

# Initial Environmental Examination

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**INDIA: Karnataka Integrated Urban Water Management Investment Program (Tranche 2) – Improvements for 24 x 7 Water Supply System for City Municipal Council in Puttur**

**Package Number: 02PTR01**

## CURRENCY EQUIVALENTS

(As of 11 May 2018)

Currency unit	–	Indian rupee (₹)
₹1.00	=	\$0.0149
\$1.00	=	₹67.090

## ABBREVIATIONS

ADB	–	Asian Development Bank
ASI	–	Archaeological Survey of India
CFE	–	consent for establishment
CFO	–	consent for operation
CMC	–	City Municipal Council
CPCB	–	Central Pollution Control Board
DPR	–	detailed project report
EHS	–	Environmental, Health and Safety
EIA	–	environmental impact assessment
EMP	–	environmental management plan
GLSR	–	ground level service reservoir
GRC	–	grievance redress committee
GRM	–	grievance redress mechanism
HDPE	–	High Density Poly Ethylene
IEE	–	initial environmental examination
KIUWMIP	–	Karnataka Integrated Urban Water Management Investment Program
KSPCB	–	Karnataka State Pollution Control Board
KUDCEMP	–	Karnataka Urban Development and Coastal Environmental Management Project
KUIDFC	–	Karnataka Urban Infrastructure Development and Finance Corporation
MoEFCC	–	Ministry of Environment, Forest and Climate Change
NGO	–	nongovernment organization
OHT	–	overhead tank
O&M	–	operation and maintenance
PIU	–	Program Implementation Unit
PMD CSC	–	Project Management Design, Construction and Supervision Consultant
PMU	–	Program Management Unit
PWD	–	Public Works Department
REA	–	rapid environmental assessment
ROW	–	right-of-way
RPMU	–	Regional Program Management Unit
SPS	–	Safeguard Policy Statement
ULB	–	urban local body
WTP	–	water treatment plant

## **WEIGHTS AND MEASURES**

dbA	-	A-weighted decibel
m <sup>3</sup>	-	cubic meter
m <sup>3</sup> /h	-	cubic meter per hour
kg	-	kilogram
kl	-	kiloliter
km	-	kilometer
msl	-	mean sea level
m	-	meter
mg/l	-	milligram per liter
mm	-	millimeter
MLD	-	million liters per day
km <sup>2</sup>	-	square kilometer

## **NOTE**

In this report, "\$" refers to United States dollars.

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## EXECUTIVE SUMMARY

The Asian Development Bank (ADB) funded Karnataka Integrated Urban Water Management Investment Program (KIUWMIP) aims to improve water resource management in urban areas in a holistic and sustainable manner. Investment support will be provided to modernize and expand urban water supply and sanitation while strengthening relevant institutions to enhance efficiency, productivity and sustainability in water use. Puttur 24x7 water supply distribution network subproject is one of the subprojects proposed in Tranche 2.

Puttur City is located in Dakshina Kannada District, surrounded by the Western Ghats and the Arabian Sea. There are no protected or eco sensitive areas in or near subproject sites. Due to the city's rapid development, water supply has become insufficient, and has resulted in water scarcity. The first organized water supply system for Puttur was implemented in 1984-1985 using Kumaradhara River as a water source. The ADB funded Karnataka Urban Development and Coastal Environmental Management Project (KUDCEMP) improved the water supply in 2005-2006 also using the Kumaradhara River as its source. To optimally utilize the assets created under KUDCEMP, the subproject proposed in Puttur under tranche 2 of KIUWMIP seeks to provide 24x7 water supply to entire Puttur City Municipal Council (CMC including its peri urban areas.

**Categorization.** ADB requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirements for environmental assessment are described in its Safeguard Policy Statement (SPS) 2009. The proposed projects are categorized as A, B, C or FI to determine the level of environmental assessment required. Puttur City Water Supply Scheme is classified as Environmental Category B as per the SPS as no significant impacts are envisioned. Accordingly, this initial environmental examination (IEE) report has been prepared to assess environmental impacts and provide mitigation and monitoring measures to ensure no significant impacts as a result of the subproject.

**Subproject Scope.** The subproject formulated under this Investment Program to address gaps in current water supply system. Detailed design of all the subproject components are completed prior to the bidding, and as per the detailed design and design validation survey the subproject includes the following components.

Scope of work / components as per detailed design	Scope of work / components as per design validation survey
(i) replacement of two old pumps with new vertical turbine pumps in Jackwell at Nekkilady;	(i) replacement of two old pumps with new vertical turbine pumps in Jackwell at Nekkilady;
(ii) construction of 1.68 kilometer (km) of raw water pumping main (400-millimetre (mm) diameter) from Jackwell to water treatment plant (WTP) at Nekkilady;	(ii) construction of <b>1.70 kilometer</b> (km) of raw water pumping main (400 millimeter (mm) diameter) from Jackwell to water treatment plant (WTP) at Nekkilady;
(iii) construction of 12.42 km clear water main of 400 mm diameter from the proposed new water treatment plant (WTP) at Nekkilady to ground level service reservoir (GLSR) at Tenkila	(iii) construction of <b>9.96 km</b> clear water main of 400 mm diameter from the proposed new Water Treatment Plant (WTP) at Nekkilady to ground level service reservoir (GLSR) at Seetigudda
(iv) construction of new WTP of capacity 8.7 million liters per day (MLD) at Nekkilady; (v) replacement of clear water pumps in existing WTP at Nekkilady	(iv) construction of new WTP of capacity 8.7 million litres per day (MLD) at Nekkilady; (v) replacement of clear water pumps in existing WTP at Nekkilady

Scope of work / components as per detailed design	Scope of work / components as per design validation survey
(vi) construction of 5.06 km of clear water feeder mains;	vi) construction of <b>9.564 km</b> of clear water feeder mains;
(vii) construction of six new overhead tanks (OHTs) – (a) 300 kiloliter (kl) capacity in Zone-2 at Mura Shantinagra, Padnur, (b) 100 KL in Zone-3 at Karmala near Microwave station, (c) 600 kl in Zone-4A at Darbe; (d) 250 kl in zone-5 at Lingadagudda, Kabaka, (e) 200 kl in Zone-6A at Balnad Helipad, and (f) 100 kl zone-8 at Balnad Kelyadi, Vitla Road;	(vii) construction of six new overhead tanks (OHTs) – (a) 300 kiloliters (kl) capacity in Zone-2 at Mura Shantinagra, Padnur, (b) 100 kl in Zone-3 at Karmala near Microwave station, (c) 600 kl in Zone-4A at Darbe; (d) 250 kl in zone-5 at Lingadagudda, Kabaka, (e) 400 kl in Zone-6A at Balnad Helipad, and (f) 100 kl zone-8 at Balnad Kelyadi, Vitla Road;
(viii) construction of two GLSRs - (a) 1,000 kl capacity at Seethigudda, and (b) 2,000 kl at Tenkila;	(viii) construction of <b>two compartment GLSR of 2400 kl at Seethigudda<sup>1</sup></b>
(ix) Intermediate pumping station at Tenkila;	(ix) Intermediate pumping station at <b>Seethigudda;</b>
(x) booster pumping station at Balnad Helipad;	(x) booster pumping station at Balnad Helipad,
(xi) 29 bulk water meters;	(xi) 29 bulk water meters;
(xii) 142.66 km of distribution network to cover 24 x 7 water supply to Puttur city for 8 zones; and	(xii) <b>158.35 km</b> of distribution network to cover 24x7 water supply to Puttur city for 10 zones; and
(xiii) Replacement of 8,441 existing meters and providing new house service connections of 4,500 for un-covered households.	(xiii) Replacement of <b>9,226</b> existing meters and providing new house service connections of <b>4910</b> for un-covered households.

IEE report was prepared based on the detailed design and included in bid and contract document. The IEE report was updated after award of contract, reflecting monitoring locations, EMP implementation responsibilities and frequency. This IEE is now updated again to reflect the change in project scope/ components location based on design validation carried out by the contractor during implementation.

**Implementation Arrangements.** Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC) is the executing agency responsible for overall technical supervision and **execution** of all subprojects funded under the Investment Program. Implementation activities are overseen by Project Management Unit (PMU) established in its head office at Bangalore in coordination with its regional office (Regional Project Management Unit or RPMU) in Mangalore PMU and RPMU are staffed with technical, administrative and financial officials, including safeguards specialists, to manage and monitor program implementation. The implementing agencies are the respective urban local bodies (ULBs). For this package, the implementing agency is Puttur City Municipal Council (CMC). A project implementation unit (PIU) has been set up for implementation of day-to-day activities in the field. A consultant team, Project Management, Design, and Construction Supervision Consultant (PMD CSC), assists PMU, RPMU and all PIUs in subproject planning and management, assures technical quality of design and construction, designs the infrastructure, and supervises construction including conducting all safeguards tasks.

**Description of the Environment.** The subproject components are mostly located in the Puttur urban area except the water intake on Kumaradhra River located at a distance of 12 km from

<sup>1</sup> Due to geological issue the site for GLSR is shifted from Tenkila to Seethigudda.



the city. It is one of the major rivers in the Dakshina Kannada District and also a major tributary of the river Netravathi. The confluence points of the rivers Kumaradhara and Nethravathi is at Uppinangadi about 400 m downstream from the vented dam. A new vented dam was constructed under KUDCEMP with a storage capacity of 0.61 million cubic meter (MCM) and a storage spreading of 2,400 m upstream of the vented dam. The area surrounding the intake well is mostly under agriculture. The distance from the jack well to the WTP at Nekkilady is about 2 km with sparsely located houses. All the major components of the subproject sites are located in existing right of ways and government-owned land. There are no protected areas, wetlands, mangroves, or estuaries in or near the subproject location. There are no forest areas within or near Puttur. Traffic management will be necessary during pipe-laying on busy roads.

**Potential environmental impacts.** No significant impacts are anticipated whether due to the location or design of the subproject as the sites are selected and fixed with the consideration that components are not located in environmentally sensitive areas. All the sites are located in government owned land parcels and all pipelines will be laid along the public roads within the right-of-way (ROW). The GLSR site at Tenkila, is being changed to Seethigudda, due to geological issue with the Tenkila site. The subproject utilizes the existing water source, and the abstraction will remain within its existing design capacity, therefore, no source related impacts is envisaged.

Due to the project sites being in urban areas and nature of open cut method for pipelaying works, unavoidable impacts include (i) health and safety hazards to workers during construction and operation; (ii) noise and dust from construction activities; (iii) increased road traffic due to interference of construction activities; (iv) soil erosion/silt runoff from construction waste soils; and

(v) increased sewage flow due to increased water supply. These impacts during construction and operation can be mitigated through good and high-quality construction and operations and maintenance (O&M) practices. In the operational phase, all facilities and infrastructure will operate with routine maintenance, which should not affect the environment. Facilities will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be affecting small areas only.

**Environmental Management Plan.** The Environmental Management Plan (EMP) aims to ensure that the activities are undertaken in a responsible, non-detrimental manner with the objectives of:

(i) providing a proactive, feasible, and practical working tool to enable the measurement and monitoring of environmental performance on-site; (ii) guiding and controlling the implementation of findings and recommendations of the environmental assessment conducted for the project; (iii) detailing specific actions deemed necessary to assist in mitigating the environmental impact of the project; and (iv) ensuring that safety recommendations are complied with.

The contractor also submitted to PIU, a site-specific environmental management plan (SEMP), which covers: (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; and (iii) monitoring program as per SEMP. The status of SEMP measures will be reported in SEMR. No works are allowed to commence prior to approval of SEMP.

A copy of the updated EMP / SEMP must be kept on work sites always. The EMP will serve as a binding document on all contractors operating on the site and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

For civil works, the contractor will be required to (i) establish an operational system for managing environmental impacts (ii) carry out all of the monitoring and mitigation measures set forth in the EMP; and (iii) implement any corrective or preventative actions set out in safeguards monitoring reports that the employer will prepare from time to time to monitor implementation of this IEE and EMP. The contractor shall allocate a budget for compliance with these EMP measures, requirements and actions.

Mitigation measures include the following: (i) implementation of a health and safety plan and regular orientation to workers; (ii) use of silencers to minimize noise levels from construction activities, and proper work scheduling during periods when it will least affect sensitive receptors; (iii) water spraying of surroundings to minimize dust; (iv) implementation of a traffic management plan in coordination with local traffic enforcers; (v) reuse of waste soils; and (vi) sewerage system improvement as part of KIUWMIP. Contractors will be providing planks to create access and ensure businesses are not affected.

Mitigation will be assured by a program of environmental monitoring conducted during construction and operation to ensure that all measures are implemented, and to determine whether the environment is protected as intended. This will include observations on- and off-site, document checks, and interviews with workers and beneficiaries, and any requirements for remedial action will be reported to PMU. There will also be longer-term surveys to monitor the expected improvements in the quality of domestic water and the health of the population. There will also be regular and periodic monitoring surveys for quality of water (at intake, reservoirs and at consumer end).

**Consultation, Disclosure and Grievance Redress.** The stakeholders were involved in developing the IEE through discussions on-site and public consultation. The views expressed were incorporated into the IEE and in the planning and development of the subproject. Draft IEE and updated was disclosed and this IEE will also be made available accessible to a wider audience via the ADB and KUIDFC websites. The consultation process will be continued and expanded during project implementation to ensure that stakeholders are fully engaged in the project and can participate in its development and implementation. A project-specific grievance redress mechanism is proposed and described in the IEE to ensure any public grievances are addressed quickly.

**Permits and Clearances Required.** Environmental Clearance requirement per Government of India Environmental Impact Assessment Notification is not applicable to this subproject. No environment-related statutory clearance or permissions required. Pipeline construction works, in some sections, will require permission from national highway and railway authorities.

**Monitoring and Reporting.** The PMU, RPMU, PIU, and Consultants will be responsible for monitoring. PMDCSC will submit monthly monitoring reports to RPMU, and the PMU will send semi-annual monitoring reports to ADB. ADB will post the environmental monitoring reports on its website.

**Conclusions and Recommendations.** The citizens of Puttur will be the major beneficiaries of this subproject. In addition to improved environmental conditions, the project will improve

the over-all health condition of the town. With the improved water supply, they will be provided with a constant supply of better-quality water, piped into their homes. The replacement of old distribution lines shall avoid cross contamination and have positive benefit on health by avoiding diseases such as diarrhea and dysentery, resulting in less expenses on healthcare, improve working days and their economic status should also improve, as well as their overall health.

Based on the findings of the IEE, there are no significant impacts and the subproject as Category “B” is confirmed. No further study or detailed environmental impact assessment (EIA) is required to comply with ADB SPS, 2009.



## I. INTRODUCTION

### A. Background

1. The Karnataka Integrated Urban Water Management Investment Program (KIUWMIP, the Program) aims to improve water resource management in urban areas in a holistic and sustainable manner. Investment support will be provided to modernize and expand urban water supply and sanitation (UWSS) while strengthening relevant institutions to enhance efficiency, productivity and sustainability in water use. The Program focuses on priority investments and institutional strengthening in water supply and sanitation within an integrated water resource management (IWRM) context.

2. The executing agency is the Karnataka Urban Infrastructure Development Finance Corporation (KUIDFC) and implementing agencies for the Investment Program will be the respective urban local bodies (ULBs).

3. The expected outcome will be improved water resource planning, monitoring and service delivery in 24x7 water supply for Puttur City. Project 2 will have 3 outputs: (i) UWSS and sanitation infrastructure expanded and upgraded; (ii) water resource planning, monitoring and service delivery improved; and (iii) institutional capacity of KUIDFC and ULBs strengthened. The IEE is based on an assessment of these components within the project area.

4. **Subproject Scope.** The subproject formulated under this Investment Program to address gaps in current water supply system. Detailed design of all the subproject components are completed prior to the bidding, and as per the detailed design the subproject includes the following components. The following table 1 reflect the change in scope of work from previous IEE to current IEE.

**Table 1: Change in scope of work**

<b>Scope of work / components as per detailed design</b>	<b>Scope of work / components as per design validation survey</b>
(i) replacement of two old pumps with new vertical turbine pumps in Jackwell at Nekkilady;	(i) replacement of two old pumps with new vertical turbine pumps in Jackwell at Nekkilady;
(ii) construction of 1.68 kilometer (km) of raw water pumping main (400-millimetre (mm) diameter) from Jackwell to water treatment plant (WTP) at Nekkilady;	(ii) construction of <b>1.70</b> kilometer (km) of raw water pumping main (400 millimeter (mm) diameter) from Jackwell to water treatment plant (WTP) at Nekkilady;
(iii) construction of 12.42 km clear water main of 400 mm diameter from the proposed new water treatment plant (WTP) at Nekkilday to ground level service reservoir (GLSR) at Tenkila	(iii) construction of <b>9.96 km</b> clear water main of 400 mm diameter from the proposed new Water Treatment Plant (WTP) at Nekkilday to ground level service reservoir (GLSR) at Seetigudda
(iv) construction of new WTP of capacity 8.7 million liters per day (MLD) at Nekkilady; (v) replacement of clear water pumps in existing WTP at Nekkilady	(iv) construction of new WTP of capacity 8.7 million litres per day (MLD) at Nekkilady; (v) replacement of clear water pumps in existing WTP at Nekkilady
(vi) construction of 5.06 km of clear water feeder mains;	(vi) construction of <b>9.564 km</b> of clear water feeder mains;
(vii) construction of six new overhead tanks (OHTs) – (a) 300 kiloliter (kl) capacity in Zone-2 at Mura Shantinagra, Padnur,	(vii) construction of six new overhead tanks (OHTs) – (a) 300 kiloliters (kl) capacity in Zone-2 at Mura Shantinagra, Padnur,

Scope of work / components as per detailed design	Scope of work / components as per design validation survey
(b) 100 KL in Zone-3 at Karmala near Microwave station, (c) 600 kl in Zone-4A at Darbe; (d) 250 kl in zone-5 at Lingadagudda, Kabaka, (e) 200 kl in Zone-6A at Balnad Helipad, and (f) 100 kl zone-8 at BalnadKelyadi, Vitla Road;	(b) 100 kl in Zone-3 at Karmala near Microwave station, (c) 600 kl in Zone-4A at Darbe; (d) 250 kl in zone-5 at Lingadagudda, Kabaka, (e) 400 kl in Zone-6A at Balnad Helipad, and (f) 100 kl zone-8 at BalnadKelyadi, Vitla Road;
(viii) construction of two GLSRs - (a) 1,000 kl capacity at Seethigudda, and (b) 2,000 kl at Tenkila;	(viii) construction of <b>two compartment GLSR of 2400 kl at Seethigudda<sup>2</sup></b>
(ix) Intermediate pumping station at Tenkila;	(ix) Intermediate pumping station at <b>Seetigudda</b> ;
(x) booster pumping station at Balnad Helipad;	(x) booster pumping station at Balnad Helipad,
(xi) 29 bulk water meters;	(xi) 29 bulk water meters;
(xii) 142.66 km of distribution network to cover 24 x 7 water supply to Puttur city for 8 zones; and	(xii) <b>158.35 km</b> of distribution network to cover 24x7 water supply to Puttur city for 10 zones; and
(xiii) Replacement of 8,441 existing meters and providing new house service connections of 4,500 for un-covered households.	(xiii) Replacement of <b>9,226</b> existing meters and providing new house service connections of <b>4,910</b> for un-covered households.

5. IEE report was prepared based on the detailed design and included in bid and contract document. The IEE report was updated after award of contract, reflecting monitoring locations, EMP implementation responsibilities and frequency. This IEE is now updated again to reflect the change in project scope/ components' location based on design validation carried out by the contractor during implementation.

## B. Background of Initial Environmental Examination

6. Safeguard Policy Statement (SPS), 2009. The proposed projects are categorized as A, B, C or FI to determine the level of environmental assessment required.<sup>3</sup> Rapid environmental assessment using ADB's rapid environmental assessment (REA) checklist for Water Supply Scheme components were conducted (Appendix 1), and results of the assessments show that Puttur water supply subproject is classified as Environmental Category B as per ADB SPS, 2009. Accordingly, this initial environmental examination (IEE) report has been prepared. The government-funded components are essential for successful operation of this subproject.

<sup>2</sup> Due to geological issue the site for GLSR is shifted from Tenkila to Seetigudda.

<sup>3</sup> Per ADB SPS, the environmental categorization and level of environmental assessment required for each category are as follows: (i) Category A: A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required. (ii) Category B: A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible and, in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required. (iii) Category C: A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed. (iv) Category FI: A proposed project is classified as category FI if it involves investment of ADB funds to or through a financial intermediary

Thus, due diligence for both ADB- and government-funded components have been included in this IEE.

7. **Scope of the Initial Environmental Examination.** IEE is prepared based on detailed engineering design of the subproject. Assessment of potential impacts are based on secondary sources of information and field reconnaissance surveys; no field monitoring (environmental) survey was conducted. Stakeholder consultation was an integral part of the IEE. The updated/revised IEE will be submitted to ADB for review and disclosure. No works will be conducted until ADB has cleared the updated/revised IEE.

8. **Report Structure.** This IEE was prepared following KIUWMIP's environmental assessment and review framework and ADB SPS, 2009.<sup>4</sup> The report comprises the following sections: (i) introduction, (ii) description of project components, (iii) policy and legal framework, (iv) description of the environment, (v) screening of potential environmental impacts and mitigation measures, (vi) public consultation and information disclosure, (vii) grievance redress mechanism, (viii) environmental management plan, and (ix) conclusion and recommendations.

## II. DESCRIPTION OF THE PROJECT COMPONENTS

9. Puttur is located in Dakshina Kannada District in Karnataka State of India. It is the headquarters of the Puttur Taluk. The City is 52 km from Mangalore and 330 km from Bangalore (Figure 1). The population of the city is 53,061 (Census 2011), the municipality spreads in an area of 36.11 square kilometer (km<sup>2</sup>) and is divided into 27 wards. Geographically, Puttur City is located at a latitude of 12°07'N and longitude of 75°02'E at an average altitude of 87 m above the mean sea level (MSL).

10. The municipal area comprises the surrounding villages Balnad, Padnoor, Kabaka, Bannur, Chikkamudnoor, Kemminje, Arypu and Kasaba. The town is situated in the Western Ghats of South India with a hilly and undulating topography. The northern parts of the city can be characterized as more flat and plain as the southern part. Agricultural activities are concentrated in the low-lying areas, whereas houses are scattered and placed up in the higher areas. The aerial view of the city centre of Puttur is shown below.

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<sup>4</sup> The environmental assessment and review framework has been prepared in 2014 during KIUWMIP loan approval. This has been updated during Tranche 2 to include recent Government of India's environmental laws, rules and regulations and Tranche 2 project components.

**Figure 1: Aerial View of Puttur**



Source: Google Maps.

**A. Need for Infrastructure Improvement in Puttur**

11. At present, Puttur City meets its water supply requirement through surface source. River Kumaradhara is the main surface source of water supply to Puttur. A new vented dam was constructed under KUDCEMP with a storage capacity of 0.61 million cubic meter (MCM) and a storage spreading of 2,400 m upstream the vented dam. Existing water supply system is depicted in Figure 2. Existing vented dam is shown in Figure 3.





**Figure 3: Existing Vented Dam at Nekkilady**



12. A reinforced cement concrete jack well (Figure 4) with a diameter of 8 meter (m) and a depth of 16.7 m was constructed on the Kumaradhara river bank. On top of the jack well, a pump house with a diameter of 10 m and a height of 5 m was built to accommodate the existing pumping system consisting of the motors of the vertical turbine pump sets, panel boards, control equipment, control valves and related piping valves. The Jack Well pumps 15.5 MLD out of the river.

**Figure 4: View of Kumaradhara River Intake**



13. The first pump set was installed in 1984-1985, during the construction of the jack well (Figure 5). During KUDCEMP, the water withdrawal was increased by installing a second pump set. The design life of the first pump set has already expired, while the design life of pump sets installed during KUDCEMP have expired in 2016.

**Figure 5: View of Existing Jack Well and Pump House**



14. The raw water transmission main, laid in 1984-85, transports water from the jack well to the WTP at Nekkilady on the left side of Uppinangadi Road. Diameter of the cast iron (CI) pipe is 300 millimeter (mm) and its length is 1.67 km. The transmission main has outlived its design period, therefore, leakages are imminent. Due to this, the transmission main stopped its operation. Under the KUDCEMP in 2006-2007, a new raw water transmission main from the jack well to the water treatment plant (WTP) was constructed to transport the ultimate water demand of 2026 amounting to 6.8 MLD for a 20-hour pumping time. The raw water transmission main is a MS pipe with a diameter of 350 mm. The main is placed on the right side of Uppinangadi road and is 1.71 km long. Although no flow meters were installed to measure the conveyed and actual consumed water, visual inspections confirmed that the transmission main is in good condition. The existing raw water transmission main is sufficient to meet the demand in 2046.

15. The old WTP that was constructed in 1984-1985 (Figure 6) and designed to treat 2.7 MLD was increased to meet the demand of 3.2 MLD in 2026. This WTP is currently not in a good condition and is not operating.

**Figure 6: View of Old Water Treatment Plant**



16. A WTP was build up during the KUDCEMP adjacent to the existing WTP with tube settlers and treats 6.8 MLD. Presently, the WTP is working satisfactorily. The existing WTP at Nekkilady cannot meet the intermittent demand of 13.5 MLD and also the ultimate demand of 15.5 MLD. Water quality test for drinking water, using Central Public Health and Environmental Engineering Organization (CPHEEO) standards, have been conducted. Two water samples

have been extracted at the vented dam before treatment and from the effluent of the Water Treatment Plant. The water quality tests were executed by the National Institute of Technology Karnataka, Surathkal in the Department of Civil Engineering on 19 June 2015.

**Table 2: Water Quality of Kumaradhara River at Intake**

Test Parameters	Unit	Sample Extracted from the Vented Dam	Sample after Water Treatment Plan	Acceptable Upper Limit for Drinking (IS10500-1992)
pH	-	6.88	6.80	6.50-8.50
Total Hardness as CaCO <sub>3</sub>	mg/l	16.00	18.00	300.00
Iron Content, as Fe	mg/l	0.33	0.10	0.30
Chloride, as Cl <sup>-</sup>	mg/l	5.50	6.00	250.00
Nitrate, as NO <sub>3</sub>	mg/l	Not detectable	Not detectable	45.00
Sulfate, as SO <sub>4</sub>	mg/l	Not detectable	Not detectable	200.00
Feacal Coliform	MPN Index /100 ml	32	0	0

17. The clear water pumping station transports the treated water from the WTP to the service reservoirs. The first pumping station was implemented in 1984-1985 on the premises of the WTP and consists of a horizontal split case pump set with two motors (55 kilo watt (kW); one working and one standby) pumping 162 cubic meter per hour (m<sup>3</sup>/h) with a total head of 76 m. In 2006-2007 during the KUDCEMP, the pumping station was uplifted to 289 m<sup>3</sup>/h with 77 m head duty condition by providing one more pump set. Two motors with a power of 90 kW were installed (one working and one standby). The pumps are in good condition due to regular annual municipal maintenance. Studies done on actual discharge from the pumping stations have indicated that the installed pumps are designed to run optimally until 2016. After the replacement in 2016, the next life design cycle will expire in 2031. The clear water pumps do not meet the intermediate water demand in 2031 as they were designed only until 2016 under KUDCEMP.

**Figure 7: View of Water Treatment Plant Constructed under Karnataka Urban Development and Coastal Environmental Management Project**



18. The first clear water transmission main (CWTM) was built in 1984-1985. The clear water was pumped starting from the clear water sump at the water treatment plant to a break pressure tank (BPT) at Kodiyadi with a capacity of 100 kiloliter (kl) in a CI rising main with a diameter of 300 mm and a length of 3,825 m. The clear water is further conveyed from the BPT at Kodiyadi to the GLSR at Seetigudda by a gravity main (total length 5,660 m). After the

BPT at Kodyadi, a gravity main (diameter 180 mm, length 3,700 m) is detoured to convey the water to the GLSR at Padnur in zone 2. The clear water transmission main system was overhauled during the KUDCEMP. A new MS rising main was constructed from the WTP (capacity 6.8 MLD) to the existing ground level service reservoir (GLSR) at Seetigudda. The new rising main has a diameter of 350 mm and a length of 9,680 m. Between the WTP and the GLSR at Seetigudda, another MS pumping main (diameter 300 mm, length 750 m) is detoured to convey the water to the overhead tank (OHT) at Chikmudnur in zone 1. An intermediate pumping station conveys the water to the reservoirs in zone 3, 5, 6 and 7, because of the higher elevation of the zones to the GLSR at Seetigudda. Only zone 4, which is also the central business district of the town, is directly served by the GLSR at Seetigudda. Zone 8 shows elevations above 234.5 MSL and a scattered population within the zone. Due to this situation, an additional water tank was constructed, which is fed by the OHT at Balnad through an High Density Poly Ethylene (HDPE) pipe (diameter 180 mm, length 2,360 m) with the help of booster pumps. However, the capacity is not sufficient to meet the demand in 2046. The CWTM serving the OHT and GLSRs in zone 1, 2, 3, 4, 5, 6, 7 and 8 are sufficient to convey the water demand by 2046. The CWTM transporting the water from the WTP to the Service Reservoir at Seetigudda is sufficient enough to convey the demand of 2046. Due to highly elevated areas with altitudes as much as +234.65 m above MSL and a scattered population in zone 8, a proposed OHT at Vittla will be served by a rising main coming from the booster pumping station after the proposed OHT at Balnad Helipad. The existing rising main (diameter 180 mm) will be extended to 2,939 m.

19. **Zoning of the Service Area.** The water distribution system of Puttur is divided in eight zones where water is provided for 20 hours. The existing zoning of the water supply system put up under KUDCEMP is not sufficient to meet water demands by 2046. Due to low pressure, some houses at higher altitudes in zone 4 and 6 cannot be supplied in 2046.

