PMS & WQMIS

PROJECT MONITORING SYSTEM & WATER QUALITY MONITORING INFORMATION SYSTEM

STATE MISSION MANAGEMENT UNIT
AMRUT KERALA

Table of CONTENTS

INTRODUCTION

Digital transformation has become a cornerstone of modern Urban Governance, particularly in the domain of Project monitoring and Water management. In Kerala, a comprehensive initiative has been launched to revolutionize Urban Water Management through digital solutions, covering critical areas such as sewage and septage management, water body rejuvenation, green space development, and water quality monitoring. This transformation initiative represents a strategic shift from traditional manual processes to an integrated digital ecosystem, designed to address the growing complexities of urban water management while ensuring sustainable development. The initiative particularly focuses on implementing advanced digital solutions across all 93 Urban Local Bodies in Kerala, marking a significant step toward smart and efficient urban governance.

OBJECTIVES

To drive digital transformation in **Urban Water Management, Sewage and Septage Management, Water Body Rejuvenation, Green Spaces development, Water Circularity, and Water Quality Monitoring** under the Blue-Green Initiative.

To re-engineer workflows, this project eliminates inefficiencies, automates processes, and enables **real-time tracking** of project execution and water quality metrics. **Real-time analytics and centralized digital platforms** enhance **transparency, accountability, and data-driven decision-making**.

To ensure **streamlined operations, optimized resource utilization, and a user-centric approach**, setting a benchmark for **sustainable and efficient urban governance** within defined timeframes. Additionally, the system facilitates **advanced water quality monitoring**, enables **early detection of contamination**, ensures **regulatory compliance**, and reduces monitoring costs while promoting ecological balance and safe water standards.

To ensure that the stakeholders and community members can access data through a centralized data-driven system for secure, transparent and reliable data.

SALIENT FEATURES

Centralized Data Management System

- Advanced unified dashboards for multi-dimensional project tracking (timeline, cost, deliverables, milestones)
- Integration capabilities with diverse data sources, surveys, and geospatial systems
- Automated reporting tools with customizable insights

Digital Transformation Infrastructure

- Streamlined data analytics processes with optimized approval workflows
- Monitoring of project progress and water quality metrics
- Centralized digital platform eliminating data silos and enhancing stakeholder collaboration

Advanced Analytics & Decision Support

- Predictive insights enabling data-driven decision-making
- Analysis of water quality parameters
- Integrated geospatial monitoring for physical progress and environmental impact assessment

Stakeholder Engagement & Accessibility

- Role-specific interfaces for regulators, researchers, and public users
- Citizen engagement applications for water quality reporting and data access
- Mobile-optimized dashboards with collaborative tools
- Seamless Data Integration & Efficiency linked to other relevant official Government websites ensures real-time data exchange, reducing redundancy and improving decision-making efficiency.
- The connection to various relevant public portals ensures citizens tracking project progress, access relevant information, fostering trust and accountability.
- Enhanced Service Delivery & Sustainability by Integrating with other official systems enabling better resource allocation, compliance monitoring, water connection requests, water metering data sets, requests for septage vehicles and allocation, complaint registering and troubleshooting, and long-term sustainability planning, ultimately benefiting the broader community.

SALIENT FEATURES

Security Framework

- **Authentication and Access Control:** Role based access control with strong password policies and session management with secure timeout policies (automatic logout for inactive users), Bute Force protection (Captcha after multiple failed login)
- **Data Protection:** End-to-end encryption for sensitive project data, Secure backup systems and Cloud hosting
- **Infrastructure Security:** Secure development, staging, and production environments
- **Compliance and Documentation:** Employee security training programs and Standard Operating Procedure (SOP)

Sustainability Framework

- Environmental monitoring aligned with Sustainable Development Goals (SDGs)
- Paperless processes and green technology integration

Standardization & Process Excellence

- Implemented SOPs and templates for operational consistency
- Digital collaboration tools and shared project repositories
- Streamlined approval processes reducing operational bottlenecks

Quality Management & Monitoring

- Automated project audit trails ensuring transparency and accountability
- Historical data analysis capabilities
- Progress and delays in project implementation for effective intervention
- Alert systems for water quality parameters

ARCHITECTURE OF THE PROJECT

Our comprehensive solutions have revolutionized Government operations through digital transformation.

The Comprehensive solution has two subcomponents:

1. **Project Management & Monitoring System**
2. **Water Quality Monitoring System**.

PROJECT MANAGEMENT & MONITORING SYSTEM

The Project Management & Monitoring sub-system comprises a comprehensive web application integrated with a Power BI dashboard, enabling end-to-end project oversight and real-time decision-making capabilities.

Process Re-engineering Highlights

- Digitized the entire project lifecycle management process, eliminating manual tracking and paper-based workflows
- Implemented automated milestone tracking and alert systems
- Established advanced collaboration capabilities across departments
- Created centralized document management and version control to prevent data loss and duplication
- Integrated data analytics for predictive project health assessment

Impact and Improvements

1. Efficiency Gains:
    - Reduced project initiation time by 80%
    - Decreased documentation processing time by 80%
    - Automated report generation, saving approximately 20 hours per week
2. Cost Benefits:
    - Reduced operational costs through paperless workflows
    - Resource allocation inefficiencies are minimized

- Reduced the time for getting details and documents from conventional records

3. Quality Enhancement:
    - Improved project delivery accuracy through standardized processes and time frames
    - Enhanced data accuracy through automated validation
    - Reduced error rates in project reporting by 90%

WATER QUALITY MONITORING SYSTEM

The Water Quality Monitoring subsystem includes a **Mobile application** for field data collection, a **Web application** for central monitoring and control, and a **Power BI dashboard** for analytics, reporting, and alert system for quality violations.

Process Re-engineering Highlights

- Transformed manual data capturing processes into digital workflows
- Implemented GPS-based sample collection tracking
- Introduced automated quality parameter analysis and interpretation
- Established advanced monitoring and alert mechanisms
- Created data-driven decision support system

Impact and Improvements

1. Service Delivery:
    - Digital water quality monitoring across locations
    - Immediate alert generation for quality deviations
    - Reduced response time to quality issues by 70%

ARCHITECTURE OF THE PROJECT

2. Data Analysis:
    - Real-time analytics for trend identification
    - Predictive modelling for quality parameters
    - Historical analysis for seasonal variations
    - Automated compliance reporting
3. Operational Excellence:
    - Mobile App based water quality data capturing & Surveillance
    - Improved sample collection efficiency by 80%
    - Enhanced resource utilization through route optimization

DIGITAL TRANSFORMATION ACHIEVEMENTS

Integration and Innovation

The project demonstrates significant technological innovation through:

- Seamless integration of mobile and web technologies
- Real-time analytics and visualization capabilities
- Advanced monitoring and alerting mechanisms
- Cloud-based infrastructure for scalability
- Cross-platform accessibility and responsiveness

Measurable Outcomes

1. Enhanced Governance:
    - Improved transparency and accountability
    - Better compliance with regulatory requirements
    - Enhanced decision-making capabilities
2. Stakeholder Benefits:
    - Increased citizen satisfaction through improved service delivery
    - Enhanced employee productivity and job satisfaction
    - Better interdepartmental collaboration
3. Sustainability:
    - Reduced paper consumption
    - Optimized resource utilization
    - Lower carbon footprint through reduced travel
    - Improved time management

BENEFICIARIES

- AMRUT Mission
- All 93 Urban Local Bodies in Kerala
- Government Authorities and Departments
- Urban Residents and Communities
- Project Stakeholders and Contractors
- Environmental Academics and Researchers
- Trainees and Students

IMPACTS IN TERMS OF TIME & COST

- **Efficient Project Monitoring, Early Bottleneck Identification and Faster Issue resolution:** Automated tracking reduced manual reporting, accelerating decision-making and execution. It highlighted inefficiencies early, reducing delays and wastage of time. Advanced monitoring enabled early detection of issues and swift rectification of water quality issues and proper remediation
- **Streamlined Approvals:** Digitized workflows minimized bureaucratic delays, ensured faster clearances and seamless communication.
- **Improved Data Accessibility:** Centralized platforms provide instant access to project progress, funding details, and water quality data, eliminating manual data retrieval.
- **Optimized and Data-Driven Resource Allocation:** Real-time updates and predictive analytics optimized manpower, equipment, materials usage and prevented underutilization or overuse. It enhanced planning, reduced unnecessary expenditures, optimized fund utilization and prevented redundancy.
- **Reduced Downtime & Emergency Procurement:** Proactive issue detection minimized the idle resources and avoided last-minute disruptions.
- **Sustainability gains** through improved water circularity and resource management lower environmental and operational costs.
- **Advanced fund tracking and Automated expenditure alerts:** Ensures timely disbursement, preventing delays and mismanagement. Prevent overspending and cost overruns.
- **Digitization empowers beneficiaries**, enabling efficient, cost-effective urban development project management in line with AMRUT’s mission.

SITUATION BEFORE THE INITIATIVE

- **Manual and Fragmented Systems**: Reliance on spreadsheets led to data inconsistencies, delays in data collection, and inefficiencies in reporting and decision-making.
- **Delayed Issue Detection**: Ineffective monitoring causes slow responses to project issues, fund mismanagement, and water contamination.
- **Inefficient Fund Disbursement**: Traditional tracking systems lacked transparency & accountability, leading to delays, misallocation, and difficulty in monitoring fund flow.
- **Resource Allocation Bottlenecks**: Absence of automated tracking led to frequent project delays, cost escalations, and inefficient resource use.
- **Poor Coordination**: Disjointed workflows among ULBs, contractors, and government bodies caused duplication of efforts and misaligned priorities.
- **Lack of Predictive Insights**: Manual processes resulted in excessive labour and material usage, increasing operational inefficiencies.
- **Inadequate Water Quality Monitoring**: Disorganized data collection and reporting hindered compliance, delayed responses to contamination, and posed public health risks.
- **Limited Transparency & Accountability**: The absence of a centralized system obstructed efficient decision-making and sustainable development.

SITUATION AFTER THE INITIATIVE

AMRUT Kerala recognized the urgency of a centralized, advanced system to automate project monitoring and water quality management. This initiative aimed to enhance transparency, accountability, improve resource utilization, and ensure better decision-making, aligning with AMRUT's sustainability goals.

- **Enhanced Efficiency & Transparency**: Automated workflows reduced delays by 85%, streamlining project execution and water quality monitoring. Real-time dashboards improved accessibility, accountability, and trust among stakeholders.
- **Optimized Resource Utilization**: Data-driven insights minimized wastage, improved manpower and material use, and ensured efficient fund allocation. Operational costs have been reduced by 40%.
- **Improved Decision-Making**: Real-time analytics enabled proactive responses to project delays and water quality issues, ensuring faster issue resolution.
- **Higher Stakeholder & User Satisfaction**: Faster service delivery, transparency, and real-time feedback increased public trust and improved governance. Over 90% of users reported better service quality.
- **Regulatory Compliance & Environmental Impact**: Continuous monitoring ensured adherence to environmental standards, reduced contamination response times by 50%, and promoted sustainability initiatives.
- **Scalability & Replicability**: The systems support expansion, with PMS adaptable for future projects and WQMS extendable to other regions.

This initiative has positioned AMRUT Kerala as a model for efficient, sustainable, and technology-driven urban governance in India.

GOVERNMENT PROCESS RE-ENGINEERING

(i) Percentage of Government Process Re-engineering (GPR) Introduced:

- Project Monitoring under AMRUT: 100% re-engineered
- Water Quality Monitoring & Management: 60% re-engineered
- Financial Management: 100% re-engineered
- Stakeholder Engagement: 90% re-engineered
- Overall Process Re-engineering: 90%

(ii) Process Flow Before GPR:

- Manual data collection and entry in multiple spreadsheets
- Sequential approval processes through physical files involving larger timelines
- Paper-based water quality testing reports
- Manual fund request and inefficient tracking systems
- Offline stakeholder communications
- Physical documentation storage and tedious retrieval process
- Manual resource allocation and inefficient tracking system

(iii) Process Flow After GPR:

- Digital data collection and analysis (100% automated)
- Digital workflow processing (95% automated)
- Advanced water quality monitoring system (95% automated)
- Automated fund management (100% automated)
- Digital stakeholder communication (90% automated)
- Cloud-based document management (100% automated)
- Resource optimization (90% automated)

(iv) Information/Data Flow Before GPR:

- Multiple data entry points with manual consolidation
- Physical file movement between departments
- Paper-based reporting and documentation

- Manual data aggregation for analysis
- Offline communication channels
- Delayed reporting and updates

(v) Information/Data Flow After GPR:

- Centralized digital data repository
- Real-time data synchronization
- Automated report generation
- Integrated data analytics & dashboard
- Digital communication channels between inter and intra departments
- Instant notifications and alerts

(vi) Specific Activities Removed/Deleted:

1. Manual Data Entry
    - Physical form filling
    - Data re-entry in multiple spreadsheets
    - Manual data verification
    - Physical file storage
2. Approval Process
    - Physical file movement
    - Manual signature collection
    - Document photocopying
    - Physical file tracking
3. Reporting
    - Manual report compilation and physical report distribution
    - Data reconciliation
    - Manual progress tracking
    - Paper-based archive maintenance

4. Quality Management
    - Paper-based sample logging and test reports
    - Physical result verification and manual compliance checking
5. Financial Management
    - Physical fund requests
    - Manual fund tracking
    - Paper-based reconciliation
    - Physical receipt storage
    - Manual audit preparation

vii) Specific Activities added/incorporated:

- **Project Management & Monitoring**: Implementation of a centralized digital platform with automated data entry, validation, and rea-time tracking of project progress through web applications, Mobile apps and Dashboards.
- **Centralized Dashboards**: Stakeholders can monitor project timelines, budgets, and deliverables, with automated data logging for milestones and status updates.
- **Automated Alerts & Approvals**: System-generated notifications/ insights for project delays, budget overruns, and approvals, with streamlined digital processes.
- **Resource Optimization**: Automated scheduling, resource allocation, and predictive models to identify potential risks, delays, and optimal resource distribution.
- **Enhanced Collaboration**: Digital platforms for interdepartmental coordination, document sharing, and virtual project review meetings.
- **Water Quality Monitoring**: Advanced tracking through dashboards, GIS integration for spatial analysis, and machine learning models to predict contamination risks.
- **Public Engagement & Compliance**: The public can access the project details and water quality data through reports and insights, automated compliance reporting, and tracking corrective actions.

CONCLUSION

These advancements ensure improved project oversight, data-driven decision-making, greater transparency and accountability in the Urban Governance system.

The implementation of these systems represents a significant leap forward in digital governance. Through careful process re-engineering and innovative technology integration, we have achieved measurable improvements in efficiency, effectiveness, and service delivery. The systems continue to evolve, incorporating user feedback and emerging technologies to further enhance government services and citizen satisfaction. These initiatives demonstrate our commitment to digital transformation and serve as a model for other government departments seeking to modernize their operations through technology-driven solutions.

AMRUT PMS

User Manual

Atal Mission for Rejuvenation and Urban Transformation

AMRUT

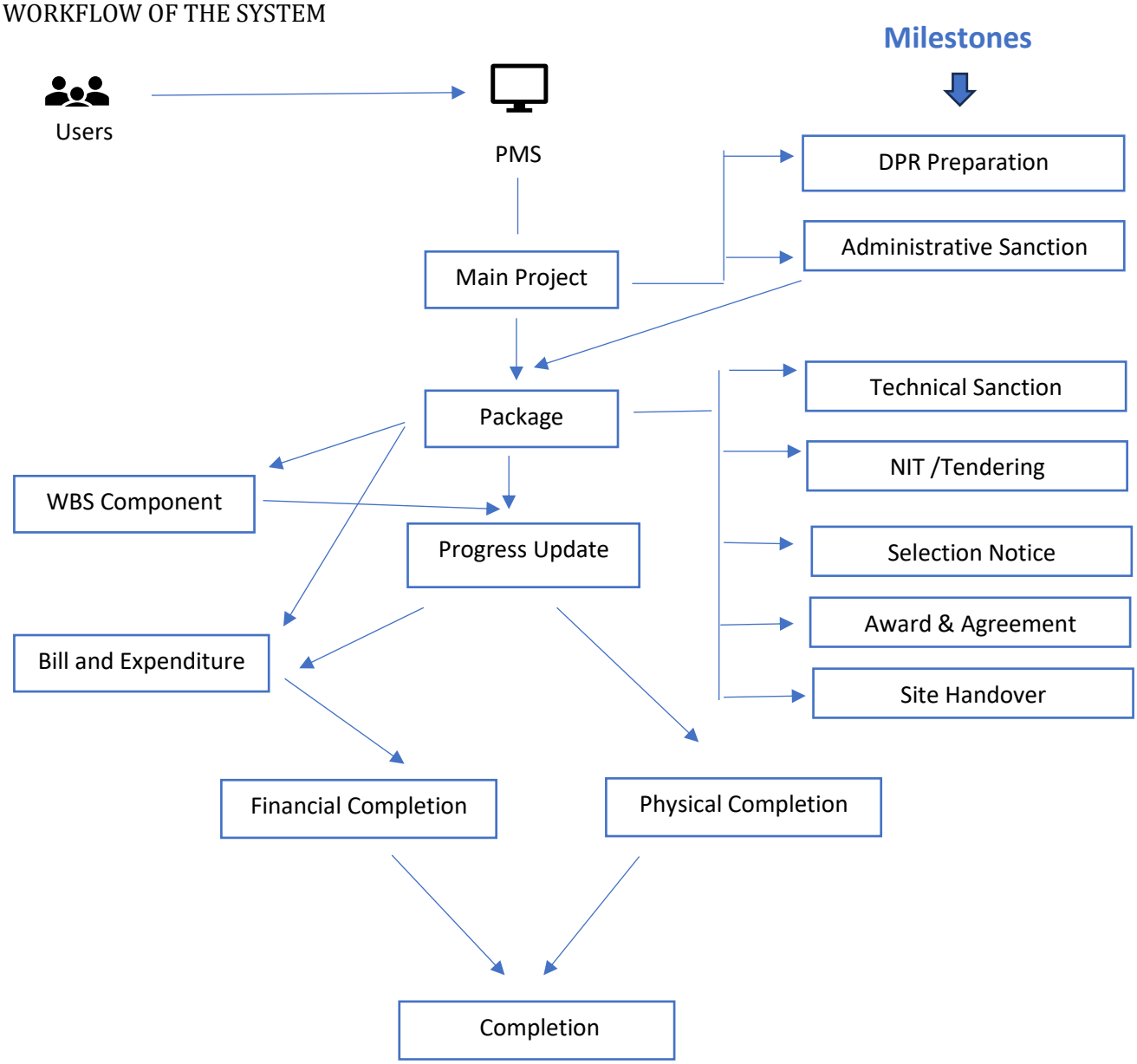
Project Monitoring System

CONTENTS

SYSTEM OVERVIEW

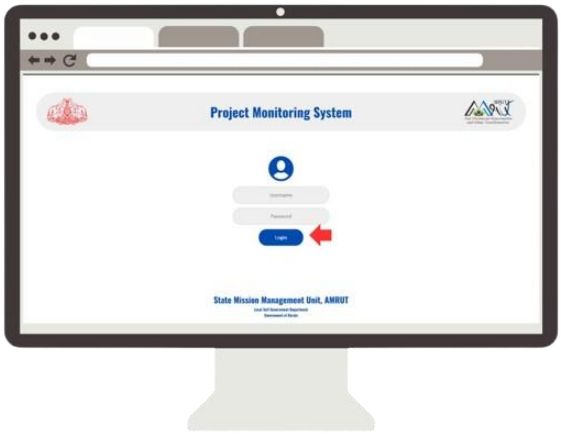
The **Project Monitoring System (PMS)** is a robust, user-friendly platform that facilitates effective project monitoring, management, and reporting under the Atal Mission for Rejuvenation and Urban Transformation (AMRUT). The PMS tracks projects, categorizing projects with Administrative Sanction (AS) as "Main Projects" and those with technical sanction as "Packages" under their respective Main Projects. Once the main project is created each milestone is captured individually with customized data from Administrative Sanction to Site Handover and physical progress update/started to completion.

WORKFLOW OF THE SYSTEM



LOGIN TO PMS

The website's URL is https://pms.amrutkerala.org/apanel.The login page appears as soon as the website is accessed. Enter the username and password to log in to the site. After entering your username and password click on the **LOGIN** button. Based on the user's hierarchy the menus will be displayed on the left side of the page.

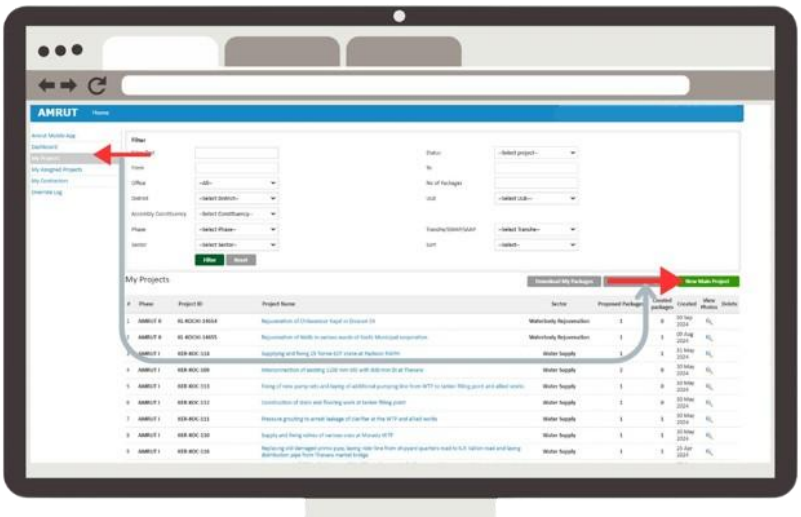


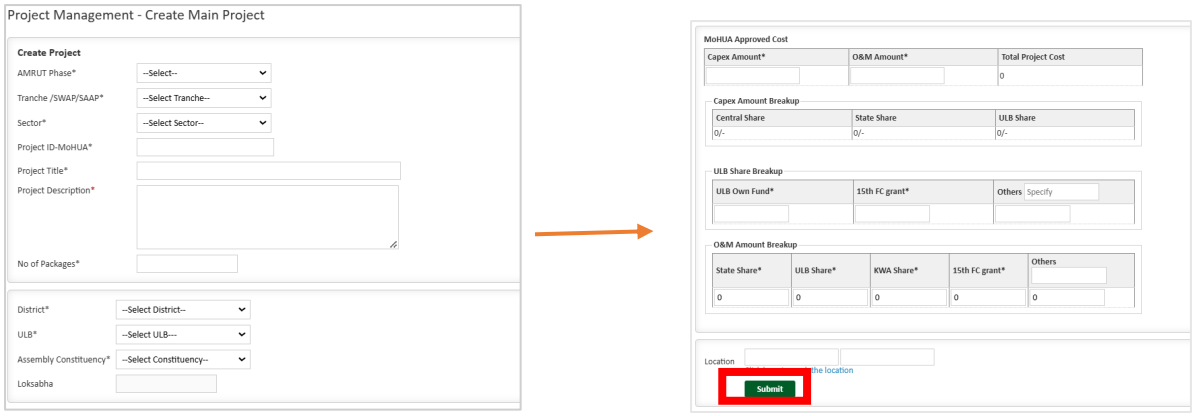
MY PROJECT

HOW TO CREATE A PROJECT?

