. Customer Relationship Management:
 - Dedicated Android mobile app (for admin/wsuc)
 - Customer information and notification.
 - Registration and tracking of customer complaints, service requests, and feedback.

- f. Water Quality, NRW, Early Warning and KPI Monitoring
 - Daily water quality monitoring of required parameters as per National Drinking Water Quality Standard, 2079 BS, with NWASH linkage.
 - Integration of newly constructed water supply systems and school structures in Lele, Kalitar, Devichour, Dukuchhap, and Chhampi Water Supply into the NWASH platform. This process is being carried out in close coordination with CIUD, WSUC, and respective Ward offices to ensure timely data entry, verification, and alignment with municipal WASH planning Monthly NRW monitoring, reporting and trend analysis.
 - Early warning system for water quality and quantity/service availability.
 - Monthly KPI monitoring and performance reporting as per applicable Water Supply and Sanitation procedures.
 - Integrated dashboard/ reporting system for water quality, NRW, alerts and KPI performance, with provision to share relevant information with WSUC members.
- g. GIS-based assets management system
 - The system shall provide an interactive GIS map interface displaying all utility assets, spatial coordinates, navigation routes, pipeline layers, and spatial customer distribution.
 - The system shall maintain comprehensive attribute registries for every asset containing: Asset ID, Name, Category, Description, Serial Number, Purchase Date, Purchase Value, Supplier, Geolocation Coordinates, Location Name, Department/Custodian, Warranty Details, Current Condition Maintenance History, Disposal Status, and Attachment Repository.

4. Scope of work

- Develop Android base software at the Chhampi WSUC office and mobile application.
- Develop separate log in access in mobile application for administrator and consumers.
- Support to enter/ import data of water users (consumers) at the initial stage after installation of software.
- Provide training to representatives/ staffs of WSUC to operate software and mobile application.
- Linking WSUC system in online payment portal/ wallets.
- Provide remote support for addressing trouble shooting and resolve software related operational problem for a year.

5. Software Development Methodology

The service provider shall propose an appropriate software development methodology, preferably an iterative/agile approach with regular Client review.

The implementation should include the following stages:

- Inception;
- Requirement validation;
- Software Requirement Specification (SRS) preparation;
- User Interface/User Experience design;
- System architecture and database design;
- Prototype development;
- Module development;

- Integration;
- Testing;
- Data migration;
- User Acceptance Testing;
- Deployment;
- Training;
- Handover;
- Warranty and maintenance.

The Client shall have opportunities to review and approve key outputs at each major stage

- 6. Deliverables: Capacity development with partners and WSUC staff is strengthening the regular operation and maintenance of water supply systems. A dedicated software system has been designed to manage key deliverables as mentioned here in table below, with updated system information integrated into the NWAASH platform of Godawari Municipality for effective planning and monitoring**

Deliverable	Description
SRS	Software Requirements Specification
System Architecture	Technical architecture and technology stack
UI/UX Design	Approved interface designs
Source Code	Complete application source code
Database	Database schema/scripts and data dictionary
Software	Fully functional application
Android App	Android-compatible interface/application as agreed
API	Integration ready APIs and documentation
GIS based Asset Management System	GIS-integrated asset management module
User Manual	End-user instructions
Technical Manual	Technical administration and maintenance
Style Guide	UI/UX design standards
Test Reports	Unit, integration, system, security, performance and UAT reports
Training	User/admin training
Deployment	Production deployment
Backup System	Backup and recovery setup
Final Handover Package	All technical, administrative and operational documentation

7. Warranty and Maintenance Support

The selected service provider shall provide a minimum one-year warranty and maintenance support period following final system acceptance. The warranty shall include:

- Bug fixing;

- Technical support;
- Security patches;
- System updates;
- Backup support;
- Performance troubleshooting;
- Database support;
- Critical issue resolution;
- Corrective maintenance.

8. Time frame:

The development and installation should be completed within four months from the date of agreement with the selected vendor. For Business Requirement Document (BRD) please contact CIUD Office.

Interested firms and individuals are requested to submit the proposal -- both Technical and Financial separately in the sealed envelopes by 1st September 2026. Please drop your proposal at CIUD Office. Proposal submitted after the aforementioned date and not meeting the terms and condition will be rejected.



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