20. A detailed assessment of existing situation was carried out, which concludes that the present water production of 6.8 MLD, is insufficient to meet the water demand of Puttur until 2046 per national standards. Besides Puttur, this sub project investment would also need to provide water supply covering four en-route villages located between the WTP and town. The average household size of the town is 4.38, based on ULB data. The present inadequacy in the water supply system, is due to (i) increased water demand; (ii) old and leaking transmission main system, along with weak management system; and (iii) inadequate water treatment facility.

## **B. Description of the Subproject**

21. Following Table 3 shows the various components of this subproject based on the detailed engineering design of the subproject. Subproject sites, layout plans and alignments are shown in Figure 8 to Figure 42.

**Table 3: Proposed Water Supply Subproject Components in Puttur**

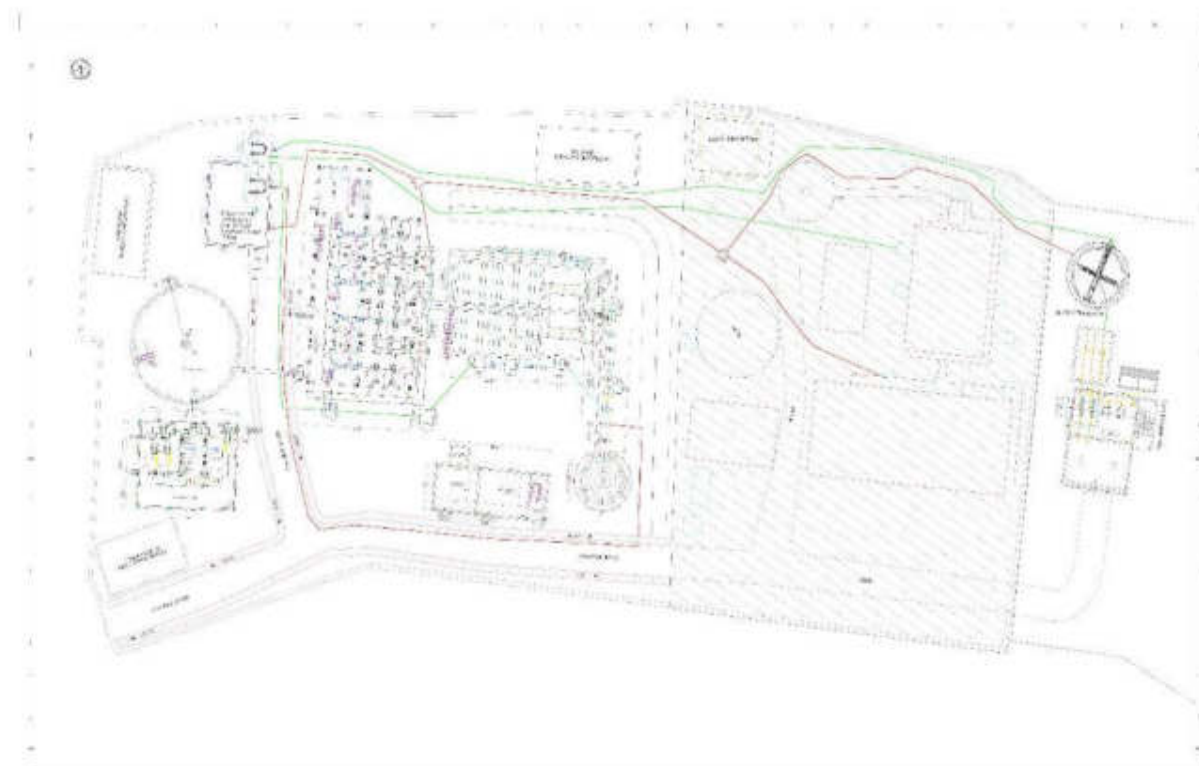
<b>Infrastructure</b>	<b>Function</b>	<b>Description</b>	<b>Location</b>
Raw water pumps in existing Jack well	Pumping of Raw water from Jack well	-Replacement of two old pumps with new vertical turbine pumps of capacity 389 m <sup>3</sup> /h, 76 m head (1+1)	Jack well site at Nekkilady
	Standby power supply arrangement for pumping	Procurement of diesel generator of 500 kilovolt-ampere - (kVA)	Jack well site at Nekkilady
Raw water Transmission Main	Conveys raw water to WTP by pumping	1.70 km length 400 mm diameter DI pipe	Pipe will be laid underground from Nekkilady to WTP all along the existing road
Water Treatment Plant	Treats raw water to meet drinking water standards	New 8.7 MLD capacity WTP based on conventional treatment process. The components Include Cascade Aerator Parshall flume Flash mixer Flocculators – 2 units Tube settlers – 2 units Rapid sand filters - 4 beds Chlorination system with safety measures Lime and alum mixing Tanks Clear water sump and pump house Backwash water recirculation and sludge management system (sludge dewatering method centrifuge) – combined system of adequate capacity for backwash and sludge management will be developed to cater to both new and existing WTPs. This component addresses the issues of concern identified in the environmental audit of existing WTP (Ref Corrective Action Plan, Table 10)	Nekkilady  Adjacent to the existing WTP; sufficient land available within the existing WTP campus to accommodate the new WTP
Clear water Pumps in existing WTP	Pumps clear water to Service reservoirs	Replacement of old pumps within new pumps: 2 pump sets of capacity 330 m <sup>3</sup> /hour and 114 m head (1+1)	Pumps will be installed in the existing clear water pumping station at WTP, Nekkilady
Clear Water Transmission Main	Pumping of clear water from WTP (water treatment plant) to service reservoir	9.96 km length 400 mm diameter DI pipe	Pipe will be laid underground from Nekkilady to Seetigudda GLSR along the public

Infrastructure	Function	Description	Location
			roads within the road right of way.
Clear water feeder main	Pumping of clear water from GLSR to Service Reservoirs	9.564 km length 150 – 300 mm diameter DI /HDPE) pipes DI pipe of 300 mm diameter – 0.549 km DI Pipe of 200 mm diameter – 4.356 km DI Pipe of 150 mm diameter – 3.414 km HDPE pipe of 180 mm – 1.245 km	Laying of pipes underground Along public roads within the ULB area
Water service reservoirs	Water storage for supply	Six OHTs and two compartment GLSR of 2400 kl at Seethigudda: <b>OHT</b> 300KL for Zone-2 at Mura Shantinagra, Padnur 100KL for Zone-3 at Karmala near Microwave station 600KLfor Zone-4A at CTO, Darbe 250KLfor Zone-5 at Lingadagudda, Kabaka 400KL for Zone-6A at Balnad Helipad 100KL for zone-8 at, Balnad Kelyadi, Vitla Road1 <b>GLSR</b> 2400KL in Zone-4 at Seethigudda	Vacant site owned by CMC Vacant site owned by CMC Vacant site owned by CMC Vacant site owned by CMC Vacant site owned by CMC Vacant site owned by CMC Vacant site owned by CMC Additional land for GLSR is already purchased at Seethigudde (Annexure 18)
Intermediate Pumping Stations (IPS)	To provide adequate pressure in the system for supply	Intermediate pumping station at Seethigdda (this has been shifted from Tenkila) Pump capacities: 65m <sup>3</sup> /h and 85 m head for zone 3 and 5 (1+1) 82 m <sup>3</sup> /h and 33 m head for zone 4A, (1+1) 119 m <sup>3</sup> /h and 100 m head for zone 6, 6A and 7, (1+1) Booster pumping station at Balnad Pump capacity 11 m <sup>3</sup> /h and 80 m head (1+1)	Pumping station will be located within Seethigdda GLSR site Pumping station will be located within the site identified for Zone 6A OHT at Balnad Helipad
Distribution system	Supply of water from service reservoirs to consumers	153.35 km of pipe lines of diameter 75 mm to 300 mm (HDPE /DI pipes)	In 10 zones within the city limits Pipes will Be laid underground along the roads within the ROW
Bulk Water Meters	To record data of volume of flow to each Distribution	29 no	Bulk meters will be fixed at strategic locations in the pipe line at Jack well

Infrastructure	Function	Description	Location
	System zones at desired time interval.		point, WTP and service reservoir points
House Service Connections (HSC)	For each house connection will be provided with meters to supply water and record volume of water. W	4910 new HSC connections 9226 replacement of existing domestic water meters	In 10 zones for all the houses within the city limits
CMC = City Municipal Council, m <sup>3</sup> /h = cubic meter per hour, DI = ductile iron, GLSR = ground level service reservoir, HDPE = high density polyethylene, HSC = House Service Connections, IPS = Intermediate Pumping Stations, km = kilometer, m = meter, mm = millimeter, MLD = million liters per day, OHT = overhead tank, RCC = reinforced cement concrete, ROW = right-of-way, ULB = urban local body, WTP = water treatment plant			

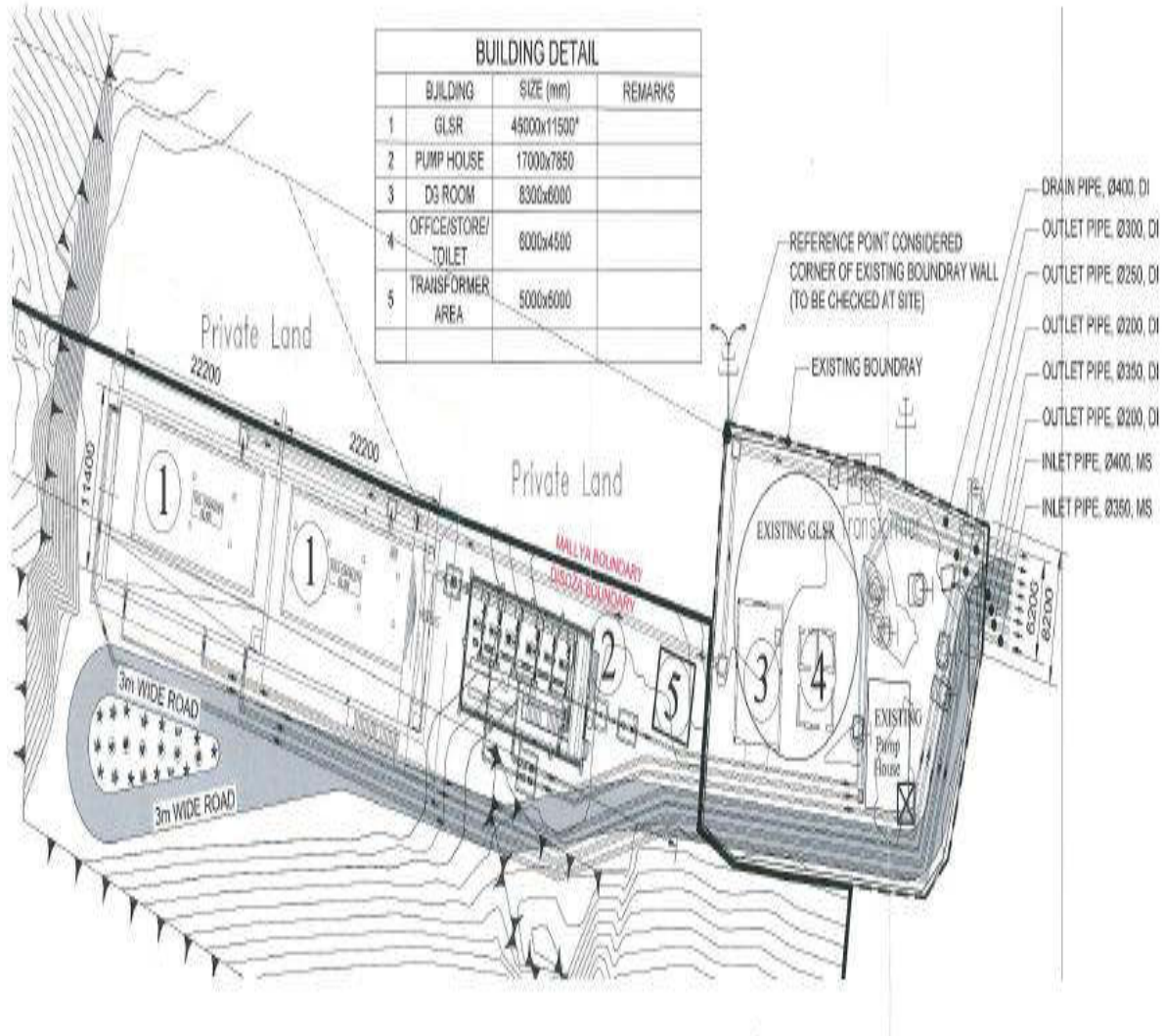




**Figure 10: Proposed WTP Layout Plan****Table 4: Details of WTP**

WTP Location	Capacity (MLD)	Treatment Process	Preliminary Design Stage? (Y/N)	Distance of WTP to nearest receptors in meters	Receiving Water of WTP Discharge	Uses of the receiving water (swimming, boating, fishing, irrigation, others [please specify])
Nekkilady , Puttur	8.7	Cascade aerator,, Parshall flume, Flash Mixer , Flocculator, Tube settler, Filter house, Chlorination,	DPR Approved	85	Not applicable - It is proposed to recirculate backwash and other wastewater in WTP, there is no discharge from WTP	Not applicable

**Figure 11: Proposed Layout of GLSR and IPS at Seetiguda**



**Figure 12: Existing and Proposed Clear Water Transmission Lines**

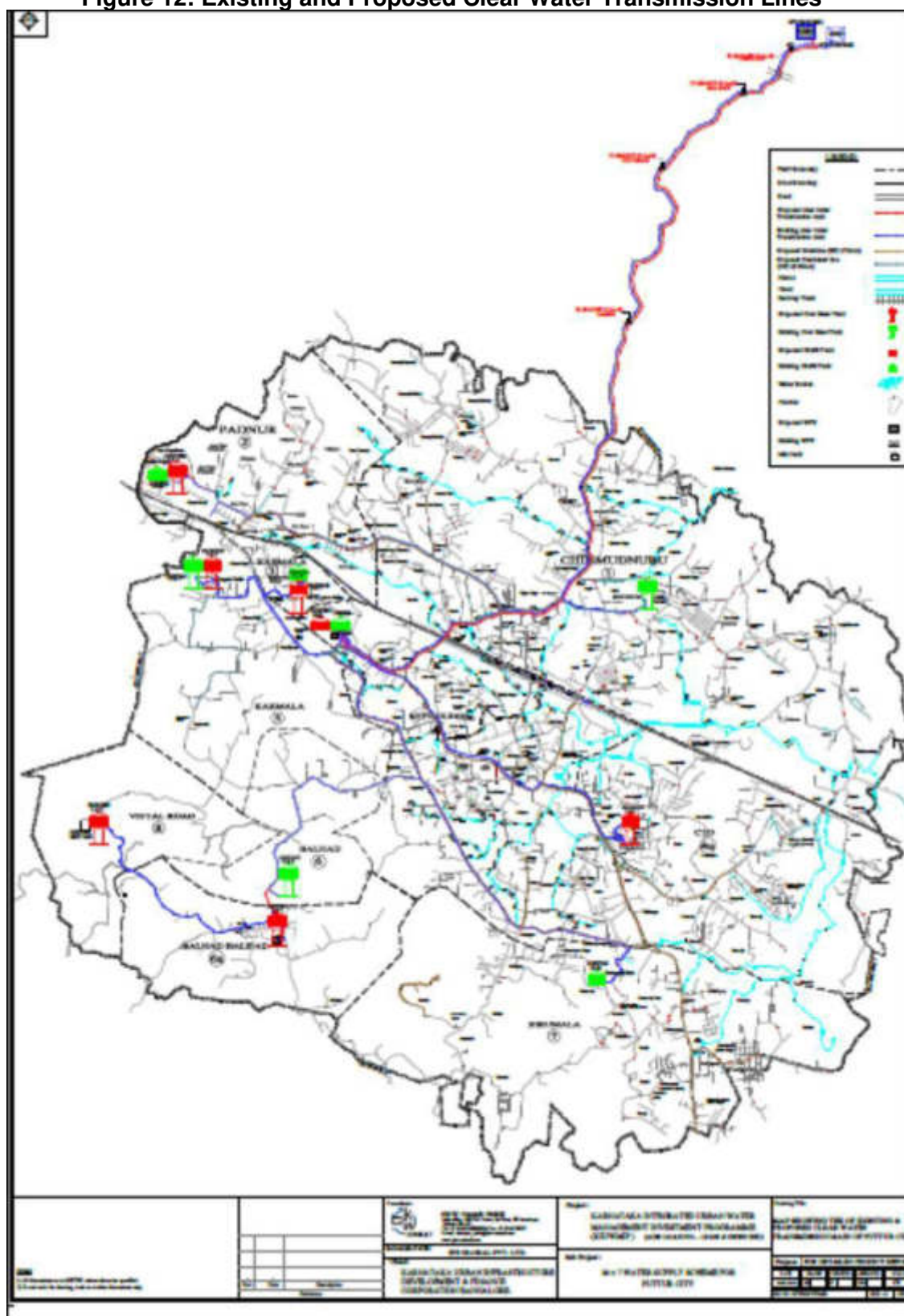
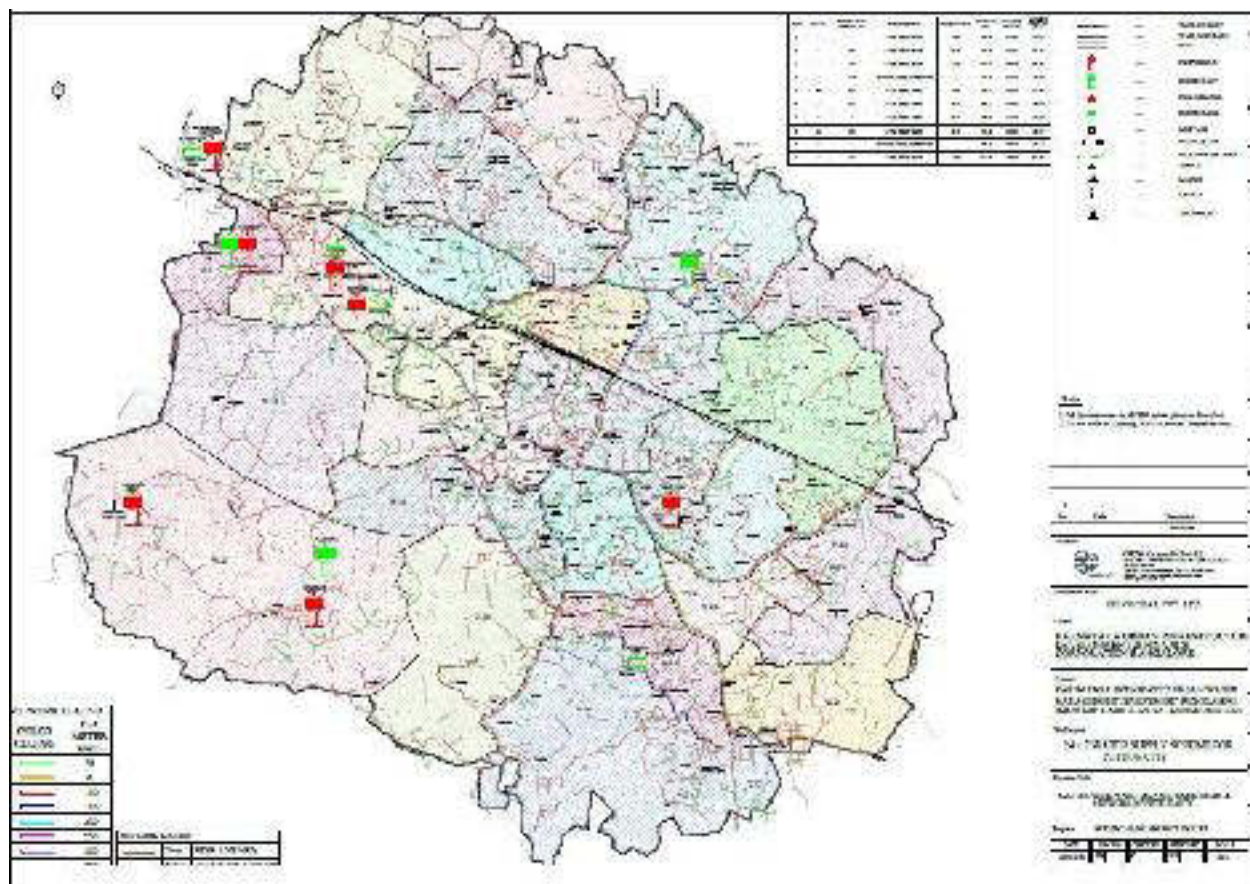
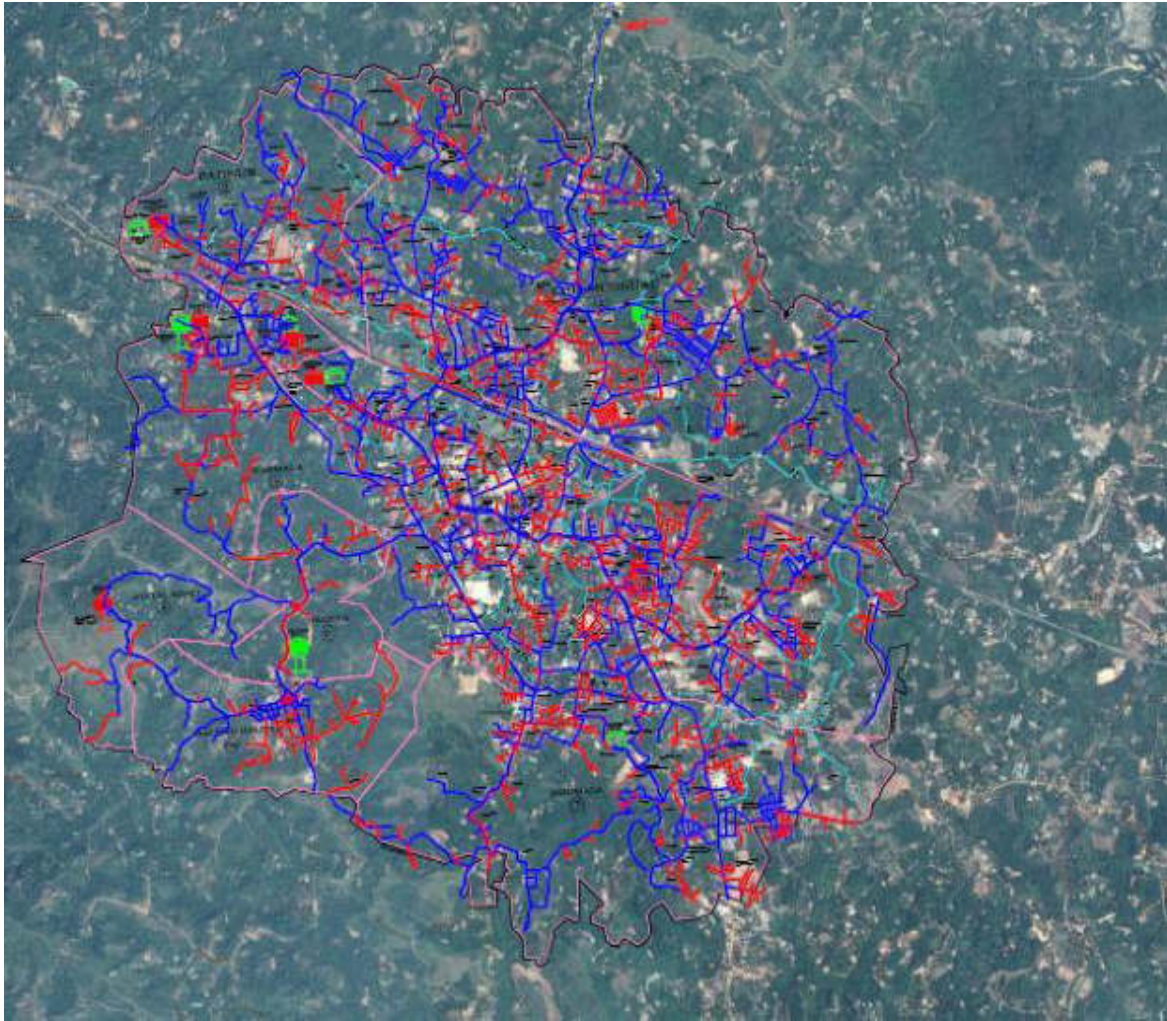




Figure 13: Proposed Water Supply Distribution System



**Figure 14: Proposed Distribution Network**



Source: Google Earth.

Figure 15: Process Diagram of WTP with Backwash and Sludge Management System

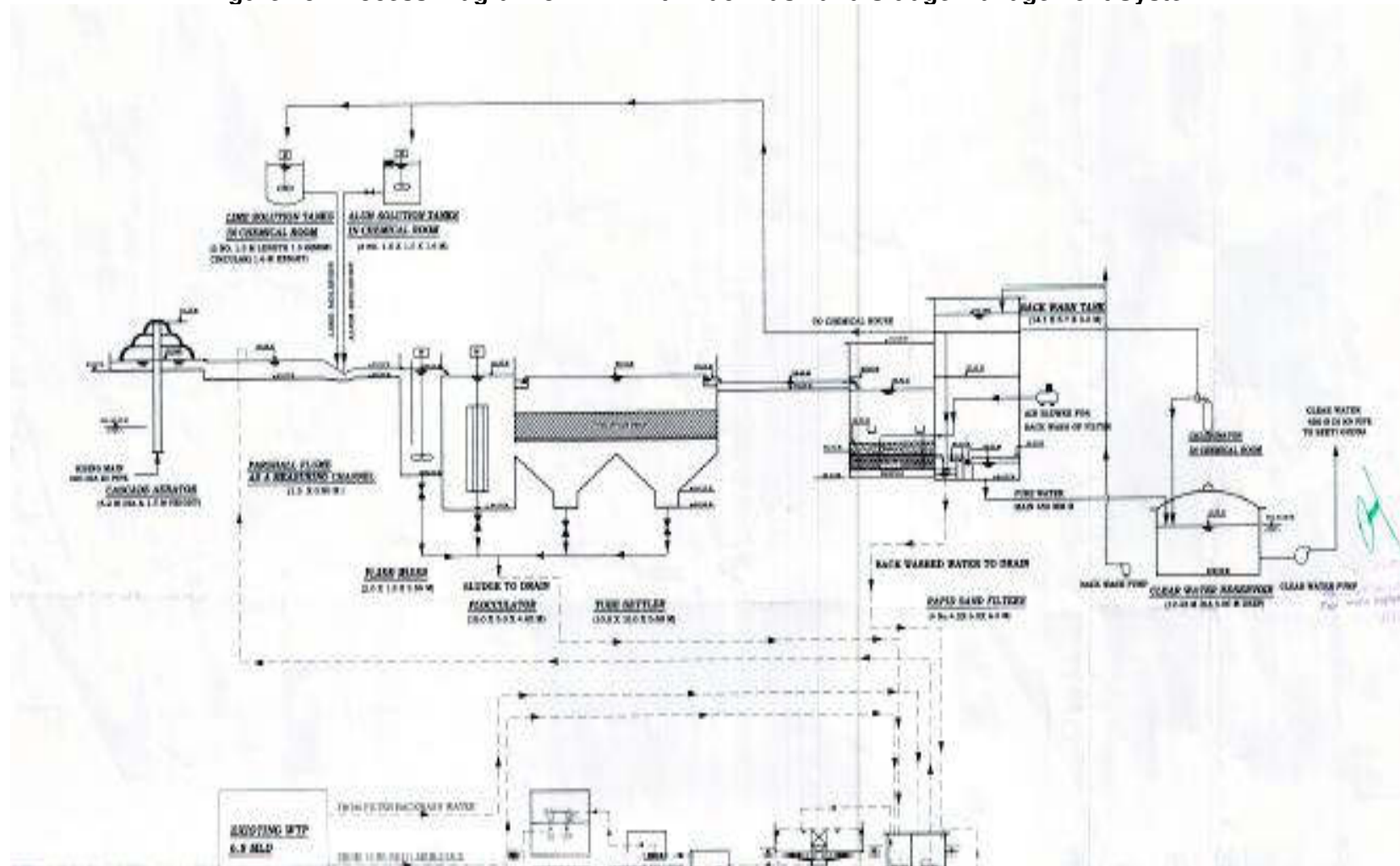
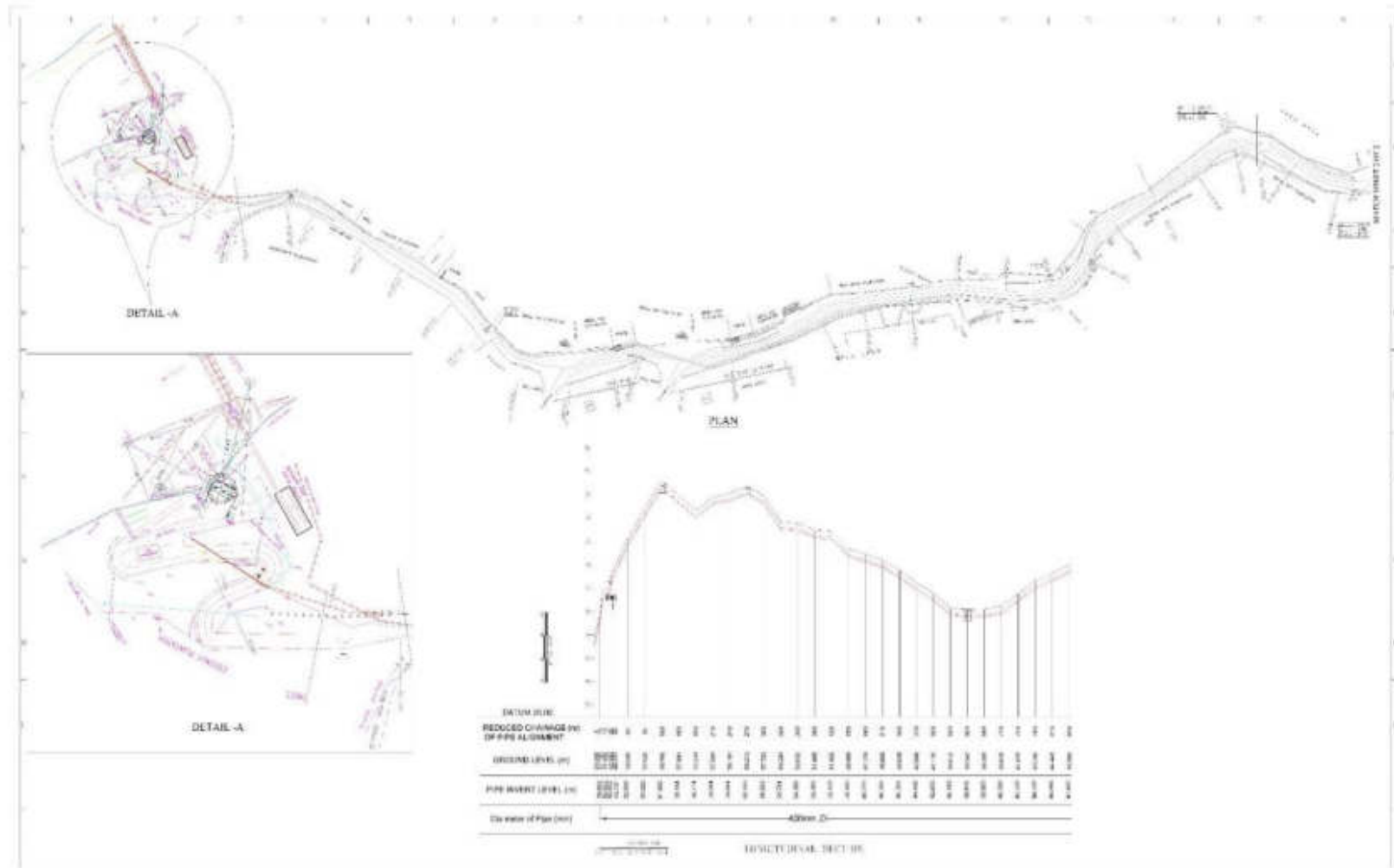