- Click **MY PROJECT** from the left side menu. The listing page of projects will appear with customized filters at the top of the page.
- Click on the **NEW MAIN PROJECT** button on the right side of the page.

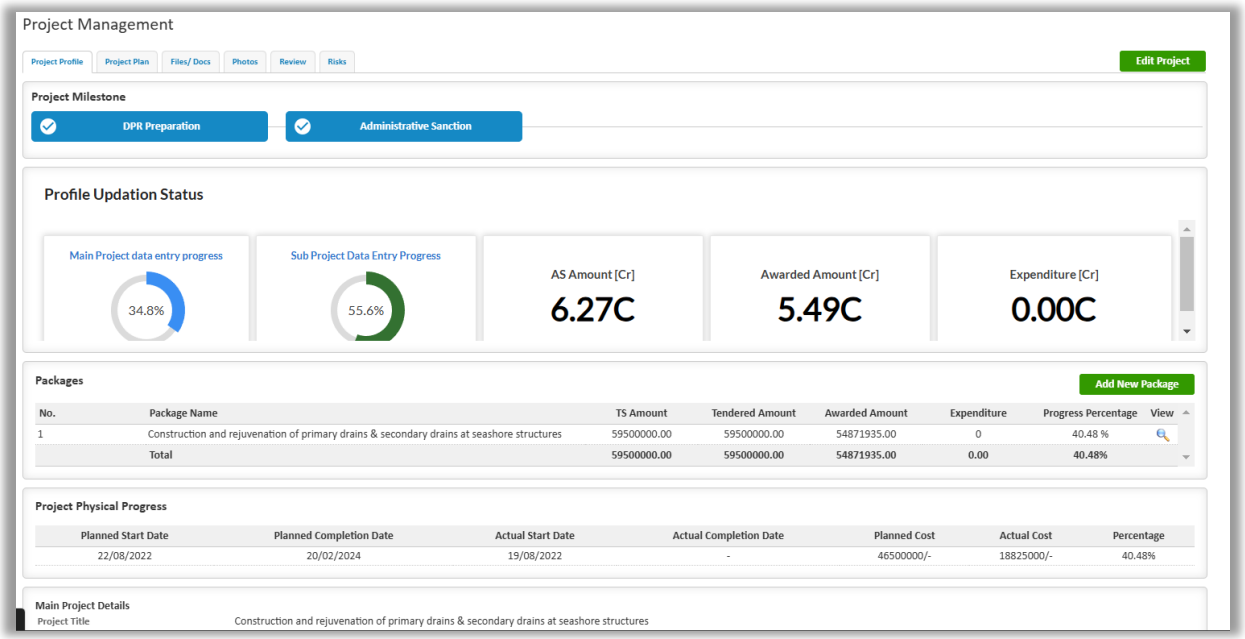
"A project is added to the system with basic details such as Project title, phase, sector, details of district and executing offices, and location plot on the map. When a project is initially added the status is considered as DPR Pending, when one by one the milestones are updated, the status will be updated accordingly "





- The project creation page appears. Fill in the following data for the project and click on the submit button to create a new project in the system.
- As soon as submitted, the page redirects to the project profile. This page is also referred to as the project view page. You can navigate to the profile page of the project from the My Projects page by simply clicking on the project title listed

Project Profile page:

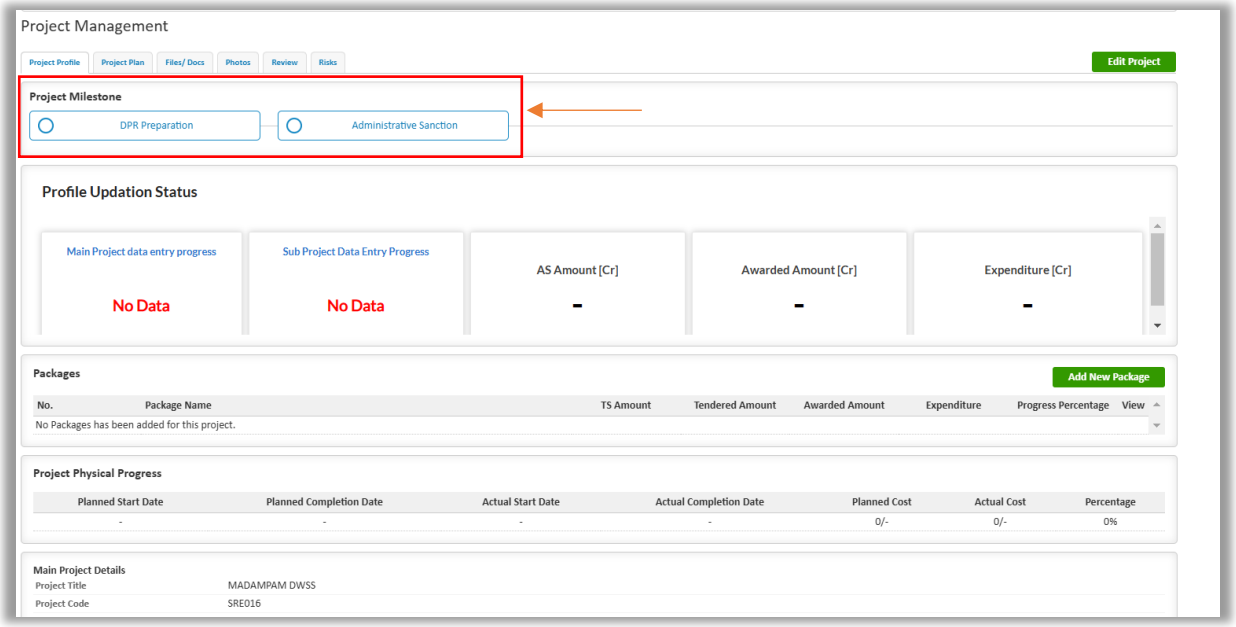


THE MILESTONES OF THE MAIN PROJECT

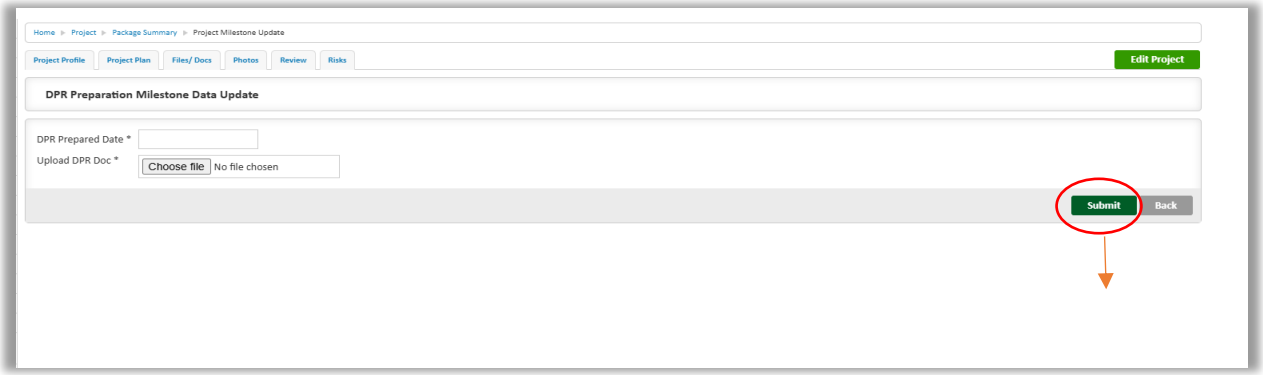
Milestones in a project represent significant points of progress that mark critical stages in the project's timeline. There are two major milestones in the main projects and those are as follows: -

MILESTONE 1: DPR PREPARATION

- On the top of the project profile page, there is the project milestone section.



- Click on the **DPR Preparation** cell to update the DPR details. An un-updated DPR Preparation cell will have no fill. Once data is entered, the cell will turn blue, indicating that the data has been updated and the milestone status is updated accordingly.
- In page DPR **Preparation Milestone Data Update,** update the DPR date and relevant document and click on the **SUBMIT** button.

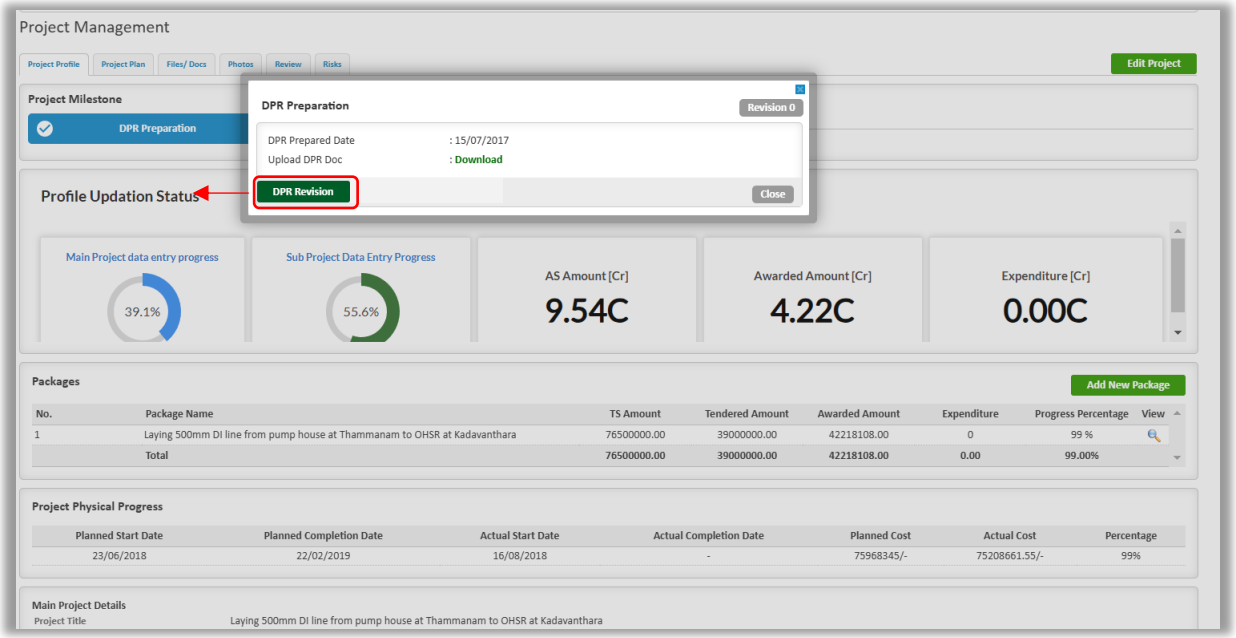


- Click the BACK button beside Submit to navigate back to a pervious page.
- To view the added details, simply click on the DPR cell. The view page will appear, displaying the DPR details.

"As soon as the DPR milestone is updated the project status will be changed to DPR Prepared."

DPR Revision

- To revise the DPR details, simply click on the DPR cell to view the information. In the modal that appears, click on the "DPR Revision" button to update the milestone details.
- Once the revision is done the initially entered data will be considered as the 0^{th} revision and display as history on the view page.



MILESTONE 2: ADMINISTRATIVE SANCTION (AS)

- On the top of the project profile page, there the project milestone section next to the DPR Preparation is **Administrative Sanction** milestone.

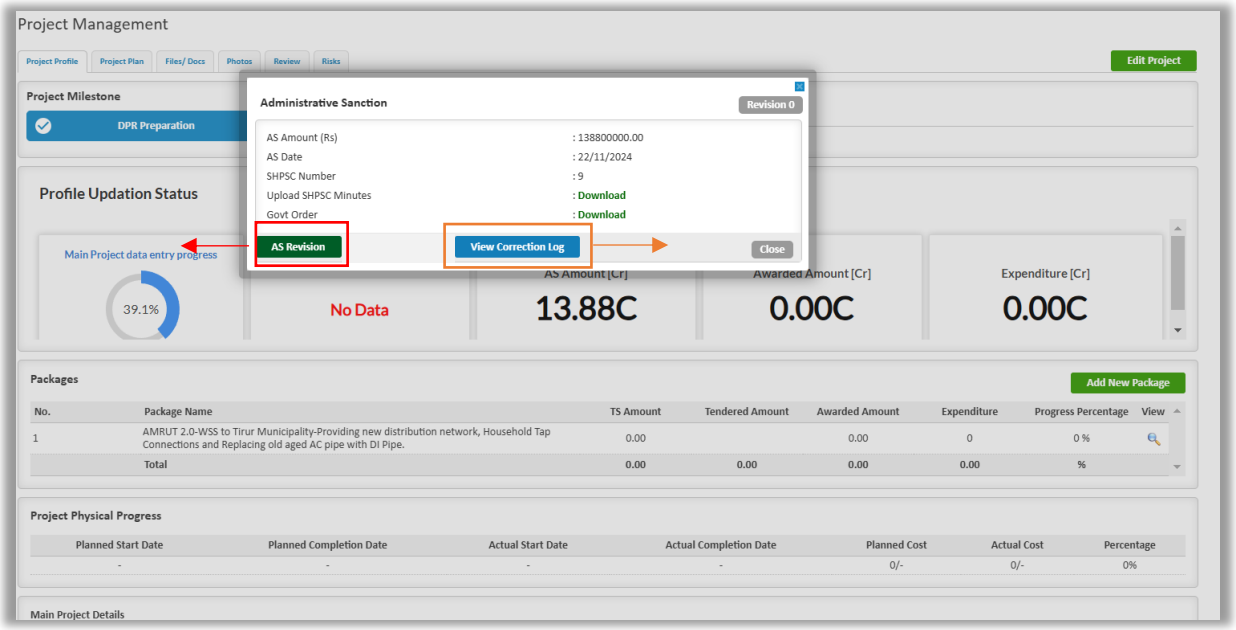
NOTE: Only after updating the DPR milestone can the AS milestone be updated. If any mandatory fields are not updated, that milestone will be considered incomplete, and the project's status will remain as the last fully updated milestone's status.

- Click on the AS cell to update the AS details of the project
- The **Administrative Sanction Milestone Data Update** page appears. Enter the AS date, SHPC number, and AS amount, and attach the AS document along with the Government Order.
- After updating the details click on **SUBMIT** button
- Click the BACK button beside Submit to navigate back to the project Profile page.
- To view the added details, simply click on the AS cell. The view page will appear, displaying the AS details.

" As soon as the AS milestone is updated the project status will be changed to AS Issued. "

AS REVISION

- To revise the AS details, simply click on the AS cell to view the information. In the modal that appears, click on the "**AS Revision**" button to update the milestone details.
- Once the revision is done the initially entered data will be considered as the 0th revision and display as history on the view displaying modal



IMPORTANCE OF VIEW CORRECTION LOG

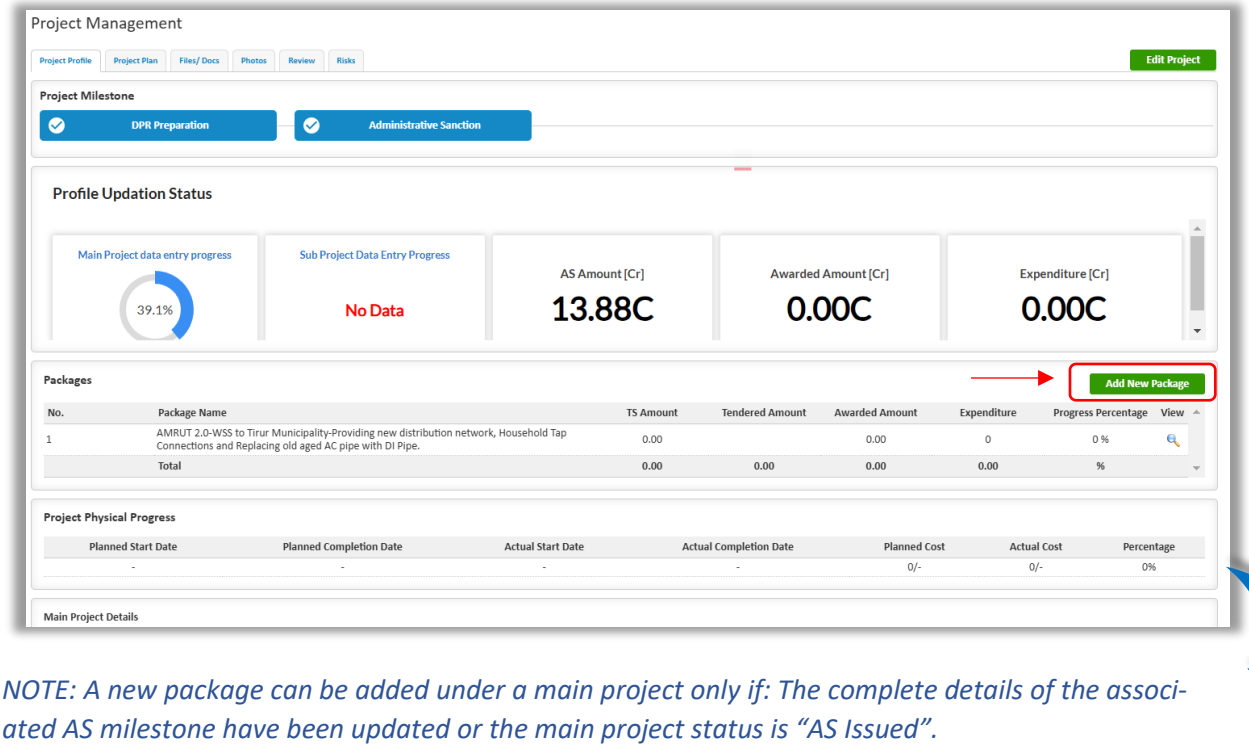
- All data corrections made within the update milestone data section will be recorded in a "View Correction Log," which tracks the corrector, correction details, and timestamp.
- To initiate a data correction, users must request edit access. The administrator can then grant "Overwrite" data access, enabling the user to edit the specific milestone data.
- Upon approval, an "EDIT" button will appear on the relevant milestone view. Clicking this button allows the user to make corrections, which will be logged. To access this log, click on "**VIEW CORRECTION LOG**."

PACKAGE CREATION

HOW ARE PACKAGES CREATED UNDER A MAIN PROJECT?

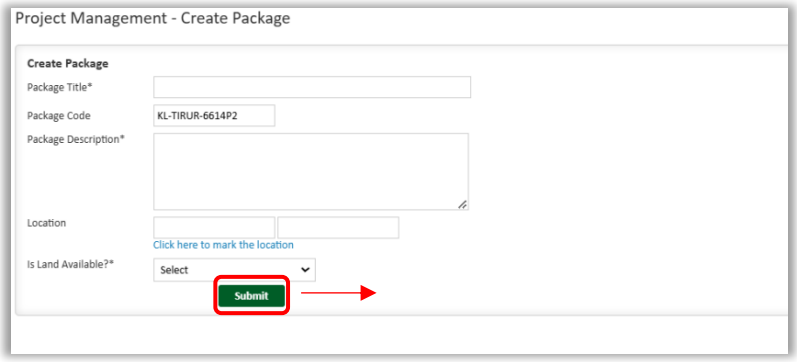
- Work with Technical Sanction (TS) received under Administrative Sanction (AS) are considered Packages. The package is enrolled in the project profile. Multiple packages with TS can be added by clicking the '**ADD NEW PACKAGE**' button one by one.

NOTE: A Newly created package status will be TS Pending

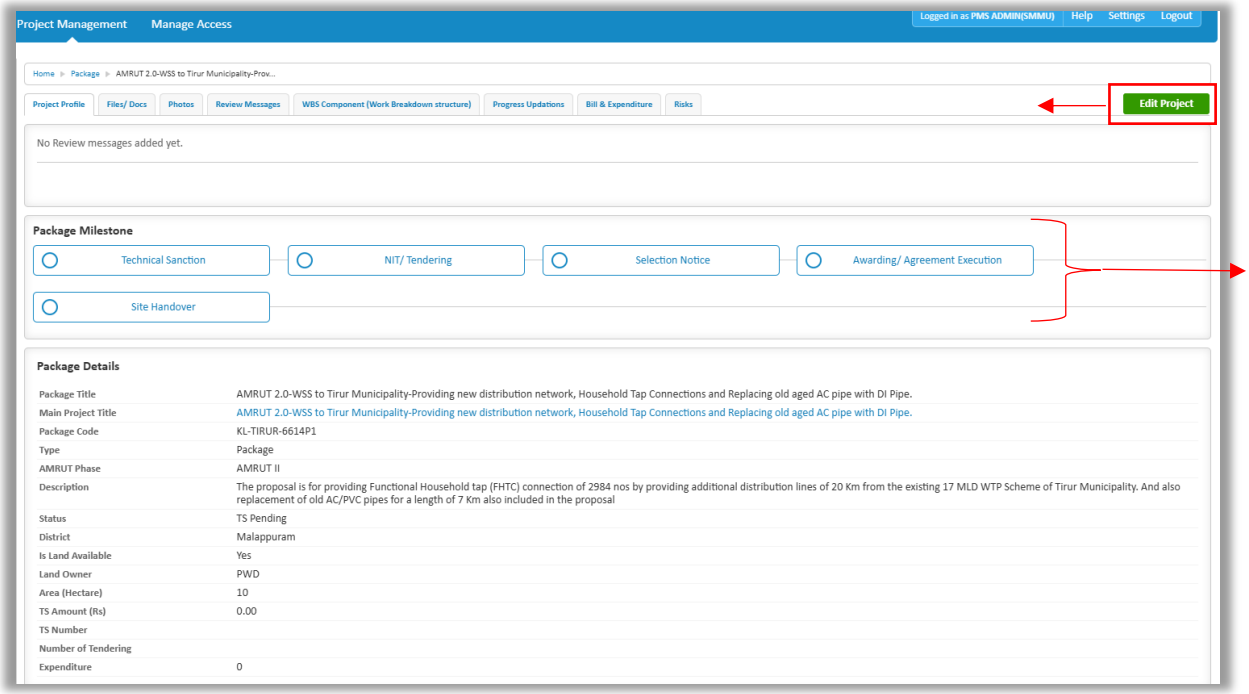


NOTE: A new package can be added under a main project only if: The complete details of the associated AS milestone have been updated or the main project status is "AS Issued".

