Appendix 2: Draft of PDM Version 4.0

[Draft] PDM: Project Design Matrix

Version: 4.0
Date: August 1, 2025

Project Name: The Project on Capacity Development of KUKL to Improve Overall Water Supply Service of Kathmandu Valley
Implementing Agency: Kathmandu Upatyaka Khanepani Limited (KUKL)
Target Group: All the staff members of KUKL
Period: From March 2021 to March 2027 (six years)
Project site: Water service areas covered by DNI's first stage; OJT sites for Output 1, 2. and 4 are Mahankalchaur branch office, Maharajgunj branch office, Baneshwor branch office, Chhetrapati branch office, Tripureshwor branch office and Lalitpur branch office; OJT sites for Output 3 will be determined after the commencement of project.

Project Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumption
Overall Goal			
The quality of KUKL's water supply services is improved.	1. Water supply hours are fair (*6) in the DMAs handed over by KVWSMB within the ring road. 2. Water is supplied as announced schedule by KUKL in the DMAs handed over by KVWSMB within the ring road. 3. The waler quality (Turbidity and Residual Chlorine) (*1) at the taps in the water supply areas by the target WTPs (*5) is improved. 4. Customer satisfaction (*1) of KUKL's water supply service is improved.	1. Water supply hour monitoring record by KUKL 2. Water distribution schedule announced by KUKL on its website, etc., the actual water supply hours (based on supply records, pressure measurement records, etc.), and results of customer satisfaction survey 3. Records of water quality monitoring by KUKL 4. Results of customer satisfaction survey conducted by KUKL	-
Project Purpose			
The KUKL's capacity of operation and maintenance of water supply is improved.	1. The water distribution management plan for fair water supply (*6) is implemented in the DMAs handed over by KVWSMB and whose old network is disconnected as of December 2025. 2. Water supply hours are fair in the DMAs handed over by KVWSMB and whose old network is disconnected as of December 2025. 3. The rate of turbidity value which satisfies 5 NTU at the treated water reservoirs of the target WTPs reaches more than 95 %. 4. The rate of residual chlorine value which satisfies the required value specified in the SOPs at the treated water reservoirs of the target WTPs reaches more than 95 %. 5. The result of customer satisfaction survey is reported in the KUKL's annual reports.	1.1 Pressure measurement record by DMA wise 1.2 Monthly water distribution schedule 2.1 Water distribution volume by reservoir wise (volume per customer) 2.2 Water supply hour by reservoir and/or DMA wise 3. Turbidity monitoring record prepared by the Central Lab. 4. Residual Chlorine monitoring record prepared by the Central Lab. 5. KUKL Annual Reports	-
Outputs			
1. The capacity of water distribution management utilizing GIS is enhanced.	1-1. GIS data is updated according to SOP in the DMAs handed over by KVWSMB as of December 2025.	1-1. Monthly working record by branch wise / Project progress reports 1-2. Latest update log of GIS data stored in the server and the	-

	1-2. GIS data is shared between Head Office and Branches according to SOP in the DMAs handed over by KVWSMB as of December 2025. 1-3 The water distribution management plan for maintaining fair supply hour is prepared for the DMAs within the ring road. (*6)	operation PC at each branch office. 1-3. Contents of distribution plan prepared in the project	
2. The capacity of NRW reduction is enhanced.	2-1. The data of water inflow and water consumption in the DMAs or sub-DMAs handed over by KVWSMB and whose old network is disconnected as of December 2025 is monthly reported from Branches to Head Office. 2-2. The NRW ratio in the areas in the DMAs or sub-DMAs handed over by KVWSMB and whose old network is disconnected as of December 2025 is monthly calculated at Head Office. 2-3. The number of training participants on NRW reduction measures (Basic training, TOT and Internal Training by KUKL) is more than 120 persons. 2-4. The NRW ratio of DMAs or sub-DMAs handed over by KVWSMB and whose old network is disconnected as of December 2025 shows an improving trend compared to the starting of measurement.	2-1. Monthly NRW calculation sheet (Excel) by DMA and/or sub-DMA wise. 2-2. Monthly NRW calculation sheet (Excel) prepared by the Head Office 2-3. Number of participants reported in the progress report prepared by the JICA Expert Team. 2-4. Moving average of 3 consecutive months of NRW recorded in the NRW calculation sheet (Excel) by DMA and/or sub-DMA wise.	
3. The capacity of operation and maintenance of WTPs and water quality control is enhanced.	3.1. The water is treated according to SOPs in the target WTPs. (*5) 3-2. The water quality is measured according to SOPs. 3-3. The monitoring activities are carried out at all target WTPs (*5) according to the water quality control plan 3-4. The water quality is regularly measured at the taps in the water supply areas by the target WTPs (*5).	3.1 Monitoring record of turbidity and residual chlorine prepared by the Central Lab and SOPs 3-2. Water quality monitoring report presented by the Central Lab. 3-3. Water quality control plan and its monitoring report presented by the Central Lab. 3-4. Water quality monitoring report presented by the Central Lab.	
4. The capacity of customer service management is enhanced.	4-1. The future plan of customer services management is prepared. 4-2. Customer satisfaction about KUKL's customer care is improved. (*1) 4-3. The results of customer complaints analysis and how KUKL responds to their complaints are regularly reported to KUKL's management. 4-4. Public awareness activities are planned and developed by KUKL and implemented annually from 2022.	4-1. Items of activity proposed and approved by KUKL for customer service management. 4-2. Satisfaction level about a whole service of KUKL, customer attention by KUKL, water supply volume, and water quality 4-3. Discussion record of Business Improvement Committee (BIC) of KUKL and report submitted by JICA Expert Team, 4-4. Discussion record of Business Improvement Committee (BIC) of KUKL.	