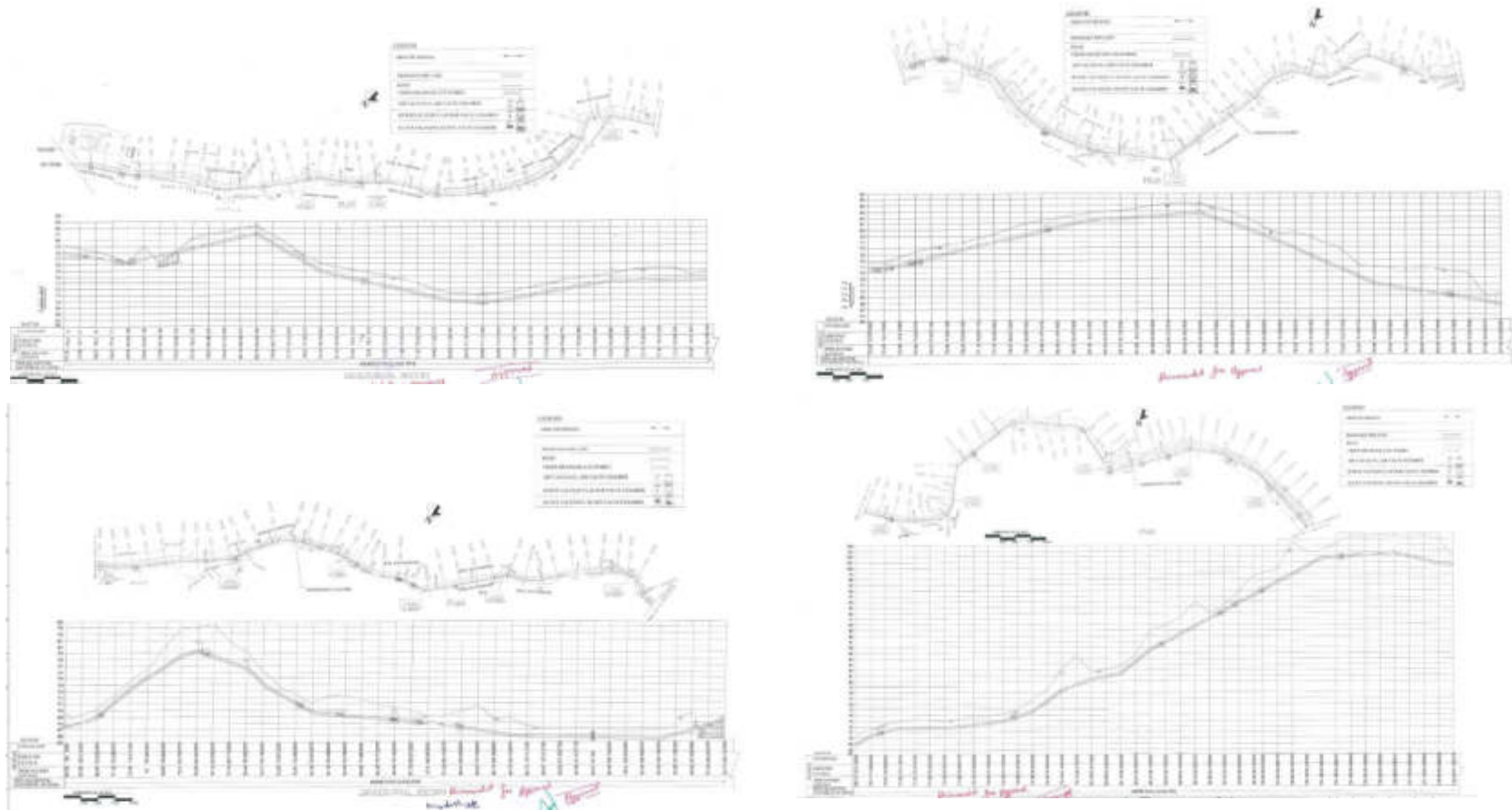


Figure 16: Detailed Alignment and Profile of Raw Transmission Main

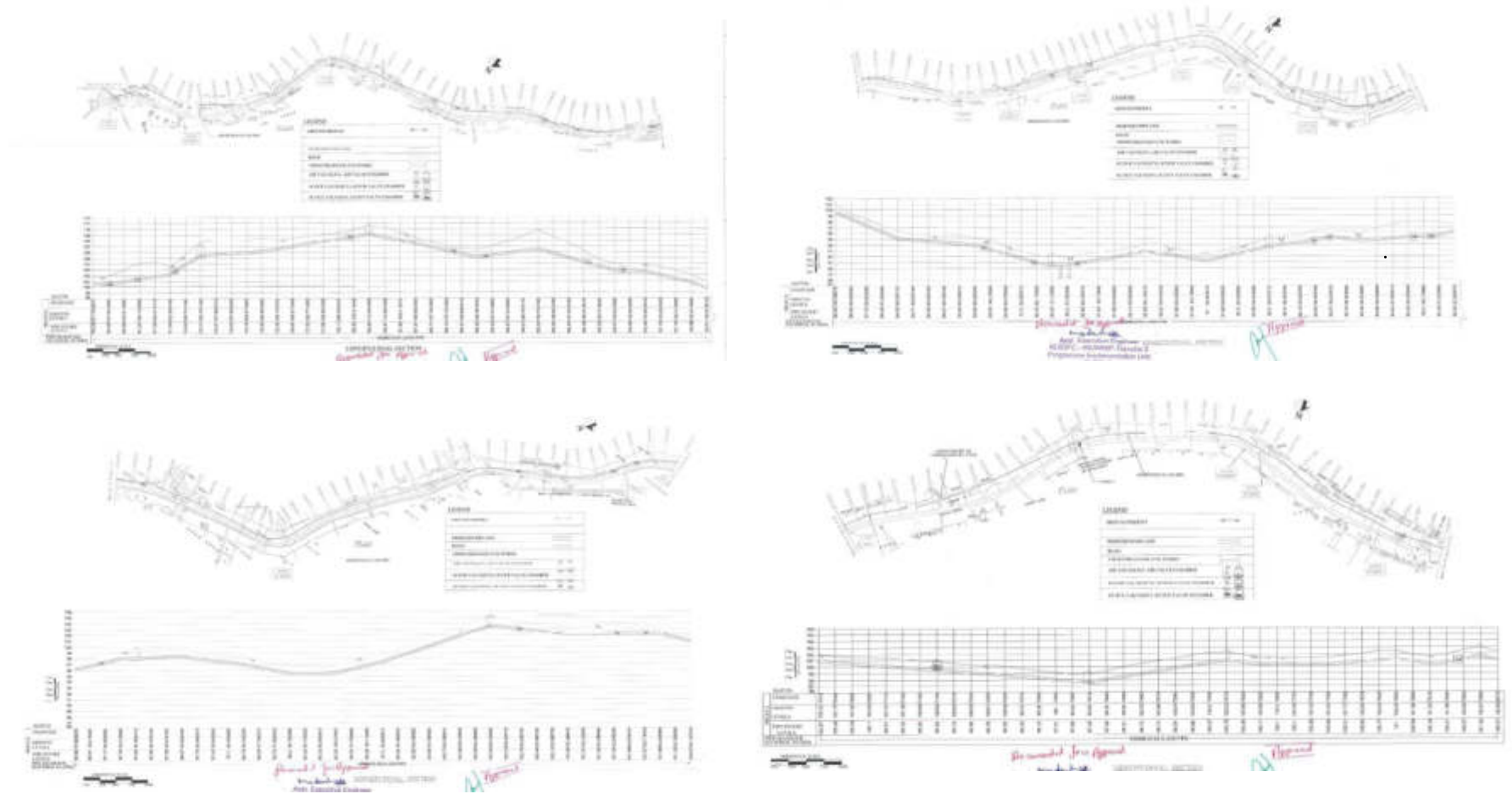




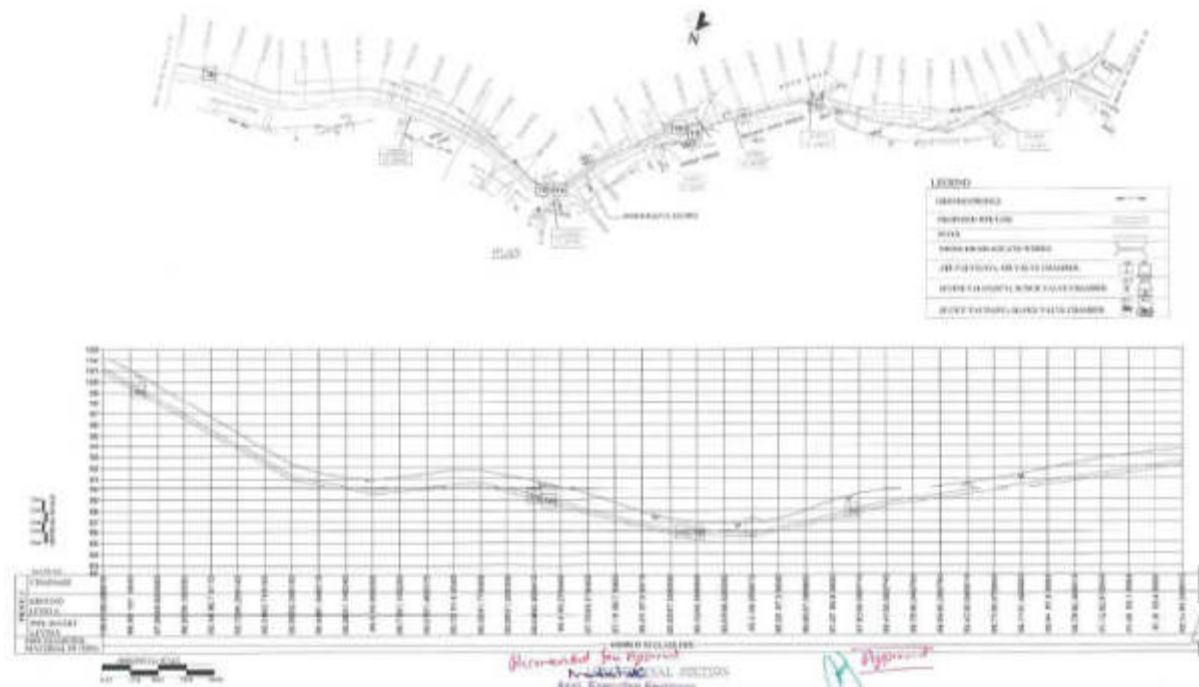
**Figure 17: Detailed Alignment and Profile of Clear water Transmission Main from WTP to GLSR at Seetigudda (chainage 0.00 to 4015.00m)**



**Figure 18: Detailed Alignment and Profile of Clear water Transmission Main from WTP to GLSR at Seetigudda (chainage 4015 to 8015.00m)**



**Figure 19: Detailed Alignment and Profile of Clear water Transmission Main from WTP to GLSR at Settiguda (chainage 8015 to 9015.00m)**



**Figure 20: Detailed Alignment and Profile of Clear water Transmission Main from WTP to GLSR at Seetigudda (chainage 8975 to 9675.00m)**

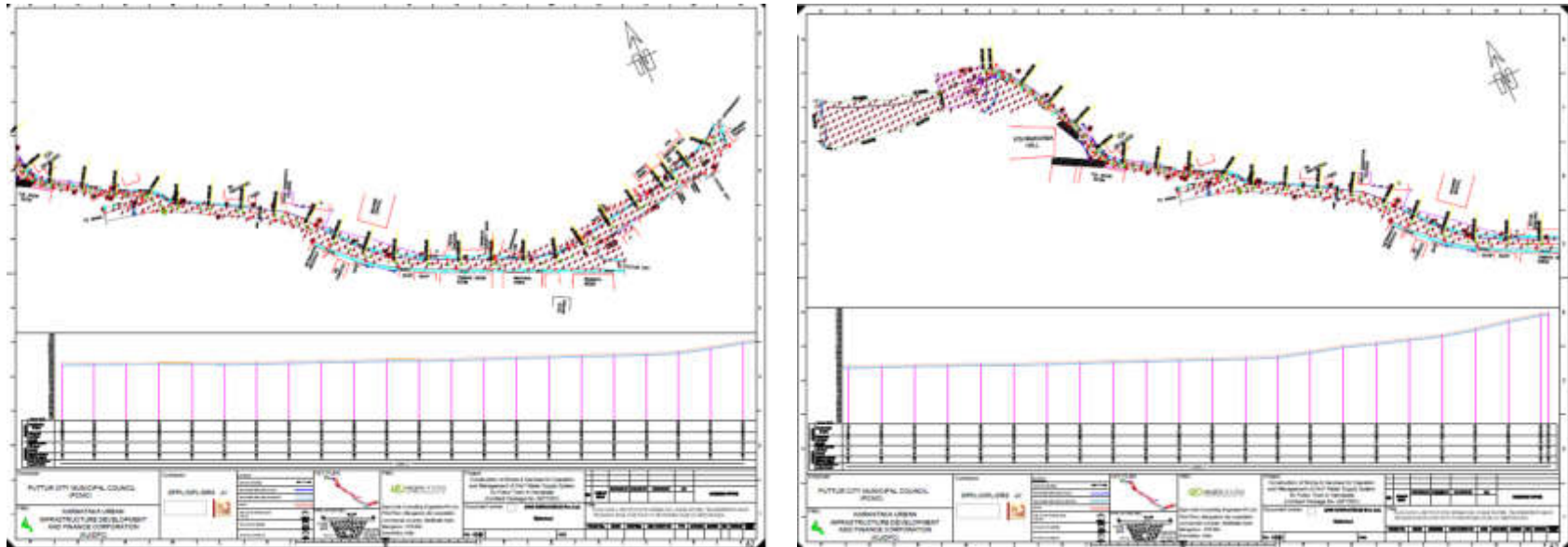


Figure 21: Proposed Layout Plan of OHT at Padnur Zone-2

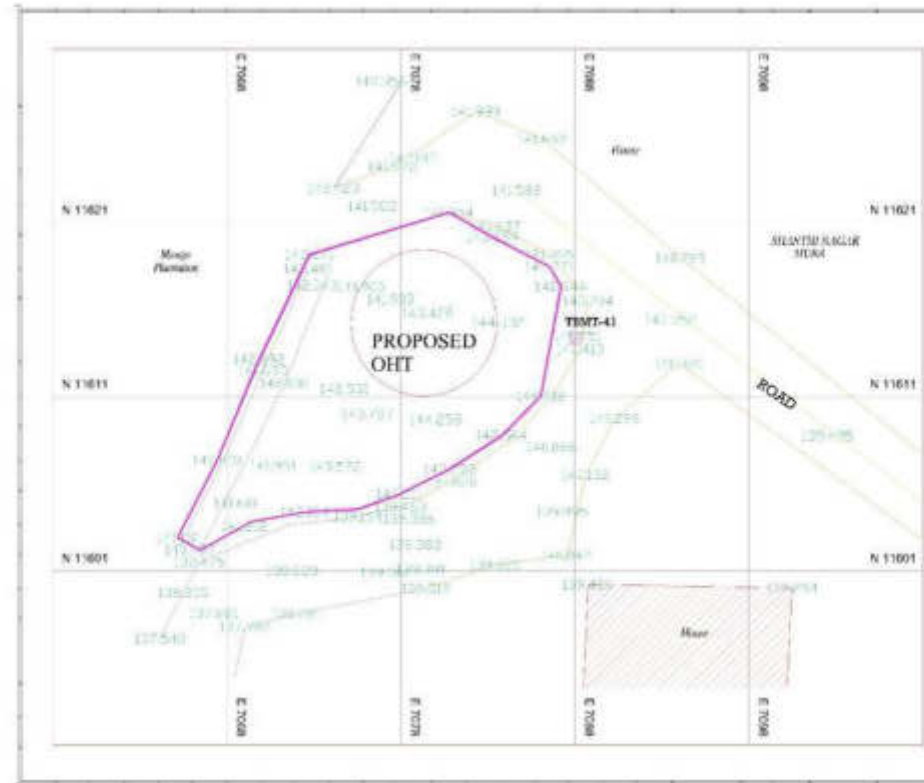


Figure 22: Sectional Plan and Elevation of OHT at Padnur Zone-2

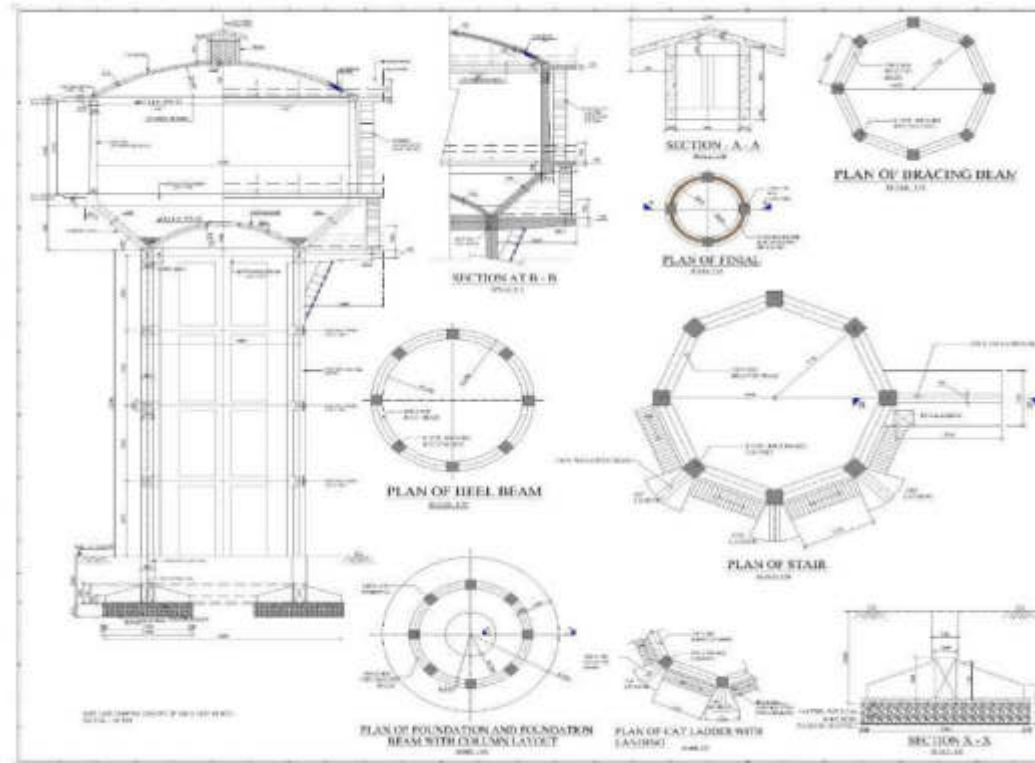
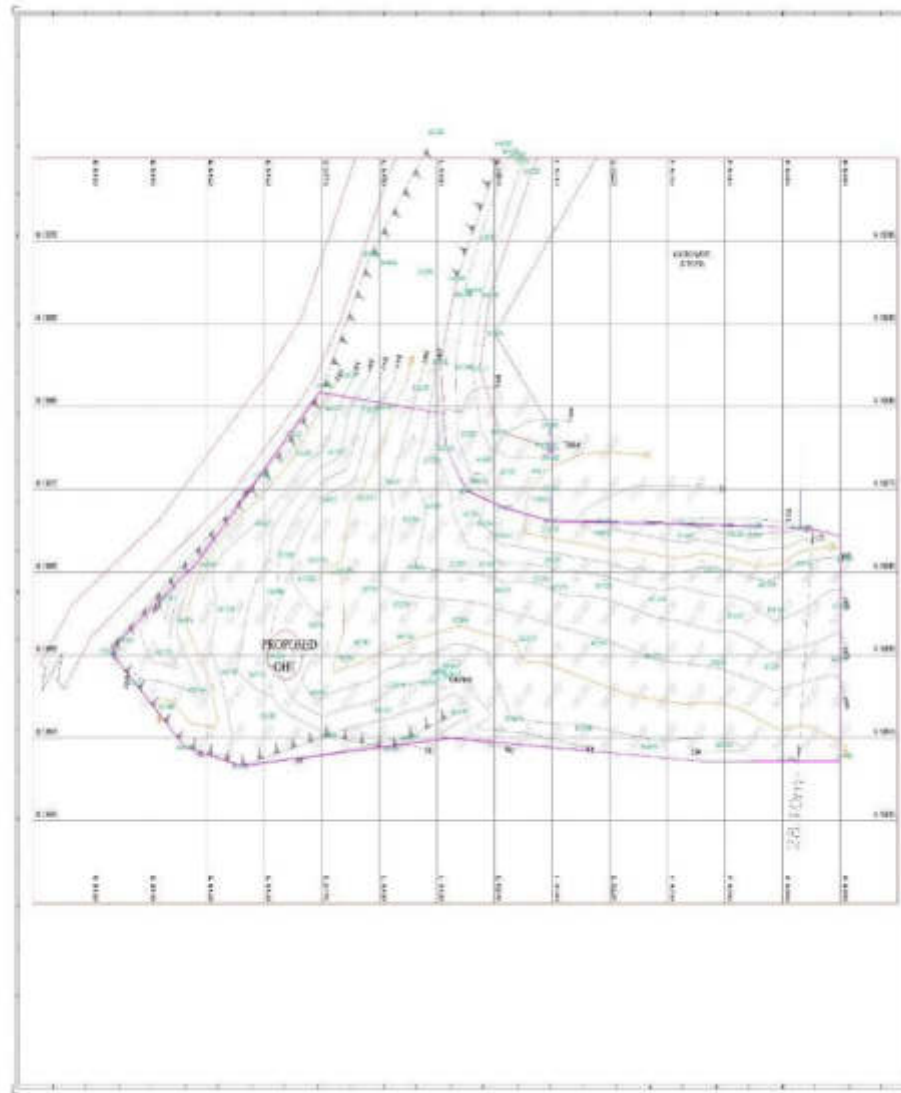
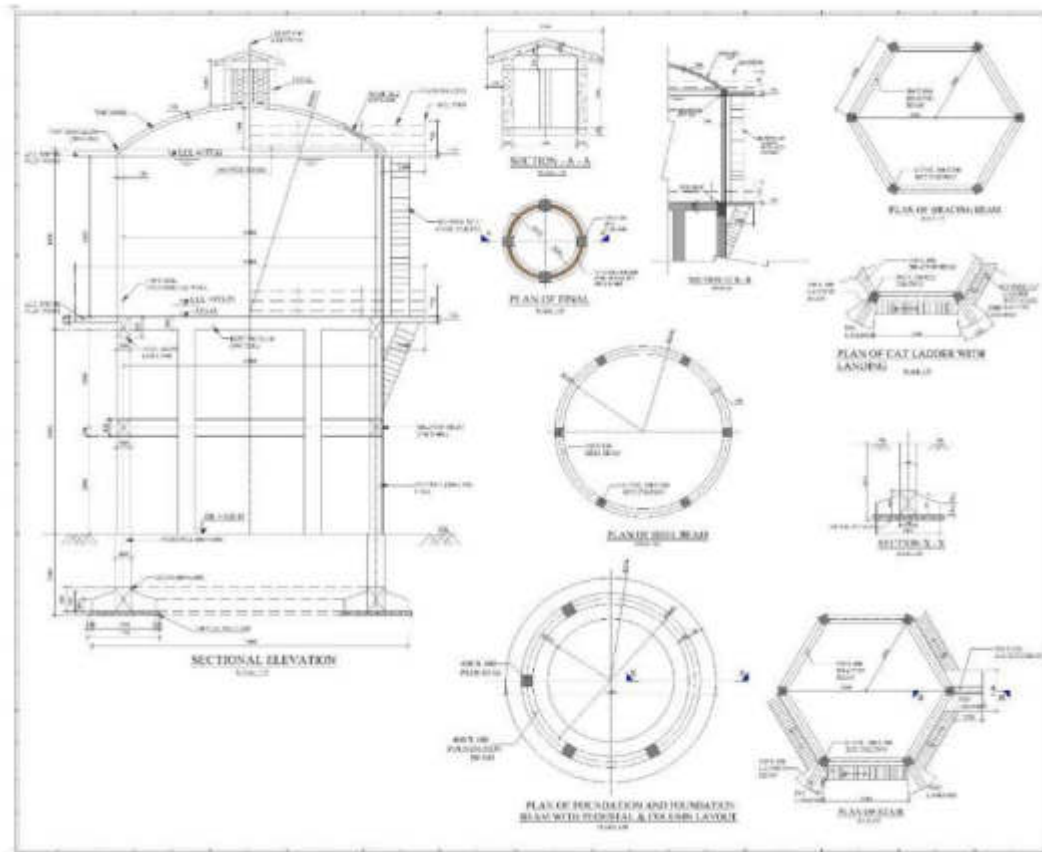