- To create a package, enter the basic details. The system will generate a unique package code, appended with a suffix (P1, P2, etc.) based on project seniority and prefixed with the Project MoHU code.
- Click on the '**SUBMIT**' button to create the package. Upon successful submission, the package profile page will be displayed, allowing you to update the remaining milestone data."



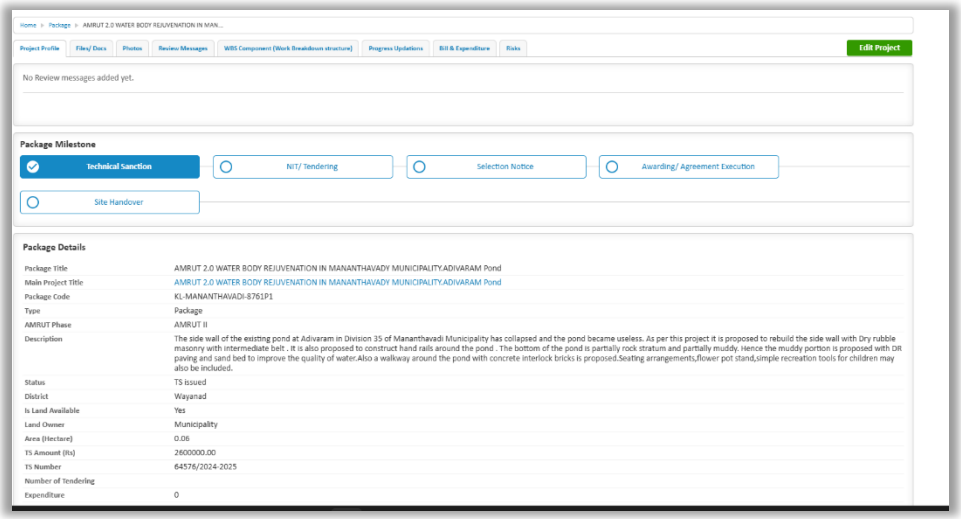
Package Profile page /View page



PACKAGE MILESTONE

MILESTONE 3: TECHNICAL SANCTION (TS)

- To initiate Technical Sanction (TS), locate and click on the "Technical Sanction Milestone" within the "Package Milestone" section. This will display the "Technical Sanction Milestone Data Update" page.
- On this page, enter the TS details: **TS Amount:** Split the TS amount into "PAC" and "Miscellaneous/Lumpsum" within the Package Allocation (PAC). The consolidated total of these two sections will be considered the final TS amount.
- Followed by TS numbers date and TS doc.

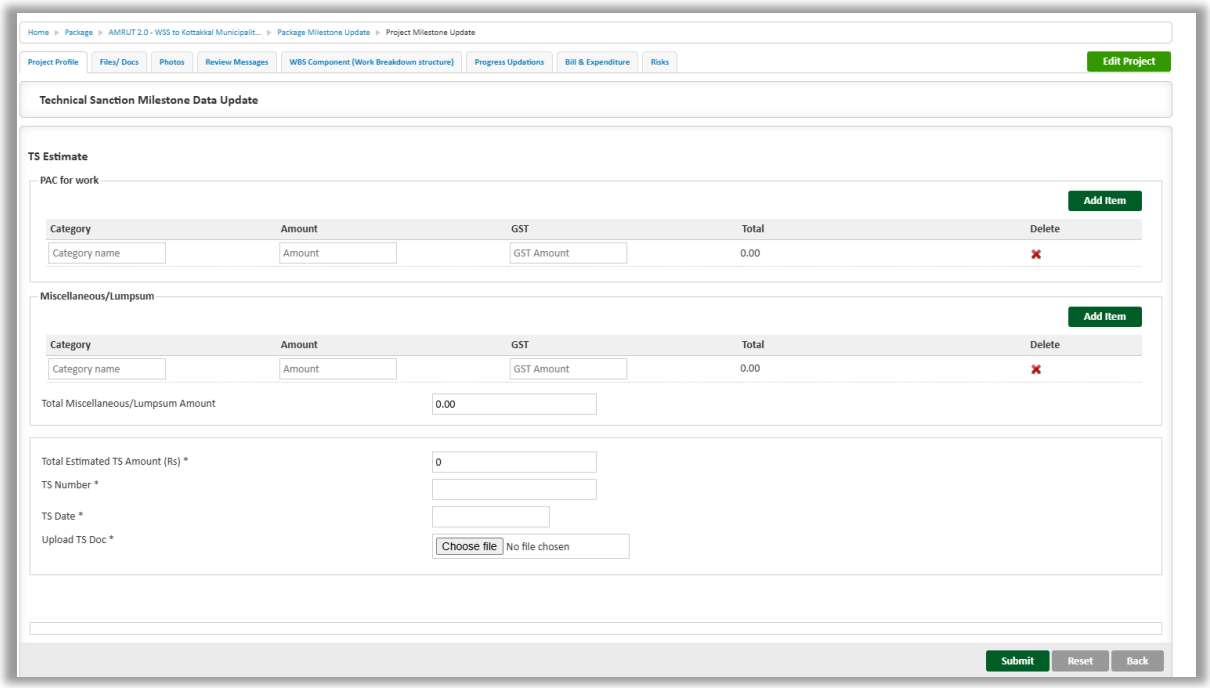


Note: The entered TS date must be after the corresponding Administrative Sanction (AS) date.

- Once the data is completed entered click on the **SUBMIT** button.

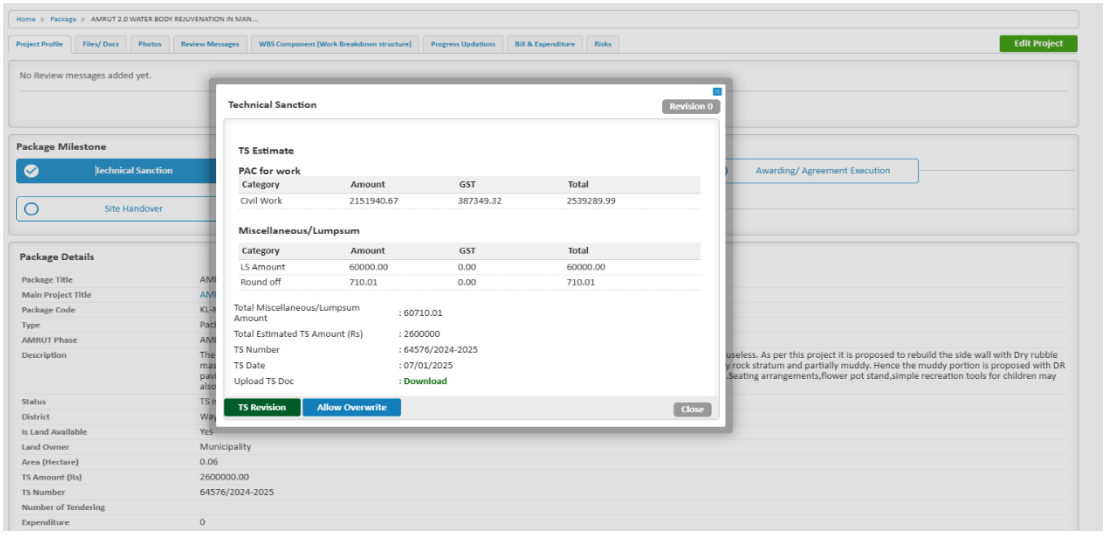
As soon as the TS milestone is updated on any one of the

multiple packages under a project the project status will be changed to TS-issued.



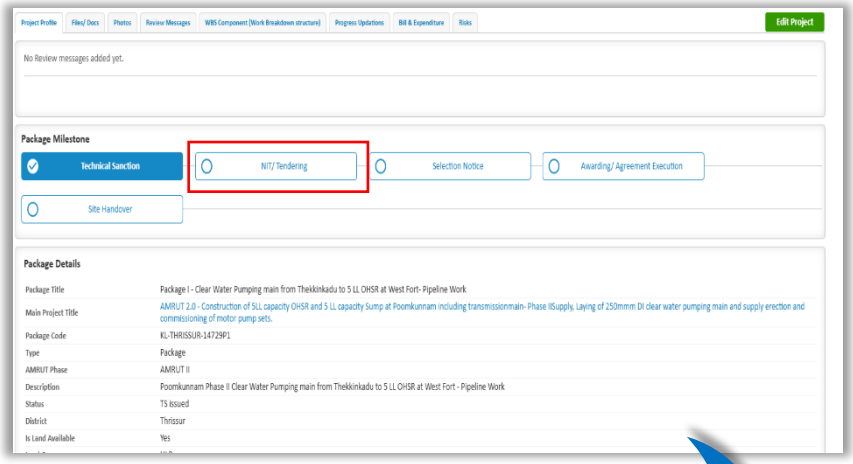
TS REVISION

- To revise the TS details, simply click on the TS cell to view the information. In the modal that appears, click on the "**TS Revision**" button to update the milestone details.
- Once the revision is done the initially entered data will be considered as the 0th revision and display as history on the view displaying modal



MILESTONE4: NIT/ TENDERING

- To initiate the NIT/Tendering milestone, locate and click on the "NIT/Tendering Milestone" within the "Package Milestone" section. This will display the " **NIT/ Tendering Milestone Data Update**" page.
- On this page, enter the Tendering details, such as Tender issue date, No. of tendering

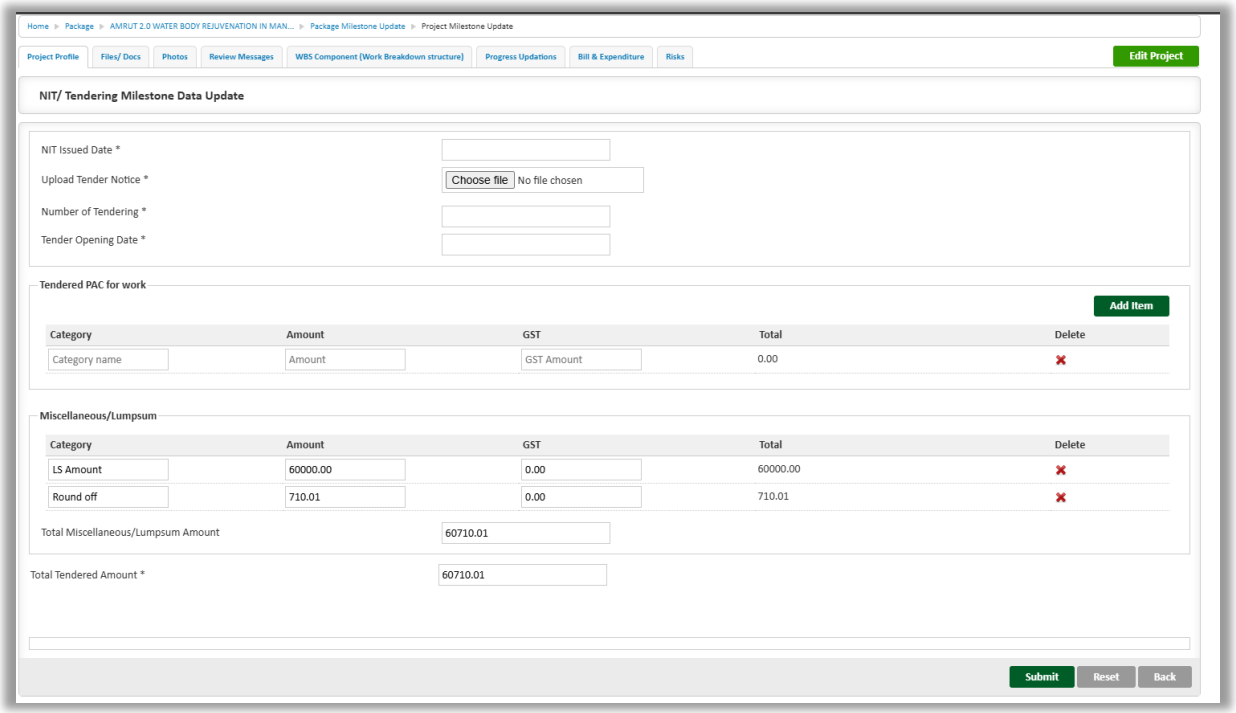


Note: The system is configured to ensure that the NIT issue date is selected after the TS date

The PAC of work and Miscellaneous/Lumpsum data will be carried forward from the TS milestone. The user has the option to edit, delete, or add a new row under these sections respectively.

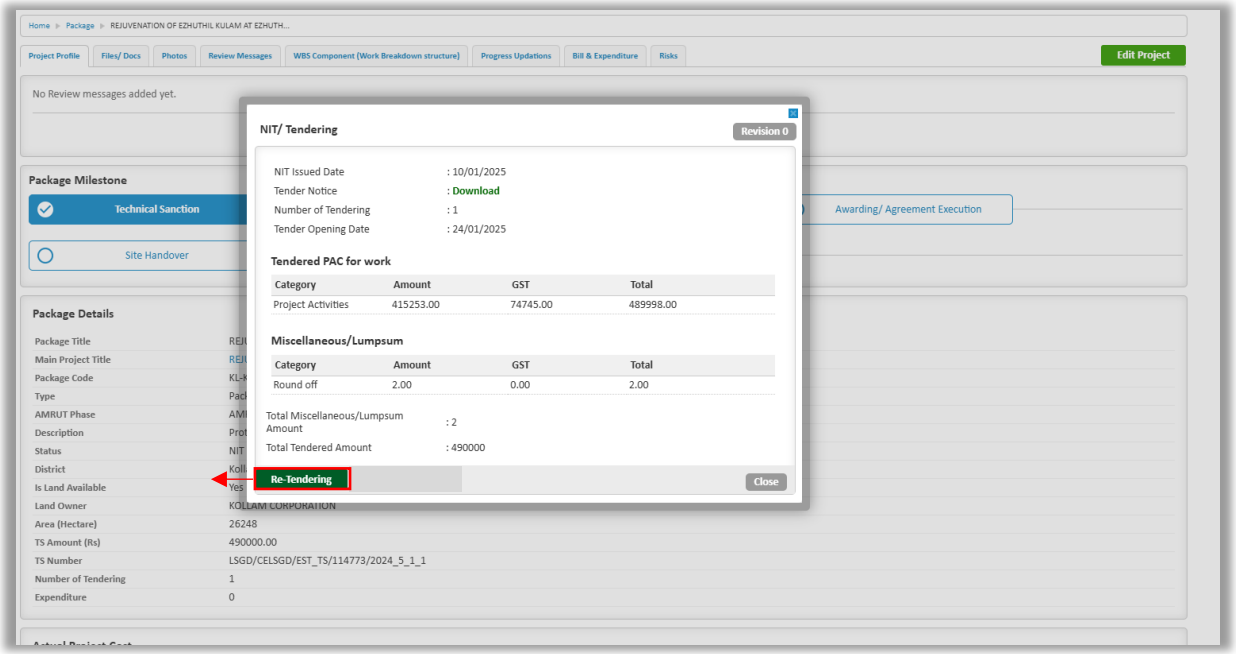
- Once the data is completely entered click on the SUBMIT button.

As soon as the NIT/Tendering milestone is updated on any one of the multiple packages under a project the project status will be changed to NIT-issued or Tendered.



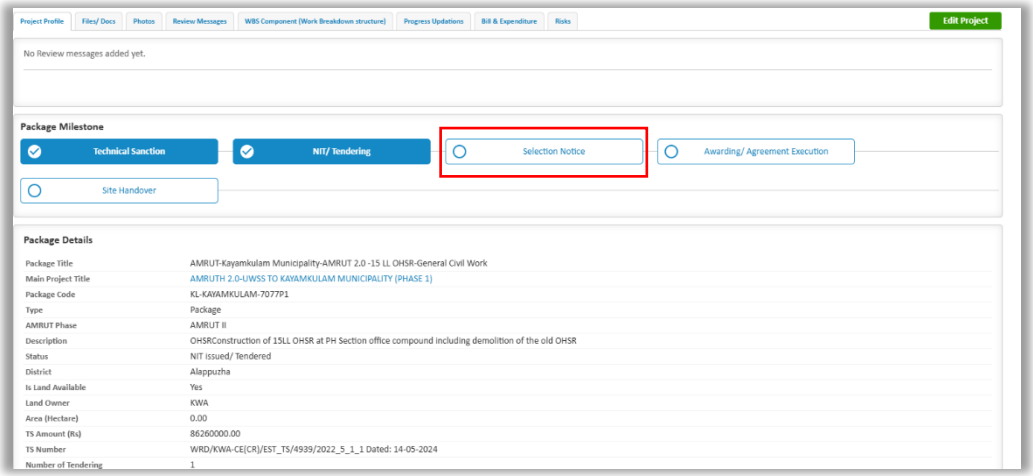
RE-TENDERING

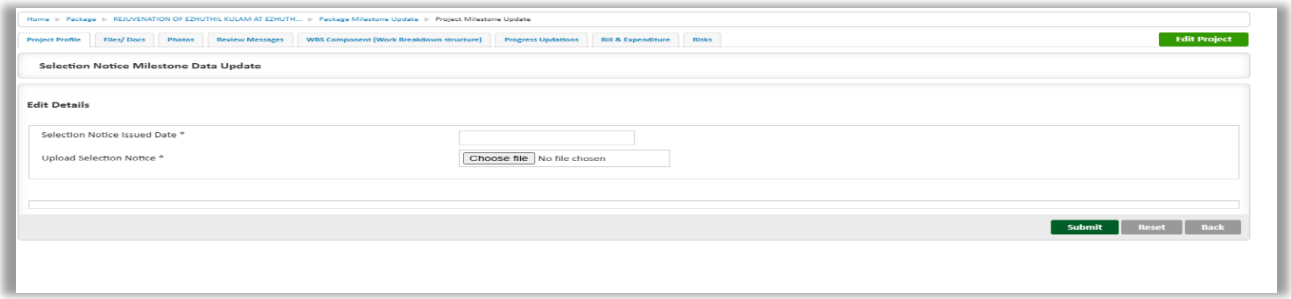
- To re-tender the NIT details, simply click on the NIT/Tendering option to view the information. In the modal that appears, click on the "**Re-Tendering**" button to update the milestone details.
- Once the re-tendering is done the initially entered data will be considered as the 0th revision and displayed as history on the view displaying modal



MILESTONE 5: SELECTION NOTICE

- To initiate the Selection Notice milestone, locate and click on the "Selection Notice Milestone" within the "Package Milestone" section placed beside NIT/Tendering. This will display the "**Selection Notice Milestone Data Update**" page.
- On this page, enter the section notice details, such as selection notice issue date and selection notice document



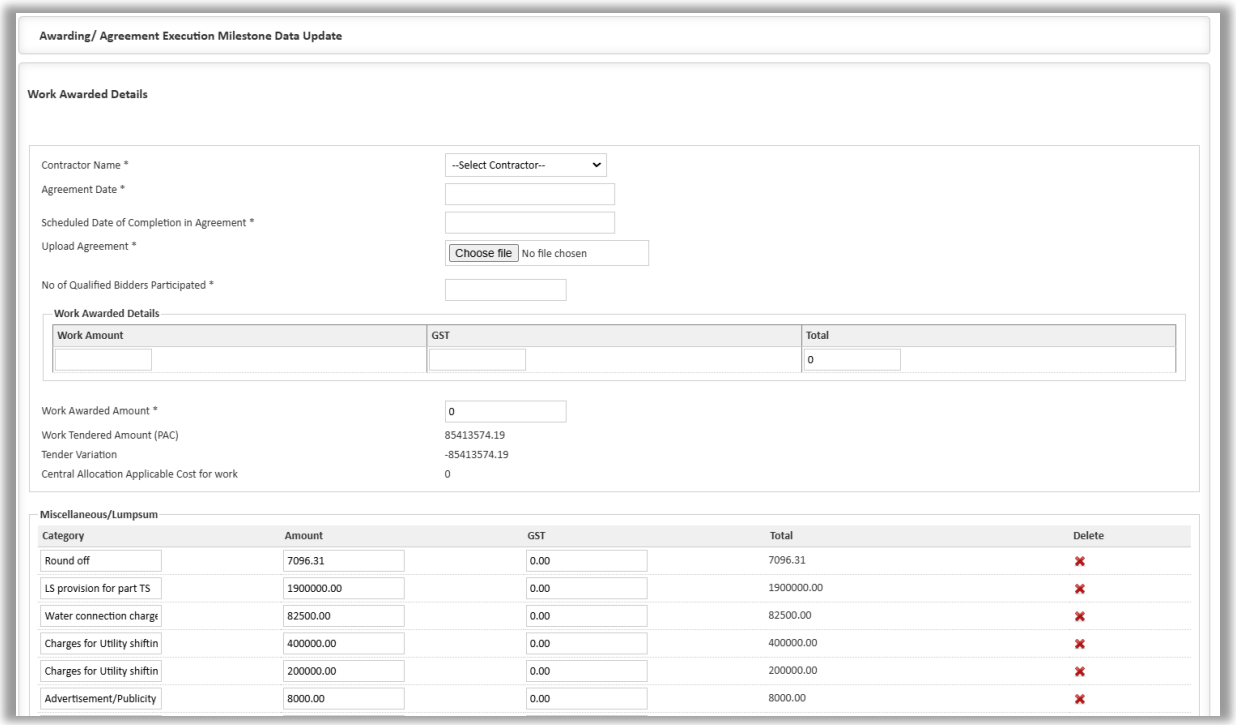


- Once the data is completely entered click on the SUBMIT button.