5. The capacity of managing KUKL's internal training is improved.	5-1. An overall structure of training (rough structure) for KUKL staff is developed. 5-2. The number of training programs that KUKL plans and implements by itself (without JICA experts' support) is more than 10 courses. (*2) 5-3. The number of trainers in each area is more than target values. (*3)	5-1. Overall structure of training (Excel) prepared under the collaboration of JICA Expert Team and KUKL. 5-2. Training program list prepared and posted on the Web site by the JICA Expert Team. 5-3. Notification of instructor certification issued by KUKL management.	
Activities	**Inputs**		**Important Assumptions**
	Japanese side	**Nepal side**	
<Output 1: Water Distribution Management Utilizing GIS> 1-1. Decide the utilization plan and operation rule of GIS. 1-2. Conduct training program (OJT) on GIS operation. (*4) 1-3. Import GIS data which is taken over from PID into KUKL's GIS system. 1-4. Compile the customer data by DNI/DMA wise 1-5. Conduct hydraulic analysis of distribution network utilizing GIS. 1-6. Prepare the water distribution plan based on the results of hydraulic analysis and actual situations of water distribution. 1-7. Conduct trainings on hydraulic analysis and water distribution management (*4) 1-8. Prepare an SOP on data input and updates of GIS. 1-9. Update GIS data as daily routine work. 1-10. Examine integration of computerized billing system and information of customer complaints into GIS. <Output 2: NRW Reduction> 2-1. Define the roles/responsibilities of Head Office and Branches for NRW reduction activities. 2-2. Decide the data collection process of NRW ratio. 2-3. Conduct trainings on NRW reduction measures (*4) 2-4. Prepare maintenance plan for maintaining NRW ratio low. 2-5. Implement maintenance plan (prepared by Activity 2-4) for maintaining NRW ratio low. 2-6. Calculate NRW ratio monthly.	Experts 1. Project Manager/Water Distribution Management 2. Hydraulic Analysis 1 3. Hydraulic Analysis 2 4. GIS 5. NRW Reduction Measures 1 6. Project Coordinator/NRW Reduction Measures 2 7. Operation and Maintenance of WTPs 8. Water Quality Control 1 9. Water Quality Control 2 10. Customer Service 1/Awareness Activity 11. Internal Training System 12. Customer Service 2	Counterparts 1. Project Director 2. Project Manager 3. Counterparts Facilities - Office Space for JICA Experts Others - Operation Costs (travel expense for counterparts, etc.)	1.Water is distributed from new Sundarijal WTP as scheduled. 2.GIS data is handed over from PID to KUKL (via KVWSMB) as scheduled. 3.Work schedule of DNI is not delayed significantly. 4.Rehabilitation work of target WTPs is not delayed significantly compared with the original plan. Pre-conditions 1.Project counterparts are assigned by the commencement of respective activities.