Figure 23: Proposed Layout Plan of OHT at Karmala zone-3



**Figure 24: Sectional Plan and Elevation of OHT at Padnur zone-2**





**Figure 25: Proposed Layout Plan of OHT at CTO zone-4A**

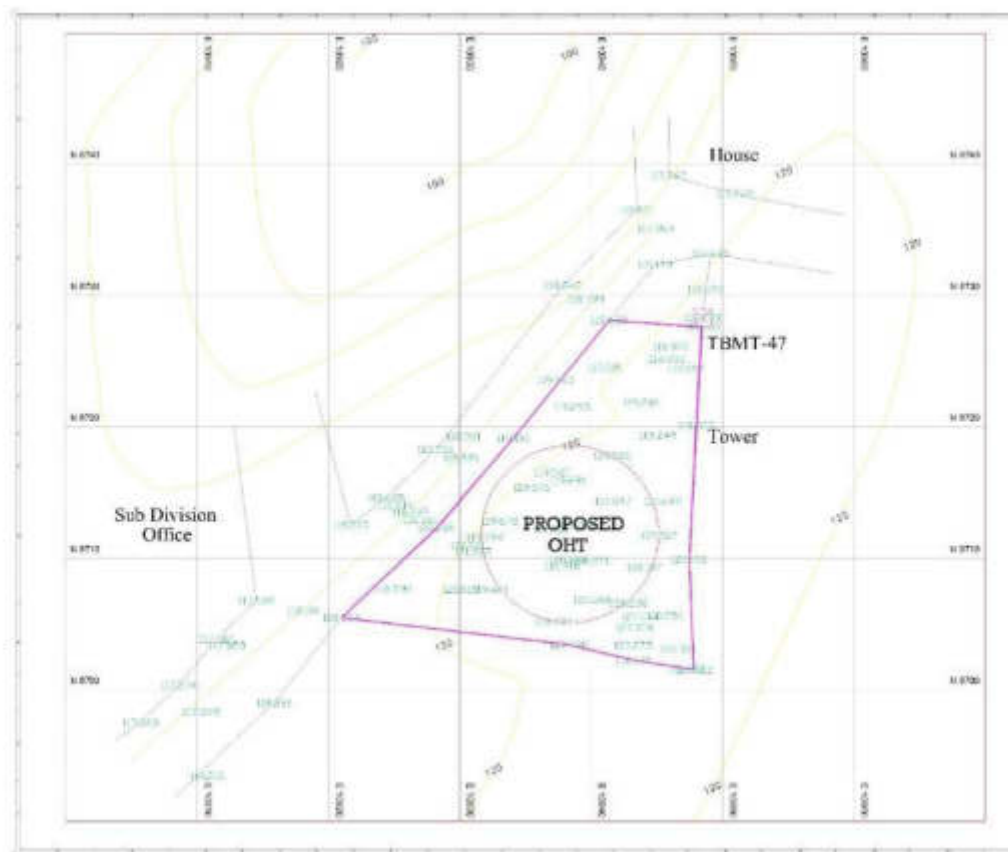


Figure 26: Sectional Plan and Elevation of OHT at at CTO zone-4A

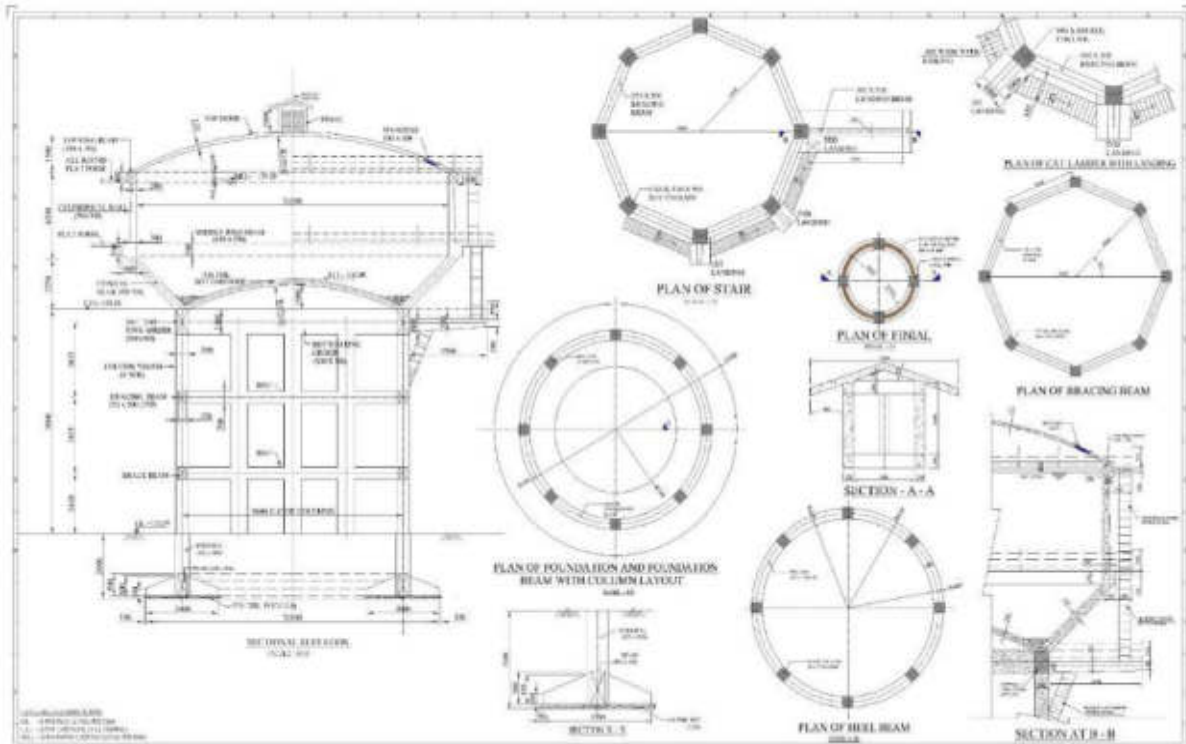


Figure 27: Proposed Layout Plan of OHT at Kabaka zone-5

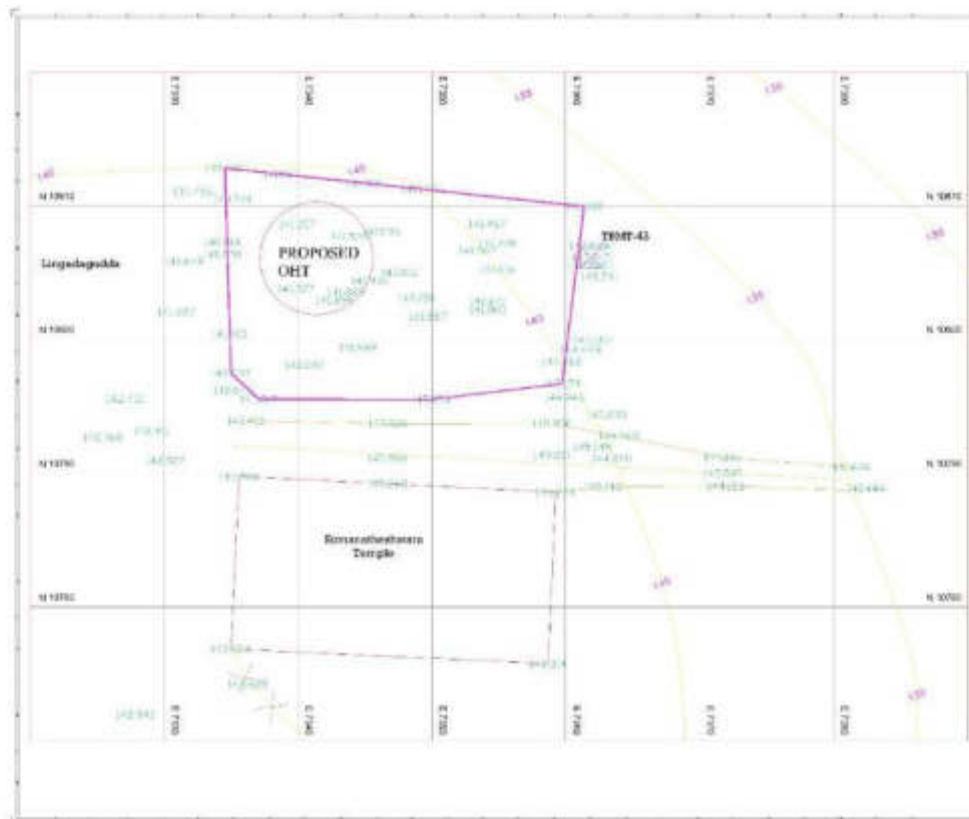


Figure 28: Sectional Plan and Elevation of OHT at at Kabaka zone-5

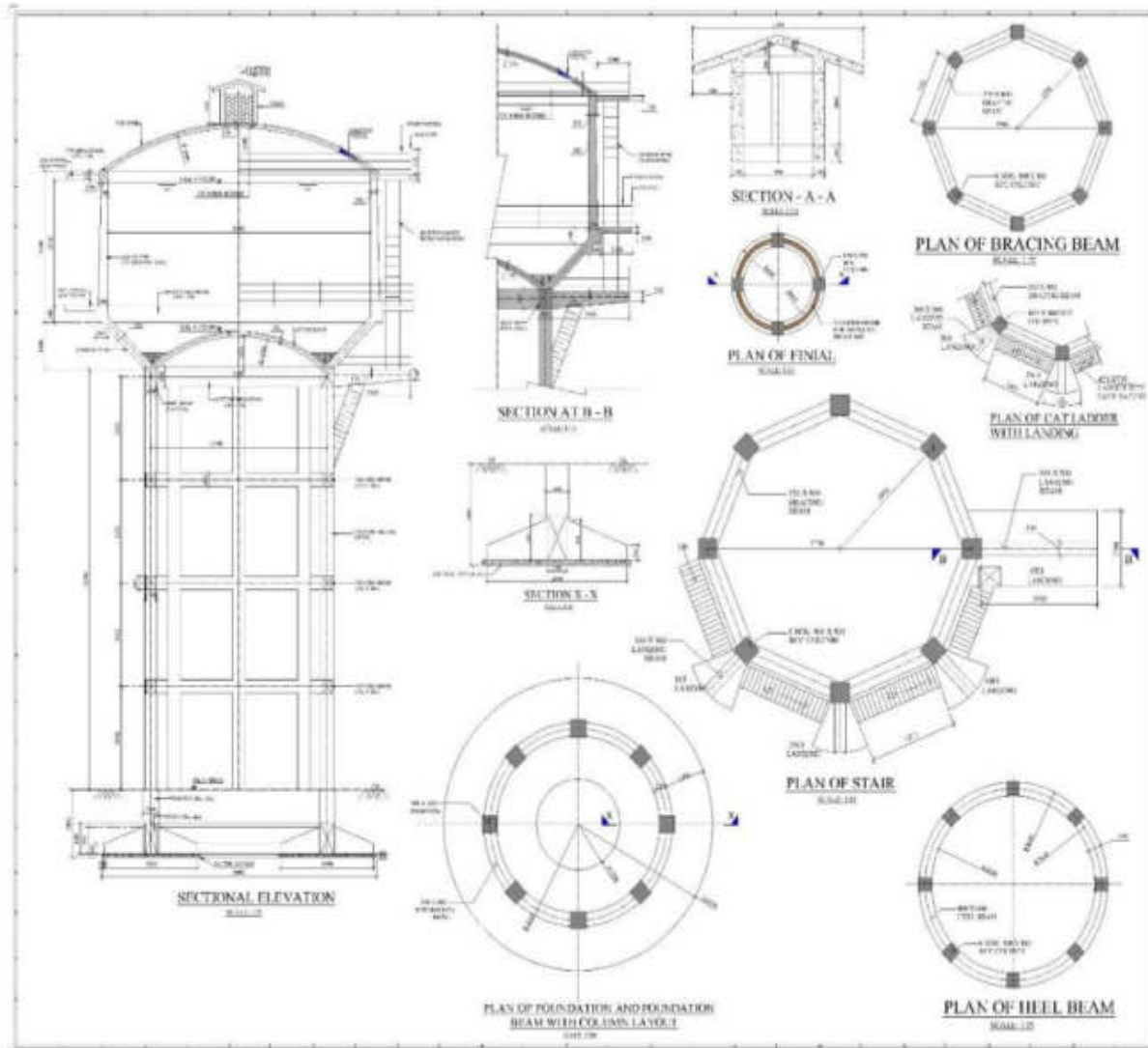


Figure 29: Proposed Layout Plan of OHT at Balnad zone-6A

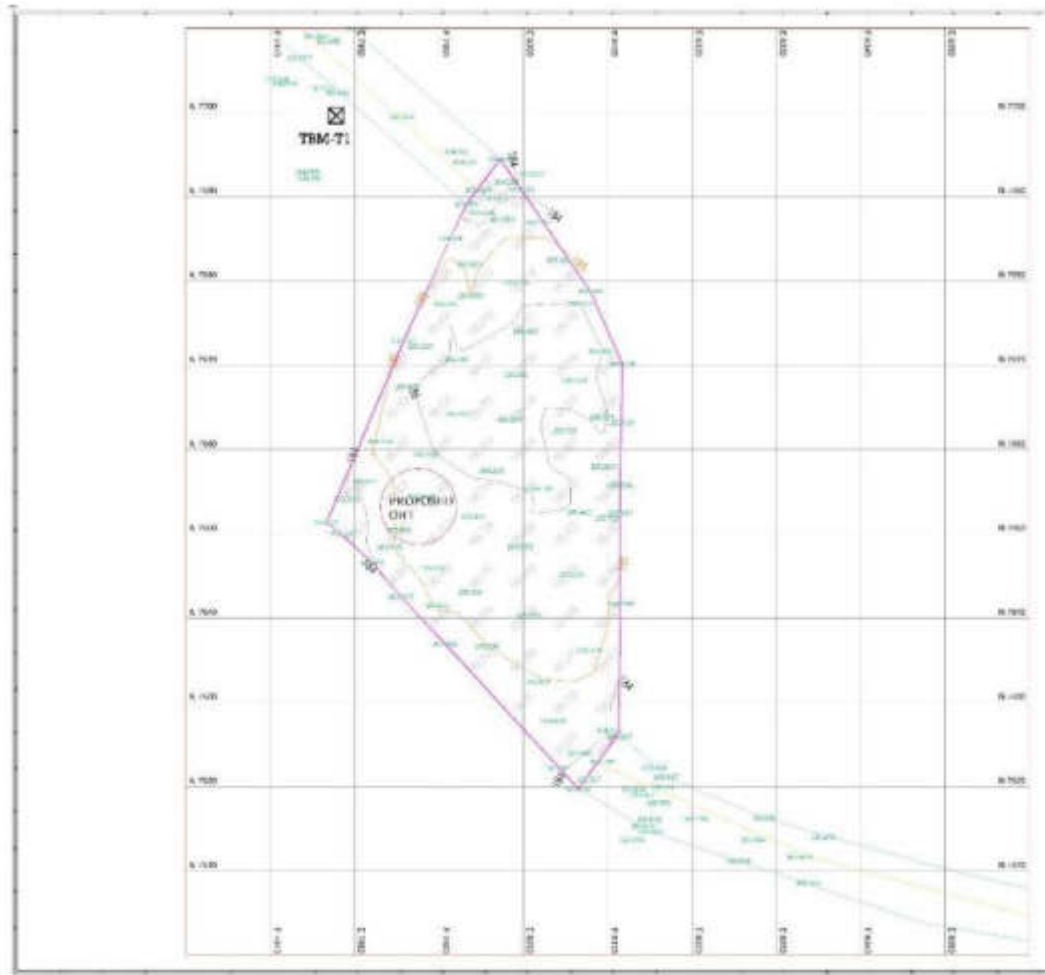


Figure 30: Sectional Plan and Elevation of OHT at at Balnad zone-6A

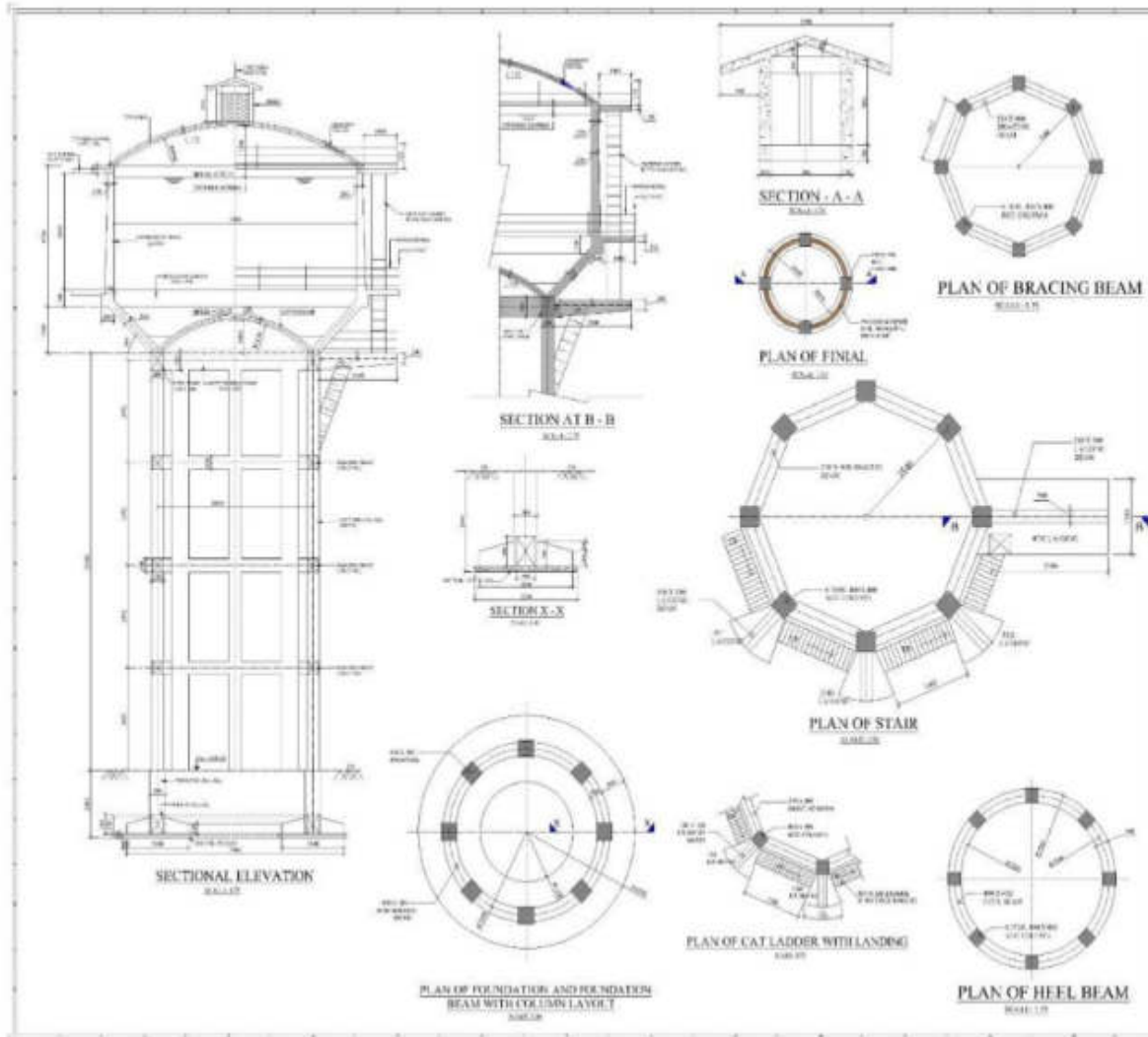


Figure 31: Proposed Layout Plan of OHT at Vitla Road zone-8

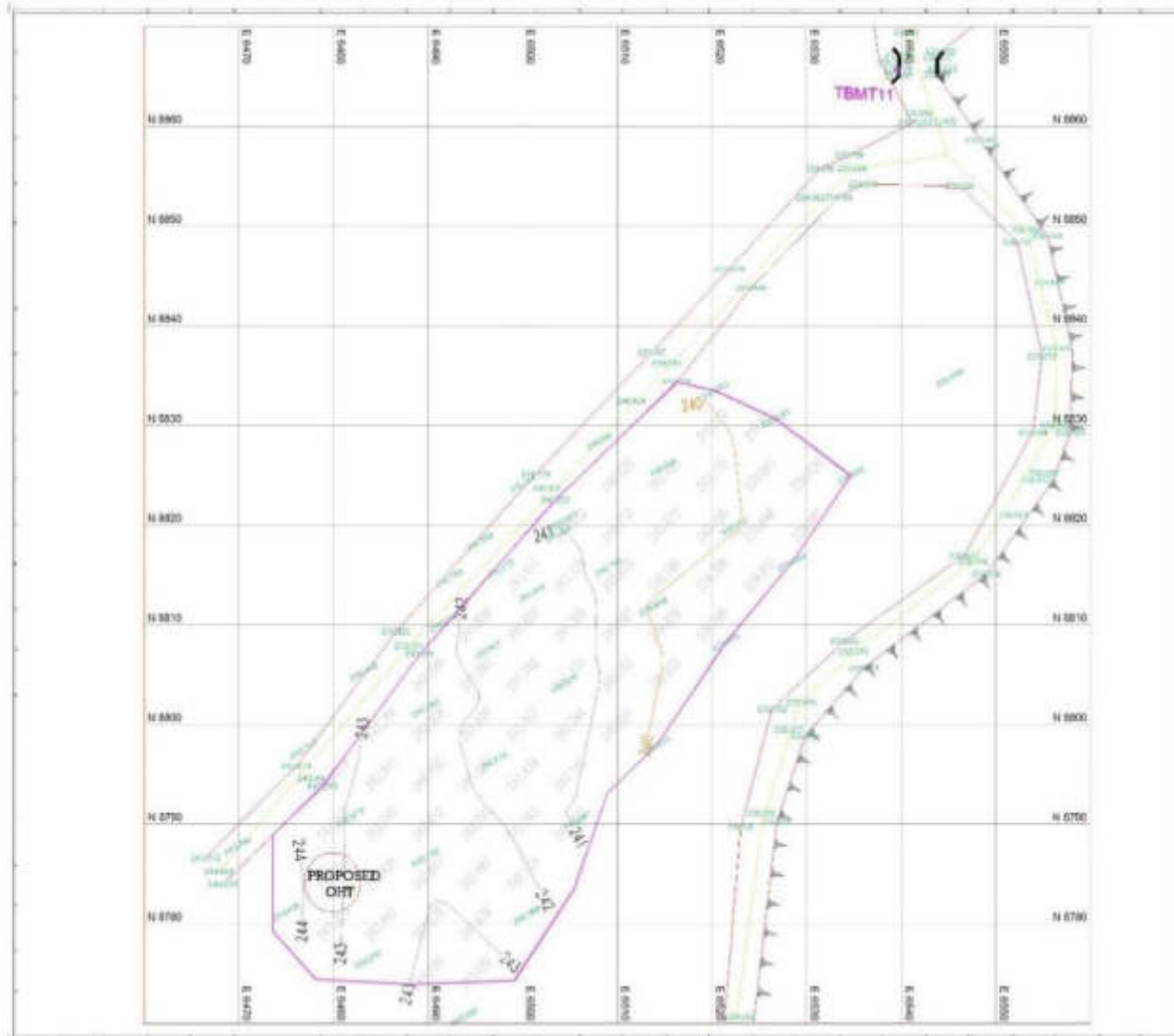






Figure 33: Existing and Proposed Distribution Lines: Zone 1

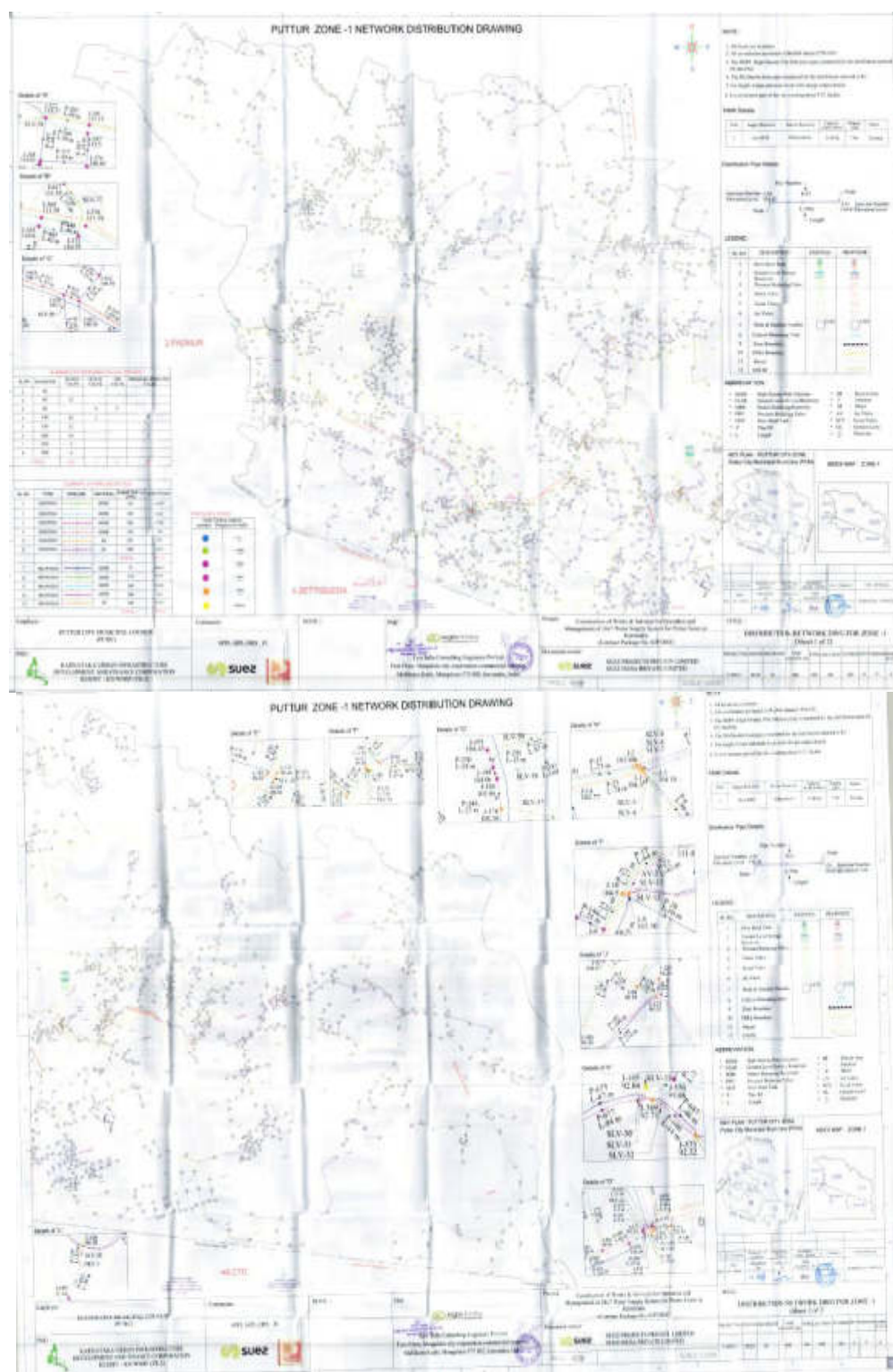
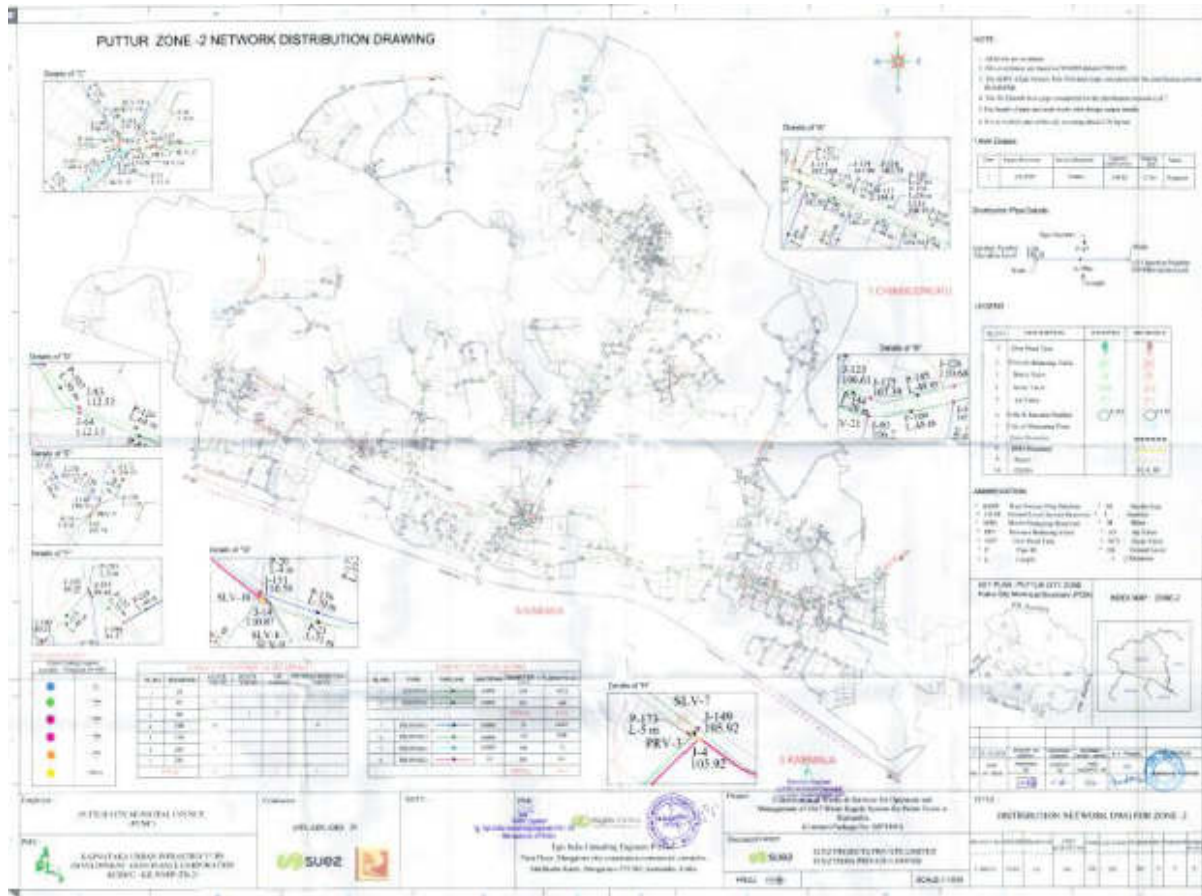