As soon as the Selection Notice milestone is updated on any one of the multiple packages under a project the project status will be changed to LOA-issued.

MILESTONE 6: AWARD & AGREEMENT

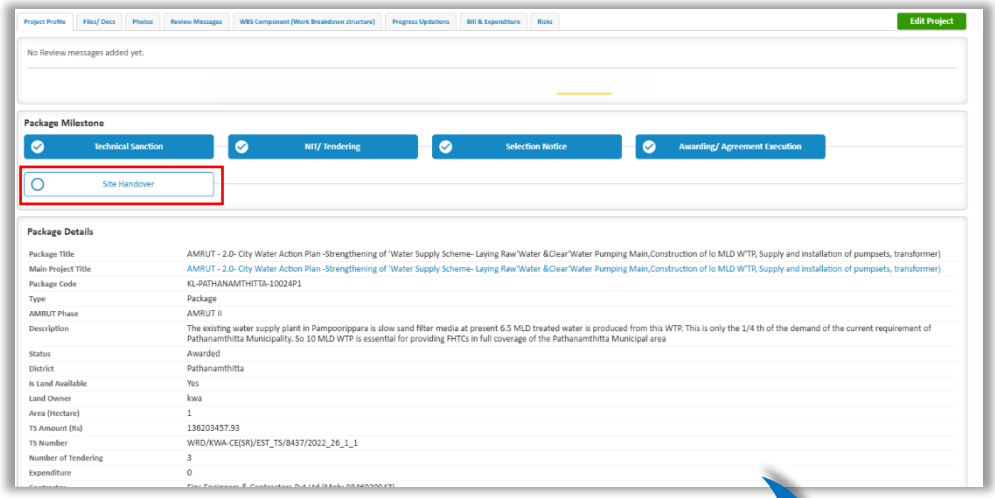
- To initiate the Award & Agreement milestone, locate and click on the "Awarding/Agreement Execution Milestone" within the "Package Milestone" section placed beside the selection notice. This will display the " **Awarding/ Agreement Execution Milestone Data Update**" page.
- The 'Award and Agreement' section awarded contractors, mapping each to their respective work. It includes the agreement date, document, and work award details.



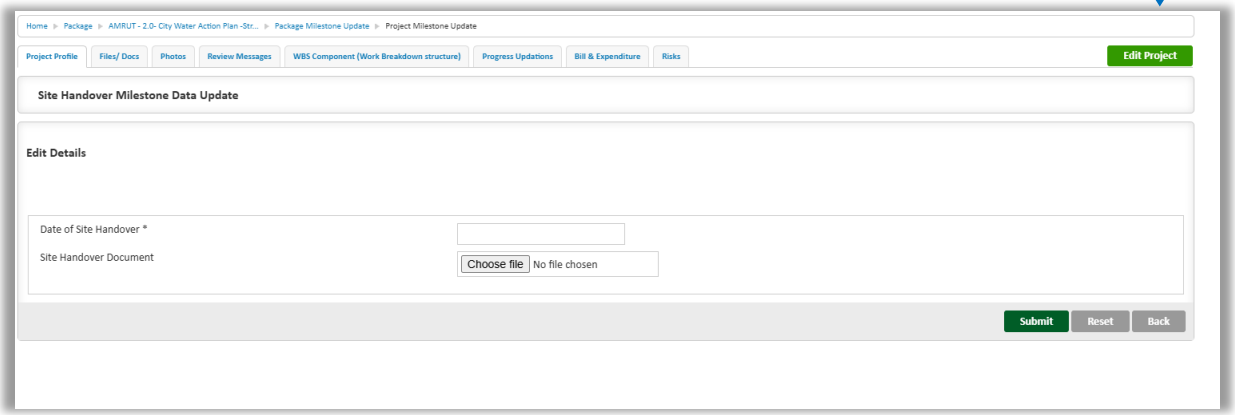
- The 'Miscellaneous/Lumpsum' section is carried forward from the TS milestone. You can modify or delete rows as needed.
- The system automatically calculates the total Award and Tender excess, along with the cost-sharing breakdown for central, state, and ULB.
- Once all fields are completed, click the 'SUBMIT' button.

As soon as the Awarding /Agreement Execution milestone is updated on any one of the multiple packages under a project the project status will be changed to Awarded.

MILESTONE 7: SITE HANDOVER



- To initiate the Site handover milestone, locate and click on the "Site Handover Milestone" within the "Package Milestone" section placed beside Awarding/Agreement Execution. This will display the " **Site Handover Milestone Data Update**" page.
- On this page, enter the Site handover details, such as the site handover date, and upload the document
- Once all fields are completed, click the 'SUBMIT' button.



As soon as the Site Handover milestone is updated on any one of the multiple packages under a project the project status will be changed to Site Handover.

WORK BREAK-DOWN STRUCTURE -WBS

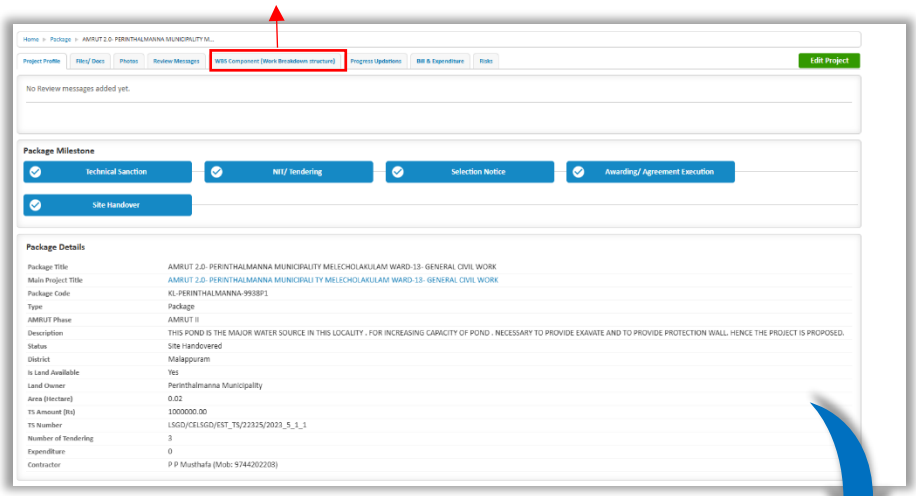
HOW ARE WBS /COMPONENTS OF A WORK ESTIMATE FOR PROGRESS UPDATES?

In Project Management Software (PMS), work breakdown structures (WBS) are created by decomposing work into its constituent components. Following the completion of six milestones, the next step involves mapping these components to their respective packages. Daughter tasks within each

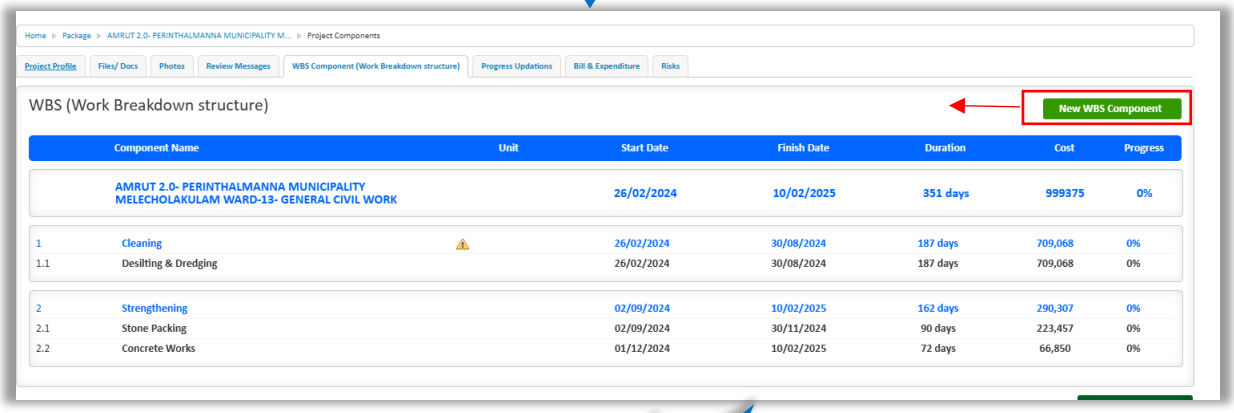
component are then planned with defined start dates, finish dates, and associated costs. Finally, the planned start and finish dates, along with the consolidated costs from the lowest-level daughter tasks, are used to determine the overall planned start and finish dates for the physical progress of that package.

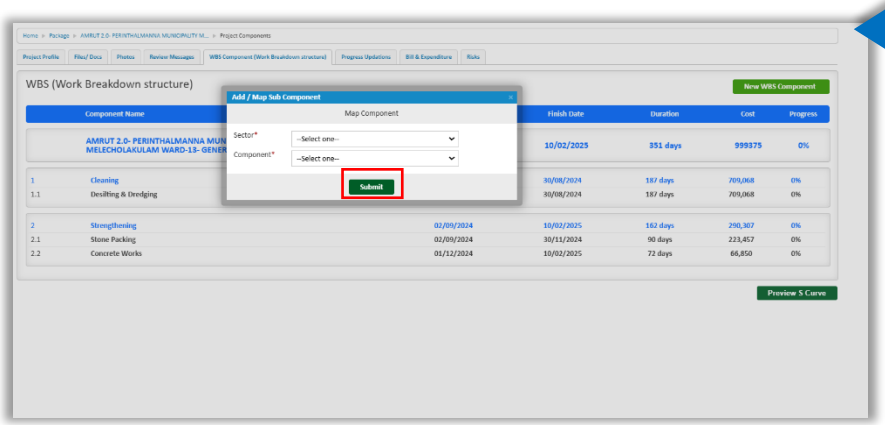
How to add a new component to the package?

- In the package profile, locate and click on the **"WBS Components**" tab. This tab is typically situated at the top of the page within a collection of tabs, each leading to a different package feature.
- Click the "NEW WBS COMPONENT" button positioned in the top-right corner of the page.
- An "Add/Map Components" modal window will appear. Choose the desired sector & component from the corresponding dropdown menu.



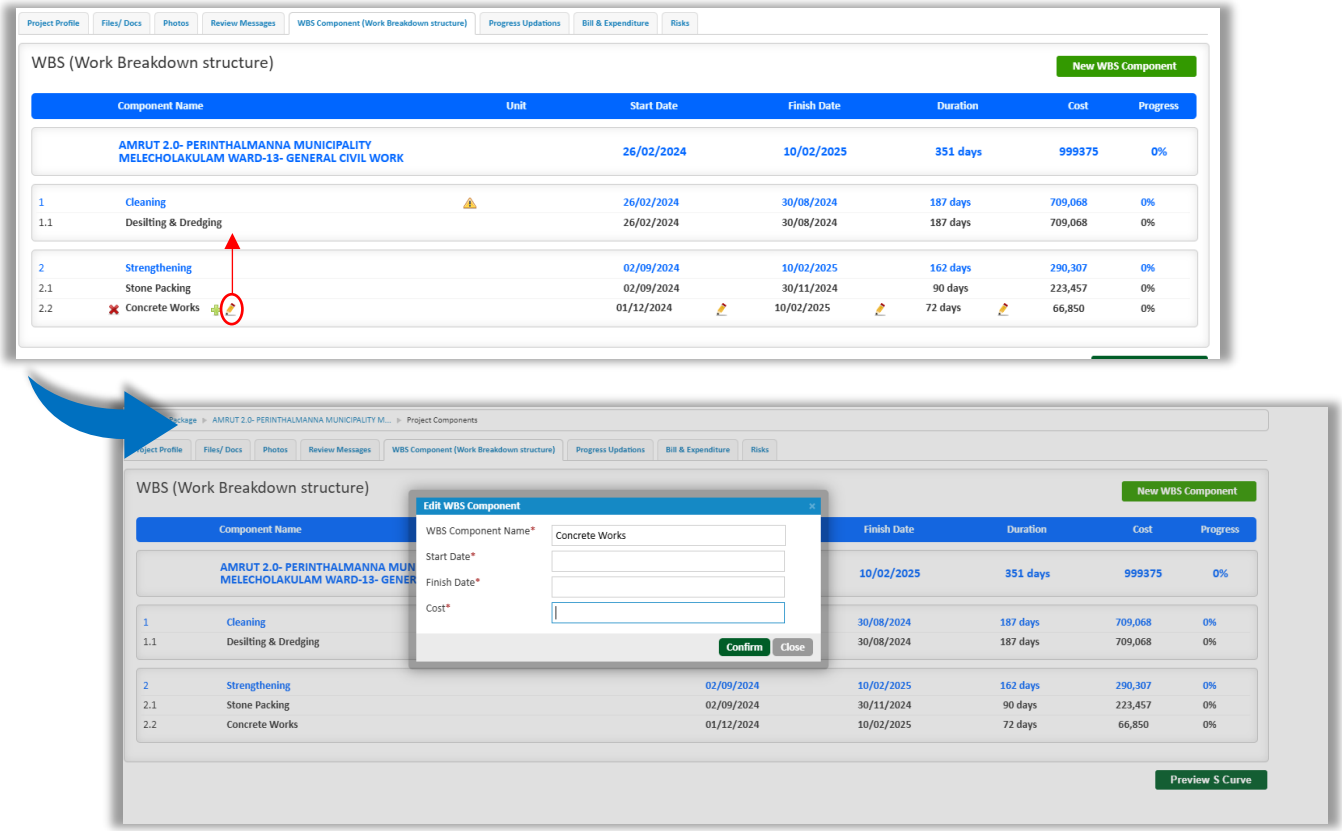
- After selecting the sector, click "Submit" to associate the component and its WBS with the package.
- Repeat these steps to add all necessary components to the package





How planned dates and costs are updated?

- Each added component will have a main component and sub-components. Planned start and finish dates for each component are always updated at the lowest sub-component level.
- When the mouse hovers over a sub-component, a pencil icon appears for editing. Clicking this icon opens an editing modal.
- Within the modal, enter the sub-component's planned start date, finish date, and cost.
- Update all sub-components to consolidate the overall package dates on the top-most row of the table.

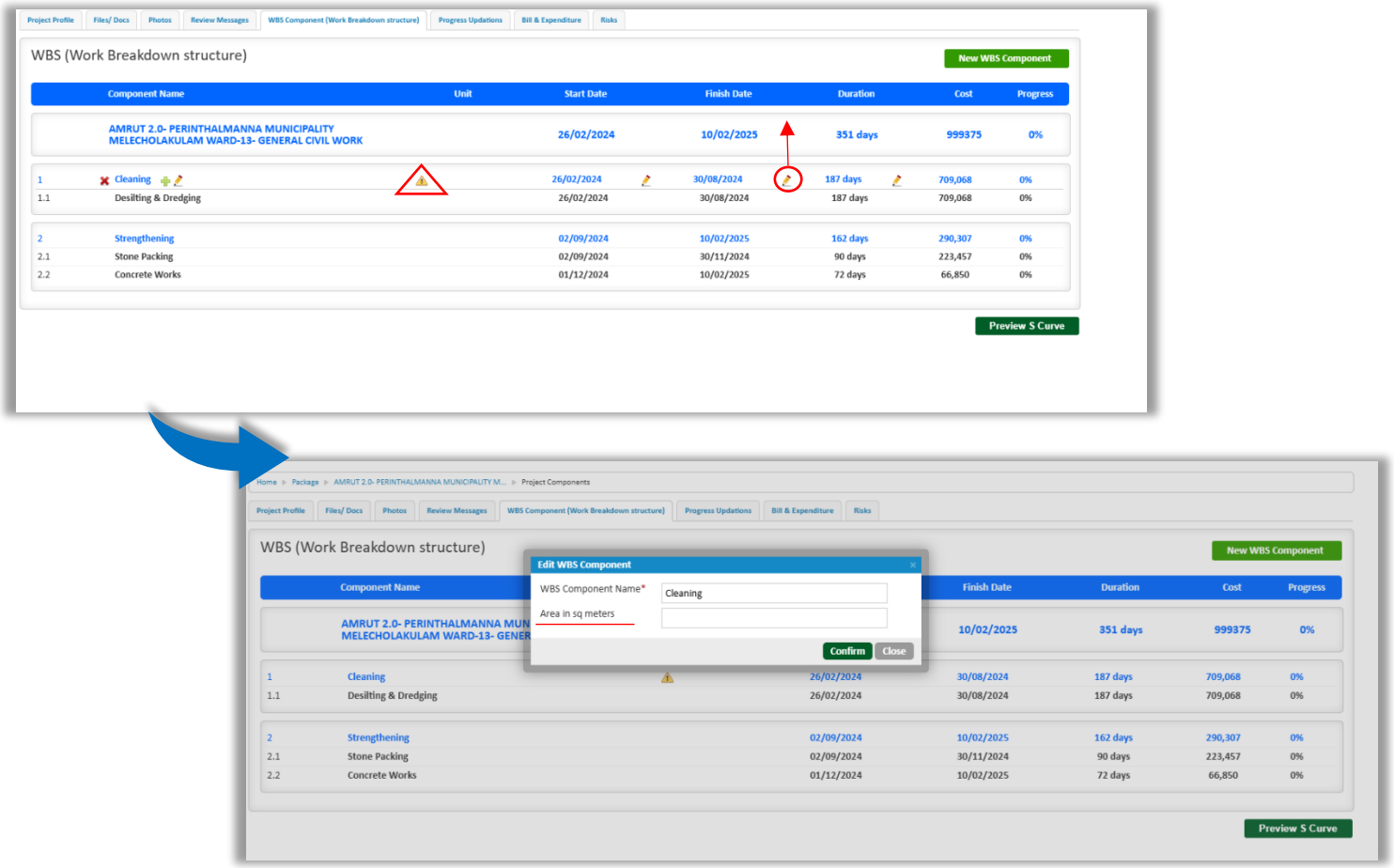


NOTE: It is not compulsory to start WBS components planning only after all milestones are updated. Users can start planning WBS components soon after the package is created but Progress updates to the planned components can be updated only after updating all six milestones.

HOW TO UPDATE THE UNITS' VALUES IN THE MAIN COMPONENT?

- When the mouse hovers over the main components a pencil icon appears for editing. Clicking this icon opens an editing modal.
- Within the modal, enter the units planned to achieve in contrast when the progress update is done the achieved value is entered
- For main components with unit value to updated a caution symbol is displayed to alert the user for updating, once the update symbol changes to a green tick mark view option

NOTE: Without adding planned dates, cost, and unit values it is not possible to add the progress update



PROGRESS UPDATE

HOW IS PHYSICAL PROGRESS UPDATION CARRIED OUT?

After updating the details of Work Breakdown Structure (WBS) components, click on the **'Progress Update**' tab adjacent to 'WBS components' within the package profile. Physical progress or field-level progress for an awarded work is tracked within the respective package. The consolidated progress of all packages is then reflected in the main project summary. The progress update tab displays

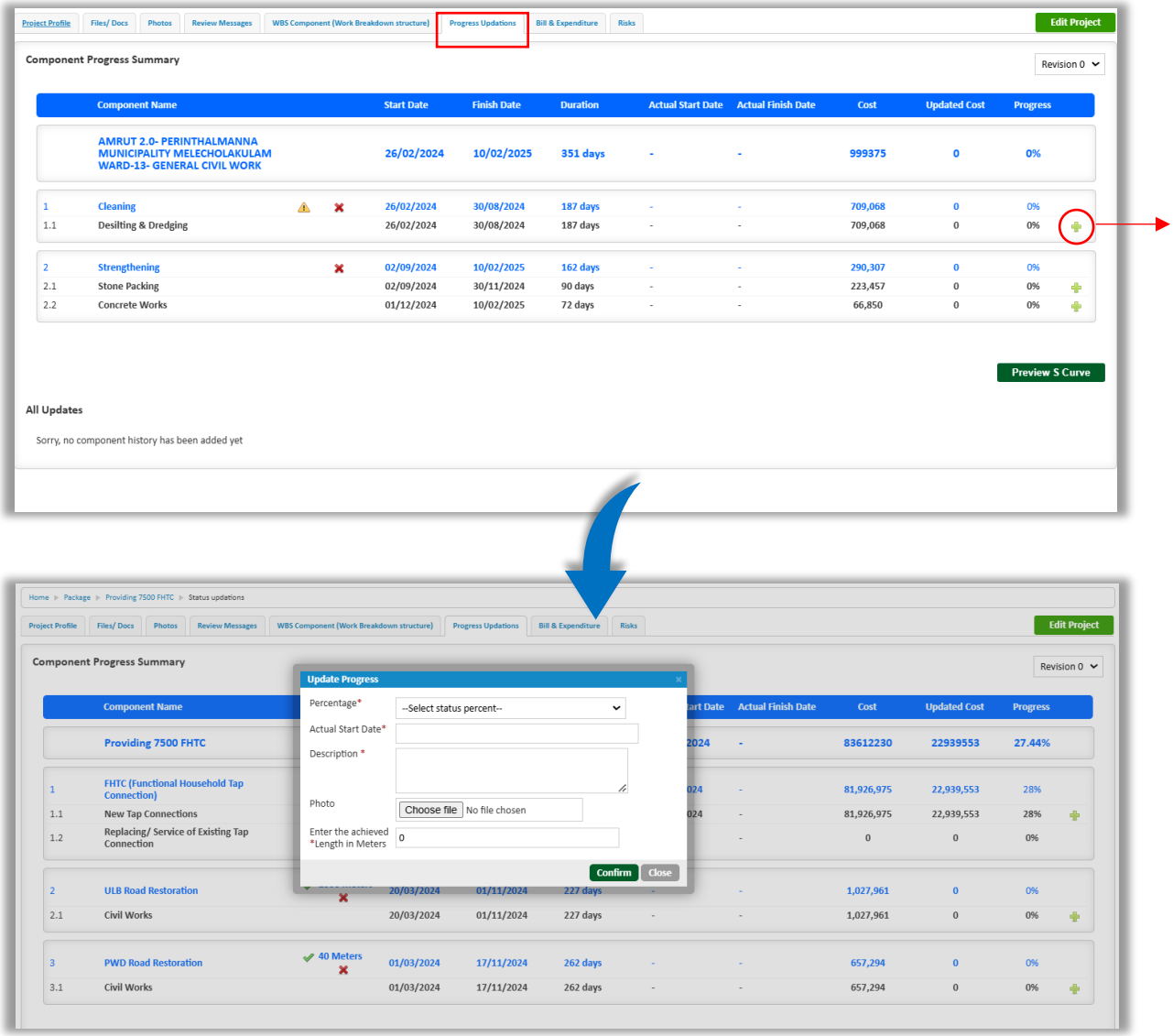
The planned WBS components. Updated lowest sub-components are indicated by a plus symbol icon.

