1.0 Introduction

In an era defined by technological advancements and the pursuit of efficiency, it is imperative that our essential public services keep pace with the evolving landscape. The management and billing systems of water boards, responsible for providing a lifeline resource to communities, are no exception. Traditional manual methods for water board management and billing have proven to be cumbersome, error-prone, and resource-intensive. To address these challenges and embrace the opportunities offered by automation, we propose the implementation of an Automated Water Board Management and Billing System.

This proposal outlines a comprehensive approach to revolutionize the way water boards operate, transforming them into dynamic, streamlined, and customer-centric entities. By harnessing the power of cutting-edge technologies, we envision a system that not only enhances operational efficiency but also enriches customer experiences and fosters sustainable water resource management.

With our proposal, starting with the Installation and Setting-up of Customized GPS Mapping Server Platform and associated software framework (Phase I), we aspire to lay the foundation for a modernized water management approach that aligns with the demands of the digital age. By adopting this system, the water board can position itself at the forefront of innovation, ensuring a reliable and equitable water supply for all customers while simplifying administrative tasks and contributing to the sustainable use of water resources.

1.1 Objectives

The main objectives of the project will be to:

i. To increase revenue collection and reduce revenue leakage;
ii. To improve transparency and accountability in revenue collection and management;
iii. To provide real-time data and insights to decision-makers;
iv. To streamline revenue collection processes and eliminate manual errors and inefficiencies;
v. Provide reports and dashboards for monitoring of revenue collected from each revenue source and for reconciliation purposes on a real-time basis. Such reports should be accessible in a very secure manner;
vi. Minimize or eliminate cash handling at The Board and other revenue collection points;
vii. Populate and revalidate a comprehensive customer database;
viii. Provide customers with convenient and secure cashless payment options for the different services provided across different providers including online payments, mobile money platforms, digital kiosks, banks, and agents;
ix. All collections through this system would be banked to The Board Revenue Collection Account;
x. The system will also among other things comply with all national and

international standard and allow periodic adjustments as may be required by the Board;

xi. To enhance customer satisfaction by providing timely and accurate bills. Also allow customer to track progress of submitted complaints to the Board up to resolution;

xii. To precisely map every customer using GPS Coordinates;

xiii. To be able to map supply pipe networks of the Board;

xiv. Be able to remotely monitor reservoirs;

xv. To efficiently monitor and account for raw materials storage and usage from supply to use;

xvi. To provide a centralized Human Resource feature for managing employees' information, such as personal details, employment history, and performance evaluations.
xvii. Any need in the organisation could be implemented after mutual discussions;

2.0 Scope of Work

The scope of work for the project will include(but not limited to):

- Conducting a needs assessment to identify the requirements for the system
- Provide guidance and support on any pre implementation activities that The Board needs to undertake in readiness for the rollout of the solution
- Developing a project plan that includes timelines, budgets, and resource requirements
- Implementation of a revenue collection solution meeting the unique requirements of the different revenue sources of The Board
- Integrating the system with existing systems and processes
- Intensive Staff Training on how to use the system
- Conducting pilot tests and collecting feed back from users
- Detailed Support and maintenance of the solution
- Rolling out the system across the state on phase-by-phase- basis

3.0 Project Overview

The key components of the proposed system will include (but not limited to):

i) **Water Management System**: A centralized platform to monitor and manage the entire water supply network efficiently.
ii) **Billing and Payment Processing**: This component will enable the Board to generate and manage accurate bills, send notifications to customers, and process payments online. Thus, automating the billing process and eliminating manual errors. The system will minimize revenue leakage by providing accurate bills and timely notifications to customers.
iii) **Customer Management, Billing and Support**: A system to improve customer engagement, billing processes, and payment collection. It will allow customer be able to make payment from the comfort of his living room, and monitor his payment history. Also be able to track his complaints to the Board. The automated customer interaction and billing system will streamline processes, leading to improved customer service. Thus, enabling privilege staff to manage customer accounts, including customer information, billing histories, and payment records.
iv) **Asset Management System**: Implementation of an asset management system to track and manage water infrastructure assets and consumables (raw materials). Also

be able to manage suppliers and the whole supply chain.

v) **Data Analytics and Decision Support**: Utilization of advanced data analytics techniques to gain insights into system performance and optimize resource allocation. This component will enable the Board to analyze billing data, identify trends and patterns, and generate reports that will inform decision-making. This will help to identify areas of revenue leakage and opportunities for revenue growth. Therefore, enable decision-makers to make informed decisions.

vi) **Human Resource Management (HR) Module**:

Your employee data at your fingertips. Simplify and streamline your HR data, helping you centralize all your employee data, no matter where they are located. No need to go through

Spreadsheets, or piles of paperwork, to access file or document attached to an employee, you can enjoy fast and efficient access at your finger tips, through selection and filter criteria which you can customize depending on your search criteria. This module is able to populate an up-to-date payroll list at anytime.

(Vii) Geographic Information System (GIS): This module will enable the Board to create an internal GIS on both it customers and supply pipe networks, to easily pin point location of customer or pipe of interest. The power that an internal GIS will give to the Board cannot be overemphasize – from easily identifying illegal/bypass connections, task for rescheduling, etc

(Viii) SCADA System: A supervisory control and data acquisition system to collect real-time data from sensors and control devices.

(ix) Remote Sensors and Telemetry: Installation of remote sensors at critical points in the network to monitor water levels, flow rates, pressure, and water quality.

(x) Communication and Integration: Development of a robust communication network to facilitate data transmission and system integration, with other components of the Board

(xi) Security: Implementation of a comprehensive cyber security measures to protect the system from cyber threats.

These components provide a foundational framework for a comprehensive Automated Water Board Management System.

4.0 Project Expected Benefits

I. **Increase Revenue Generation**
II. **Full Utilization of Existing Workforce**
III. **Improved Water Supply:** The automated water system will enhance the efficiency of the water supply network, leading to better water availability and increased customer satisfaction.
IV. **Reduced Water Losses**: Leak detection technologies and real-time monitoring will help identify and address leaks promptly, reducing water losses.
V. **Enhanced Asset Management:** The asset management system will ensure optimal maintenance scheduling, prolong asset life, and minimize downtime.
VI. **Data-Driven Decision Making:** Advanced analytics will provide valuable insights into system performance, enabling data-driven decision making.
VII. **Training and Capacity Building**: Train the staff of Katsina State Water Board on using and maintaining the automated system. Thus, foster a culture of continuous improvement and innovation within the organization.

4.0 Needs Assessment and Implementation Planning

- Conduct a thorough assessment of the current water supply system in Katsina State.
- Identify key points, challenges, and opportunities for improvement.
- Develop a detailed project plan, including timelines, budget, and resource allocation.
- Design the architecture of the automated water system, considering the specific needs of Katsina State.
- Develop and configure the billing system, payment processing, data analytics platform, and asset management system.
- Implement a robust communication network to ensure seamless data transmission.
- Integrate the various components of the automated water system into a cohesive system.
- Conduct rigorous testing and optimization to ensure the system's reliability and performance.
- Train the staff of the Board on using and maintaining the automated system.