Figure 34: Existing and Proposed Distribution Lines: Zone 2



**Figure 35: Existing and Proposed Distribution Lines: Zone 3**

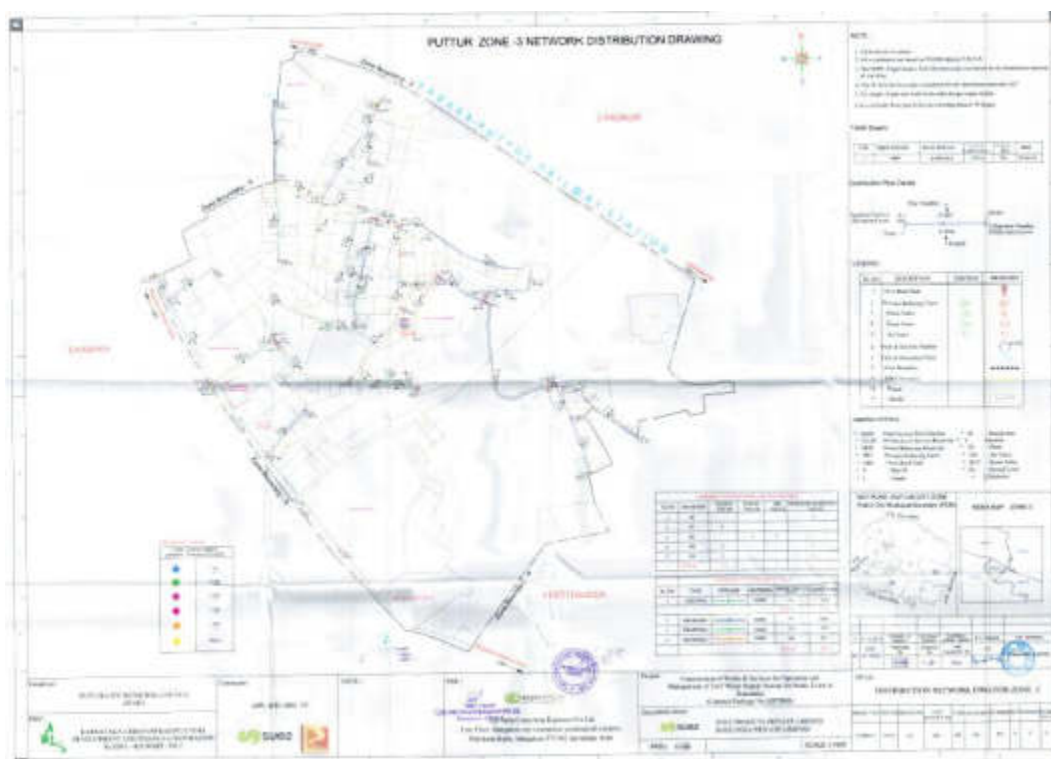
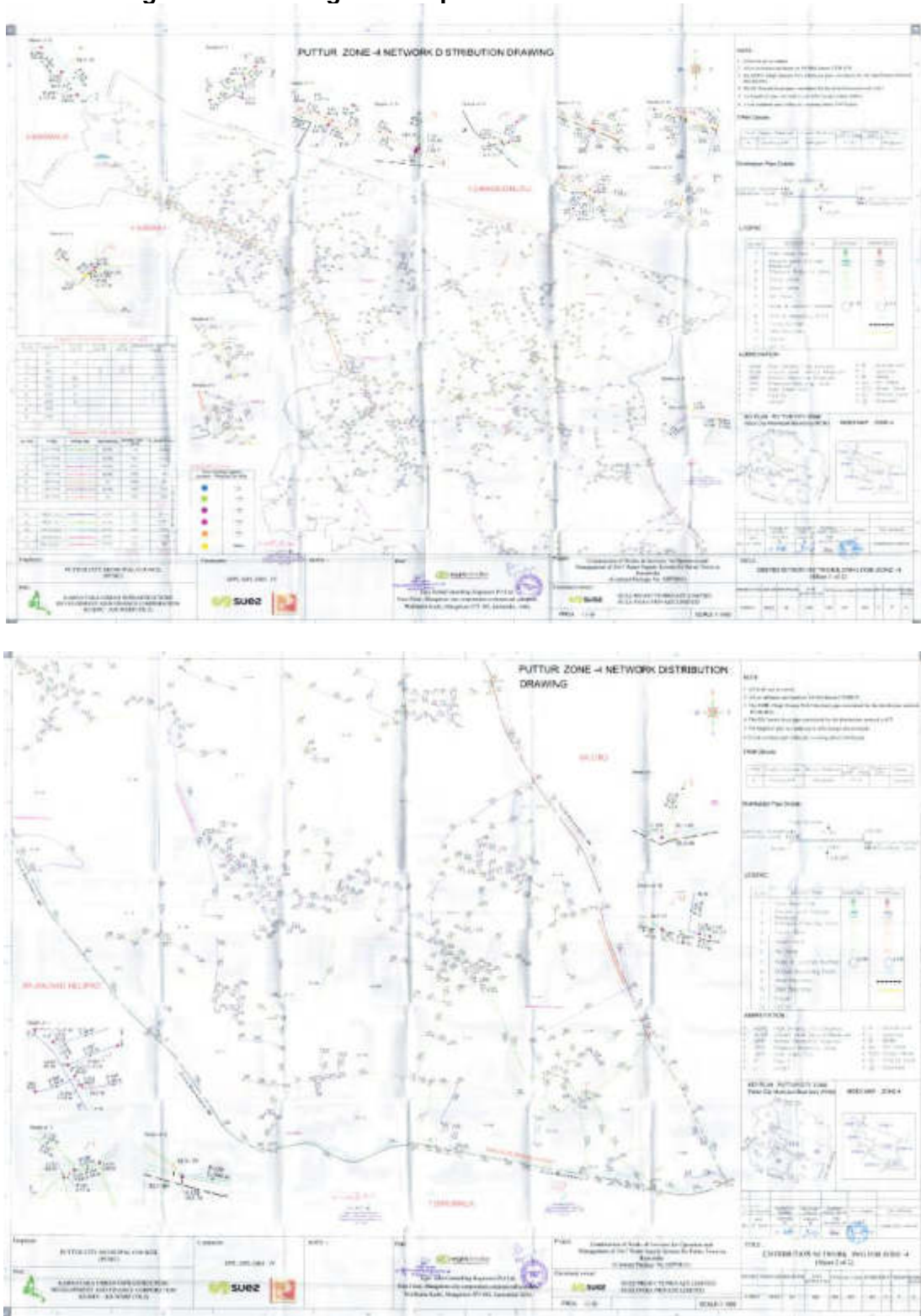


Figure 36: Existing and Proposed Distribution Lines: Zone4





**Figure 37: Existing and Proposed Distribution Lines: Zone 4A**

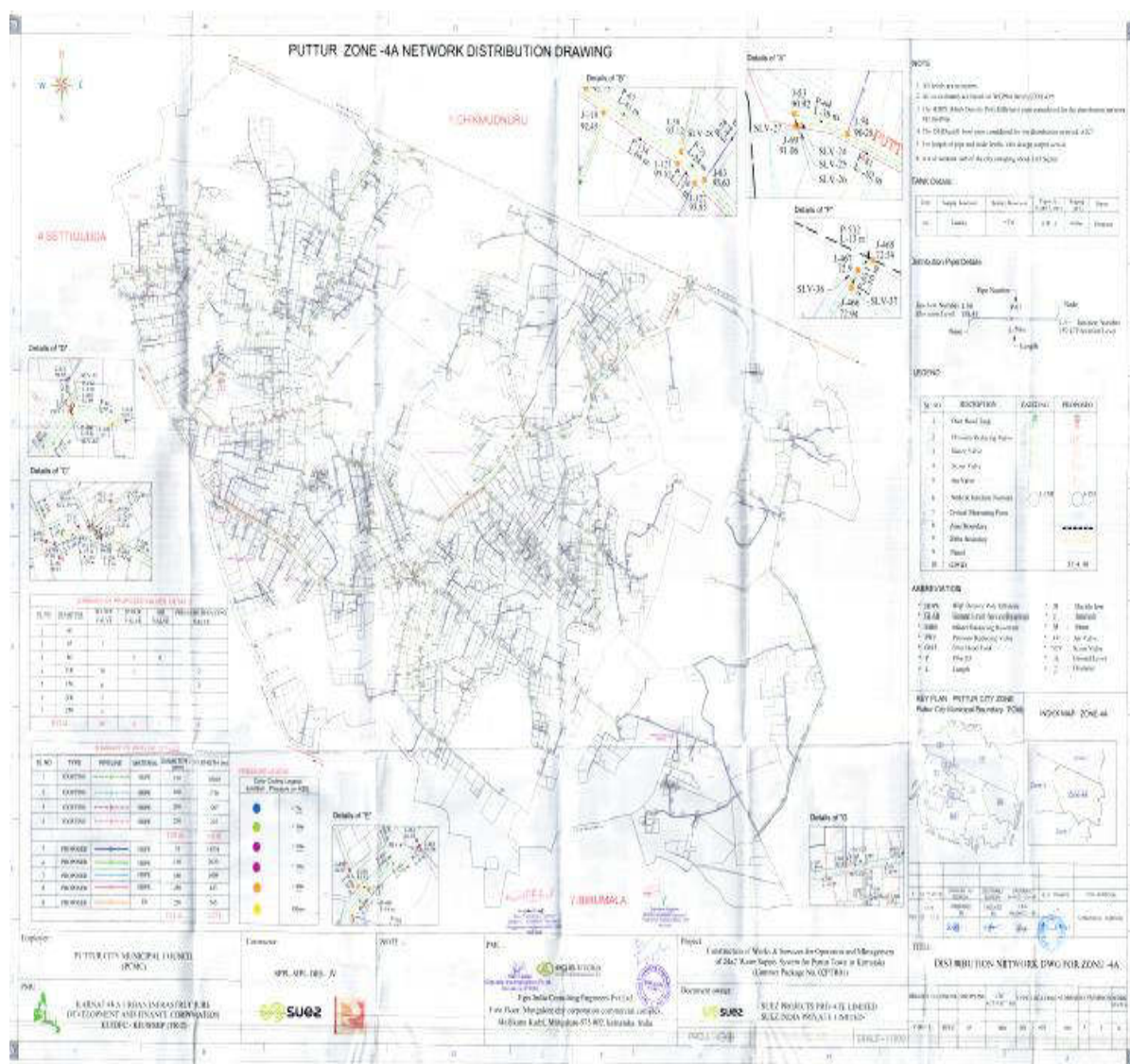
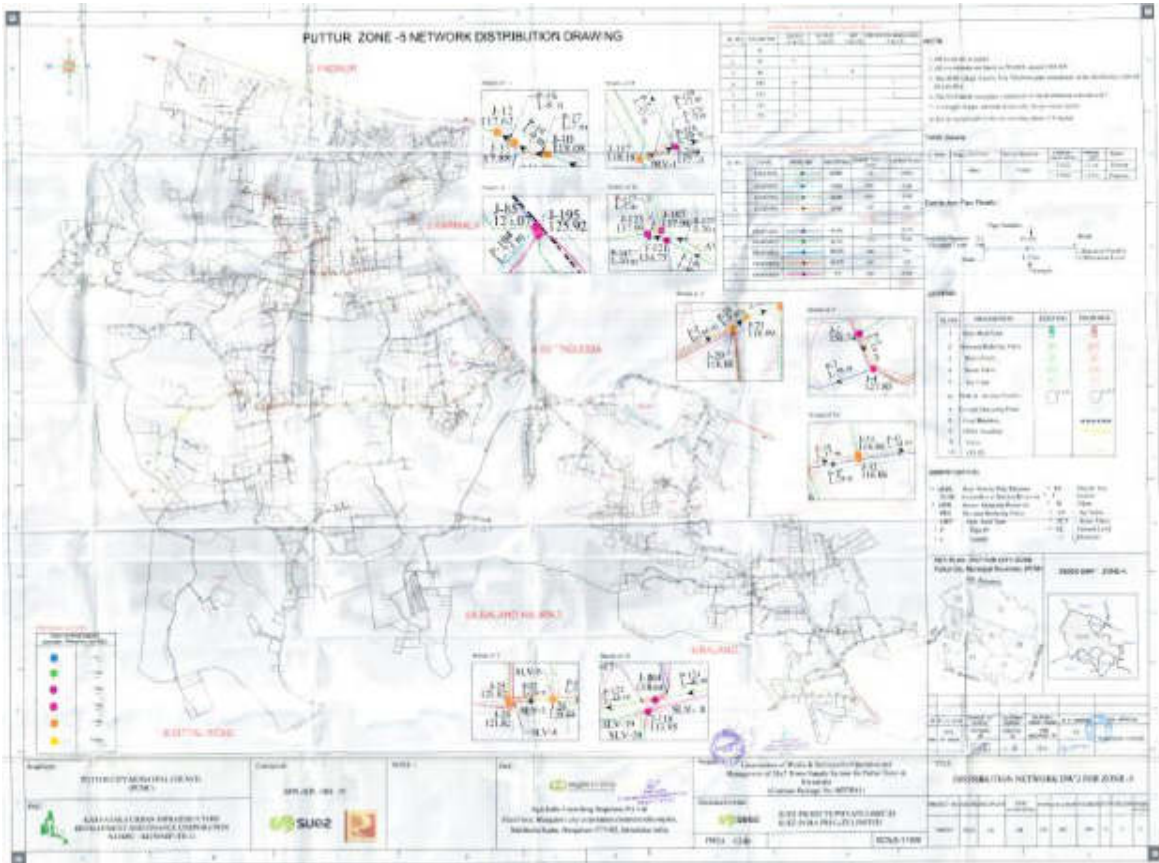
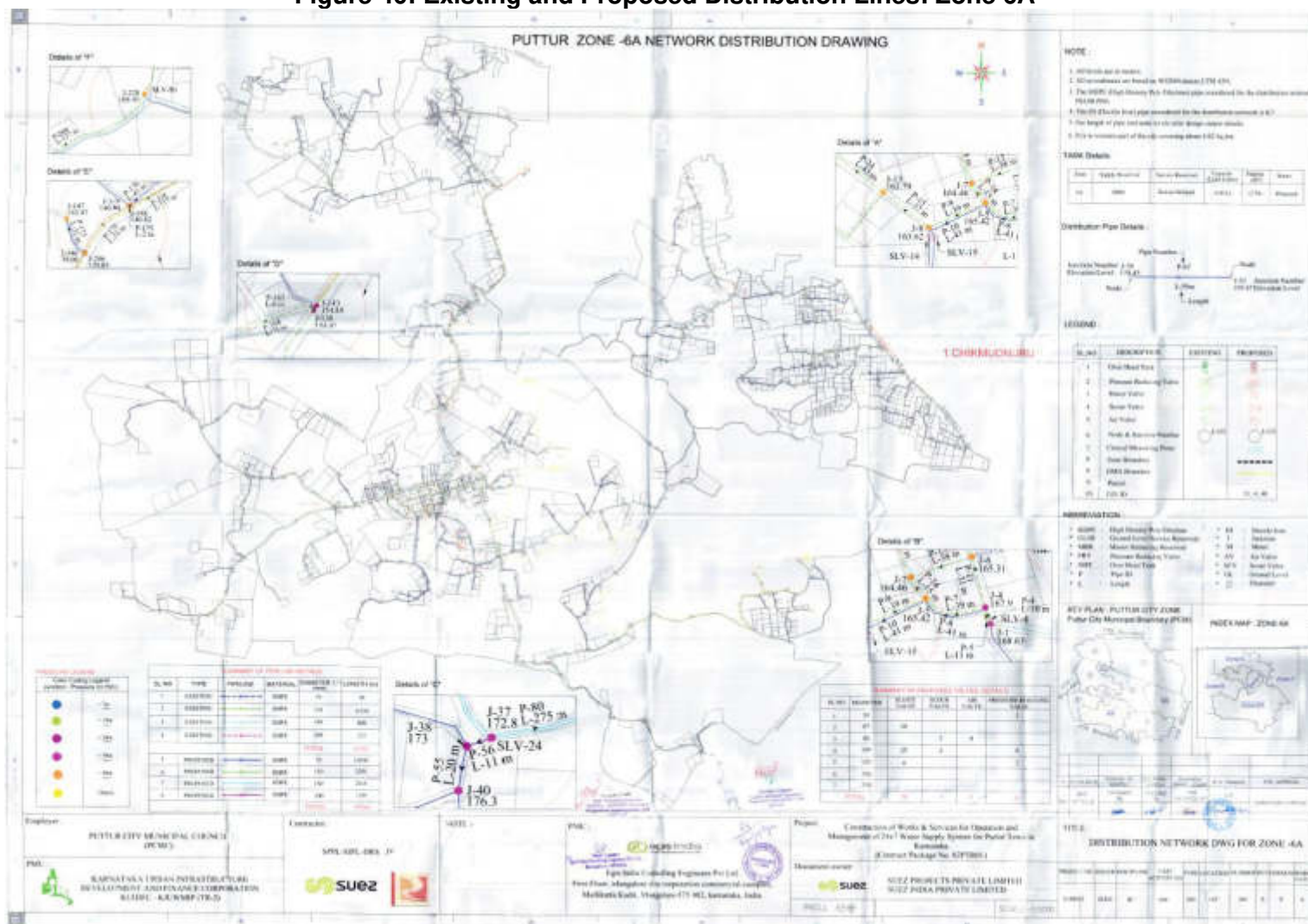


Figure 38: Existing and Proposed Distribution Lines: Zone 5





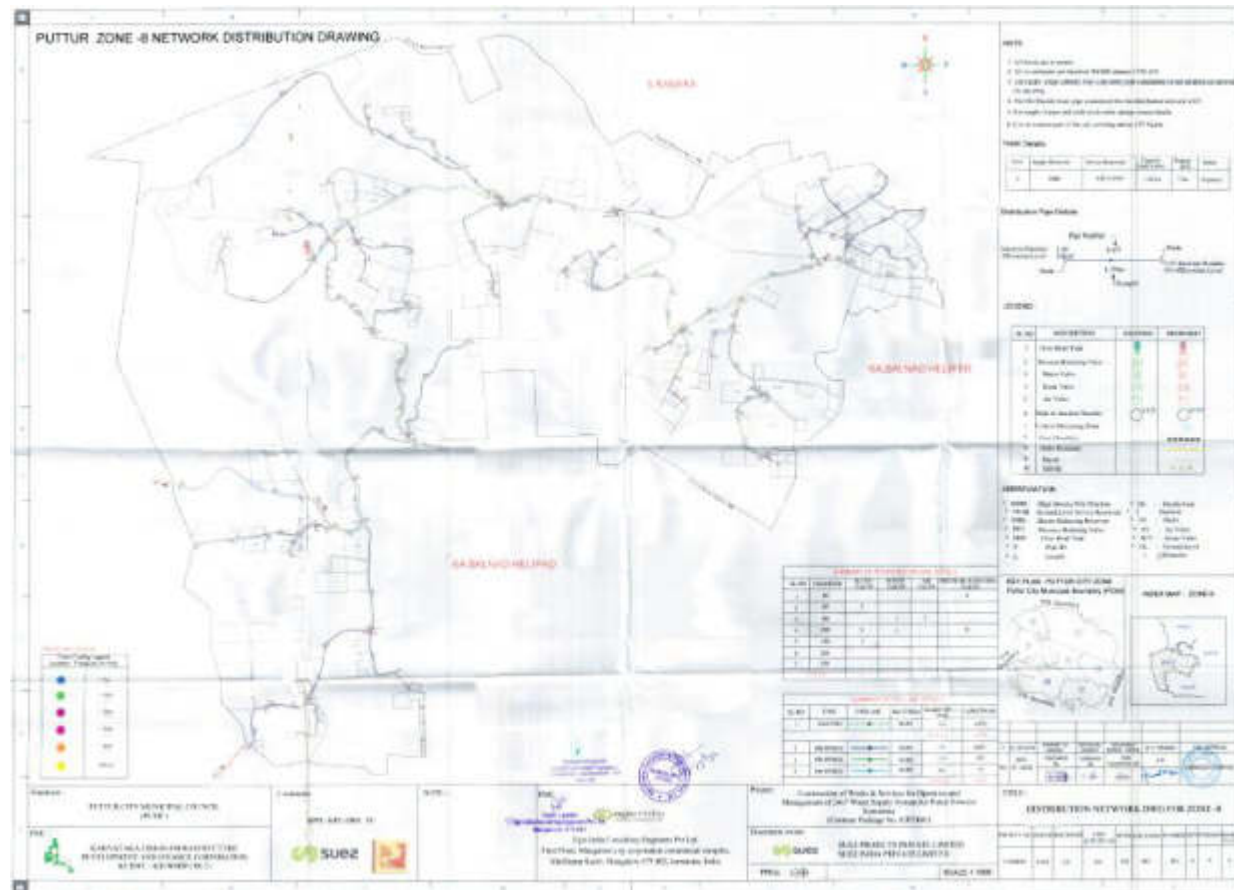








**Figure 42: Existing and Proposed Distribution Lines: Zone 8**



### C. Implementation Schedule

22. Project implementation schedule is given below. Construction work started in Oct 2019 and will be completed by August 2021

Completion of Detailed Project Report	
Tender issue	June 2018
Contract Award	November 2018
Commencement of work	November 2018
Construction period with O & M	33 months & 96 months O & M

## III. POLICY AND LEGAL FRAMEWORK

### A. ADB Safeguard Policy Statement, 2009

23. ADB's Safeguard Policy Statement, 2009, requires the consideration of environmental issues in all aspects of the Bank's operations, and requires environmental assessment of all project loans, program loans, sector loans, sector development program loans, financial intermediary loans and private sector investment operations.

24. The nature of the assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects are screened for their expected environmental impacts and are assigned to one of the following categories:

- (i) Category A: A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required.
- (ii) Category B: A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible and, in most cases, mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.
- (iii) Category C: A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.
- (iv) Category FI: A proposed project is classified as category FI if it involves investment of ADB funds to or through a financial intermediary.

25. The ADB Rapid Environmental Assessment Checklist (<http://www.adb.org/documents/guidelines/environmentalassessment/eaguidelines002.asp>) was used to screen the project for environmental impacts and to determine the environment category. The complete checklist is given in Appendix 1.

26. ADB has classified this subproject as Category B and following procedure for multitranché financing facility (MFF) loans, has determined that one IEE will be conducted for each subproject, with a subproject being the water supply infrastructure improvements proposed in a subproject City.

27. **Environmental Management Plan.** An EMP which addresses the potential impacts and risks identified by the environmental assessment shall be prepared. The level of detail and complexity of the EMP and the priority of the identified measures and actions will be commensurate with the Project's impact and risks.

28. **Public Disclosure.** The IEE will be put in an accessible place (e.g., local government offices, libraries, community centers, etc.), and a summary translated into local language for the project affected people and other stakeholders. The following safeguard documents will be put up in ADB's website so that the affected people, other stakeholders, and the general public can provide meaningful inputs into the project design and implementation:

- (i) For environmental category A projects, a draft EIA report at least 120 days before Board consideration;
- (ii) Final or updated EIA and/or IEE upon receipt; and
- (iii) Environmental monitoring reports submitted by the Project Management Unit (PMU) during project implementation upon receipt.

29. During the design, construction, and operation of the project the pollution prevention and control technologies and practices consistent with international good practice, as reflected in internationally recognized standards such as the World bank Environmental, Health, and Safety (EHS) Guidelines -General EHS Guidelines: Occupational, Health and safety ([www.ifc.org/ifcext/enviro.nsf/Content/ Environmental guidelines](http://www.ifc.org/ifcext/enviro.nsf/Content/Environmental%20guidelines)) and EHS Guidelines for water & sanitation will be followed (<http://www.ifc.org/wps/wcm/connect/e22c050048855ae0875cd76a6515bb18/Final%2B-%2BWater%2Band%2BSanitation.pdf?MOD=AJPERE>)

30. Employers and supervisors are obliged to implement all reasonable precautions to protect the health and safety of workers. Preventive and protective measures should be introduced according to the following order of priority:

- (i) Eliminating the hazard by removing the activity from the work process. Examples include substitution with less hazardous chemicals, using different manufacturing processes, etc;
- (ii) Controlling the hazard at its source through use of engineering controls. Examples include local exhaust ventilation, isolation rooms, machine guarding, acoustic insulating, etc;
- (iii) Minimizing the hazard through design of safe work systems and administrative or institutional control measures. Examples include job rotation, training safe work procedures, lock-out and tag-out, workplace monitoring, limiting exposure or work duration, etc.
- (iv) Providing appropriate personal protective equipment (PPE) in conjunction with training, use, and maintenance of the PPE
- (v) Comply with: Child Labour (Prohibition and Regulation) Amendment Act, 2016; Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 as amended from time to time from appropriate authorities; Trade Unions Act, 1926; The Building and Other Construction Workers (Regulation of Employment and conditions of Service Act) 1996 and the Cess Act of 1996; The Factories Act, 1948; and Prohibition of Employment as Manual Scavengers and Their Rehabilitation Act 2013.

31. Following requirements of ADB SPS, PMO and RPMOs shall apply pollution prevention and control technologies and practices consistent with international good practice. When the Government of India regulations differ from these levels and measures, PMO shall achieve whichever is more stringent. Appendix 4, 5 and 6 provide applicable standards. If less stringent levels or measures are appropriate in view of specific subproject circumstances, PMO will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

## **B. Government Law and Policies**

32. The Government of India EIA Notification of 2006 (replacing the EIA Notification of 1994) sets out the requirement for Environmental Assessment in India. This states that environmental clearance is required for specified activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts.

33. Category A projects require environmental clearance from the central Ministry of Environment, Forest and Climate Change (MOEFCC). The proponent is required to provide preliminary details of the project in the prescribed manner with all requisite details, after which an Expert Appraisal Committee (EAC) of the MOEFCC prepares comprehensive terms of reference (TOR) for the EIA study. On completion of the study and review of the report by the EAC, MOEFCC considers the recommendation of the EAC and provides the environmental clearance if appropriate.

34. Category B projects require environmental clearance from the State Environment Impact Assessment Authority (SEIAA). The State level EAC categorizes the project as either B1 (requiring EIA study) or B2 (no EIA study) and prepares TOR for B1 projects within 60 days. On completion of the study and review of the report by the EAC, the SEIAA issues the environmental clearance based on the EAC recommendation. The Notification also provides that any project or activity classified as category B will be treated as category A if it is located in whole or in part within 10 km from the boundary of protected areas, notified areas or inter-state or international boundaries.

35. None of the components of this water supply improvement subproject in Puttur falls under the ambit of the EIA Notification 2006, and, therefore environmental clearance is thus not required for the subproject.

36. Environmental Rules, Laws, and Regulations. Besides EIA Notification 2006, there are various other Acts, Rules, Policies and Regulations currently in force in India that deal with environmental issues that could apply to infrastructure development. These are listed in Appendix .2. Table 5 below presents a summary of environmental regulations and mandatory requirements applicable to the subproject.

**Table 5: Applicable Environmental Regulations**

<b>Law</b>	<b>Description</b>	<b>Requirement</b>
EIA Notification	The EIA Notification of 2006 and 2009 (replacing the EIA Notification of 1994), set out the requirement for environmental assessment in India. This states that Environmental Clearance is required for certain defined activities/projects, and this must be obtained before any construction work or land preparation (except land acquisition) may commence. Projects are categorized as A or B depending on the scale of the project and the nature of its impacts. Category A projects require Environmental Clearance from the Ministry of Environment and Forest (MOEF). Category B projects require Environmental Clearance from the State Environmental Impact Assessment Authority (SEIAA).	Sub project is not a listed activity in Schedule I of this notification and hence environmental clearance is not required.
Water (Prevention And Control of Pollution) Act of 1974, Rules of 1975, and amendments	Control of water pollution is achieved through administering conditions imposed in consent issued under provision of the Water (Prevention and Control of Pollution) Act of 1974. These conditions regulate the quality and quantity of effluent, the location of discharge and the frequency of monitoring of effluents. Any component of the Project having the potential to generate sewage or trade effluent will come under the purview of this Act, its rules and amendments. Such projects have to obtain Consent for Establishment (CFE) under Section 25 of the Act from Karnataka State Pollution Control Board (KSPCB) before starting implementation and Consent for Operation (CFO) before commissioning. The Water Act also requires the occupier of such projects to take measures for abating the possible pollution of receiving water bodies.	None of the components in this sub project requires CFE or CFO under this act.
Air (Prevention and Control of Pollution) Act of 1981, Rules of 1982 and amendments	The projects having potential to emit air pollutants into the atmosphere have to obtain CFE under Section 21 of the Air (Prevention and Control of Pollution) Act of 1981 from KSPCB before starting implementation and CFO before commissioning the project. The occupier of the project/facility has the responsibility to adopt necessary air pollution control measures for abating air pollution. Procure diesel generators (500 KVA) only from approved manufacturers/ suppliers the manufacturer/ supplier shall be registered with the Central Pollution Control Board (CPCB) and shall have valid certificates for "Type Approval" and "Conformity of Production"	For the project, the following will require CFE and CFO from KSPCB: if, (i) diesel generators; (ii) hot mix plants; and (iii) stone crushers, installed for construction. Contractor shall procure the same. All relevant forms, prescribed fees and procedures to obtain the CFE and CFO can be found in the KSPCB website ( <a href="http://www.kspcb.gov.in">www.kspcb.gov.in</a> ). Standards for diesel generator sets are provided in Appendix 3

<b>Law</b>	<b>Description</b>	<b>Requirement</b>
Environment (Protection) Act, 1986 and CPCB Environmental Standards.	Emissions and discharges from the facilities to be created or refurbished or augmented shall comply with the notified standards notified.	Appendix 4 provides applicable standards for ambient air quality and noise. Appendix 5 provides standards for discharge of effluents Appendix 4 and 5 respectively also provides a comparison of national standards and internationally recognized guidelines with respect to ambient air and noise, and effluent discharge. ADB SPS requires adoption of stringent values for project implementation
Noise Pollution (Regulation and Control) Rules, 2000 amended up to 2010	Rule 3 of the Act specifies ambient air quality standards in respect of noise for different areas/zones.	Appendix 4 provides applicable noise standard.
Ancient Monuments and Archaeological Sites and Remains Act, 1958 and Ancient Monuments and Archaeological Sites and Remains (Amendment and Validation) Act ,2010	The Amendment Act designates areas within 100 meters (m) from the “protected property” as “prohibited area” and beyond that up to 200 m as “regulated area” respectively. No “construction” is permitted in the “prohibited area” and any “construction” in the “regulated area” requires prior permission of the Archaeological Survey of India (ASI). “Protected property” includes the site, remains, and monuments protected by ASI or the State Department of Archaeology and “construction” means construction of any structure or building	There are no protected monuments near project area in Puttur. However, in case of chance finds, measures are suggested in Environmental Management Plan (EMP) to take prompt action to ensure its removal or protection in situ.
Labor Laws	The contractor shall not make employment decisions based upon personal characteristics unrelated to job requirements. The contractor shall base the employment relationship upon equal opportunity and fair treatment and shall not discriminate with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment or retirement, and discipline. The contractor shall provide equal wages and benefits to men and women for work of equal value or type	Appendix 2 provides applicable labor laws including amendments issued from time to time applicable to establishments engaged in construction of civil works.
Biodiversity Act of 2002	The Biodiversity Act 2002 primarily addresses access to genetic resources and associated knowledge by foreign individuals, institutions or companies, to ensure equitable sharing of benefits arising out of the use of these resources and knowledge to the country and the people.	Not applicable to Puttur City Water Supply Scheme as no mentioned activities are involved in the project
Ramsar Convention, 1971	The Ramsar Convention is an intergovernmental treaty that provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources. India is one of the signatories to the treaty. The Ramsar convention made it mandatory for the signatory	Not applicable to Puttur City Water Supply Scheme as no wetlands presents in the project area.

Law	Description	Requirement
	countries to include wetland conservation in their national land use plans.	
Wildlife Protection Act, 1972	This overarching Act provides protection to wild animals, birds, plants and matters connected with habitat protection, processes to declare protected areas, regulation of wildlife trade, constitution of state and national board for wildlife, zoo authority, tiger conservation authority, penalty clauses and other important regulations.	Not applicable to Puttur City Water Supply Scheme as none of the project component will have any impact on wildlife or protected areas.
Forest (Conservation) Act, 1980 Indian Drinking Water Standards	The Forest (Conservation) Act prevents the use of forest land for non-forest uses without the clearance from MOEF, Government of India Gives details of the permissible and desirable limits of various parameters in drinking water as per the Bureau of Indian Standards	Not applicable to Puttur City Water Supply Scheme as there is no forest area within or adjacent to the project area. Appendix 6 provides drinking water standards <a href="http://cgwb.gov.in/documents/wq-standards.pdf">http://cgwb.gov.in/documents/wq-standards.pdf</a>
Karnataka Forest Act, 1963 and Karnataka Forest Rules, 1969	This Act makes the basis for declaration of Reserved Forests, constitution of village forest committees, management of reserved forests and penalties and procedures.	Not applicable to Puttur City Water Supply Scheme as there is no forest area within or adjacent to the project area.
Karnataka Preservation of Trees Act, 1976 and Karnataka Preservation of Trees Rules, 1977	This Act has put restriction on felling of trees in the State unless until permitted by the Tree Officer. Any person desiring to fell a tree shall apply in writing to the tree officer for permission in that behalf. It further defines clauses for planting adequate number of trees, planting in place of fallen/destroyed trees, preservation of trees and adoption of trees.	No Tree cutting envisaged as per The present design Compensatory plantation as stipulated in the tree cutting permission shall be adhered to if any tree cutting required.