Clicking this icon opens a modal window. These modal displays:

- Progress percentage

- Date of update
- Description
- Photo attachment

Select the achieved percentage on the date of update from the dropdown.



If the main component has units, enter the achieved value as the updated percentage. If no value is achieved, it can be saved as zero or the same value multiple times.

NOTE: However, once a value is updated, a lower value or percentage cannot be entered on the next day.

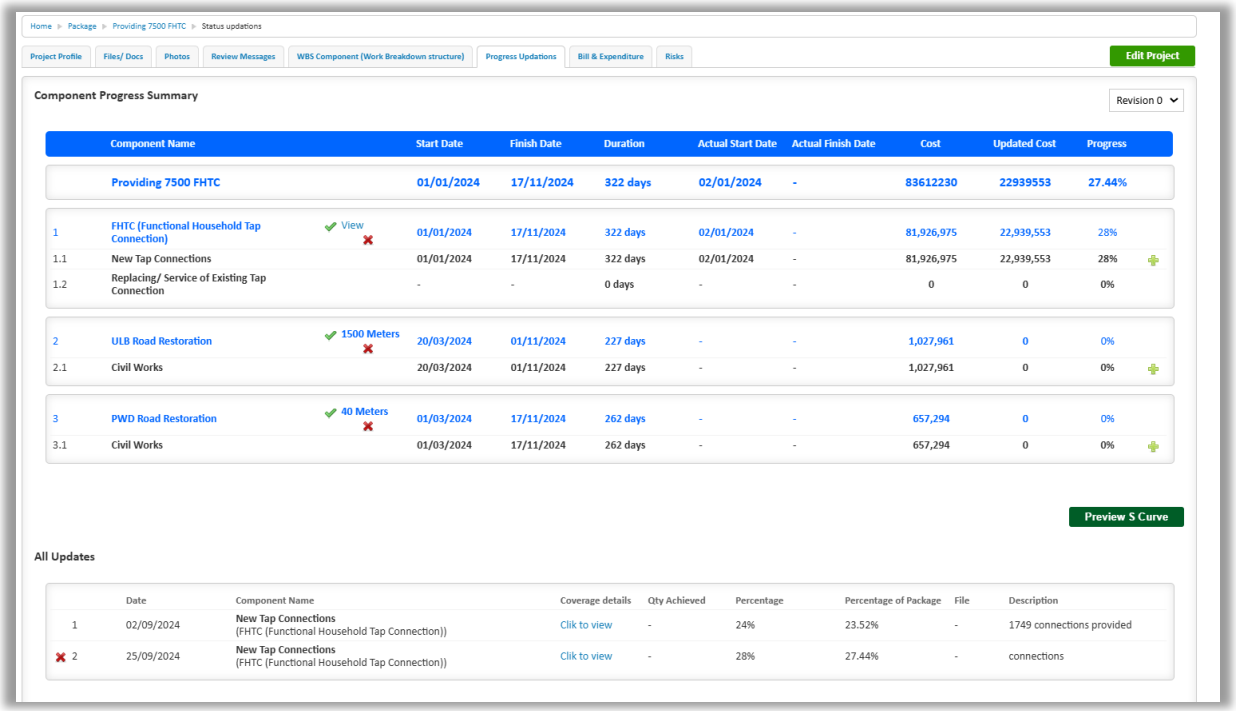
- ✓ *As soon as a progress update is added the WBS component planned data will be freezer unit revision is carried out.*
- ✓ *When a progress update is carried out in any of the packages under a project the status of the main project will be changed to Started, i.e. the project is under physical progress and ongoing.*

- ✓ *Only all the progress of packages gets 100% the main is considered to be physically completed*

MY UPDATES & WBS COMPONENT REVISION

MY UPDATES

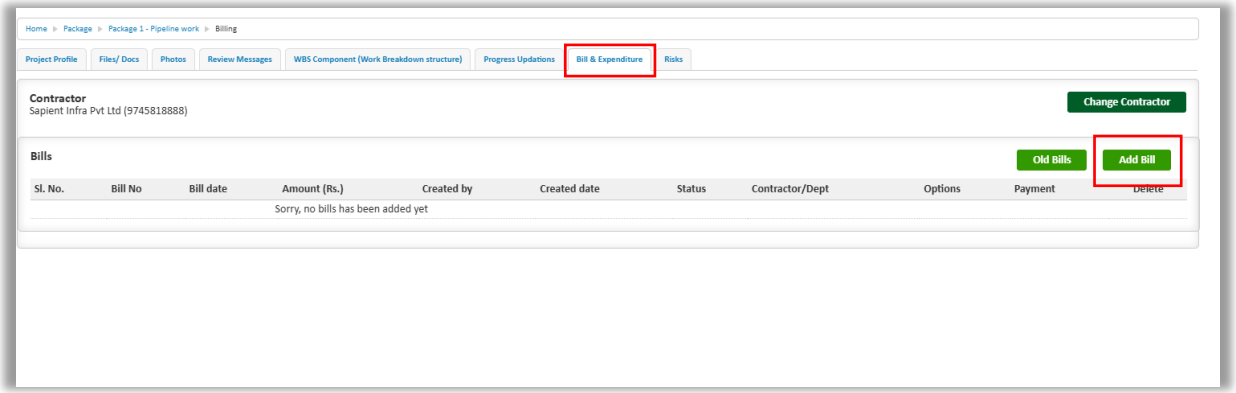
Progress updates are displayed in the "Progress Update" tab, sorted by date below the WBS component table. Users can analyse the updates based on the dates.



BILL AND EXPENDITURE

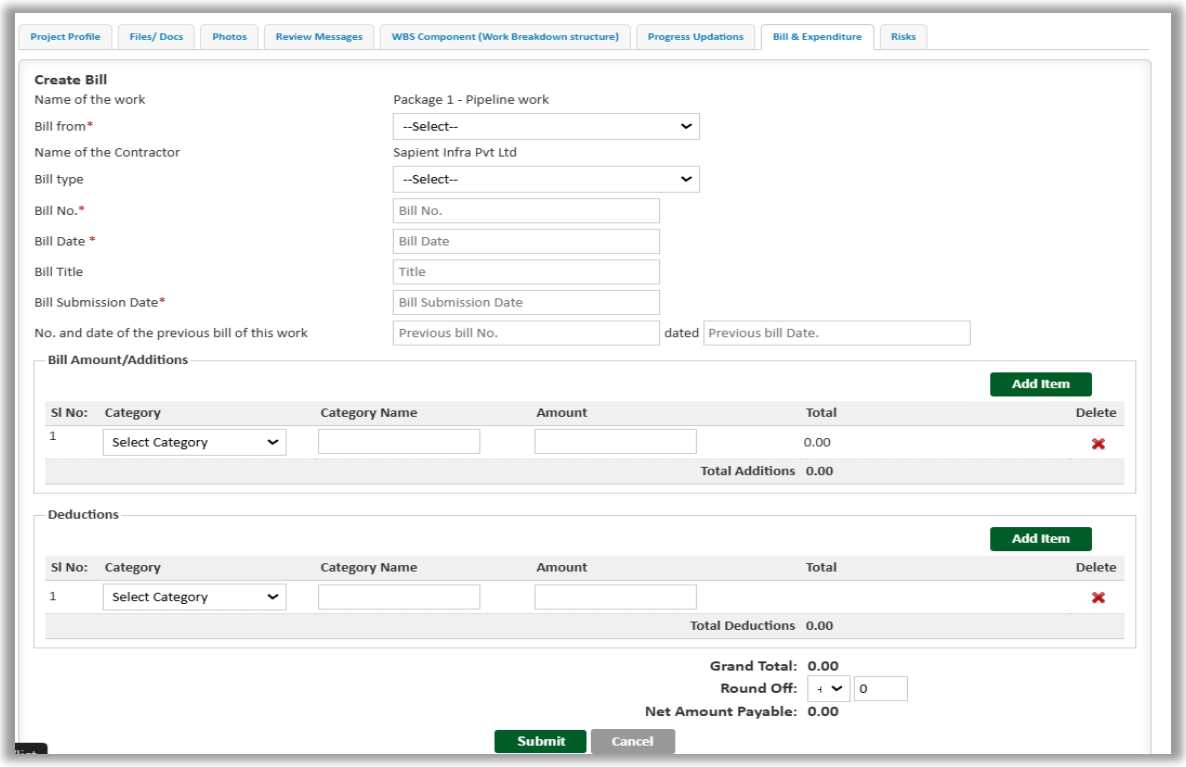
In the package profile, locate and click on the **"Bill & Expenditure**" tab. This tab is typically situated at the top of the page within a collection of tabs, each leading to a different package feature. In this module the financial progress of a package is captured

For updating each financial progress click select 'NEW BILL" button to a new bill



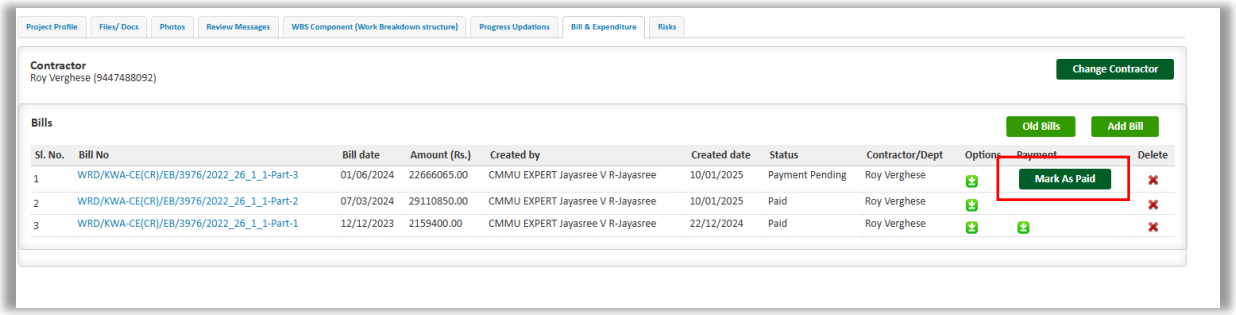
HOW TO CREATE A BILL?

- Click on 'NEW BILL" button, the page for creating new bill appears
- Enter the details required for each bill submission, including the contractor's name, bill type, and submission date.
- The bill categorizes expenses into additions and deductions, allowing for a clear financial summary.
- Users can add category items dynamically to the bill, enhancing flexibility in the billing process.
- It includes fields for inputting individual item amounts, with a total calculated for both additions and deductions.
- A grand total and net amount payable are prominently displayed at the end of the bill for quick reference.



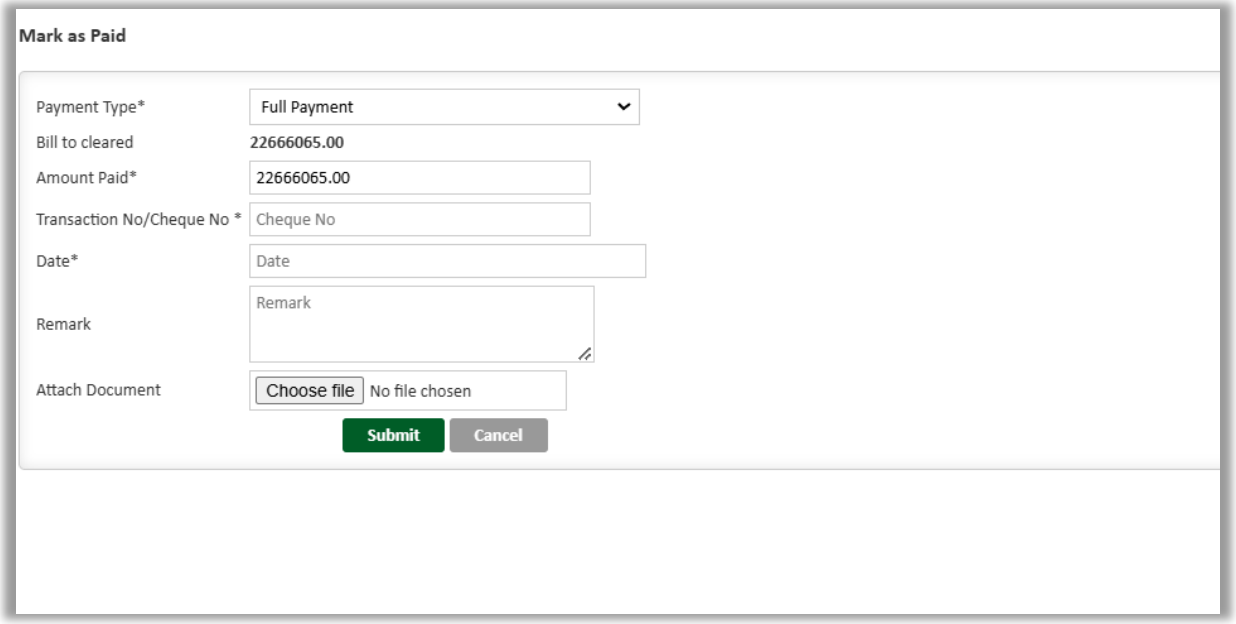
- Click on the submit button after entering details to save the bill
- Created bill will be listed under the same tab Bill and expenditure with bill no
- To view the bill, click on bill no, which directs to view page of that bill

NOTE: Created bill will be in the status of Payment Pending and only when payment is marked against that bill the amount is considered as expenditure and taken for analysing the financial progress



HOW TO MARK THE PAYMENT AGAINST A BILL?

- In the Bill and Expenditure section corresponding each payment pending bill there is a MARK AS PAID button, click this button
- Page for updating the payment details appears



- Select the payment type as either full payment or part payment
- Update the payment date with transaction details and relevant docs (optional)
- When a bill partially made the status gets updated as such respectively

NOTE: The amount paid is taken as the actual expenditure of the package and in turn consolidated at project level

“

When both physical and financial progress is achieved the project is considered as complete and status of that project will be updated as completed “

OTHER MISCELLANEOUS FEATURE

RISK MODULE

The risk module assists in monitoring and mitigating external risks that may impede project or package progress, enabling timely action to resolve issues. Risks are categorized into 14.

To add a risk in any one or more one category in the project & package profile, locate and click on the **"Risk**" tab. This tab is typically situated at the top of the page within a collection of tabs, each leading to a different package feature. In this module the financial progress of a package is captured

The page with 14 risk category and its explanation appears, against each category there is plus symbol under add indicant column

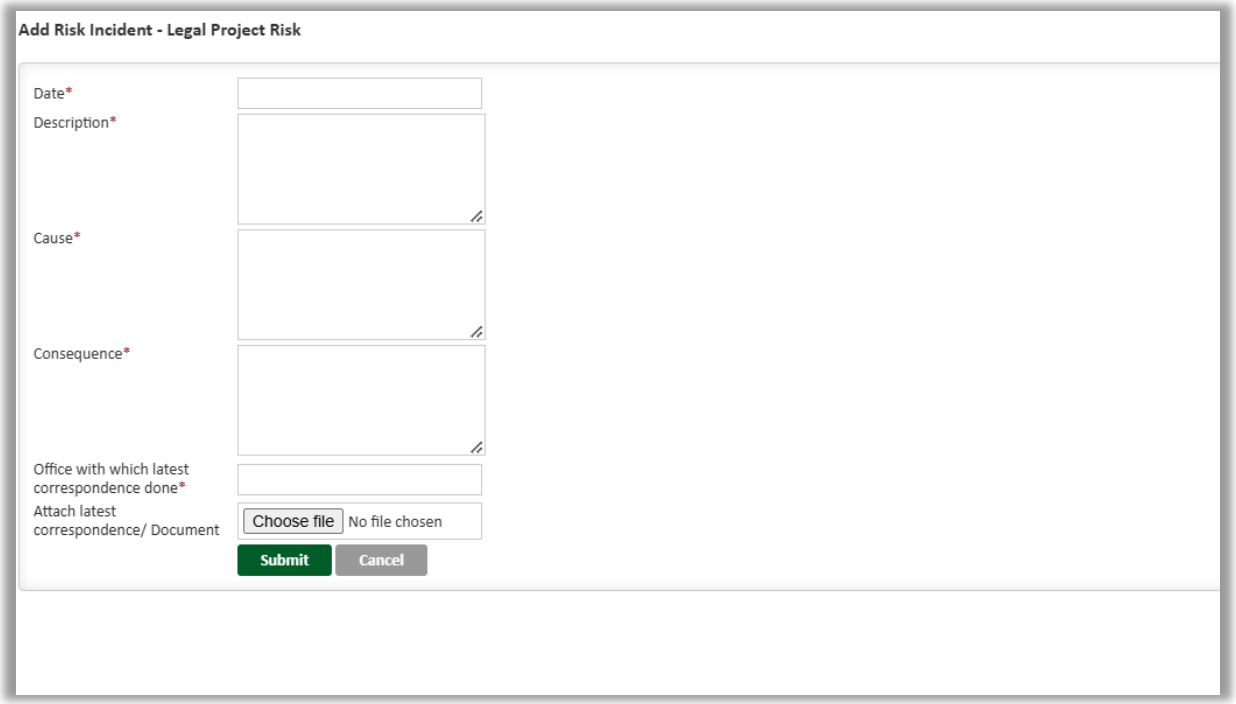
Click on plus system to add a new risk under a selected category

Project Risks

Help

#	Risk	Explanation	Assigned/Not	Add Incident
1	SMMU Level - AMRUT Organisational Project Risk	SMMU Level - Any situation that delays the project where AMRUT's Internal Permission, Decision, Approval and fund transfer.	No	
2	Permission - Approval/ Permissions Related (from other departments excluding road cutting permission and land related)	Permission - Any situation where Approval/Permission from other departments (PCB/ Fire & Safety/ Railway/ BSNL/ Corporation/ Panchayat/ Funding Agency/ Electrical Inspectorate etc.) causes project delay.	No	
3	Contract - Contract Related Risks	Contract - Any situation causing a violation of the contractual agreement/ Delay in executing the agreement/ Delay in starting the project / Delay in supplying materials	No	
4	Cancellation - Decided to cancel	Cancellation - Decided to cancel the project, hence no progress. Awaiting approval.	No	
5	Dependancy - Delays due to other Projects	Dependancy - Slow progress/ New proposal for other Projects of AMRUT/ Waiting to complete or start the project from another department/ Other departments cause delays for the current project	No	
6	ULB Level - General ULB level delay/ Procedural delay	ULB Level - Any incident at the ULB level that delays the implementation.	No	
7	Land - Land Related Risk	Land - Any situation causing a delay in land availability (including site handing over, permission, Land acquisition, boundary demarcation, dispute)	No	
8	Legal - Legal Project Risk	Legal - Court Cases/ situations that generate legal implications	No	
9	Natural - Natural Calamities Related	Natural - Any situation where Natural Calamities cause delay to the project (flood/ wind/ heavy rain)	No	
10	Protest - Public Protest	Protest - Any objection from the public to implement the work	No	
11	Road - Road Cutting Related Risk	Road - Any situation causing delay in road cutting (permission from PWD/GP/NHAI/Corporation etc.. excluding delay due to slow progress or delay in other related projects)	No	
12	Social - Social Project Risks	Social - Any situation related to the well-being of the workforce/ stakeholders/COVID-19 Pandemic	No	
13	Technical - Technical Project Risk	Technical - Technical reasons cause a negative effect on project objectives. (seasonally waterlogged site/ geotagging related, technically not feasible)	No	
14	Tender - Tender Call Related	Tender - Poor response from tenderers/Lack of bidders/ any situation causing combining/splitting of packages/estimate revision/tendering-related issues	No	

- Add risk incident page appears, enter the risk with risk details, the date and a detailed description.
- Users must specify the cause and consequences associated with the risk incident.
- The document prompts for the office with which the latest correspondence occurred, ensuring traceability.
- There is an option to attach the latest correspondence or relevant documents



- After entering the risk details click on **SUBMIT** button.
- Added risk will be listed below the same category. To update the risk status, click on the risk status plus button