2-7. Head Office compiles Performance Indicators, such as amount of water production, amount of water distributed, or NRW ratio, which are collected at Branches. <Output 3: O&M of WTPs and Water Quality Control> 3-1. Define the roles/responsibilities of WTPs, Branches, Head Office and laboratories in water quality control. 3-2. Conduct trainings on water treatment and water quality control. (*4) 3-3. Prepare SOPs of water treatment and water quality control. 3-4. Prepare monitoring plan of waler treatment and water quality control. 3-5. Monitor the water quality based on the monitoring plan prepared in Activity 3-4. 3-6. Reflect the monitoring results to waler quality improvement and effective water treatment. <Output 4: Customer Service> <Customer Satisfaction Survey> 4-1. Prepare a plan of customer satisfaction survey including survey design and TOR for survey company. 4-2. Conduct customer satisfaction survey at baseline, mid-term and end-line. 4-3. Prepare a plan for measures to improve customer satisfaction. <Analysis of Customer Complaints and Customer Management> 4-4. Review the Customer Grievance Module's level of functioning on the Computer Billing and Accounting System (CBAAS) and current practice of customer care (internal arrangements such as internal procedures or staff allocation) 4-5. Identify activities necessary to fully utilize the Customer Grievance Module and improve the customer care management. 4-6. Prepare an activity plan for data management utilizing the Customer Grievance Module, analysis of customer complaints and improvement of customer care management. 4-7. Analyze the customer complaints. 4-8. Report the results of analysis on customer complaints to KUKL management. <Training on Customer Services> 4-9. Conduct trainings on customer care (how to behave to customers) targeting for staff in charge or customer care and meter readers. (*4) <Public Awareness> 4-10. Prepare a plan of activities for public awareness. 4-11. Conduct public awareness activities based on Activity 4-10	Overseas Trainings: - Training in Japan: 6 persons/year x 5 times (Totally 30 persons) - Third Country Training: as necessary Equipment 1. GIS equipment - GIS server: 1 unit for head office - PC for GIS operation: 6 units - RTK-GNSS receiver: 6 units 2. Inspection Device of Customer Meter - Portable test meter: 9 units - Electronic water meter: 1 unit - Portable pulse logger: 1 unit 3. Equipment for rehabilitation of WTP - Portable ultrasonic flow meter: 1 set 4. Water Quality Measurement - Potable Residual Chlorine Meter: 9 units - Portable Turbidity Meter: 9 units - Multi Pocket Meter: 4 units 5. Equipment for the activities of public awareness - Laptop PC: 1 set - Video Camera: 1 set - Projector: 1 set 6. Equipment for Customer Care Section in the head office and target branch offices - Desktop PC: 7 sets 7. Others for project activities - Multi-function color photocopy machine: 1 unit - Radio Handset Guiding System: 1 set - Sound set for small scale lecture: 1 set - Sound set for middle scale lecture: 1 set 8. Supporting device for remote management work - Smartphone: 3 sets - Laptop PC: 3 sets - Speakerphone for small scale meeting: 1 set - Speakerphone for middle scale meeting: 1 set - Action camera (GoPro): 1 set 9. Other additional equipment approved by JICA during the Project		<Problems and Measures> 

4-12. Summarize and review the results of public awareness activities and utilize it for next plan. <Output 5: Internal Training System> ＜Overall Training Plan＞ 5-1. Identify the training necessary for KUKL staff. 5-2. Prepare an overall training program (rough plan) necessary for KUKL staff. 5-3. Prepare a database (on Excel basis) on training programs. <Trainings in the areas that this Project targets> (*4) 5-4. Prepare a manual for internal training management. 5-5. Conduct trainings on internal training management targeting for the nominated staffs of Output 5 members and Human Resources Development Section. 5-6. Prepare training programs (modules) on the fields that the Project targets such as GIS, Hydraulic Analysis, Water Distribution Management, Water Quality Control, Water Treatment, Customer Management) in collaboration with staff in the relevant section. 5-7. Prepare for trainings such as development of training materials, examination of how to measure the effectiveness of training, etc., in collaboration with staff in the relevant section. 5-8. Conduct training of trainers (TOT) in each area. 5-9. Conduct trainings. (Support training implementation as staff in charge of training management) 5-10. Summarize and review the results of trainings. 5-11. Reflect the training results to next training plans.			

(*1) These values were determined by the end of Term-1 after the Project begins through discussion with C/Ps.
(*2) The training programs refer to those which are conducted in collaboration between Human Resources Development Section and trainers of other relevant sections.
(*3) The basic target fields are as follows:
Output 1: Water Distribution Management (2 trainers for GIS operation, 2 trainers for hydraulic analysis, 1 trainer for distribution management),
Output 2: NRW Management (1 trainer for anti-illegal connection, 2 trainers for customer meter accuracy control, 2 trainers for commercial losses)
Output 3: Waler Quality Management (3 trainers for water quality control, 3 trainers for water treatment)
Output 4: Customer Management (1 trainer for customer care, 2 trainers for meter reading)
(*4) The activities on the trainings under Output 1, 2, 3 and 4 will include development of training modules and training materials, examination of measuring the effectiveness of trainings and feedback of the training results to the next plans in respective fields. The timing of conducting training programs is described in Activity 1-2, 1-7, 2-3, 3-2 and 4-9.
(*5) The target WTPs are limited to Mahankalchaur, Bode, Bansbari and New Sundarijal.
DNI: Distribution Network Improvement (Project supported by ADB)
PID: Project Implementation Directorate
WTP: Water Treatment Plant
TOT: Training of Trainers
CBAAS: Computerized Billing and Accounting System
(*6) Fair water supply is defined as ensuring at least 2 hours in every supply area.