#### IV. DESCRIPTION OF THE ENVIRONMENT

##### A. Environmental Profile of Puttur

##### 1. Location

37. Puttur is located in Dakshina Kannada District. Geographically, Puttur City is located at a latitude of 12°77' N and longitude of 75°22'E. Puttur has the status of City Municipal Council (CMC). The town is divided into 27 wards and spreading to an area of 36.11 km<sup>2</sup>.

##### 2. Topography, Soil and Geology

38. The town is situated in the Western Ghats of South India with a hilly and undulating topography. The northern parts of the city can be characterized as flat and plain as the southern part. Agricultural activities are concentrated in the low-lying areas, whereas houses are scattered and placed up in the higher areas

39. The soil in the Dakshina Kannada district is mostly lateritic type, found distributed in the Pediplain area characterized by high iron and aluminum content. Lateritic soil is mostly red in color and yellow loamy, pale to bright red colors are also seen. Lateritic soil is suitable for



paddy, sugarcane, areca nut (*Areca catechu*) and plantation crops, viz. crops like cardamom and plantains. Loamy red soils are distributed in the lower reaches of valleys. Red lateritic soil is the most dominant soil type in the area. The texture of the soil varies from fine to coarse. The soil in valleys and intermediate slopes is rich in loam whereas in upper slopes it is much coarse in nature. The soil responds well to irrigation and other soil -management practices. Silty and loamy soils are of transported origin and are found mostly along river banks and in valley plains.

40. They have good infiltration capacity and are well-suited for agriculture due to their fertility. The average Ground Level is 87 m above MSL. As per the seismic zoning map of India, Puttur City falls under the zone III, which is the moderate earthquake risk zone in India.

### 3. Climate

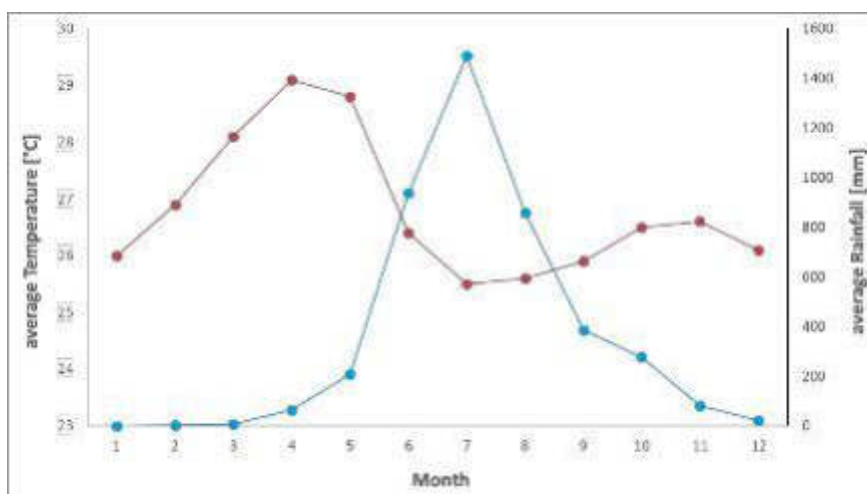
41. The yearly mean temperature is 26.8°C and the total yearly rainfall is 4,329 mm (Climate data.org, 2015) and is comprised in the Table 6 below; The rainfall occurs in monsoon seasons from June to September.

**Table 6: Climate Data of Puttur**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C	31.3	31.8	32.7	33.1	32.4	29.3	28.0	28.2	28.8	29.9	30.8	31.2	30.63
Daily mean °C	26	26.9	28.1	29.1	28.8	26.4	25.5	25.6	25.9	26.5	26.6	26.1	26.79
Average low °C	20.8	22.0	23.6	25.2	25.2	23.5	23.0	23.1	23.0	23.2	22.4	21.0	23
Average rainfall mm	0	1	6	63	208	938	1,489	858	386	277	81	22	4,329

°C = degree Celsius, mm = milliliter.

Source: Climate-Data.org. Climate Table of Puttur, Karnataka, India. <https://en.climate-data.org/location/24087/>.

**Figure 43: Average Temperature und Rainfall in Puttur**

Source: Climate-Data.org, 2015.

#### 4. Air Quality

42. The quality of ambient air is assessed based on the distribution of particulate matters, PM 10 and PM 2.5 values in the area per the prevailing statutory stipulations. The baseline PM 10 and PM 2.5 values studied for the region around the river sand blocks range from 41 to 69 and 15 to 37  $\mu\text{g}/\text{m}^3$ , respectively (for a 24-hour period) as against the National Ambient Air Quality Standard (NAAQS) of 100 and 60  $\mu\text{g}/\text{m}^3$ , respectively. The atmospheric  $\text{NO}_2$  and  $\text{SO}_2$  parameters measured in the region range from 17 to 20 and 11 to 14  $\mu\text{g}/\text{m}^3$ , respectively as against the NAAQS standard desirable limits of 80  $\mu\text{g}/\text{m}^3$  each. Other harmful parameters such as Carbon Monoxide (CO), Ozone ( $\text{O}_3$ ), Ammonia ( $\text{NH}_3$ ), Lead (Pb), Nickel (Ni),  $\text{C}_6\text{H}_6$ , Arsenic (As), etc. were found to be below detection level 3

#### 5. Ambient Noise Level

43. The average level of Noise measured in river sand block region ranges from 60 to 72 dB during daytime and is well within the noise standards stipulated by Karnataka State Pollution Control Board.<sup>5</sup>

#### 6. Surface Water

44. The water quality for Kumaradhaara River were analyzed and tests were conducted by the National Institute of Technology Karnataka, Surathkal in the Department of Civil Engineering on 19 June 2015 (Appendix 7). As presented in Table 7, all the tested parameters within the stipulated standards.

**Table 7: Surface Water Quality of Kumaradhara Source for Puttur**

Test parameters	Unit	Sample Extracted from the Vented Dam	Acceptable Upper Limit for Drinking (IS10500-1992)
pH		6.88	6.50-8.50
Total Hardness as $\text{CaCO}_3$	mg/l	16.00	300.00

<sup>5</sup> Source: Proceedings of the Dakshina Kannada District Sand Monitoring Committee, Mangaluru, Dated 26 August 2014 and 28 August 2014

Test parameters	Unit	Sample Extracted from the Vented Dam	Acceptable Upper Limit for Drinking (IS10500-1992)
Iron Content, as Fe	mg/l	0.33	0.30
Chloride, as Cl <sup>-</sup>	mg/l	5.50	250.00
Nitrate, as NO <sub>3</sub>	mg/l	Not detectable	45.00
Sulfate, as SO <sub>4</sub>	mg/l	Not detectable	200.00
Total Coliforms most probable number	MPN Index /100 ml	32	0

Cl = Chloride, Fe = Iron, mg/l = milligrams per liter, ml = milliliter, MPN = most probable number, pH = potential of Hydrogen.

45. The pH values in the surface water samples collected from the Netravati River ranges from 6.86 to 7.28. The Total Dissolved Solids (TDS) in the same samples range from 138 to 145. The river water is characterized by low heavy metal content which is below detection limits in the water analyses. The pH values in the ground water samples collected from the region ranges from 6.4 to 7.4. The TDS in the groundwater samples from the region were found to be 64 to 95 ppm. The distribution of Cation and Anion contents in the water samples are within permissible range. There are no unusual or harmful elements detected in the water samples (footnote 5). Seasonal and perennial springs are located in the foothills of hillocks and forests in the district. Thermal spring which is of very rare occurrence in south India has been found in the district. It is called as 'Bendru Teertha' and located at Irde on Puttur-Panaje road at a distance of 13 km from Puttur. The rock formations exposed in and around the spring are gneisses traversed by veins of quartz and pegmatite on the southern banks of Badantadka river. The temperature of water varied from 35oC to 38oC. In the centre of the spring the temperature varies from 37oC to 38oC. The chemical analysis data of spring water shows TDS of 424 ppm, SiO<sub>2</sub>, 80.0 ppm, Cl 60 ppm, HCO<sub>3</sub> 196 ppm, Mg 21 ppm, SO<sub>4</sub> 61 ppm, CaCO<sub>3</sub> 121 ppm, Na 81 ppm, K 7.0 ppm and pH 8.2. (Source: Ground Water Information Booklet for Dakshina Kannada district, Central Ground Water Board South West Region 2012).

## 7. Groundwater

46. The average groundwater development of the district is 66%. The resource estimation reveals that the extent of development is 85% in Puttur taluk. Net ground water availability for future irrigation development as of March 2009 in Puttur taluk is 846 hectare-metre (ha-m) and Sulyataluk is 1970 ha-m.

47. The Categorization is based on stage of groundwater development as well as long-term trend of ground water level indicates that 20% of the area of Puttur taluks are over exploited. Major parts of Puttur (70%) are in 'safe' category. In these areas groundwater development is on a low-key and hence enough scope exists further groundwater development. Groundwater quality in the district is generally good and potable. The specific conductivity of ground water in the district varies from 70-140 micromhos/cm at 25oC. The contamination of groundwater from fertilizers is observed in Puttur. (Source: Ground Water Information Booklet for Dakshina Kannada district, Central Ground Water Board South West Region 2012).

## B. Ecological Resources

48. The subproject components are mostly located in Puttur urban area except the jack well at the water intake on Kumaradhra River, which is outside at a distance of 12 km from the city. There are no protected areas, wetlands, mangroves, or estuaries in or near the subproject location. There are no forest areas within or near Puttur. No new works are proposed in the river. New pumps will be installed in the existing pump house at intake. The area surrounding

the intake well is mostly used for irrigation. All the pipelines will be laid along the public roads within the roads right of way. All these roads, except the raw water alignment from intake to WTP, are located within the urban area of Puttur town. There are no forests or any eco sensitive areas in the pipeline alignment. No tree cutting is envisaged. Reservoir (OHTs and GLSR) sites are located within the urban area of Puttur town. There are trees of local species in some of the reservoir sites, however, these will be accommodated in the layout plan design, and tree cutting will be avoided as far as possible.

## **C. Economic Development**

### **1. Industry and Agriculture**

49. Puttur is the second largest town in Dakshina Kannada district, which is a largest market for areca nut in Karnataka. Puttur is an agro based town of the Coastal region surrounded by several hillocks with lush green forest situated in the belt of Western ghat which gets heavy rainfall. The Major occupation of the people is agriculture. The crops grown mainly are paddy, areca, coconut, cashew, rubber, cocoa bean, chilli, vanilla, pepper and plantains. In addition, dairy farming, sericulture and horticulture activities supplement the earnings of the people to some extent.

### **2. Transportation**

50. Puttur is situated on the Mangalore-Mysore state highway and is 52 km from Mangalore. It is also connected to the national highway NH-48(Mangalore-Bangalore) through Uppinangadi which is 12 km from the city. Puttur railway station falls on the railway line linking Mangalore and Bangalore. It is around 1 km from the town center. The nearest airport is Mangalore International Airport which is around 55 km from Puttur.

## **D. Socio Cultural Resources**

### **1. Demography**

51. Puttur population has grown from 48070 in 2001 to 53,061 in 2011 with a growth rate of 04 %. The decadal growth was never steady during the past six decades. The lowest growth rate of 1.04% was observed during 2001- 2011 and the highest was recorded in the decade 1971-1981 with a figure of 7.85 percent. Details of decadal population growth are indicated in Table 8.

**Table 8: Population Growth of Puttur Town**

<b>Year</b>	<b>1961</b>	<b>1971</b>	<b>1981</b>	<b>1991</b>	<b>2001</b>	<b>2011</b>
<b>Population</b>	12,498	17,483	20,103	35,879	48,070	53,061
<b>Population growth rate (%)</b>		3.99	1.50	7.85	3.40	1.04
<b>Population density(population/km<sup>2</sup>)</b>	387.8	542.4	623.7	1,113.2	1,491.5	1646.3

52. The population density of Puttur City was 388 persons/km<sup>2</sup> in the year 1961 and has increased to 1646 persons/km<sup>2</sup> in 2011.

53. Sex Ratio. Population of children with age of 0-6 is 5,049 which is 9.52 % of total population of Puttur. Sex Ratio is of 1010 against state average of 973. Child sex ratio is 929 compared to Karnataka state average of 948.

54. Literacy. Literacy rate of Puttur is 92.35 percent higher than state average of 75.36 percent. Male literacy is 95.94% while female literacy rate is 88.83.

## **2. History, Culture and Tourism**

55. Puttur derived its name from "Puttha" in Tulu, meaning snake nests (ant hills/ mounds inhabited by snakes). Puttur got its name after pearl "Mutthu" in Kannada, Place of pearl "Mutthur" slowly renamed itself to Puttur. The famous myth from centuries ago say that due to the drought, priests were performing rituals with rice as prasad in the Holy pond of Mahalingeshwara temple when, suddenly, the water started coming from all the corners to turn rice into pearls. Majority of the people speak Tulu language, along with other languages like Kannada Havayaka, Konkani, Byari, Kodava, Puttur Malayalam, etc.

56. There is an ancient temple said to be built in 11-12th century where Lord Shiva (popularly known as Puttur Mahalingeshwara) was the main deity. It is said that about 300 years ago, Tippu Sultan, the ruler of Mysore who was fighting against the British, took possession of part of Puttur. A mosque (Juma Masjid Kallega) was built in Puttur at Kalle near Puttur. Later the Kalle was called as Kallega by the local people. This is the oldest mosque of town.123. Bendru Theertha (Hot Spring): About 15 km from Puttur there is a natural hot water spring (in Tulu language known as Bendru Theertha). It is believed by the local people that the water is said to be more auspicious and a dip in the lake drives away all skin diseases like eczema, allergic rashes and many more ailments. It is situated in a scenic spot by the side of river Seerehole which flows west ward and merges with Arabian Sea. It is the only hot water spring in South India. Beeramale Hill: Beeramale Hill is an attractive tourism spot of Puttur. The height of the Hill is around 1,000 feet from the Sea Level. Sri Vishwakarma Temple is situated on one side of this hill.

57. Shivaram Karanth Balavana is a prominent place in Puttur. K. Shivaram Karanth, Jnanpith Award recipient stayed here for about 40 years. Karanth made most of his literary contributions and cultural endeavours at Balavana. He was a literary giant and most of this literary contribution was published here. Those books earned great name and fame for himself and Puttur. Now Balavana is taken over by the Government of Karnataka and a government appointed committee manages this property. The Balavana is situated about 2 km from Puttur in Parladka.



58. 'Shri Gopalakrishna temple,' situated in Shibara, was built around 300 years ago. Mai De Deus Church is an ancient churches built in 1830 by the Roman Catholic missionaries from Goain Gothic style. This holy church is renovated with elegant architectural beauty. Maril church: A church built in 1999. Peer Mohalla Juma Masjid, Koornadka: Koornadka is very historical place in Puttur at the period of Tippu Sulthan some soldier families settled at this place and they name this place as koor because they are originated from koor which is in Afaganistan(Abu Khan, Sayyed, Sheik Saheb, Patni Wala, Moideen Patan, KoorgSahebfamilies).





59. However, there are no protected (nationally important) monuments or archaeological or historical places in Puttur.

### E. Environmental Settings of Subproject Component Sites





60. There are no environmentally-sensitive feature and no significant physical and cultural resources within or adjacent to the subproject sites. All the subproject sites selected are on government-owned vacant land parcels, and all the pipelines are proposed along the roads, where there is space along the ROW to lay the pipeline. GLSR site at Tenkila, due to geological issue will be shifted to Seetigudda and vide directly purchased land. Some sites are covered with shrubs and bushes, and there are small in some reservoir sites. There are no trees in the proposed pipeline alignment along the roads. Photographs of proposed OHT sites are provided in Table 9.

**Table 9: Site Environmental Features**

Subproject Component	Proposed Site Setting	Site Photograph
Up Gradation of electro-mechanical equipment' in Jack well at Nekkilady	Works will be conducted within the existing jackwell Diesel generator set has been proposed for the un-interrupted power supply to the Jack well. Diesel generator will be installed within the jackwell compound.	
Laying of raw water transmission of main for 1.70 kilometer (km) from Nekkilady jack well to water treatment plant (WTP) with 400 mm diameter pipe	Pipeline will be laid along the existing roads within the road right- of-way (ROW). Road width in initial stretch (Nekkiladi Dam Road) is about 5.5 m, and in the rest of the alignment it varies from 11 to 12 m (Nekkiladi junction Road, and Puttur-Uppinangadi Road). Pipeline will be laid in the road shoulder, adequate space is available.	

Subproject Component	Proposed Site Setting	Site Photograph
Construction of new WTP	Old WTP will be dismantled and the new WTP will be constructed WTP is located outside town limits, in Nekkilady Village. surrounding land used for school, 50 m away from WTP, and other side is agricultural land.	
Laying of 9.96 km clear water transmission main from proposed new WTP to Seetigudda master balancing reservoir with 400 mm diameter	Pipeline will be laid along Puttur-Uppinangadi Road within the ROW. Road width varies from 11m to 12m Pipeline will be laid in the road shoulder, adequate space is available.	  



Subproject Component	Proposed Site Setting	Site Photograph
Water Service reservoir/ overhead tank (OHT) in Zone-2 at Mura Shantinagra, Padnur	The proposed site for OHT (300 KL) is identified in Padnur, site owned by Puttur CMC. The site is vacant, and covered with shrubs and bushes, and few small trees. Site is not prone for flooding. Access road is available	
Water Service reservoir/OHT in Zone-3, Karmala near Microwave station	The proposed site for OHT (100 kl) is identified in Karnala, site owned by Puttur City Municipal Council (CMC). The site is vacant and there are no trees at the identified location. Site is not prone for flooding. Access road is available	
Water Service reservoir/OHT in Zone-4A, at CTO, Darbe	The proposed site for OHT (600 kl) is identified in Darbe, site owned by Puttur CMC. Site is covered with shrubs, bushes and small trees. Site is not prone for flooding. Access road is available.	
Water Service reservoir/OHT in zone-5, Lingadagudda, Kabaka	The proposed site for OHT (250 kl) is identified in Kabaka, site owned by Puttur CMC. The site is vacant and adjacent to existing old OHT. Site is covered with shrubs and bushes; there are no trees at the identified location. Site is not prone for flooding. Access road is available	



Subproject Component	Proposed Site Setting	Site Photograph
<p>Water Service reservoir/OHT in Zone-6A, Balnad Helipad</p> <p>Booster pumping station</p>	<p>The proposed site for OHT (400 kl) is identified in Balnad, site owned by Puttur CMC. The site is vacant and there are no trees at the identified location. Site is not prone for flooding. Access road is available</p> <p>Booster pumping station will also be constructed at this site</p>	
<p>Water Service reservoir/OHT in zone-8, Balnad Kelyadi, Vitla Road</p>	<p>The proposed site for OHT (100 kl) is identified in Balnad Kelyadi, site owned by Puttur CMC. The site is vacant and there are no trees at the identified location. Site is not prone for flooding. Access road is available</p>	
<p>GLSR in Zone-4 at Seethigudda</p>	<p>The proposed site for GLSR (2400 kl) is in Seethigudda site. Existing GLSR, Seethigudda to be dismantled for construction of new GLSR there are no trees at the identified location. Site is not prone for flooding. Access road is available</p>	
<p>GLSR at Seethigudda</p> <p>Intermediate pumping station</p>	<p>Land for Seethigudda GLSR is directly purchased through negotiated settlement (Appendix 18). The site is vacant and covered with shrubs and bushes. Site is not prone for flooding. Access road is available. Intermediate pumping station will</p>	

Subproject Component	Proposed Site Setting	Site Photograph
	also be constructed at this site.	

## V. SCREENING OF POTENTIAL ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

### A. Introduction

61. Potential environmental impacts of the proposed infrastructure components are presented in this section. Mitigation measures to minimize / mitigate negative impacts, if any are recommended along with the agency responsible for implementation. Monitoring actions to be conducted during the implementation phase is also recommended to reduce the impact further.

62. As a general practice, an IEE should evaluate impacts due to the pre- construction (location, design), construction and operation phases of the project. Construction and operation are the two activities in which the project interacts physically with the environment, so they are the two activities during which the environmental impacts occur. In assessing the effects of these processes therefore, all potential impacts of the project should be identified, and mitigation is devised for any negative impacts. Following sections evaluate impacts of the proposed Puttur Water Supply Subproject to be funded under KIUWMIP Tranche 2.

- (i) **Location Impacts.** There are no environmentally sensitive feature and no significant physical and cultural resources within or adjacent to the subproject sites. All the subproject sites selected are on government-owned vacant land parcels, and all the pipelines are proposed along the roads, where there is space along the ROW to lay the pipeline. Some sites are covered with shrubs and bushes, and there is no notable tree cover in any other sites. There are no trees in the pipeline alignment.
- (ii) **Design Impact.** Includes impacts arising from technology used and method for treatment and pumping facilities, pipelaying works and construction of GLSRs and OHTs.
- (iii) **Construction Impacts.** Includes impacts caused by site clearing, earthworks, machinery, vehicles and workers. Construction site impacts include erosion, dust, noise, traffic congestion and waste production.
- (iv) **O&M Impacts.** Include impacts arising from the operation and maintenance activities of the infrastructure facility. These include routine management of operational waste streams and occupational health and safety issues.

### B. Pre-Construction Impact

63. **Location.** These Impacts are associated with planning particularly on the site selection. They include impacts due to encroaching on sensitive areas and impacts on the people who might lose their homes or livelihoods due to the development of the proposed site. In case of water supply lines, no significant impacts are anticipated since the laying of water line will be along the already built-up area. Out of eight new service reservoirs has been proposed, all are in government lands. There is a need to directly purchase land for construction of additional capacity GLSR at Seetigudda.

64. Proposed subproject sites are carefully selected to avoid encroachment into sensitive areas and minimize the impacts on people livelihoods and homestead.

65. In the case of this project (i) most of the individual elements are relatively small and involve straight forward construction and operation, so impacts will be mainly localized and not greatly significant; (ii) most of the predicted impacts are associated with the construction process, and are produced because that process is invasive, involving excavation and earth movements; and (iii) being located in the city, will not cause direct impact on biodiversity values.

66. The Puttur CMC should obtain all necessary clearances before the starting of the work. The applicable clearances are given as Appendix 8. The clear water rising main crosses railway over bridge in one location at Chainage 140/400 near Kabaka Puttur railway station at Bolwar. The rider lines passes along NH-275 for a length of 5.82 Kms. The Puttur CMC should obtain necessary clearances before the starting of the work. The locations are shown in Figure 44. For Water distribution network clearances required is parallel to NH-275 for rider lines as proposed. For transmission main, Railway crossing at chainage 140/400 at Bolwar near Kabaka Puttur railway station is required and both are under process.

67. **Tree Cutting at Project Sites.** All sites are carefully selected, and layouts designed to minimize the tree cutting. There are few trees at some project sites (e.g., Padnur), which need to be cut for the OHT construction. Pipelines are proposed along the roads, at some places there are trees, however, no tree cutting is envisaged for laying pipelines. Following measures need to be implemented to further minimize and/or compensate for the loss of tree cover during design validation and preconstruction phase:

- (i) Further minimize, if possible, removal of trees by adopting to site condition and with appropriate layout design and pipeline alignment, wherever there are trees on the selected sites or pipe alignments;
- (ii) For any tree cutting that may be required at other sites, obtain prior permission from Forest Department; and
- (iii) Plant and maintain 10 trees for each tree that is removed.



- (i) Identify and include locations and operators of these utilities in the detailed design documents during design validation and preconstruction phase to prevent unnecessary disruption of services during construction phase;
- (ii) Conduct detailed site surveys with the construction drawings and discuss with the respective agencies during the construction phase before ground clearance; and
- (iii) Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. In case of disruption of water supply, alternative supply, through tankers, shall be provided.

**69. Site Selection of Construction Work Camps, Stockpile Areas, Storage Areas, and Disposal Areas.** If the work camp is planning to set up, priority is to locate these near the subproject locations. However, if it is deemed necessary to locate elsewhere, sites to be considered will not result in destruction of property, vegetation, irrigation, and drinking water supply systems. Residential areas will not be considered for setting up camps to protect the human environment (i.e., to curb accident risks, health risks due to air and water pollution and dust, and noise, and to prevent social conflicts, shortages of amenities, and crime). Extreme care will be taken to avoid disposals near the forest, water bodies, swamps, or in areas which will inconvenience the community. All locations would be included in the design specifications and on plan drawings. Construction work camps shall be located at least 200 m from residential areas. Material stockpiles shall be protected by bunds during the monsoon to arrest the silt laden runoff into drains. The subproject is likely to generate soil from excavations, which needs to be disposed safely.

**70. Construction Debris.** Subproject requires dismantling of an old WTP and a GLSR to make way for the proposed new WTP and GLSR respectively. This will generate considerable quantities of construction debris. Following measures should be implemented for disposal of debris:

- (i) Project Implementation Unit (PIU) shall identify a debris disposal site in consultation Puttur CMC adhering to the criteria given above.
- (ii) Priority shall be to reuse the debris for any beneficial purpose, such as road construction, and material such as iron, wood etc., shall be salvaged for reuse
- (iii) Debris should be removed from construction area.
- (iv) Debris should be covered with tarpaulin sheets during the transportation.
- (v) Debris transportation should not be done during the peak hours and should avoid narrow and heavy traffic routes.

**71. Site Selection of Sources of Materials:** Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution. To mitigate the potential environmental impacts, locations of quarry site/s and borrow pit/s (for loose material other than stones) would be included in the design specifications and on plan drawings. Priority would be sites already permitted by Mines and Geology Department. If other sites are necessary, these would be located away from population centers, drinking water intakes and streams, cultivable lands, and natural drainage systems; and in structurally stable areas even if some distance from construction activities.

**72.** For Puttur subproject, the quarry material required will be sand and stone aggregate, and the nearest quarries are near Panemangalore- and Modentar, Alankar for stone aggregate. These are existing quarries and are licensed by Mines and Geology Department.

The material from the existing quarries will be adequate for the subproject construction, and therefore no new quarry sites will be developed for the purpose.

**73. Design of the Proposed Components.** The Central Public Health and Environmental Engineering Organization (CPHEEO) manual suggests a design period of 30 years in general while designing the system for water supply components. Since, the packages are proposed to be implemented sequentially; theoretically, each of the system components should have a different design year.

**74.** However, in order to maintain unanimity in the design period and design population, 2046 is considered as the design year for all the system components. Accordingly, 2016 is the base year and 2031 the intermediate year to cross check the designs pertaining to intermediate demand. The rate of supply has been taken as 135 lpcd for 100% population.

**75. Source Sustainability.** The water source for Puttur is Kumaradhara river. The water intake is located at a distance of 12 km from the city. Current withdrawal from river is 6.8 MLD and the additional withdrawal required to meet the ultimate design year 2046 demand is 8.7 MLD. Therefore, a total of 15.5 MLD water will be abstracted from the river to meet the city and enroute villages demand of 2046. According to the field observations and available data (Appendix 9), the water source Kumaradhara river is sufficient and reliable to meet the water demand of Puttur in 2046. It is one of the major rivers in Dakshina Kannada District and also a major tributary of River Netravathi. River is almost perennial, however, the flow reduces considerably during the summer season. A vented dam was constructed across Kumaradhara, at about 400 m upstream of confluence point of the river Kumaradhara and Netravati, under the ADB funded KUDCEMP. This is a small vented dam with a storage capacity of 0.61 million cubic meter (MCM). The water impoundment is confined to the river course only, and spreads up to about 2,400 m upstream of the dam. Considering 20% losses, the actual available water quantity is 0.489 MCM. This storage capacity is sufficient to meet the demand especially in the summer time. From the ULB sources it is mentioned that the River Kumaradhara is perennial river and water flow is always there since last 25 years there is no shortage of water in the river. As the project will utilize an existing dam, within its capacity, no impacts envisaged on downstream flow, aquatic life etc., due to the project.

**76. River water Quality:** There are no major pollution sources like industries in the upstream side of the intake. Most of the villages and towns, however, along the river in general discharge domestic wastewater into the river without any treatment, although there is no such notable disposal point in the proximity of the intake. A grab sample was collected from the intake and tested for quality, and is found to be fit for drinking after conventional treatment and disinfection. The raw water will be treated to drinking water standards and supplied to the consumers.

**77. Water Treatment Plant.** The pipeline from pumping station will reach, to a new cascade aerator, from where the water will be conveyed through the raw water channel to the flash mixer, then to flocculator and then to the Tube Settler. Clarified water then leads to Filter House. Filtered water collected in new clear water reservoir. Additional structures are proposed to house chemical treatment processes as the existing chemical house will be utilized for chemical dosing in both the existing and upgraded plant. Back wash water from existing and proposed filter houses and sludge from flocculator and tube / plate settlers leads to Centrifuge. The dried sludge powder can be dumped within WTP site. The recirculation requires additional pumps and O and M cost.



78. Environmental audit of the existing WTP has been conducted during the draft IEE preparation to assess the compliance with environmental legislation and current environmental performance. This audit identified certain issues of concern in chlorine handling and application, and management of backwash and sludge generated from the treatment process. An action plan is suggested in the following Table 10 to ensure the compliance. The actions required are already considered and additional infrastructure and budget required have been included in the subproject, and are part of contractor scope of work. Environmental Audit report is presented in Appendix 10.