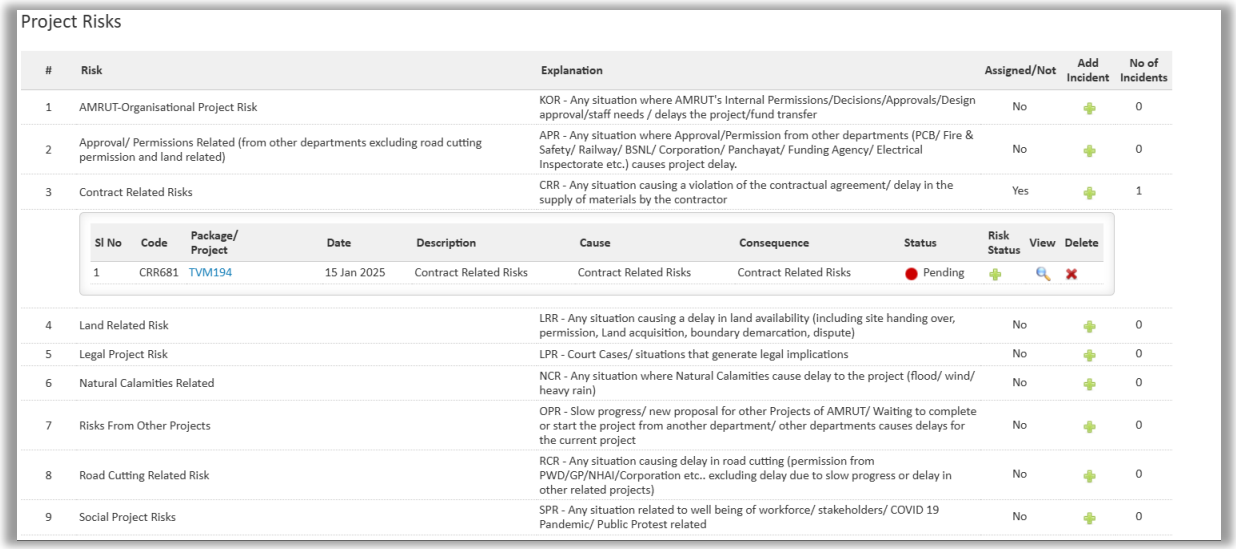
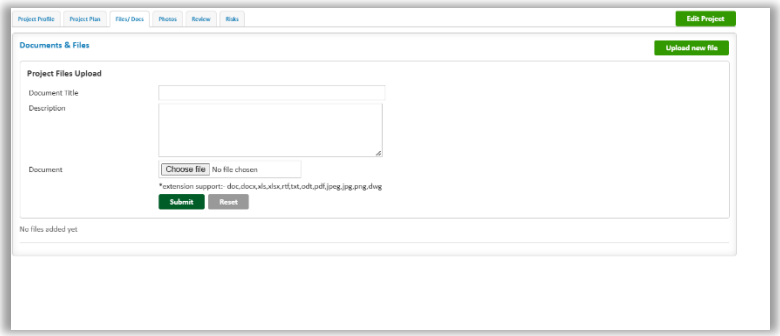


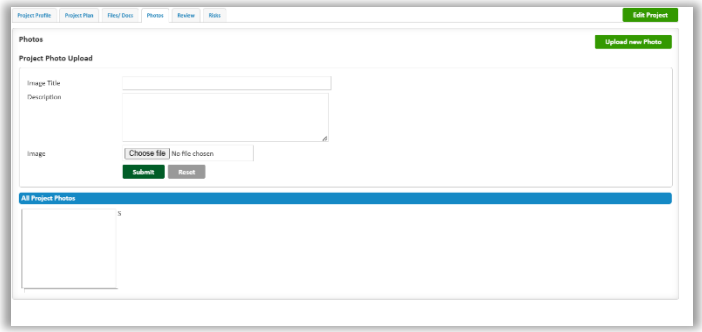
PHOTO AND FILE/DOC MODULE

Any addition photos or documents related to a particular project or package can be uploaded into the corresponding profiles. To upload category in the project & package profile, locate and click on

the **"Photo & File/Doc** " tab. This tab is typically situated at the top of the page within a collection of tabs

Upload the files/Photos with a filename into system and its be listed under the particular project or package profiles

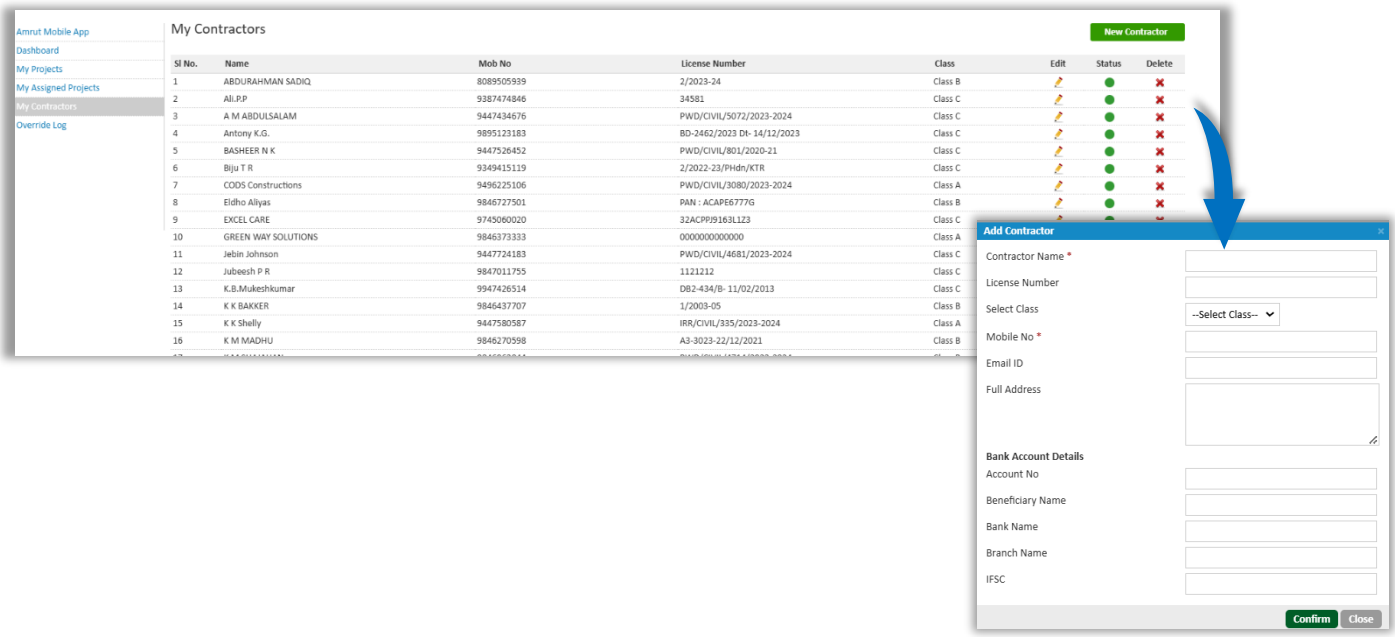




MY CONTRACTORS

To enrol the contractors to system. Locate and select **My Contractors** module from left side menu.

The page appears with **NEW CONTRACTOR** button on top right side of the page. Click select this button to add new contractors



** **********

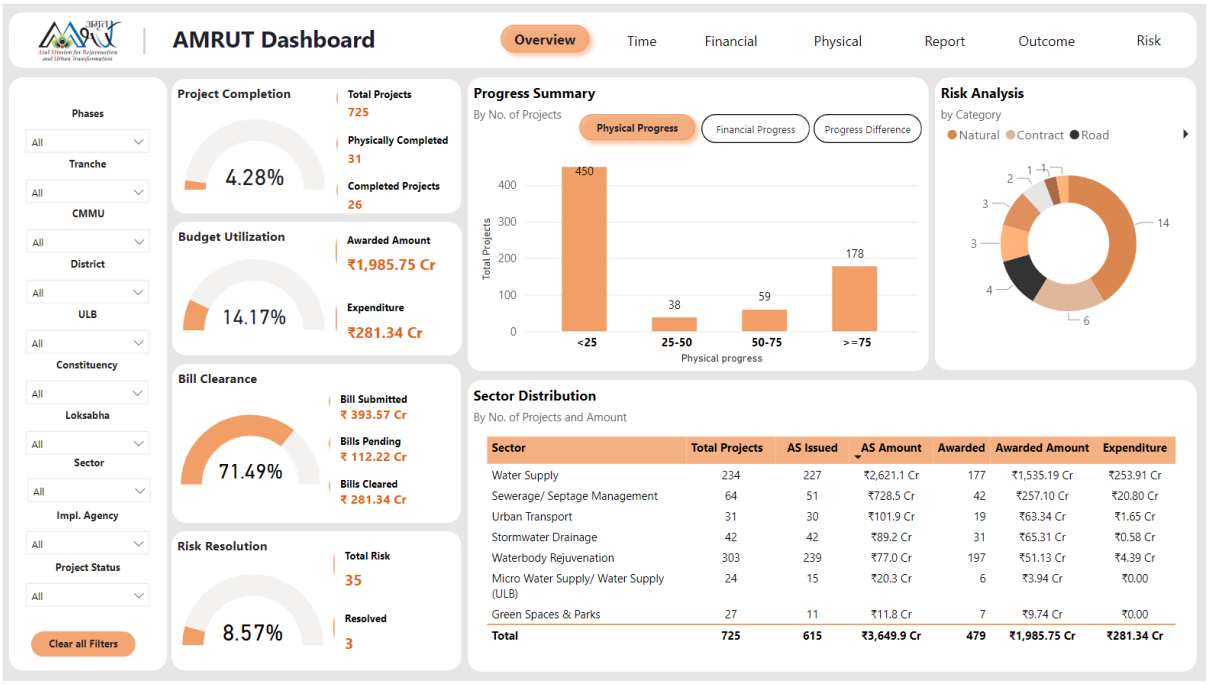
DASHBOARD (POWER BI)

Overview

The dashboard overview provides real-time insights into key aspects such as project completion status, budget utilization, bill clearance, risk resolution, and analysis.

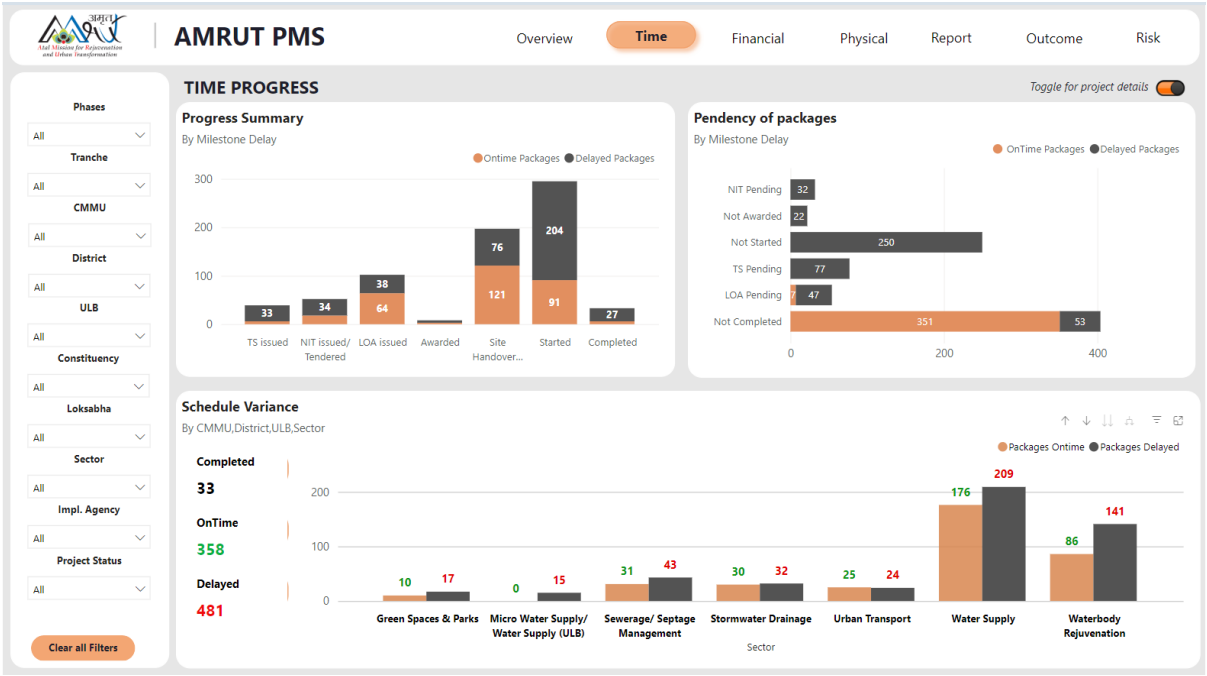
Users can apply multiple filters throughout the dashboard, refining the view based on AMRUT phases (1 & 2), tranches, CMMU, district, urban local body, constituency, Lok Sabha, sector, implementation agency, and project status.

The sector-wise project distribution section offers a clear representation of projects and their respective budgets across various sectors.



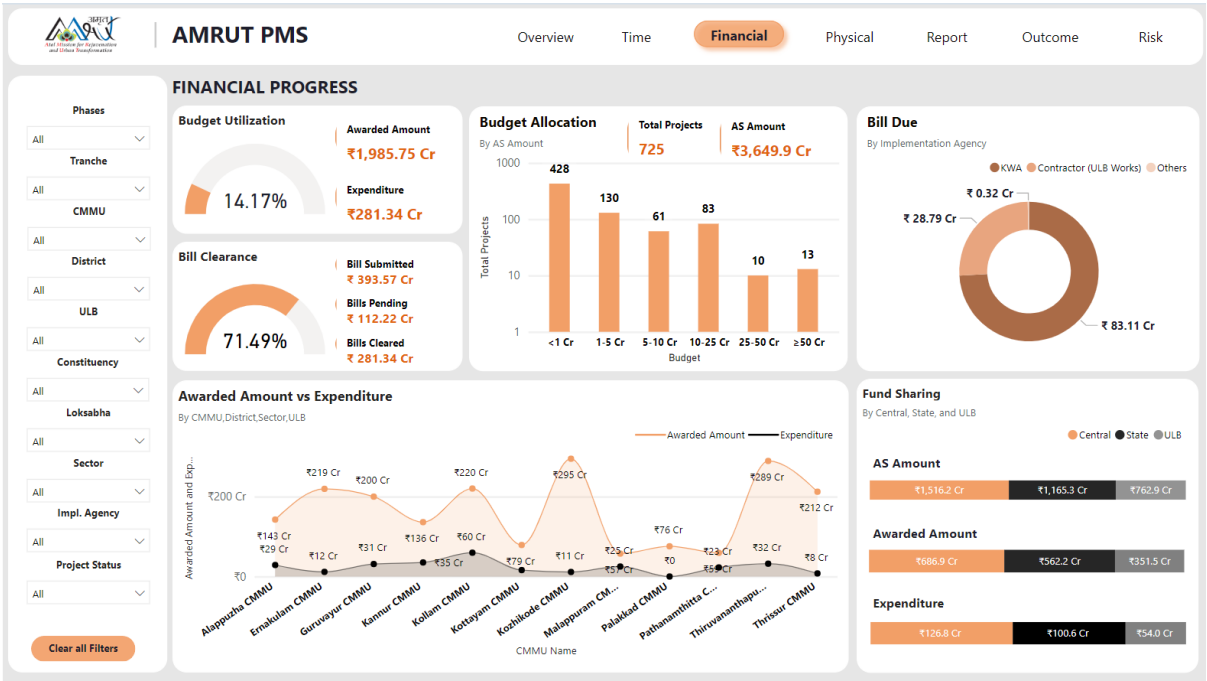
Time Progress

The Time progress page categorizes projects into on-time and delayed, with an option to toggle between package-level and project-level details.



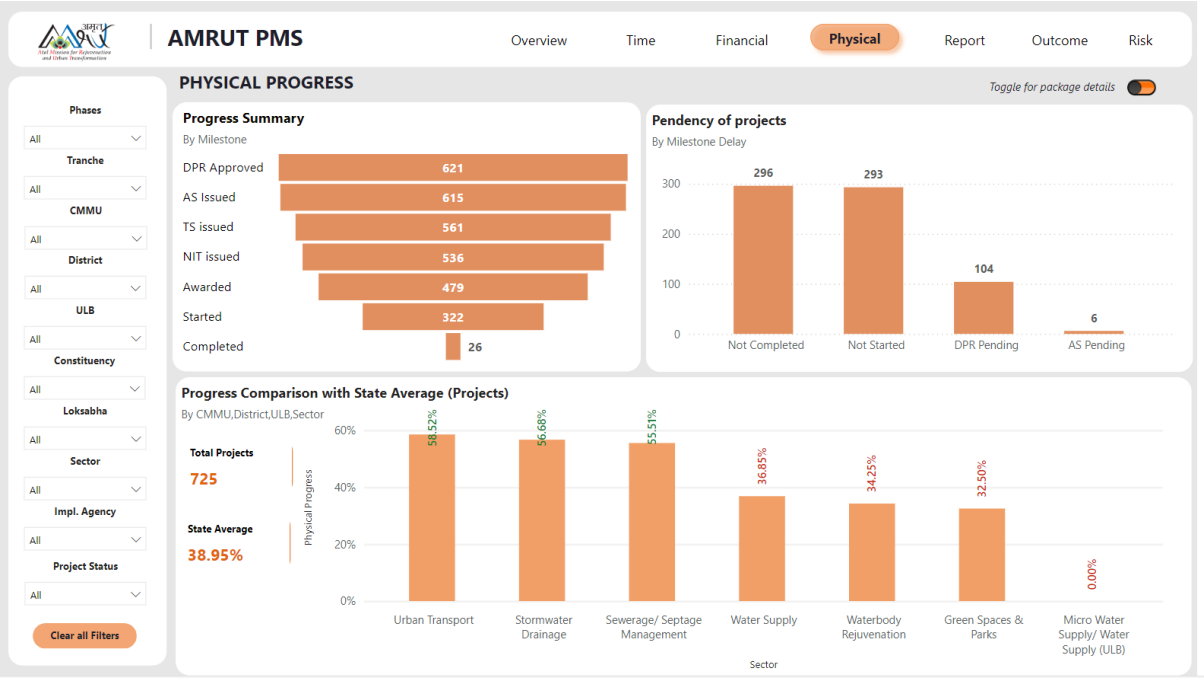
Financial Progress

The financial progress section highlights budget allocation, utilization, bill clearance status, and outstanding dues. It also displays fund-sharing details among the central, state, and urban local bodies.



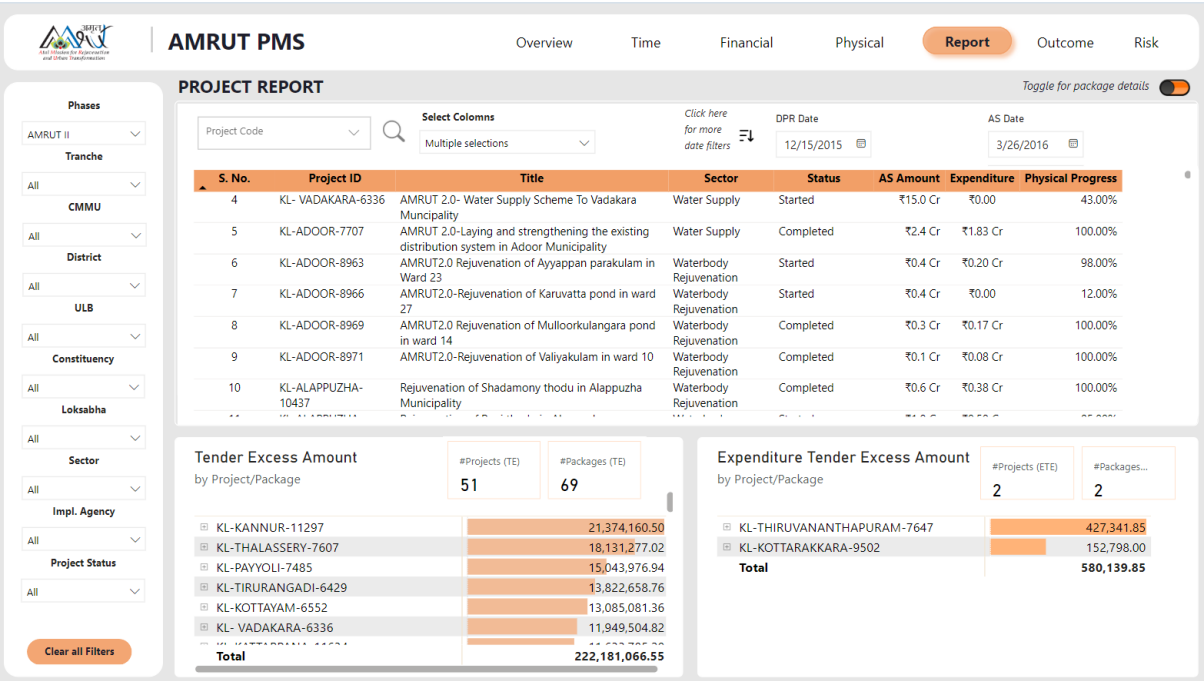
Physical Progress

In the physical progress section, milestone-wise completion and delays of each project are presented, along with a comparison to the state average.



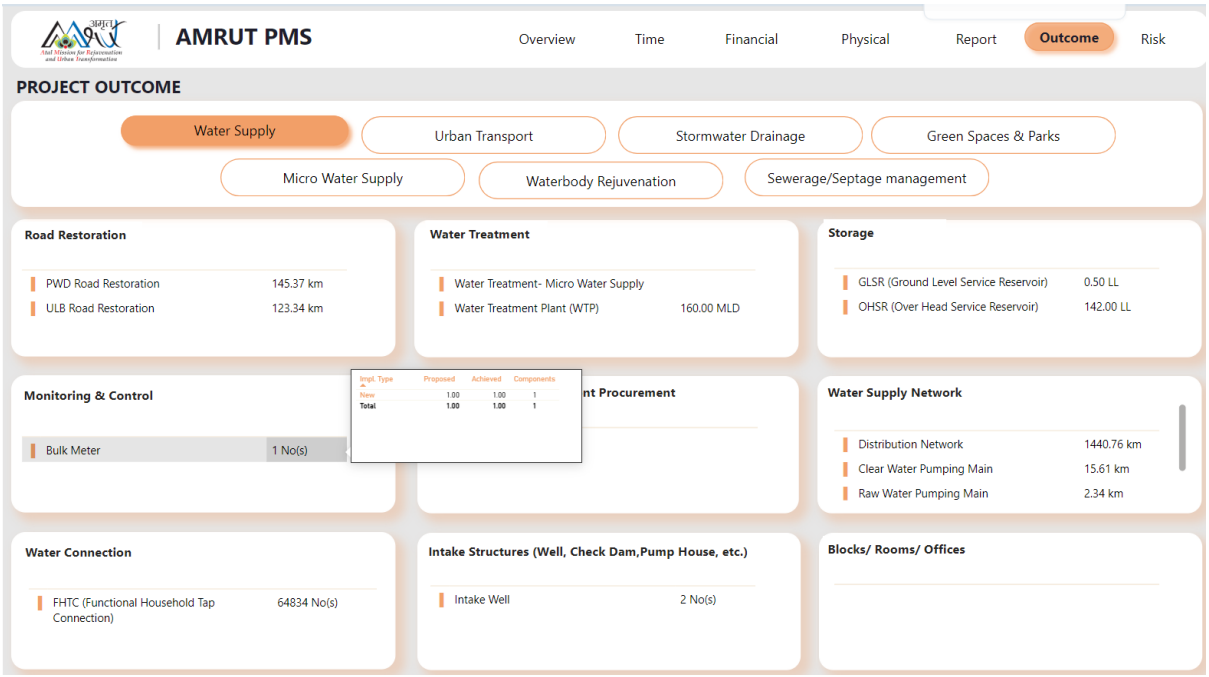
Project Report

A comprehensive project report is available, summarizing key details such as status, district, local body, sector, and more.