**Table 10: Corrective Action Plan for Environmental Compliance of Existing WTP**

Concern	Action Required	Timeline	Responsible Agency and Funding Source
Poor backwash wastewater and sludge management – discharged untreated into natural drains	- Provision of backwash recirculation system – to avoid discharge and also to recover raw water -Provision of sludge collection, thickening, drying and reuse/disposal system.	Corrective actions such as treatment of backwash water and sludge management system are included in the subproject	Puttur CMC;  Improvements required for backwash and sludge management already included in the present subproject under KIUWMIP
Poor handling of chlorination system and lack of safety measures	Improvements to chlorination already included in the subproject.	Same as above	Puttur CMC  Improvements required for chlorination system is already included in the present subproject under KIUWMIP

79. There is invariably a safety risk when considerable quantities of chlorine are handled at the WTP. (Chlorine cylinders will be brought by trucks to the site, installed and operated to disinfect the water supplies). Since facilities are located in the urban area, precautions will thus be needed to ensure the safety of both workers and citizens.

80. The average dose of chlorine for pre-chlorination will be about 4mg/l and that for post-chlorination will be about 3 mg/l. With the present water supply 6.8 MLD, about 25 kg of chlorine is consumed daily. This which will increase to 50 kg per day with the augmented capacity of 15.5 MLD. Chlorine cylinders (called tonners, with capacity about 900 kg) will be procured from nearest manufacturing unit and stored at the site.

81. To avoid any risk to workers and public, the chlorination facility at the WTP is designed with all appropriate safety features and equipment to meet with any accidental eventuality, which may include:

- (i) Chlorine neutralization pit with a lime slurry feeder;
- (ii) Proper ventilation, lighting, entry and exit facilities;
- (iii) Facility for isolation in the event of major chlorine leakage;
- (iv) Personal protection and safety equipment for the operators in the chlorine plant;
- (v) Visible and audible alarm facilities to alert chlorine gas leak;
- (vi) Laboratory facility shall not be housed within the chlorination facility;

- (vii) Provide training to the staff in safe handling and application of chlorine; this shall be included in the contract of Chlorinator supplier;
- (viii) Develop an emergency response system for events like chlorine leakage; and
- (ix) Supplier of Chlorinator equipment shall provide standard operating manual for safe operation and as well as maintenance and repairs; preferably these shall be provided both in English and Kannada Languages.

82. **Energy Efficiency.** Owing to higher elevation of the town to that of intake at Nekkilady, the energy intensive pumping could not be avoided. The raw water from the intake will be pumped to WTP, and from the WTP treated water will be pumped to GLSR. From GLSR at highest point, water is supplied by gravity to the consumers. Energy efficient pumps and motors will be procured and used.

83. **Social and Cultural Resources – Chance Finds.** Any work involving ground disturbance can uncover and damage archaeological and historical remains. Subproject area is not a known area of archaeological potential, and therefore the risk is low. Nevertheless, construction contractor needs to follow these measures in conducting any excavation work:

- (i) Create awareness among the workers and supervisors about the chance finds during excavation work;
- (ii) Stop work immediately if any finds are suspected to allow further investigation; and
- (iii) Inform archaeological agencies promptly if a find is suspected and take any action they require to ensure its removal or protection in situ.

### **C. Construction Impacts**

84. The civil works for pipeline network projects include earth work excavation for pipeline trenches, pipe laying, installing valves, flow meters and data loggers, shifting of public utilities (if required) and providing house connections. Earth work excavation will be undertaken by machine and include danger lighting and using sight rails and boning rods at every 100 m, while pipe laying works will include laying pipes at required gradient, fixing collars, elbows, tees, bends and other fittings including conveying the material to work spot and testing for water tightness.

85. The excavation is done in such a way that there will be a minimum depth of 1 m. Pipes will be handled and laid in the trenches with utmost precaution so as not to damage existing utilities and cables. Once they are laid, pipes will be joined as per specification and then tested for any cracks or leakages. The minimum working hours will be 8 hours daily, the total duration of each stage depends on the soil condition and other local features. Table 11 shows the details of construction activities involved in the subproject.



**Table 11: Construction Activities for the Subproject**

<b>Component</b>	<b>Construction method</b>	<b>Likely waste generated</b>
Water Supply line	<p>Trench excavation along the identified main roads of about 1 m plus pipe dia, but in some case it may go deeper.</p> <p>A bed of sand of 100 mm thick will be prepared at the bottom and pipes will be placed and joined. Excavated soil will be replaced and compacted. Where the pipes are laid in the roadway, handheld pneumatic drill will be used to break the road surface. Construction activity will be conducted along the roads in the town and will cover most part of the town. The work will be conducted by a team of 5 workers at each site</p>	<p>Around 110,180 m<sup>3</sup>. of soil is excavated and 90-95% will be utilized for refill and remaining soil need to be disposed off.</p> <p>This excess soil shall be used for filling if required or stored/ dumped in approved debris disposal site.</p>
Water treatment Plant and water reservoirs	Excavation, compaction and consolidation of earth, bar bending, concreting, staging and finishing work etc.	Soil will be excavated for foundations and underground tanks, part of this soil will be reused at sites for levelling and filling, and rest of the soil needs to be disposed off safely
m <sup>3</sup> = cubic meter, dia = diameter, m = meter, mm = millimeter.		

86. Although construction of the pipelines involve quite simple techniques of civil work, the invasive nature of excavation and the subproject locations in the built-up areas of Puttur City, where there are a variety of human activities, will result to impacts to the environment and sensitive receptors such as residents, businesses, and the community in general. These anticipated impacts are temporary and for a short duration.

87. Physical impacts will be reduced by the method of working and scheduling of work, whereby the project components will be (i) constructed by small teams working at a time; and (ii) any excavation done near sensitive area like school, religious places and house will be protected as per standard construction practices. These are discussed in detail in the following sections.

88. While trenching at densely populated areas like market place or layouts, or roads with heavy traffic, additional care has to be taken. Hard barricade should be mandatorily provided along with caution board and traffic diversion boards. Some of the densely populated area identified at Puttur are Neharu Nagara, Darbe, Bolwar, Nellikatte, Parlodka, Kemmai, Krishnanagra, Bannur. Except these Bustand road, Kemmai road, darbe road, Court road, Vivekananada Nagara road, Uppinangadi Road, Bypass road, all other roads are narrow and/or located in busy commercial area. Therefore, full closure will be required in those stretches.

89. Prior to the start of work, contractor should prepare a site-specific Construction Management Plan, which should be submitted every month before works start. The Construction Management Plan will include the method statement for construction works, Utility Management and Contingency Plan, Traffic Management Plan, Work camp and Labour Camp details, Safety measures taken for the workers and the public.

90. The method statement for pipeline works should be simple and explain the contractor's work process that is actually conducted on site, with safety and safeguard concerns. Method Statement is very important, particularly for pipe line works along the roads. Method Statement

can be prepared for each stretch (say 1 km) /specific site based on the project area. Method Statement should be in a Table format with appended site layout map and cover the following:

- (i) Work description;
- (ii) Number Of workers (skilled and unskilled);
- (iii) Details of Plant, equipment and machinery, vehicles;
- (iv) Work duration (total, and activity-wise, for example for pipe laying, from excavation to road resurfacing/testing);
- (v) Personal Protection Equipment (helmet, gloves, boots, etc.) details for each type of work;
- (vi) Details of materials at each site (type and quantity);
- (vii) Risks/hazards associated with the work (for example, Trench excavation will have risks such as trench collapse, persons/vehicles falling into trench, structural risk to nearby buildings, damage to buildings, infrastructure etc.);
- (viii) Construction waste/debris generated (details and quantity);
- (ix) Detail the sequence of work process (step-by-step) including specific details of each work;
- (x) Contractor's supervision and management arrangements for the work;
- (xi) Emergency: Designate (i) responsible person on site, and (ii) first aider;
- (xii) Typical site layout plan including pipe trenching, placement of material, excavated earth, barricading etc.;
- (xiii) The pipelines are to be laid along the roads. The excavated soil, placed along the trench may get disturbed due to wind, rain water and the movement of workers, vehicles and pedestrians, and spill onto road way – disturbing road users, creating dust, road safety issues, etc., and also into nearby open drains; and
- (xiv) The following should be included in the site layout plan:
  - Barricade/security personnel at the site to prevent entry/trespassing of pedestrian/vehicles into the work zone;
  - Location of temporary stockpiles and provision of bunds;
  - Separation of stockpiles areas with workers/vehicle movement paths to avoid disturbing the stockpiled soil;
  - Wetting of soil to arrest dust generation by spraying water; and
  - Waste/surplus soil and concrete debris utilization and disposal plan – indicate expected duration of temporary stockpiling along the trench at each site and identify final surplus soil utilization/disposal site in consultation with PIU.

91. The following should be included in the site layout plan:

- (i) Provide barricading/security personnel at the site to prevent entry/trespassing of pedestrian/vehicles into the work zone;
- (ii) Location of temporary stockpiles and provision of bunds;
- (iii) Separation of stockpiles areas with workers/vehicle movement paths to avoid disturbing the stockpiled soil;
- (iv) Wetting of soil to arrest dust generation by sprinkling water; and
- (v) Waste/surplus soil and concrete debris utilization and disposal plan – indicate expected duration of temporary stockpiling along the trench at each site and identify final surplus soil utilization/disposal site in consultation with PIU.

92. **Sources of Materials.** Significant amount of gravel, sand and aggregate, will be required for this subproject. The construction contractor will be required to:

- (i) Use quarry sites and sources permitted by Mines & Geology Department only;
- (ii) No new quarry sites shall be developed for the subproject;
- (iii) Verify suitability of all material sources and obtain approval of implementing agency; and
- (iv) Submit on a monthly basis documentation of sources of materials to PMDCSC/PIU.

93. **Air Quality.** It is most certain that work will be conducted during the dry season, so there is potential for creating dust from the excavation of dry soil, backfilling, transportation to disposal, and from the import and storage of sand/gravel for bedding. Dismantling of old WTP structures is required at the WTP for construction new WTP units. Dismantling activity will generate considerable dust, and as the WTP is located in the town, impacts will be significant. Proper measures to contain dust within the site is a must. Emissions from construction vehicles, equipment, and machinery used for excavation and construction will also induce impacts on the air quality in the construction sites. Anticipated impacts include dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, Sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons) but temporary and during construction activities only.

To mitigate the impacts, construction contractors will be required to:

- (i) Consult with PIU on the designated areas for stockpiling of clay, soils, gravel, and other construction materials;
- (ii) Damp down exposed soil and any stockpiled onsite by spraying with water when necessary during dry weather;
- (iii) Enclose the area with dust screens of sufficient height during the dismantling work; employ proper construction methods limiting the dust generation;
- (iv) Bring materials (aggregates, sand, etc., gravel) as and when required;
- (v) Use tarpaulins to cover sand and other loose material when transported by vehicles;
- (vi) Clean wheels and undercarriage of vehicles prior to leaving construction site; and
- (vii) Fit all heavy equipment and machinery with air pollution control devices which are operating correctly; ensure valid Pollution under Control (PUC) Certificates for all vehicles and equipment used in the construction activity.

94. **Noise Levels.** The soils are deep in the subproject area and therefore activities like rock cutting/blasting that generate high noise are not anticipated. In isolated areas where a hard stratum is encountered (especially for deep pipe lines in some locations requiring using of pneumatic drills, there will be high noise during the activity. Also, where the pipelines are required to be laid in the roadway, pneumatic drills will be used to break open the road surface. Pneumatic drills typically generate an equivalent noise of 82-98 dBA, at 1 m distance from the activity. Increase in noise level may be caused by excavation equipment, and the transportation of equipment, materials, and people. Dismantling activity at the WTP will also produce considerable noise. The sensitive receptors are the general population and socio-cultural institutions in the area. Noise will be for a short term (about 2-3 days at each location) thus impact is minimal and short-term. The construction contractor will be required to:

- (viii) Plan activities in consultation with the PIU so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance;
- (ix) Construction work shall be limited to day light hours (6 AM to 6 PM);

- (x) Provide prior information to the local public about the work schedule;
- (xi) Ensure that there are no old and sensitive buildings that may come under risk due to the use of pneumatic drills; if there is risk, cut the rocks manually by chiseling.
- (xii) Minimize noise from construction equipment/pneumatic drills by using silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers the sound impact to surrounding sensitive receptor;
- (xiii) Properly enclose the dismantling area with temporary noise barriers;
- (vii) Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s; and
- (viii) Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach.

95. **Surface Water Quality.** There is no construction in river. Puttur town receives high rainfall (4,329 mm). The southwest monsoon winds bring rainfall from June to September while the northeast monsoon winds deliver rainfall from October to December. Excavation will be avoided during the monsoon season, thereby no foreseen impact on drainage and surface water quality. In unavoidable cases of excavation during monsoons, there may be temporary impacts like flooding of construction sites, mixing of construction waste and material within the runoff, etc. This may lead to silting and blockage of drains and water bodies. Mobilization of settled silt materials, run-off from stockpiled materials, and chemical contamination from fuels and lubricants during construction works can contaminate downstream surface water quality of the streams draining the city. These potential impacts are temporary and short-term duration only and to ensure these are mitigated, construction contractor will be required to:

- (i) Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;
- (ii) Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with Implementing Agency on designated disposal areas and dispose as per the Spoil Management Plan (sample outline of Spoil Management Plan provided in Appendix 11);
- (iii) Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies;
- (iv) Provide temporary bunds for stockpiles and materials; Place storage areas for fuels and lubricants away from any drainage leading to water bodies. Storage structure should consider 110% capacity bund;
- (v) Dispose any wastes generated by construction activities in designated sites; and
- (vi) Conduct surface quality inspection and monitoring.

96. **Groundwater.** Subproject activities do not **interfere** with groundwater regimes no groundwater abstraction is proposed nor will the activities affect groundwater quality.

97. Another physical impact that is often associated with excavation is the effect on drainage and the local water table if groundwater and surface water collect in the voids. To ensure that water will not pond in pits and voids near project **location**, the construction contractor will be required to conduct excavation works on non-monsoon season to the maximum extent possible.

98. **Landscape and Aesthetics.** The construction work is likely to generate considerable quantities of waste soil. The pipe laying work **will** generate surplus soil; as small diameter pipes are proposed it will generate only 5-10% as surplus as most of the soil will be used for

refilling after the pipe is laid in trench. Indiscriminate disposal of the soil and waste, excess construction material, concrete, packing materials, containers, lubricants and oils may affect the local environment at the disposal location. Dismantling activity at the WTP will produce significant quantities of construction waste and debris. These impacts are negative but short-term and reversible by mitigation measures. The construction contractor will be required to:

- (vii) Prepare and implement Waste / Spoil Management Plan – it should present how the surplus Waste generated will temporarily stocked at the site, transported and disposed properly;
- (ii) Avoid stockpiling of excess excavated soils as far as possible;
- (iii) Avoid disposal of any debris and waste soils in the forest areas and in or near water bodies/rivers;
- (iv) Coordinate with ULB/CMC for beneficial uses of excess excavated soils or immediately dispose to designated areas;
- (v) Recover used oil and lubricants and reuse or remove from the sites;
- (vi) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;
- (vii) Remove all wreckage, rubbish, or temporary structures which are no longer required; and
- (viii) Request PMU/PMDCSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.

99. **Accessibility.** Transport infrastructure will be affected by the pipe laying work. Excavated soil will make narrow streets even less passable. In instances where there is no available land to lay pipes on, road excavation may be done along the main roads, disrupting traffic. Very narrow streets may have to be closed to traffic to give way to excavation works. Potential impact is negative but short term and reversible by mitigation measures. The construction contractor will be required to:

- (i) Plan pipeline work in consultation with the traffic police;
- (ii) Plan work such that trench excavation, pipe laying, and refilling including compacting, at a stretch is completed in a minimum possible time;
- (iii) Provide for immediate consolidation of backfilling material to desired compaction – this will allow immediate road restoration and therefore will minimize disturbance to the traffic movement;
- (iv) Schedule transport and hauling activities during non-peak hours;
- (v) Do not close the road completely, allow traffic to move on one line;
- (vi) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites;
- (vii) In unavoidable circumstances of road closure, provide alternative routes, and ensure that public is informed about such traffic diversions;
- (viii) At all work sites public information/caution boards shall be provided – information shall inter-alia include: project name, cost and schedule; executing agency and contractor details; nature and schedule of work at that road/locality; traffic diversion details, if any; entry restriction information; competent official's name and contact for public complaints;
- (ix) Keep the site free from all unnecessary obstructions;
- (x) Drive vehicles in a considerate manner;
- (xi) Prepare a Traffic Management Plan – a template is provided for reference at Appendix 12; and

- (xii) Where ever road width is insufficient, there will be temporary loss of access during pipelaying. Under those circumstances, contractor can adopt the following measures:

Inform the affected local population two days in advance about the work schedule

- Plan and execute the work in such a way that the period of disturbance/ loss of access is minimum; and
- Provide pedestrian access in all the locations until normalcy is restored.

100. **Impacts on Social Sensitive Areas.** Since works will be conducted in an urban area where there are sensitive areas like schools, hospitals and religious centers, trench excavation activities can create nuisance and health hazard to children and people with ailments. Proposed mitigation measures aim to minimize **the** impact in all areas. However, special attention is necessary for these locations. The following measures shall be implemented within a 250 m around the sensitive locations (schools, hospitals, and religious centers:

- (i) No material should be stocked in this area; material shall be brought to the site as and when required;
- (ii) Conduct work manually with small group of workers and less noise; minimize use of equipment and vehicles;
- (iii) No work should be conducted near the religious places during religious congregations;
- (iv) Material transport to the site should be arranged considering school timings; material should be in place before school starts;
- (v) Notify concerned schools, hospitals etc., 2 weeks prior to the work; conduct a 30-minute awareness program on nature of work, likely disturbances and risks and construction work, mitigation measures in place, entry restrictions and dos and don'ts; and
- (vi) Implement all measures suggested elsewhere in this report – dust and noise control, public safety, traffic management, strictly at the sites.

101. **Socio-Economic – Income.** All of the project components will be located in government land and existing ROWs. Excavation of trenches and pipe laying work in the town will obstruct access to residences/commercial buildings adjacent to the pipeline. Disruption of access to commercial establishments may affect livelihood. **Since** many of the roads are narrow, construction activities may also obstruct traffic. The potential impacts are negative and moderate but short-term and temporary. The construction contractor will be required to:

- (i) Leave space for access between mounds of excavated soil;
- (ii) Provide wooden planks/footbridges for pedestrians and metal sheets for vehicles to allow access across trenches to premises where required;
- (iii) Consult affected businesspeople to inform them in advance when work will occur
- (iv) Address livelihood issues, if any; implement the Resettlement Plan to address these issues;
- (v) Provide sign/caution/warning boards at work site indicating work schedule and traffic information; prevent public entry into work sites through barricading and security;
- (vi) Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints;
- (vii) Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools;

- (viii) Prepare and implement spoils management plan; and
- (ix) Provide alternate sources of clean water until water supply is restored.

102. **Socio-Economic-Employment.** Manpower will be required during the construction period 24 months. This can result to generation of contractual employment and increase in local revenue. Thus, potential impact is positive and long-term. The construction contractor will be required to employ local labor force to the maximum extent, if manpower is available.

103. **Occupational Health and Safety.** Workers need to be mindful of the occupational hazards which can arise from working in height and excavation works. Dismantling work also poses considerable risk. Potential impacts are negative and long-term but reversible by mitigation measures. The construction contractor will be required to:

- (i) Comply with all national, state and local core labor laws (See Appendix 2 of this IEE);
- (ii) Develop and implement site-specific Health and Safety (H&S) Plan which will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use Personal Protective Equipment; (c) H&S Training<sup>6</sup> for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents;
- (iii) All trenches deeper than 1 m shall be protected with hard barricade to avoid safety risks to workers, public and nearby buildings/structures;
- (iv) Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;
- (v) Provide medical insurance coverage for workers;
- (vi) Secure all installations from unauthorized intrusion and accident risks;
- (vii) Provide supplies of potable drinking water;
- (viii) Provide clean eating areas where workers are not exposed to hazardous or noxious substances;
- (ix) Provide health and safety orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers;
- (x) Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;
- (xi) Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;
- (xii) Ensure moving equipment is outfitted with audible back-up alarms;
- (xiii) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate;

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<sup>6</sup> Some of the key areas that may be covered during training as they relate to the primary causes of accidents include slips, trips and falls; (ii) personal protective equipment; (iii) ergonomics, repetitive motion, and manual handling; workplace transport; and (v) legislation and responsibilities. Training can provide the foundations of competence but it does not necessarily result in a competent worker. Therefore, it is essential to assess staff competence to ensure that the training provided is relevant and effective. Supervision and monitoring arrangements shall be in place to ensure that training has been effective and the worker is competent at their job. The level of supervision and monitoring required is a management decision that shall be based on the risks associated with the job, the level of competence required, the experience of the individual and whether the worker works as part of a team or is a lone worker



- (xiv) Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively; and
- (xv) Overall, the contractor should comply with International Finance Corporation (IFC) Environmental, Health and Safety (EHS) Guidelines on Occupational Health and Safety (this can be downloaded from <http://www1.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2Boccupational%2Bhealth%2Band%2Bsafety.pdf?MOD=AJPERES>).

104. The Contractor has submitted site specific H&S plan including guidelines for COVID -19 of KUIDFC (attached as **appendix 16**) and state and central government. The contractor has also taken approval for this site-specific H&S plan from PIU/PMU before start of construction. The status of EMP implementation based on SEMP are reported in SEMRs.

- (i) The H&S plan may be updated as and when new guidelines are issued by the governments, and international organizations such as WHO and ADB.
- (ii) All the contractors be advised to prepare site-specific plan compliant with government circulars, guidelines and public health advisories, elaborating the arrangements and measures for implementation of the H&S plan.
- (iii) These site-specific plans should be shared with ADB after KUIDFC's approval. In accordance with the government guidelines, the respective agreed measures are in place before resumption of the specific activity at project sites and congregation of workers at the project site and camps. The implementation of the contractor's approved site-specific plans is properly monitored by the project consultants and the PMU/PIUs.

105. **Community Health and Safety.** Hazards posed to the public, specifically in high-pedestrian areas may include traffic accidents and vehicle collision with pedestrians. In most of the cases location of project sites are along the road ways, hence safety risk to community is to be considered. The pipe line work may require trenches along the roads including in narrow streets; unprotected trench excavation may endanger the stability of nearby buildings/structures. Potential impact is negative but short-term and reversible by mitigation measures. The construction contractor will be required to:

- (i) Provide hard barricading for all deep excavations that may require especially for pipe lines (>1m); identify buildings at risk prior to start of excavation work and take necessary precautions for safe conduct of work;
- (ii) Plan material and waste routes to avoid times of peak-pedestrian activities;
- (iii) Liaise with implementing agency/Puttur CMC in identifying risk areas on route cards/maps;
- (iv) Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure;
- (v) Provide road signs and flag persons to warn of dangerous conditions, for all work sites along the roads; and
- (vi) Overall, the contractor should comply with IFC EHS Guidelines Community Health and Safety (this can be downloaded from <http://www1.ifc.org/wps/wcm/connect/dd673400488559ae83c4d36a6515bb18/3%2Bcommunity%2Bhealth%2Band%2Bsafety.pdf?MOD=AJPERES>)

106. **Work Camps.** Operation of work camps can cause temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants. Potential impacts are negative but short-term and reversible by mitigation measures. Provision of proper living facilities and basic amenities (water, sanitation, fire safety, health and safety, etc.) shall be ensured.

107. The construction contractor will be required to comply with the following. Overall, the contract should follow the IFC EHS guidelines specific to workers accommodation (this can be downloaded from [http://www1.ifc.org/wps/wcm/connect/topics\\_ext\\_content/ifc\\_external\\_corporate\\_site/ifc+sustainability/publications/publications\\_gpn\\_workers\\_accommodation](http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/publications/publications_gpn_workers_accommodation)).

- (i) Consult with PIU before locating workers camps/sheds, and construction plants; as far as possible located at least 200 m from residential areas;
- (ii) Minimize removal of vegetation and disallow cutting of trees;
- (iii) Living facilities shall be built with adequate materials, and should be in good condition and free from rubbish and other refuse;
- (iv) The camp site should be adequately drained to avoid the accumulation of stagnant water;
- (v) Provide water and sanitation facilities; water, meeting Indian drinking water standards shall be provided, in adequate quantities (supply of 60- 80 LPCD); all water storage structures must be cleaned regularly and covered properly to avoid any contamination;
- (vi) Provide separate facilities for men and women; sanitary facilities shall be properly build and well maintained; toilet and bath facilities should be provided on basis of 1 per 15 or less persons;
- (vii) Train employees in the storage and handling of materials which can potentially cause soil contamination;
- (viii) Recover used oil and lubricants and reuse or remove from the site;
- (ix) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;
- (x) Remove all wreckage, rubbish, or temporary structures which are no longer required;
- (xi) Report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work; and
- (xii) The work camp details should be included in the Construction Management Plan.

108. **Social and Cultural Resources.** Chance Finds. Subproject area is not a potential archaeological area and therefore no impacts envisaged. Nevertheless, the construction contractor will be required to:

- (i) Create awareness among the workers and supervisors about the chance finds during excavation work;
- (ii) Stop work immediately if any finds are suspected to allow further investigation;
- (iii) Inform archaeological agencies promptly if a find is suspected and take any action they require to ensure its removal or protection in situ; and
- (iv) Adjacent to important religious sites, undertake excavation and construction work in such a way that no structural damage is caused to the building.

109. **Debris disposal:** Prior to the commencement of works, contractor shall identify a debris disposal site in consultation with the Puttur CMC and adhering to following criteria:

- (v) The said site shall be selected preferably from barren, infertile lands. In case agricultural land needs to be selected, top-soil stripping, stacking and preservation should be undertaken prior to initiation of any activities;
- (vi) Debris disposal site shall be at least 200 m away from surface water bodies;
- (vii) No residential areas shall be located within 100 m downwind side of the site;
- (viii) The site is minimum 250 m away from sensitive locations like settlements, ponds/lakes or other water bodies; and
- (ix) The local governing body and community shall be consulted while selecting the site.

#### **D. Operational and Maintenance Impacts**

110. Operation and Maintenance of the water supply system will be carried out by Puttur CMC. The system has a design life of 30 years, during which it shall not require major repairs or refurbishments and should operate with little maintenance beyond routine actions required to keep the equipment in working order. The stability and integrity of the system will be monitored periodically to detect any problems and allow remedial action if required. Any repairs will be small-scale involving manual, temporary, and short-term works involving regular checking and recording of performance for signs of deterioration, servicing and replacement of parts.

111. Recurrence of pipe bursting and leakage problems can be managed through leak detection and water auditing surveys. Puttur CMC will be required to ensure that leakage rectification is done at the shortest possible time.

112. Improper disposal of silt and debris removed from trenches could cause inconvenience to public. Silt and debris shall be collected in trucks and transported to the approved disposal site and or can be used as covering material for wastes being landfilled.

113. Repair works could cause some temporary disruption of activities at locations of social and cultural importance such as schools, hospitals, churches, tourist sites etc., so the same precautions as employed during the construction period should be adopted. ULB/CMC needs to:

- (i) Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity;
- (ii) Complete work in these areas quickly; and
- (iii) Consult the custodians of important buildings, cultural and tourism authorities and local communities in advance of the work to identify and address key issues, and avoid working at sensitive times, such as religious and cultural festivals.

114. The citizens of Puttur City will be the major beneficiaries of the improved water supply, as they will be provided with a constant supply of better quality water, piped into their homes. In addition to improved environmental conditions, the project will improve the over-all health condition of the town.

#### **E. Cumulative Impacts**

115. Cumulative impacts are those that result from the successive, incremental, and/or combined effects of a project or activity when added to other existing, planned, and/or reasonably anticipated future ones. The subproject is proposed to improve municipal water

supply in Puttur, by improving raw water supply via replacement of pumping systems, creation of new treatment facility, water transmission and storage infrastructure, and distribution lines in currently uncovered areas, and to improving water distribution lines in the presently covered areas. Subproject do no include any creation or new or augmentation of existing water source. Water abstraction from Kumaradhara, the source of water supply to Puttur, will remain within its existing design capacity, and therefore no impacts envisaged. During the construction work, dust pollution is anticipated from the subproject activities. This, combined with the other usual construction activities in urban areas, may increase the particulate matter concentration in ambient air. Dust control measures suggested in the EMP will minimize the dust generation from the subproject construction activities. Therefore, no significant impacts envisaged.

## **VI. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE**

### **A. Project Stakeholders**

116. Most of the main stakeholders have already been identified and consulted during preparation of this IEE, and any others that are identified during project implementation will be brought into the process in the future. Primary stakeholders are:

- (i) Residents, shopkeepers and businesspeople near the work sites;
- (ii) Public representatives and prominent citizens of the town;
- (iii) Puttur City Municipal Council; and
- (iv) KUIDFC, Government of Karnataka.

117. Secondary stakeholders are:

- (v) Other concerned government institutions (utilities, regulators, etc.)
- (vi) Nongovernment organizations (NGOs) and community-based organizations (CBOs) working in the affected communities;
- (iii) Other community representatives (prominent citizens, religious leaders, elders, women's groups);
- (iv) The beneficiary community in general; and
- (v) ADB as the funding agency.

### **B. Consultation and Disclosure up to Date**

118. Public consultation meetings were conducted during the project preparation and design stages. Various forms of public consultations (consultation through ad hoc discussions on site) have been used to discuss the project and involve the community in planning the project and mitigation measures.

119. A public consultation workshop was conducted on 28 June 2016 in Puttur to discuss the proposed project and likely environmental issues and mitigation measures. Key stakeholders – public representatives, officials from various agencies, district level officers, from each project town, including Puttur, were participated in the workshop. Details of this consultation meeting is appended at Appendix 13.

120. Various meetings held in Puttur for the subproject, which included (i) elected representatives of ULB consultation held on 6 March 2015 and passed a resolution indicating the need of project, (ii) General Body meeting with all elected members/ Councilors meeting held on

3 November 2015, (iii) Member of Legislative Assembly (MLA) held consultation meeting on 13 June 2016, (iv) site visit to all sites and consultation with local nearby residents. The details of the stakeholder's consultations are presented below.