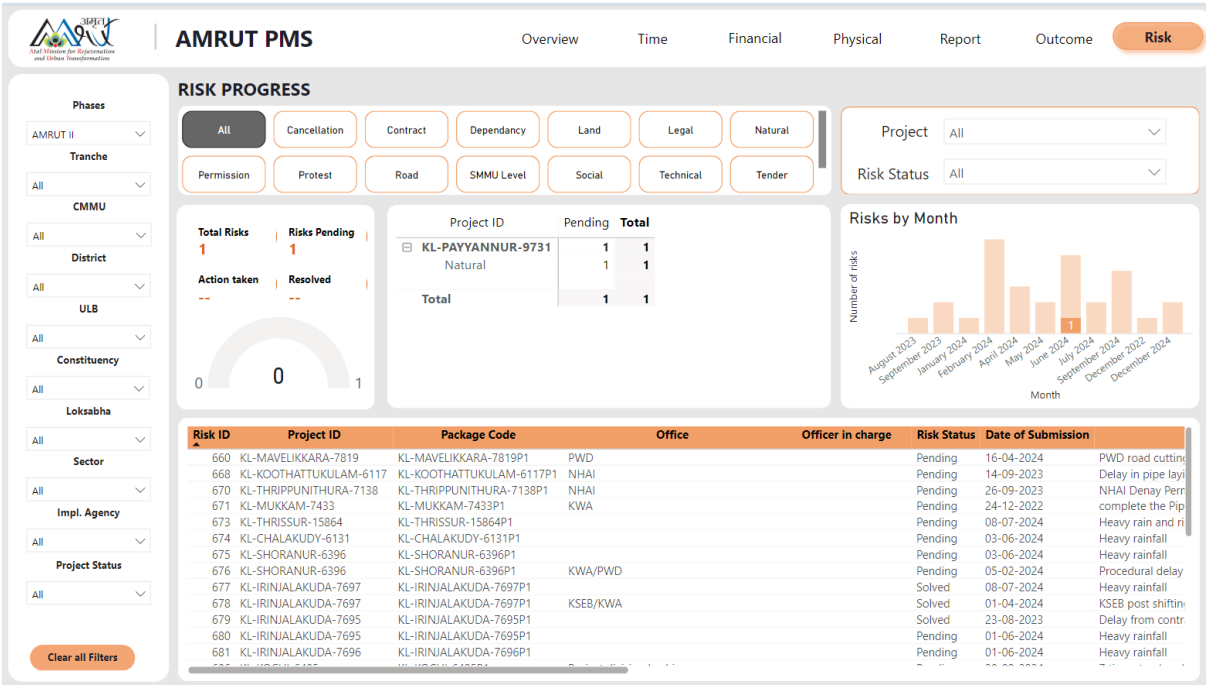
Outcome

The quantifiable sector-wise outcomes of each project are shown here, providing measurable insights into their impact.



Risk/ issues

The risk analysis section displays total risks, pending issues, resolved cases, and actions taken. For immediate attention, a month-wise count of each project is also available.



****

User Manual

WQMIS

Water Quality Monitoring Information System

Prepared By

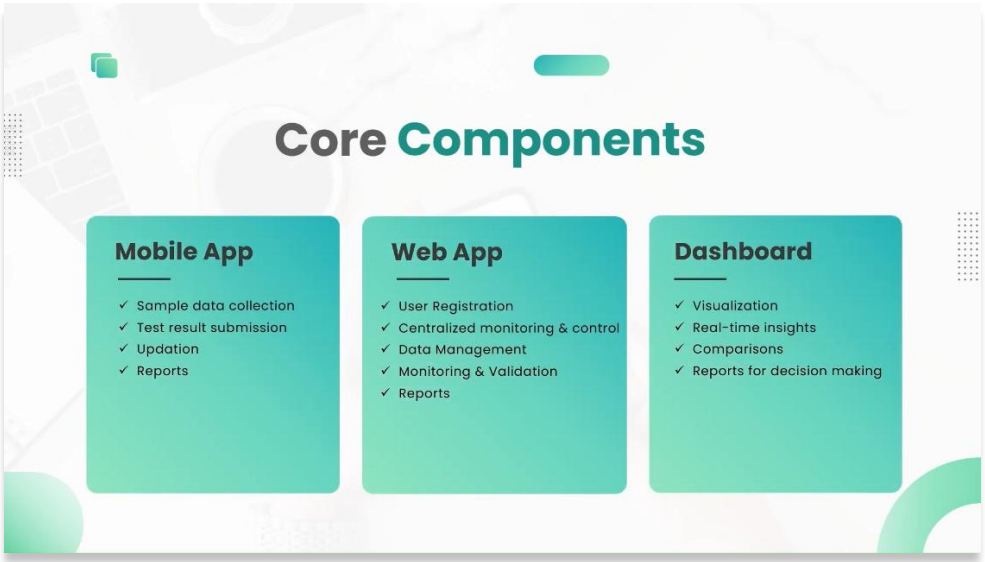
AMRUT, Kerala

Table of Contents

Introduction

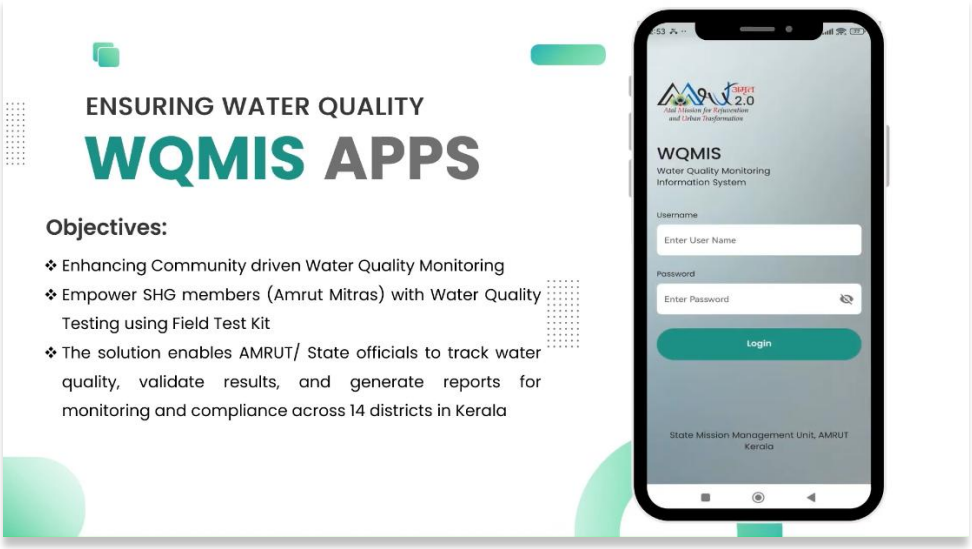
WQMIS is an advanced solution for real-time water quality monitoring, de-centralized data collection, validation, and centralised reporting.

The system comprises three modules: A Field Application, a Web Platform and a Dashboard.



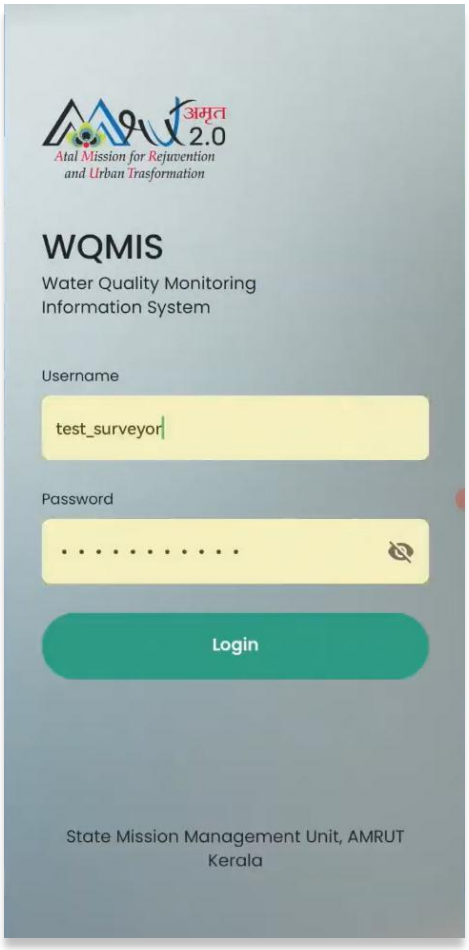
Mobile Application

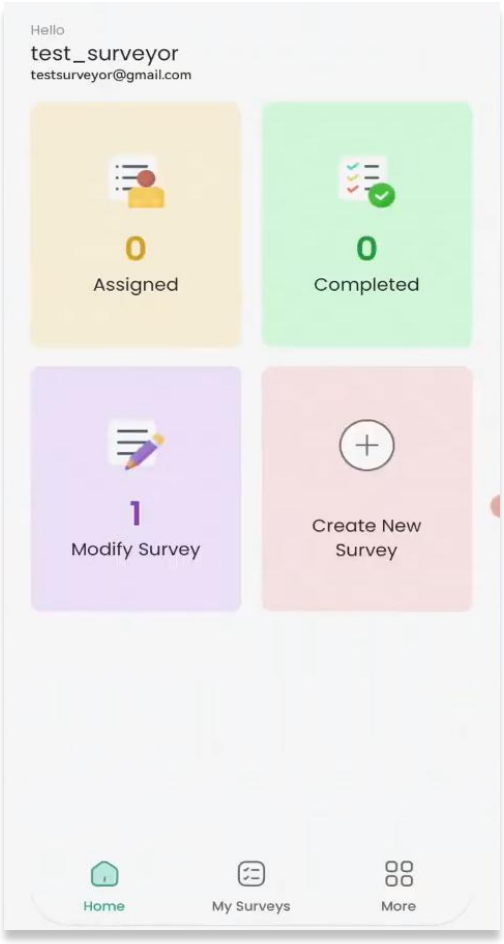
empowers grassroots participation by enabling real-time, accurate data collection.



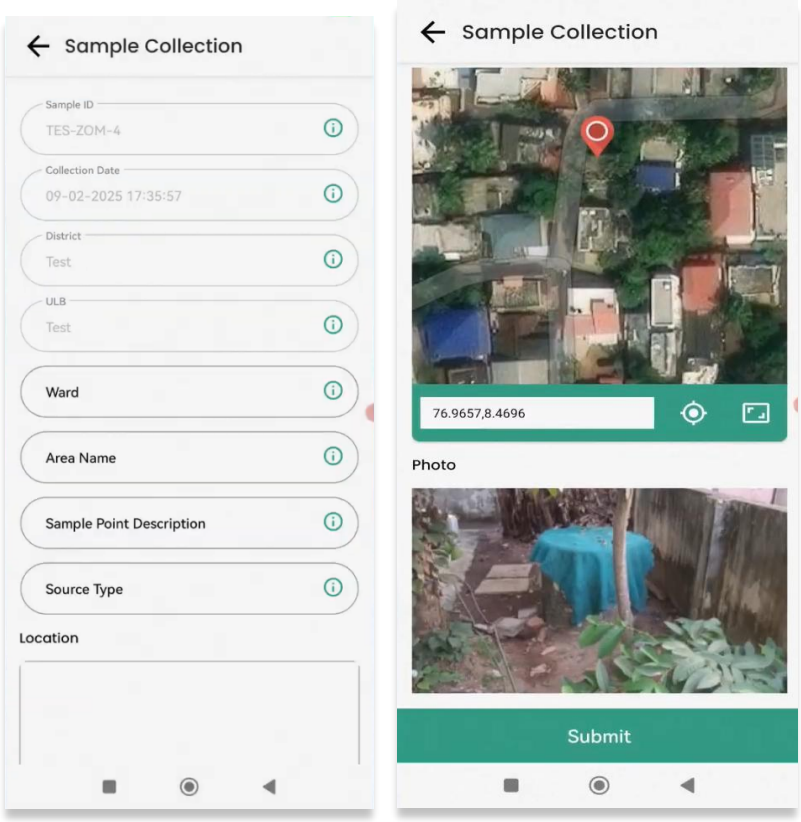
Water Sample Collection:

Women SHG Members can securely login with user-specific credentials, ensuring data security and accountability.

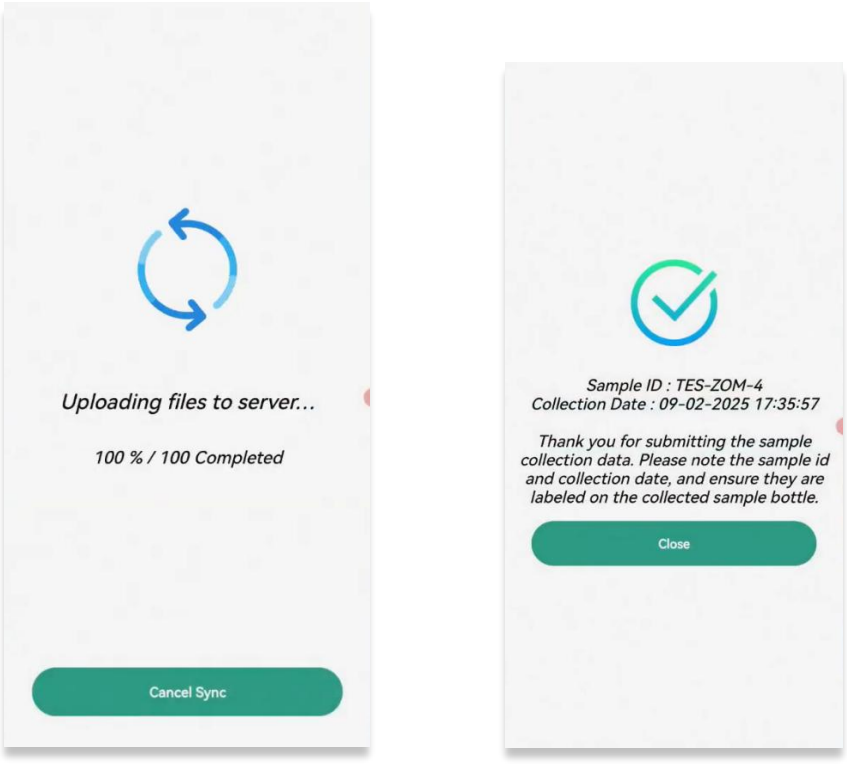




The app streamlines data capture with auto-generated sample IDs, date and time of water sample collection, Area, Water Source type, GPS location tracking and location photos guaranteeing precise sample identification. Integrated photo and GPS features provide contextual evidence, enhancing transparency and detailed analysis.

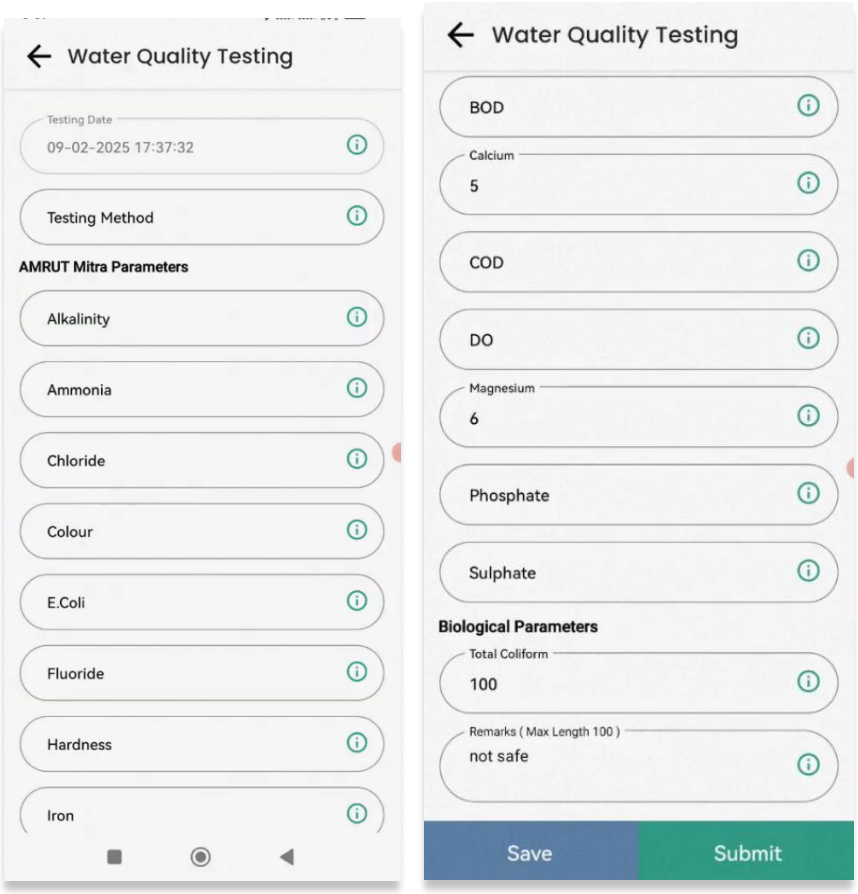


On submitting the Sample collection data, it will be synced to the server.



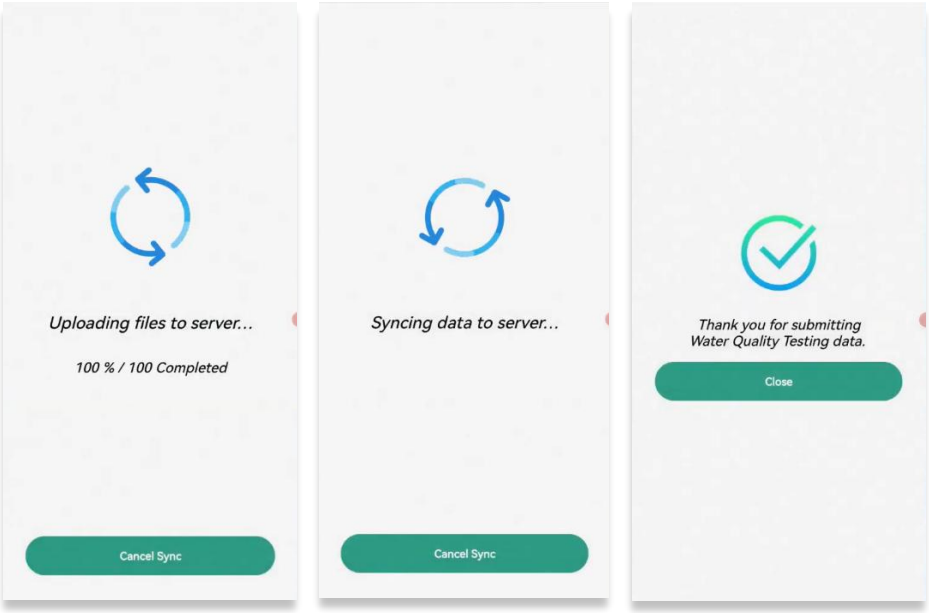
Water Quality Testing:

After submitting the water sample collection information, the water sample must be tested with a field test kit (FTK) or by the Water quality testing laboratory. The testing date and time will be captured automatically. The testing method and field test kit name or lab name must be entered. The results from the lab can be uploaded to the system also.



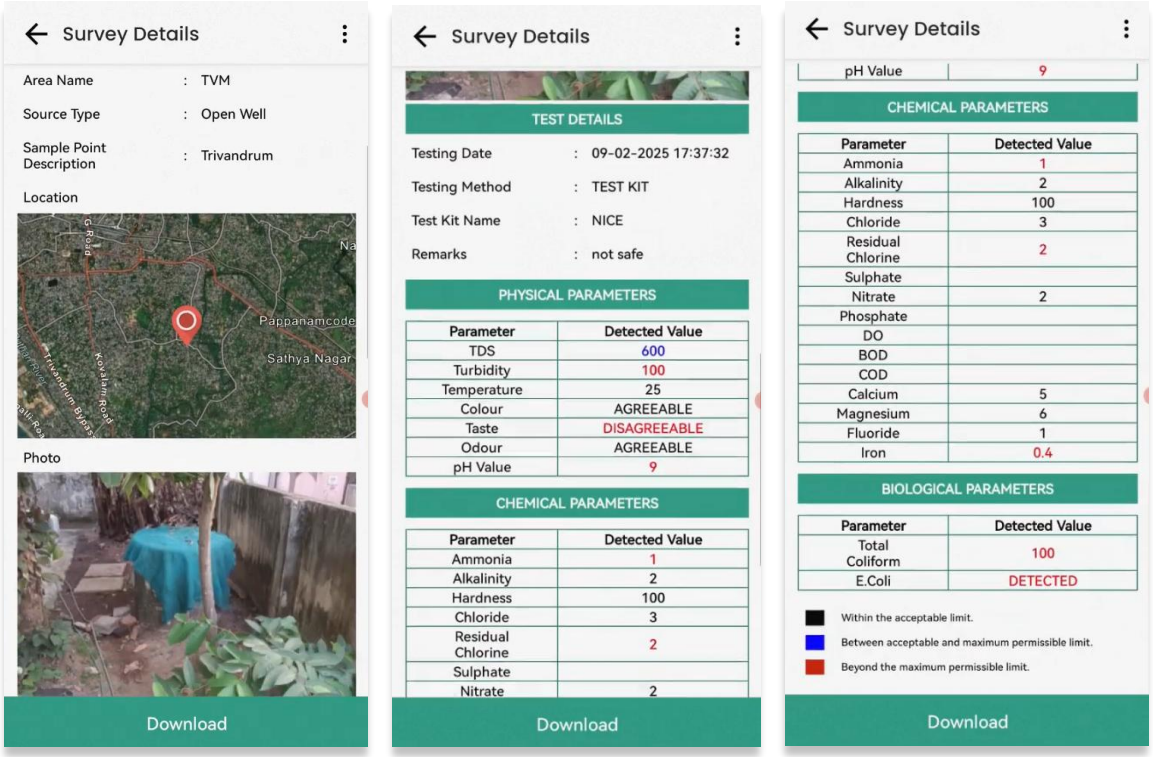
Users can save incomplete surveys as drafts and submit finalized reports for review, ensuring seamless data management. Water quality parameters are arranged in the order of physical, chemical and biological. For easy access to Amrut Mitras, some parameters are arranged under the Amrut Mitra category.

After entering the tested value, the user is taping the submit button. The data will be synced to the server instantly.

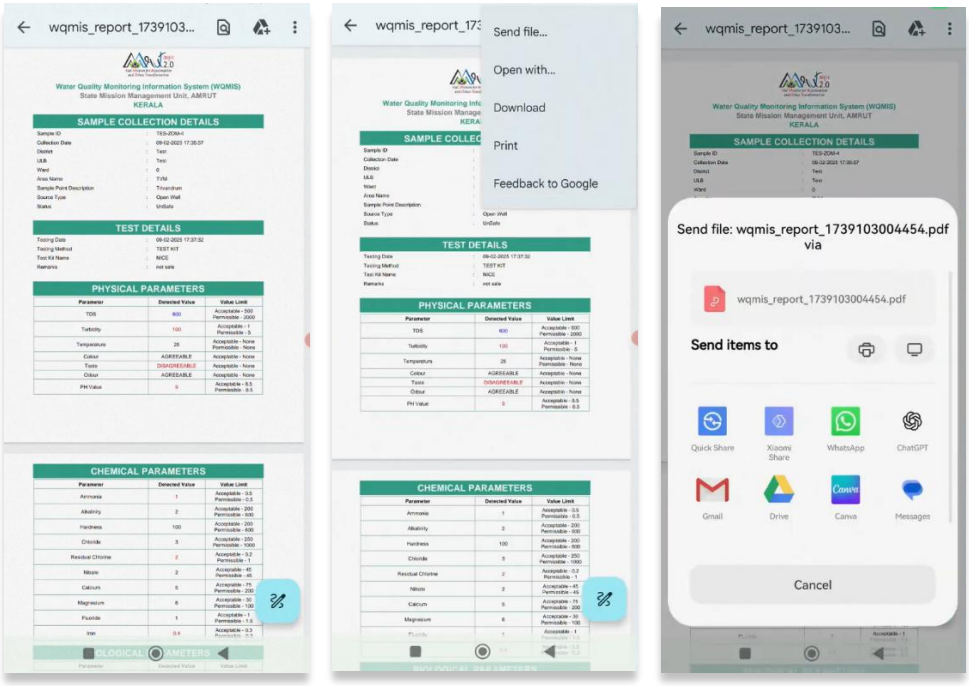


Every data point feed into a centralized system, and it is visible to authorities in real-time in a Web Application by enabling authorities to track trends, identify risks, and make informed decisions.

Automated real-time validation instantly flags unsafe samples, allowing for quick intervention on the Mobile app, Web application and Dashboard.



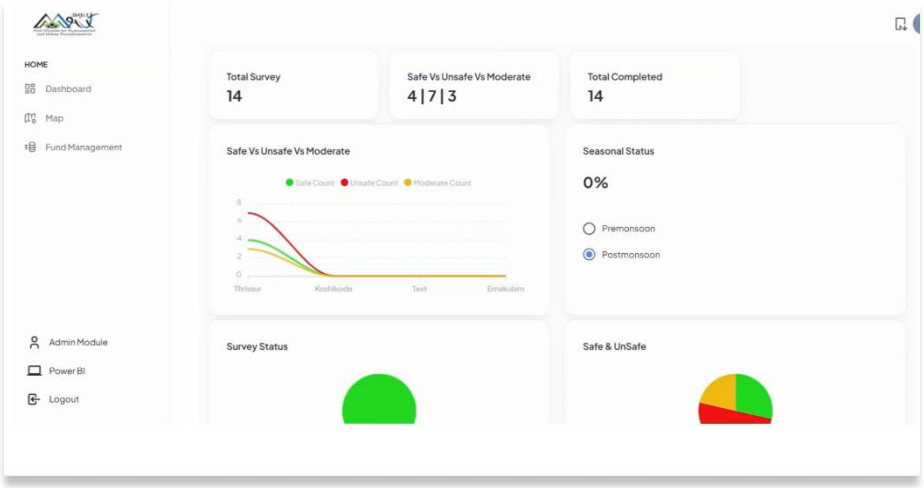
The test results can be downloaded as PDF files instantly and shared to the public through various online media.



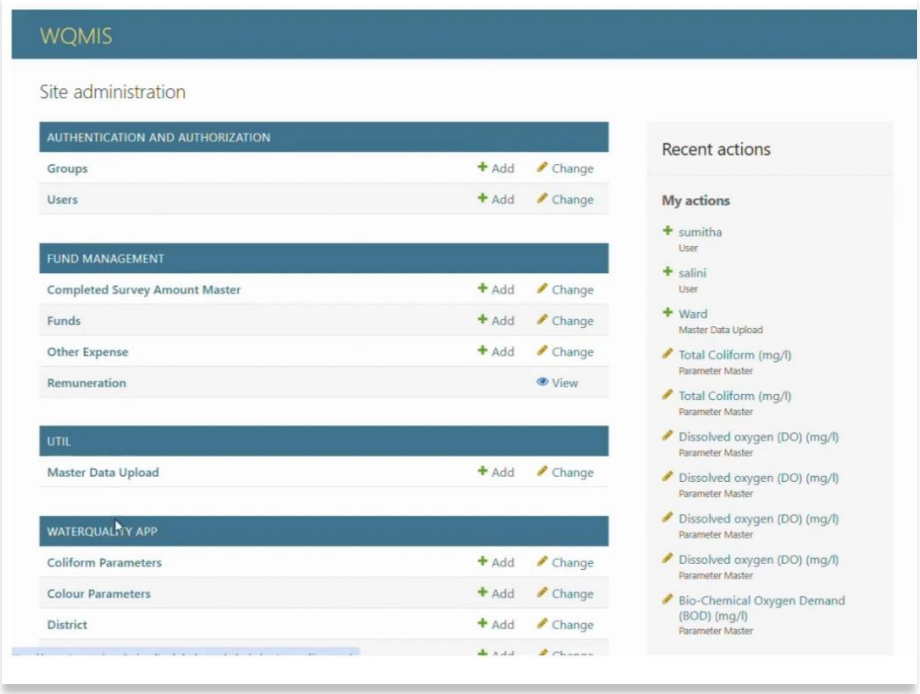
Web Application

It is a powerful governance tool designed to streamline water quality monitoring and decision-making. Administrators can securely log in to access a real-time dashboard that provides live updates on survey data, project status, and high-risk areas.

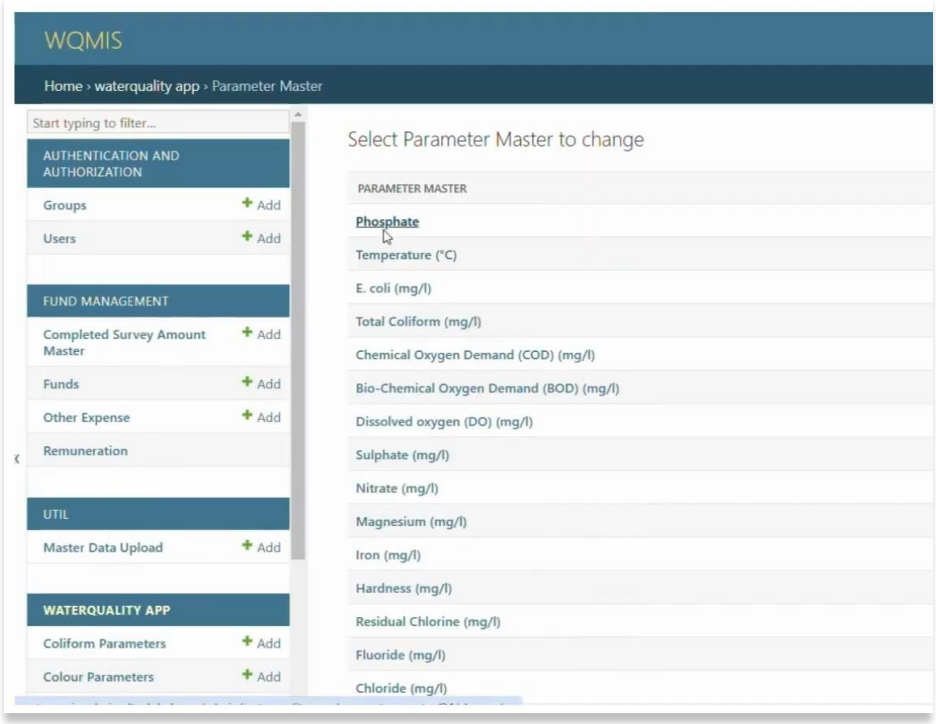
At a glance, admins can access live updates on total surveys, completed and draft entries, and district-wise classifications of safe, unsafe, and moderately safe water samples.



The Admin Module offers secure authentication and authorization management, ensuring controlled access for different stakeholders. Admins can also manage fund allocation, ensuring optimal resource distribution for water quality initiatives.



The Parameter Master ensures water quality standards are met by validating sample results against predefined limits.



Power BI Dashboard

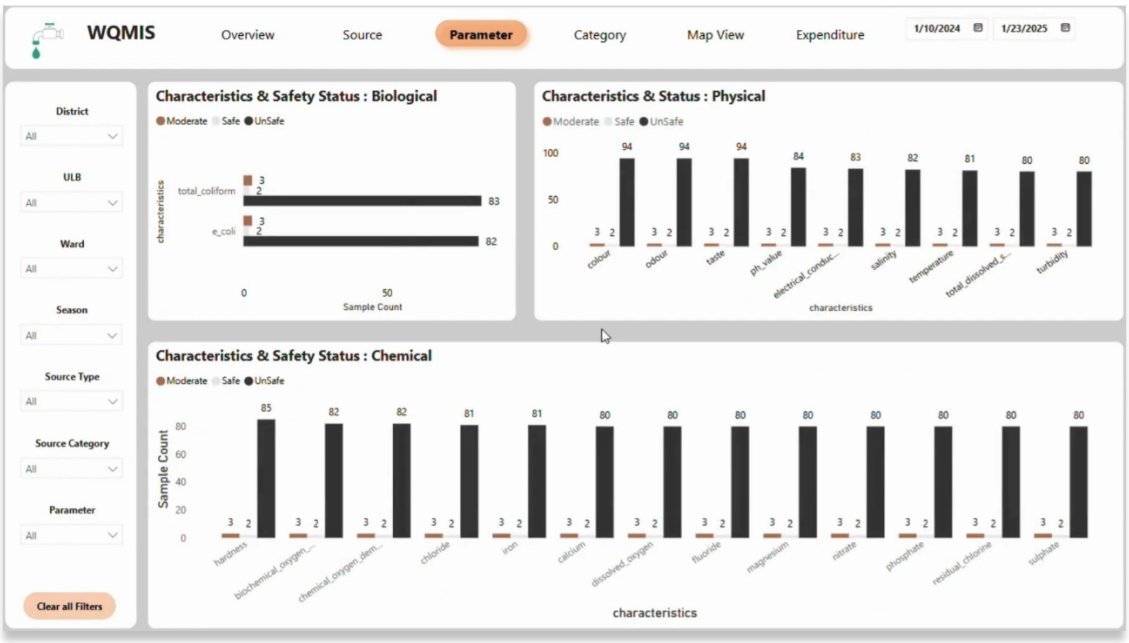
For deeper insights, the Power BI dashboard provides real-time visualizations of water quality trends, project progress, and high-risk areas, empowering data-driven decisions.

A key feature is the ability to apply filters for precise data extraction, based on district, urban local bodies, wards, season, parameters, source category and type.

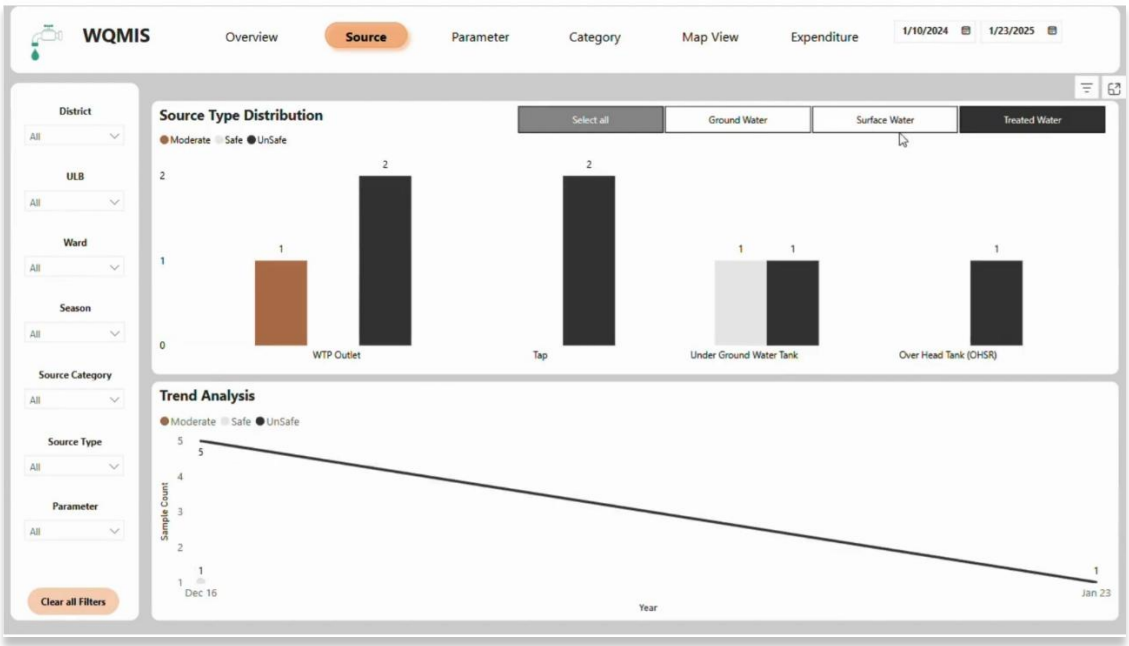
Users can analyze water safety across different districts and Urban Local Bodies making it easy to identify areas that need immediate attention, with powerful filtering options to refine data.

The dashboard presents safety distribution across various water sources like wells, reservoirs, and municipal supplies.

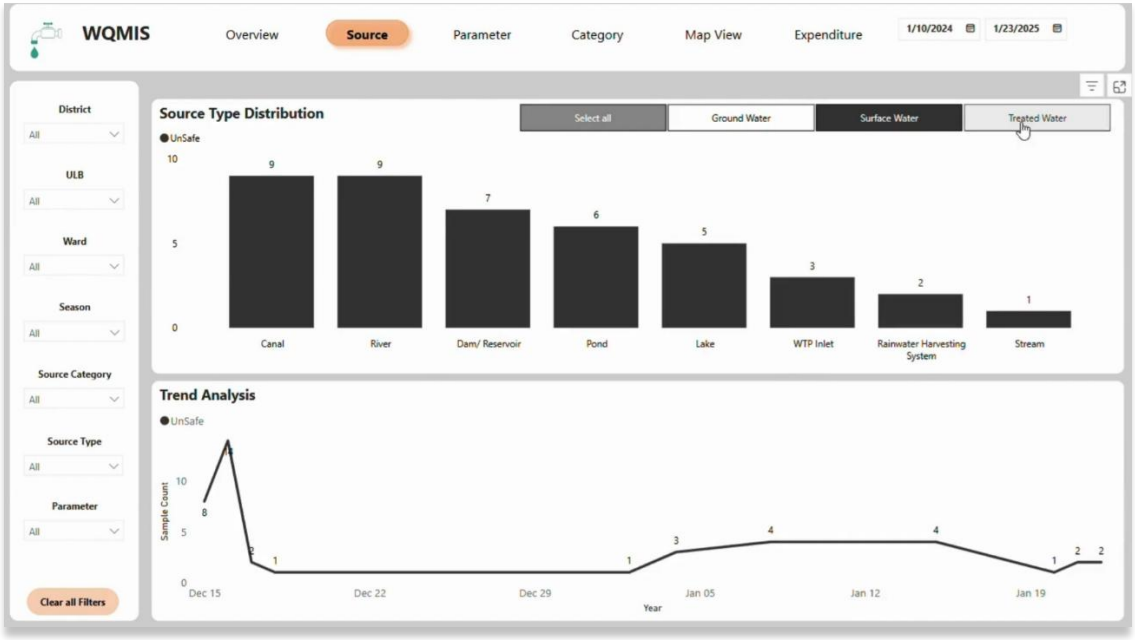
A detailed analysis of physical, chemical, and biological parameters.



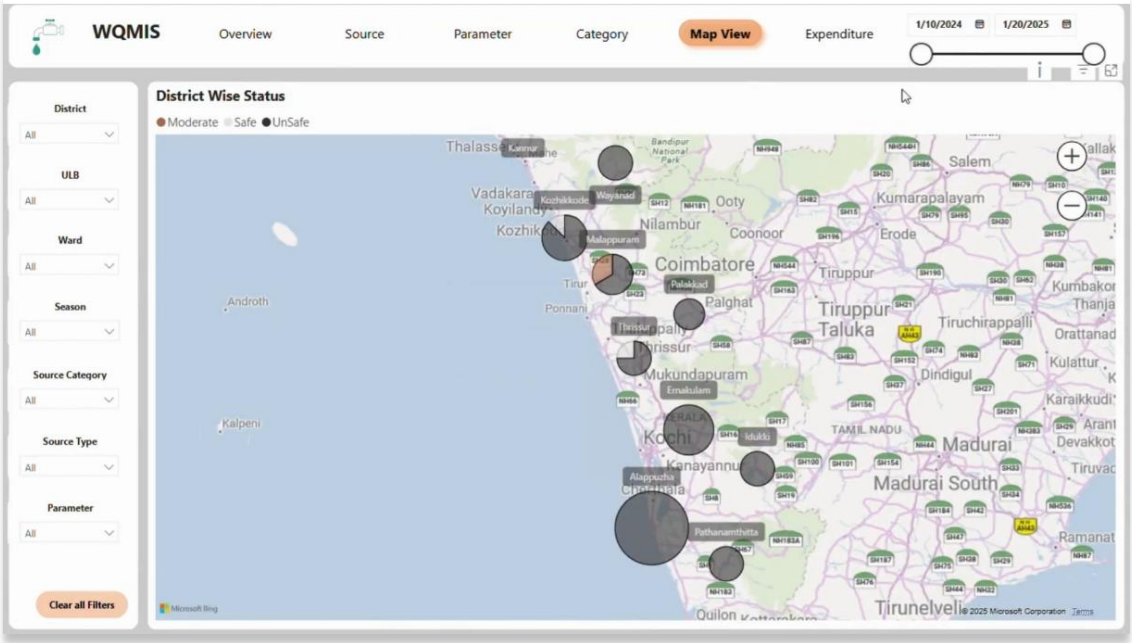
Detailed analysis of Source category: Groundwater, Surface Water, and Treated Water.



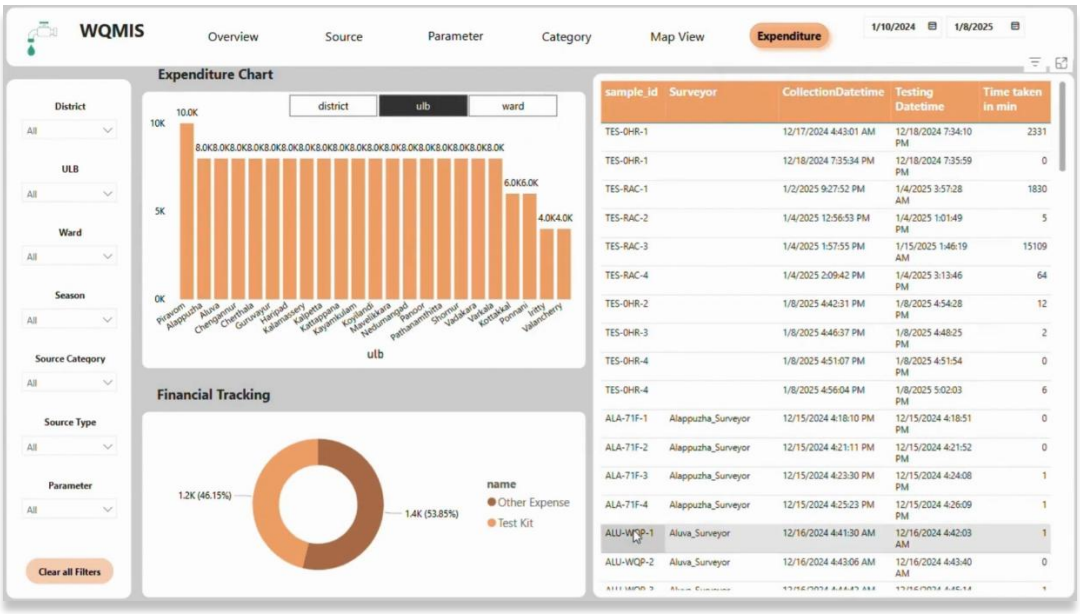
Water Source type under each Source category.



For a quick overview, the interactive map visualizes Kerala's water safety trends.



The expenditure analysis ensures transparency in testing costs at the district, ULB, and ward levels—supporting better budget planning and resource allocation.



Conclusion

This data-driven approach enhances communication and decision-making, restoring public trust in water safety management. With real-time insights, safer water for everyone can be ensured.

****