**Table 12: Stakeholder Consultations**

No.	Date	Meeting Location	Meeting headed by	Meeting attend by	Remarks
1	06 March 2016	Council Hall, City Municipal Council (CMC), Puttur	President Puttur CMC, Commissioner CMC	Jayaprakash T, Praveen Rego, Sudheer	Presentation of Inception Report
2	01 March 2016	Council Hall, CMC, Puttur	President Puttur CMC, Commissioner CMC	Jayaprakash T, Praveen Rego, Sudheer	Presentation of PDR Tranche-II
3	28 June 2016	Town Hall Puttur	President CMC Puttur, MLA Puttur	Deputy Project Director (DPD), Ragavendra Kudva, Praveen Rego, Jayaprakash T, Sudheer, Public Works Department Engineers, KUWS & DB Engineers, NRIs, Publics	Public workshop on Detailed Project Report(DPR)
4	30 June 2016	Council Hall, CMC, Puttur	President CMC Puttur, MLA Puttur	Jayaprakash T, Praveen Rego, Sudheer	Presentation of DPR Tranche-II
5	08 February 2018	PUTTUR ULB	Vice President of CMC Puttur	Vice President of CMC Puttur , Deputy Project Director(DPD) KIUWMIP, RPMU Mangalore, Commissioner CMC Puttur, Executive Engineer KUIDFC, KIUWMIP Puttur, Assistant Executive Engineer KUIDFC, KIUWMIP Puttur, Assistant Executive Engineer PIU-Puttur, GKW Consultants, President Secretary, Members of the press (Journalists Association), Self Help Group members, Employees, Officials and Subordinates, General Public Puttur	DPD KIUWMIP RPMU Mangalore explained briefly the 24 x7 water supply in the Puttur Town, technical assistance to the project and the allocation of funds. He explained that the provision of 24 X 7 water supply would be for the welfare of the people and would provide for the supply of water till

No.	Date	Meeting Location	Meeting headed by	Meeting attend by	Remarks
					2046.
6	26 Oct 2018	Bharath Matha samudaya Bhavan Kallega, Puttur	CMC member Sri K. Jeevinder Jain	Shivarama K Member of ward number 1, CMC Puttur, Vasantha Karekkadu Member of ward number 2, CMC Puttur, K. Jeevendhar Jain Member of ward number 3, CMC Puttur, Naveen Kumar Member of ward number 16, CMC Puttur, Roopa T Shetty Citizenship CMC, Puttur, Madesh C.M AEE KUIDC, KIUWMIP, PIU Puttur, Shamanth Kumar HR AE KUIDC, KIUWMIP, PIU Puttur, Praveen R Rego, G.K.W Consultants, Mangalore, Sheik Hassan Sahib, ICE cum CDA RMPMU, Mangalore, H. Sanjeev, SDO (Sarver) RMPMU, Mangalore, Staff Members, CMC Puttur. Public, Puttu	The GKW Consult Design Engineer Mr Praveen Rego described the 24*7 water supply project with details of expenditure and timeline and requested suggestions and support from the public.
7	27 Nov 2018	Kombettu Marati Samaja Bhavana Puttur		City Municipal commissioner, Puttur, Ward councilors, KIUWMIP, Engineers, GKW and EGIS consultants and ward residents.	For creating awareness among resident of ward 13, 14 and 15
	30 Nov 2018	Municipality Samudaya Bhavana, Puttur		City Municipal commissioner, Puttur, Ward councilors, KIUWMIP, Engineers, GKW and EGIS consultants and ward residents.	For creating awareness among resident of ward 18,19 and 20
8	10 Dec 2018	Community hall of Shiv Parvathi mandir	Ward Councilor	Ward councilors, GKW and EGIS consultants and ward residents.	For creating awareness among resident of ward 4,6,7 and 8 followed by questions and answers
9	20 Dec 2018		Ward Councilor	Mr. Sanjeev, Social Development Officer RPMU Mangalore, Mr. Hassan Community Development Assistant RPMU Mangalore,	Mr. Hassan Vitla and Mr. Prakash B of EGIS explained the components of

No.	Date	Meeting Location	Meeting headed by	Meeting attend by	Remarks
				Mr. Shamanth, Assistant Engineer, PIU Puttur, Councilors: Mr. Padmanabha Nayak, Mr. Prem Kumar GKW and EGIS Consultants and resident of ward 10 and 12.	24X7 water supply project designed for Puttur city in brief. Mr. Praveen Rego provided the complete details of the components followed by questions and answers

### C. Future Consultation and Disclosure

121. Executive agency and implementing agency shall extend and expand the consultation and disclosure process significantly during implementation of the Investment Program.

122. **Consultation during Construction.** Prior to start of construction, PIU will conduct meaningful<sup>7</sup> consultation and information dissemination sessions at various places and solicit the help of the local community, leaders/prominent for the project work. Focus group meetings will be conducted to discuss and plan construction work (mainly pipeline work) with local communities to reduce disturbance and other impacts and also regarding the project grievance redress mechanism. Project information and construction schedule will be provided to the public via mass media (newspapers, television, websites etc.). A constant communication will be established with the affected communities to redress the environmental issues likely to surface during construction phase. Contractor will provide prior public information (in Kannada and English) about the construction work in the area, once 7 days prior to the start of work and again a day before the start of work via pamphlets. At the work sites, public information boards will also be provided to disseminate project related information.

- (i) Public meetings with affected communities (if any) to discuss and plan work programs and allow issues to be raised and addressed once construction has started; and
- (ii) Smaller-scale meetings to discuss and plan construction work with individual communities to reduce disturbance and other impacts, and provide a mechanism through which stakeholders can participate in subproject monitoring and evaluation.

123. **Project Disclosure.** Draft IEE and updated IEE was disclosed, and this IEE will also be made available accessible to a wider audience via the ADB and KUIDFC websites. Executive summary of the updated IEE will be translated in Kannada and made available at the offices of PMU, Regional Project Management Unit (RPMU), PIU, and Puttur CMC and also displayed on their notice boards. Hard copies of the IEE will be accessible to citizens as a means to disclose the document and at the same time creating wider public awareness. Electronic

<sup>7</sup> Meaningful consultation will: (i) be carried out on an ongoing basis throughout the project cycle; (ii) involve timely disclosure of relevant information. Affected peoples and stakeholders will have access to relevant project information prior to any decision-making that will affect them; (iii) be conducted free of intimidation or coercion; and (iv) be gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups



version of the IEE in English and Executive Summary in Kannada will be placed in the official website of the KUIDFC after approval of the IEE by ADB. Stakeholders will also be made aware of grievance register and redress mechanism.

124. Public information campaigns to explain the project details to a wider population will be conducted. Public disclosure meetings will be conducted at key project stages to inform the public of progress and future plans. Prior to start of construction, the PIU will issue Notification on the start date of implementation in local newspapers. A board showing the details of the project will be displayed at the construction sites for the information of public.

125. Local communities will be continuously consulted regarding location of construction camps, access and hauling routes and other likely disturbances during construction. The road closure together with the proposed detours will be communicated via advertising, pamphlets, radio broadcasts, road signage, etc.

- (i) Public information campaigns (via newspaper, TV and radio) to explain the project to the wider town population and prepare them for disruption they may experience once the construction program is underway;
- (ii) Public disclosure meetings at key project stages to inform the public of progress and future plans, and to provide copies of summary documents in Kannada; and
- (iii) Formal disclosure of completed project reports by making copies available at convenient locations in the study towns, informing the public of their availability, and providing a mechanism through which comments can be made.

126. Based on ADB requirements, the following will be posted on ADB website: (i) this IEE, upon approval of ADB; (ii) a new or updated IEE, if prepared, reflecting significant changes in the Project during implementation; (iii) corrective action plan prepared during Project implementation to address unanticipated environmental impacts and to rectify non-compliance to EMP provisions; and (iv) environmental monitoring reports. Documents will also be available on the websites of KUIDFC and Puttur CMC.

## **VII. GRIEVANCE REDRESS MECHANISM**

127. The grievance redress mechanism (GRM) for the subproject has been established in accordance with an official Memorandum issued upon the order of Joint Managing Director KUIDFC Official Memorandum dated 28 June 2017. It has been established to receive, evaluate and address the concerns, complaints and grievances of the affected persons in relation to the project's social and environmental performances. The GRM aims to provide time bound action and transparent mechanisms to resolve social and environment concerns.

128. A project GRM will cover the project's towns for all kinds of grievances and will be regarded as an accessible and trusted platform for receiving and addressing project related complaints and grievances. The multi-tier GRM will have realistic time schedules and identify persons responsible to address grievances and deal directly with complainants to resolve their issues.

129. Awareness on grievance redress procedures will be created through Public Awareness Campaign with the help of print and electronic media. The Safeguards Officer of RPMU will ensure that vulnerable households are also made aware of the GRM and assured of their grievances to be redressed adequately and in a timely manner.

130. There will be multiple means of registering grievances and complaints by dropping grievance forms in complaint/ suggestion boxes at accessible locations, or through telephone hotlines, email, post or writing in a complaint registrar book in ULB's project office. There will be complaint registrar book and complaint boxes at construction site office to enable quick response of grievances/ complaints for urgent matters. The name, address and contact details of the persons with details of the complaint / grievance, location of problem area, date of receipt of complaint will be documented. The RPMU's Safeguards Officer will be responsible at the project level for timely resolution of the environmental and social safeguards issues and registration of grievances, and communication with the aggrieved persons.

#### **A. Grievance Redressal Process**

131. There will be several tiers for grievance redress process (Figure 45). Simple grievances for immediate redress will first be resolved at site by Contractor. If unaddressed for up to 7 days the complainants may go to PIU officer in ULB responsible for addressing resettlement/social issues. Resident engineer and the ULB will assist in resolving the issues. Name, designation and contact number of personnel responsible for grievance redress at ULB and RPMU, will be posted at Contractor's and PMDCSC's site office in full visibility of public. Grievances of immediate nature should be resolved at site/ within ULB/PIU level within 15 days of registration of grievances.

132. All the Grievances that cannot be resolved at ULB/PIU within 15 days will be forwarded to the grievances redress committee (GRC) headed by Deputy Project Director, RPMU at Subdivision level who will review and resolve within 15 working days of grievance being registered with assistance of the concerned PIU/ULB personnel if required. The grievances of critical nature and those cannot be resolved at GRC level should be referred to District Level Implementation Committee (DLIC) set up at district level headed by Deputy Commissioner who will review the grievances and to be settled within 30 days. All documents related to grievances, follow up action taken to resolve along with explanatory note on nature, seriousness and time taken for grievance redress shall be prepared by RPMU SO and circulated to DLIC members at least a week prior to scheduled meeting. The decision taken at the DLIC level will be communicated to the complainant by Safeguard Officer, RPMU through ULB/PIU

133. For any issues that remain unresolved by the GRC it is referred to DLIC at the District Level, and if the decisions taken at such meetings are not acceptable, the complainants /displaced persons can approach the Court of Law per Government of Karnataka legal procedure.

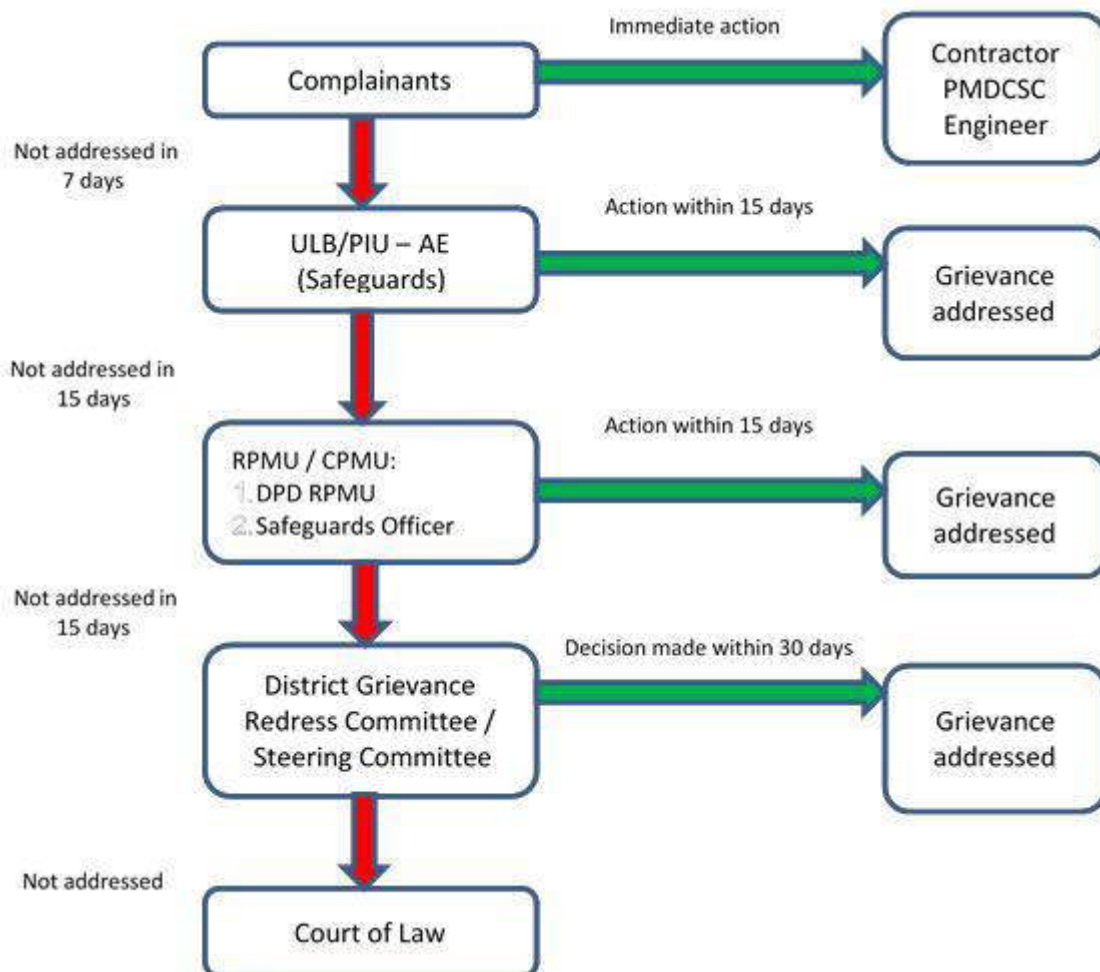
#### **B. Grievance Redress Committee Composition and Selection of Members**

134. The GRC for the project will be headed by (a) Special Land Acquisition Officer/Assistant Commissioner of the concerned sub-Division as Chairman of the sub Division with members as follows: (i) ULB Commissioners/Chief Officer of the concerned ULB towns, (ii) Deputy Project Director as member Secretary and Convener, (iii) PMDCSC Engineer, (iv) Affected Community member/NGO, and (v) Safeguards Officer RPMU KIUWMIP Mangalore member and will shoulder responsibility of keeping records of grievances/ complaints in details. Safeguard Officer of RPMU will be responsible for coordinating with all GRC members and the displaced persons for grievance redressal. The grievances of critical nature and those cannot be resolved at Divisional level should be referred to DLIC set up at District level they will determine the merit of each grievance and attempt to resolve the same within a month from

the date of lodging of complaints. The decision of DLIC is final and cannot be contested in any other forum except in the Courts of Law.

135. The affected person also can use the ADB Accountability Mechanism through directly contact (in writing) to the Complaint Receiving Officer (CRO) at ADB headquarters or to ADB Indian Resident Mission (INRM). The complaint can be submitted in any of the official languages of ADB's DMCs. The ADB Accountability Mechanism information will include in the PID to be distributed to the affected communities, as part of the project GRM. Appendix 17 provides copy of Notification for constitution of GRC.

**Figure 45: Grievance Redress Process**



AE = Assistant Engineer, CPMU = Central Program Management Unit, PIU = Project Implementing Unit, PMDCSC = Project Management Design and Construction Supervision Consultant, RPMU = Regional Project Management Unit, ULB = urban local body.

136. **Recordkeeping.** Records of all grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date these were effected and final outcome will be kept by PIU (with the support of PMDCSC) and submitted to PMU.

137. **Information Dissemination Methods of the Grievance Redress Mechanism.** The PIU, assisted by PMDCSC/CAPRRRC will be responsible for information dissemination to affected

persons and general public in the project area on grievance redress mechanism. Public awareness campaign will be conducted to ensure that awareness on the project and its grievance redress procedures is generated. The campaign will ensure that the poor, vulnerable and others are made aware of grievance redress procedures and entitlements per agreed entitlement matrix including, whom to contact and when, where/ how to register grievance, various stages of grievance redress process, time likely to be taken for redress of minor and major grievances, etc. Grievances received and responses provided will be documented and reported back to the affected persons. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the PIU, offices, ULB notice boards and on the web, as well as reported in the semi-annual environmental and social monitoring reports to be submitted to ADB.

**138. Periodic Review and Documentation of Lessons Learned.** The PMU will periodically review the functioning of the GRM and record information on the effectiveness of the mechanism, especially on the PIU's ability to prevent and address grievances.

**139. Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) will be borne by the respective PIU. Cost estimates for grievance redress are included in resettlement cost estimates.

**140. Country Legal Procedure.** An aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.

**141. ADB's Accountability Mechanism.** In the event that the established GRM is not in a position to resolve the issue, the affected person can also use the ADB Accountability Mechanism through directly contacting (in writing) the CRO at ADB headquarters or the ADB India Resident Mission. The complaint can be submitted in any of the official languages of ADB's developing member countries. Before submitting a complaint to the Accountability Mechanism, it is recommended that affected people make a good faith effort to resolve their problems by working with the concerned ADB operations department (in this case, the resident mission). Only after doing that, and if they are still dissatisfied, they could approach the Accountability Mechanism. The ADB Accountability Mechanism information will be included in the project-relevant information to be distributed to the affected communities, as part of the project GRM.

## **VIII. ENVIRONMENTAL MANAGEMENT PLAN**

### **A. Environmental Management Plan**

142. The purpose of the Environmental Management Plan (EMP) is to ensure that the activities are undertaken in a responsible, non-detrimental manner with the objectives of: (i) providing a proactive, feasible, and practical working tool to enable the measurement and monitoring of environmental performance on-site; (ii) guiding and controlling the implementation of findings and recommendations of the environmental assessment conducted for the project; (iii) detailing specific actions deemed necessary to assist in mitigating the environmental impact of the project; and (iv) ensuring that safety recommendations are complied with.

143. The contractor has prepared and submitted to PIU, a site-specific environmental management plan (SEMP) including (i) proposed sites/locations for construction work camps, storage areas, hauling **roads**, lay down areas, disposal areas for solid and hazardous wastes;

(ii) specific mitigation measures following the approved EMP; and (iii) monitoring program as per SEMP. The status of SEMP measures will be reported in SEMR. No works are allowed to commence prior to approval of SEMP.

144. A copy of the SEMP/updated EMP must be kept on work sites at all times. The EMP will be included in the bid documents and will be further reviewed and updated during implementation. The EMP will be made binding on all contractors operating on the site and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

145. For civil works, the contractor will be required to (i) establish an operational system for managing environmental impacts (ii) carry out all of the monitoring and mitigation measures set forth in the EMP; and (iii) implement any corrective or preventative actions set out in safeguards monitoring reports that the employer will prepare from time to time to monitor implementation of this IEE and EMP. The contractor shall allocate a budget for compliance with these EMP measures, requirements and actions.

146. Tables 13 to 15 show the potential adverse environmental impacts, proposed mitigation measures, responsible parties, and estimated cost of implementation for the subproject. This EMP was included in the bid documents and was further reviewed and updated during implementation. Table 16 shows the Environmental Monitoring Plan to be implemented during project implementation and operation.

**Table 13: Environmental Management Plan for Anticipated Impacts –Pre-Construction**

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
Submission of updated environmental management plan (EMP)/site environmental plan (SEP); EMP implementation and reporting	Unsatisfactory compliance to EMP	(i) Appoint Safeguards (Environmental, Health and Safety or EHS) Engineer to ensure EMP implementation (ii) Submission of updated EMP/site-specific environmental management plan (SEMP) (iii) Timely submission monthly of monitoring reports including documentary evidence on EMP implementation such as photographs	(i) once during design validation period  (ii) once before start of construction  (iii) monthly	Contractor	(i) mobilization of EHS engineer (ii) submission of SEMP prior to start of works (iii) submission of monthly reports	PMDSC/PIU/RPMU/PMU/ULB	Contractor cost
Utilities	Telephone lines, electric poles and wires, water lines within proposed project area	(i) Identify and include locations and operators of these utilities in the detailed design documents, during design validation phase and preconstruction phase, to prevent unnecessary disruption of	(i) once after design	Contractor in collaboration with Puttur City Municipal Council (CMC)	(i) List of affected utilities and operators; (ii) Bid document to include requirement for a contingency plan for service interruptions (example	PMDSC /RPMU/PMU	No cost required.  Mitigation measures are part of terms of reference (TOR) of PMU, design engineers, and supervising consultants.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		services during construction phase (ii) Conduct detailed site surveys with the construction drawings and discuss with the respective agencies before ground clearance; and (ii) Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.	(ii) once before bid is tendered  (iii) Once after design validation and discussion with respective agencies		provision of water if disruption is more than 24 hours), spoil management plan, and traffic management plan		
Trees on project sites	Tree cutting	(i) Further minimize removal of trees, if possible, by adopting to site condition and with appropriate layout design (Overhead tank or OHT sites) and alignments (pipelines) (ii) For any tree cutting that may be required, obtain prior	(i) once during design validation stage  (ii) once during approval process	Contractor in collaboration with Urban local body (ULB)/Program Implementation Unit (PIU)	(i) Layout plan of OHTs (ii) tree cutting / pruning permission (iii) Compensatory tree plantation as part of the project	PMD CSC /RPMU/PMU	Cost for implementation of mitigation measures responsibility of contractor.



Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		permission from Forest Department (iii) Plant and maintain 10 trees for each tree that is removed	(iii) once after the approval process				
Social and Cultural Resources – Chance finds	Ground disturbance can uncover and damage archaeological and historical remains	(i) Create awareness among the workers and supervisors about the chance finds during excavation work (ii) Stop work immediately if any finds are suspected to allow further investigation (iii) Inform archaeological agencies promptly if a find is suspected, and take any action they require to ensure its removal or protection in situ.	(i) once in a month  (ii) as and when required  (iii) when (ii) above is initiated	Construction Contractor and Project Management, Design and Construction Supervision Consultant (PMD CSC)	Chance Finds Protocol	PMD CSC/PIU/RPMU/PMU	No cost required.
Construction work camps, hot mix plants, <del>hot mix plants</del> , stockpile areas, storage areas, and	Disruption to traffic flow and sensitive receptors	(i) Prioritize areas within or nearest possible vacant space in the project location; (ii) If it is deemed necessary to	(i) once before finalization of the location/area	Contractor to determine locations prior to beginning of construction works and to be reviewed and	(i) List of selected sites for construction work camps, hot mix plants, stockpile	PMD CSC/RPMU/PMU	No cost required.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
disposal areas.		locate elsewhere, consider sites that will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems; (iii) Do not consider residential areas; (iv) Take extreme care in selecting sites to avoid direct disposal to water body which will inconvenience the community. (v) For excess spoil disposal, ensure (a) site shall be selected preferably from barren, infertile lands. In case agricultural land needs to be selected, written consent from landowners (not lessees) will be obtained; (b) debris disposal site shall be at least 200 m away from surface	(ii) once before finalization of the location/area  (iii) once before finalization of the location/area  (iv) once before finalization of the location/area	approved by PIU	areas, storage areas, and disposal areas. (ii) Written consent of landowner/s (not lessee/s) for reuse of excess spoils to agricultural land		

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		water bodies; (c) no residential areas shall be located within 50 m downwind side of the site; and (d) site is minimum 250 m away from sensitive locations like settlements, ponds/lakes or other water bodies.					
Debris disposal	Impacts due to improper disposal of debris	<p>(i) PIU shall identify a debris disposal site in consultation Puttur CMC adhering to the criteria</p> <p>(i) Priority shall be to reuse the debris for any beneficial purpose, such as road construction, and material such as iron, wood, etc., shall be salvaged for reuse</p> <p>The following measures should be considered for disposal of surplus/waste soil:</p>	<p>(i) Once before starting of project work and as and when required</p> <p>(ii) every time before the debris is transported.</p> <p>every time before the debris is transported.</p>	PIU and Contractor to determine locations prior to beginning of construction works.	List of selected sites for disposal	PMDCSC/RPMU/PMU	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>(i) The excavated soil Debris should be removed from construction area at the earliest for beneficial reuse such as land raising/filling of excavated areas.</p> <p>(ii) Debris Soil should be covered with tarpaulin sheets during the transportation.</p> <p>(iii) Soil Debris transportation should not be done during the peak hours and should be avoid narrow and heavy traffic routes and important religious or tourist sites.</p>					
Sources of Materials	Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion,	<p>(i) Prioritize sites already permitted by the Mining Department;</p> <p>(ii) If other sites are necessary, inform construction contractor that it</p>	<p>(i) once before sourcing of the materials</p> <p>(ii) once every month</p>	Contractor to prepare list of approved quarry sites and sources of materials with the approval of PMDCSC	<p>(i) List of approved quarry sites and sources of materials;</p> <p>(ii) Bid document to include</p>	PIU/RPMU/PMU	<p>No cost required.</p> <p>Mitigation measures are part of ToR of PMU, design engineers, and</p>

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
	disturbance in natural drainage patterns, ponding and water logging, and water pollution.	is their responsibility to verify the suitability of all material sources and to obtain the approval of PMU and (iii) If additional quarries will be required after construction is started, inform construction contractor to obtain a written approval from PMU.	(iii) once every month		requirement for verification of suitability of sources and permit for additional quarry sites if necessary.		supervising consultants.
Structural and seismic stability of storage reservoirs (OHTs or GLSRs) is to be ensured for the safety of people working in and living around these structures.	The failure of the storage structures can be catastrophic.	The design shall incorporate seismicity of the place and all other safety factors. All care shall be taken to ensure a safe and structurally sound construction.	Once during design validation	PIU and PMDCSC	Incorporated in final design and communicated to contractors.	RPMU/PMU	No cost required.  Mitigation measures are part of ToR of PMU, design engineers, and supervising consultants.
Consents, permits, clearances, NOCs, etc.	Failure to obtain necessary consents, permits, NOCs, etc.	(i) Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.	(i) once component-wise	ULB/PIU and PMDCSC	Incorporated in final design and communicated to contractors.	RPMU/PMU	No cost required. Cost of obtaining all consents, permits,

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
	can result to design revisions and/or stoppage of works	(ii) Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc. (iii) Include in detailed design drawings and documents all conditions and provisions if necessary	(ii) every month and as and when compliance is obtained  (iii) once semi-annually				clearance, NOCs, etc. prior to start of civil works responsibility of PMU.  Mitigation measures are part of TOR of PMU, design engineers, and supervising consultants.
Method statement	Use of approved construction practices to minimize construction impacts	Method Statement should be in a Table format with appended site layout map and cover the following: (i) Work description (ii) Number of workers (skilled and unskilled) (iii) Details of plant, equipment and machinery, vehicles (iv) Work duration (total, and activity-wise, for example for pipe laying, from excavation to road	Once when the statement is submitted and to be reviewed once in a month.	Contractor to prepare method statement for review and approval by PMDCSC / PIU prior to start of work.	Review of method statement and implementation of work	RPMU/PMU	No cost required.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>resurfacing/testing)</p> <p>(v) PPE (helmet, gloves, boots, etc.) details for each type of work</p> <p>(vi) Details of materials at each site (type and quantity)</p> <p>(vii) Risks/hazards associated with the work (for example, Trench excavation will have risks such as trench collapse, persons/vehicles falling into trench, structural risk to nearby buildings, damage to buildings, infrastructure etc.)</p> <p>(viii) Construction waste/debris generated (details and quantity)</p> <p>(ix) Detail the sequence of work process (step-by-step) including specific details of each work</p>					



Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>(x) Contractor's supervision and management arrangements for the work</p> <p>(xi) Emergency: Designate (i) responsible person on site, and (ii) first aider</p> <p>(xii) Typical site layout plan including pipe trenching, placement of material, excavated earth, barricading etc.</p> <p>(xiii) The pipelines are to be laid along the roads. The excavated soil, placed along the trench may get disturbed due to wind, rain water and the movement of workers, vehicles and pedestrians, and spill onto road way – disturbing road users, creating dust, road safety issues, etc., and</p>					

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Implementation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		also into nearby open drains.					

**Table 14: Environmental Management Plan for Anticipated Impacts – Construction**

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
EMP Implementation Training	Impacts on the environment, workers, and community due to improper implementation of EMP	(i) Project manager and all key workers will be required to undergo EMP implementation including spoils management, Standard operating procedures (SOP) for construction works; occupational health and safety (OHS), core labor laws, applicable environmental laws, etc. (ii) appointment of Environment, Health and Safety (EHS) Engineer by contractor prior to start of work	(i) once prior to the start of construction and as and when the project management and key workers change  (ii) once before the start of work	Construction Contractor / PIU / PMDCSC	(i) Certificate of Completion (Safeguards Compliance Orientation) (ii) Posting of Certification of Completion at worksites (iii) Posting of EMP at worksites	RPMU/PMU/ULB	Cost of EMP Implementation Orientation Training to contractor is responsibility of PMU.  Other costs responsibility of contractor.
Air Quality	Emissions from construction vehicles, equipment, and machinery used for installation of pipelines resulting to dusts and increase in concentration of vehicle-related pollutants such as carbon monoxide, sulfur oxides,	(i) Consult with PIU/PMDSC on the designated areas for stockpiling of clay, soils, gravel, and other construction materials; (ii) Damp down exposed soil and any stockpiled on site by spraying with water when necessary during dry weather; (iii) Use tarpaulins to cover sand and other loose material when transported by trucks; (iv) Clean wheels and undercarriage of vehicles prior to leaving construction site (v) Fit all heavy equipment and	(i) once for each work site  (ii) on a daily basis each area  (iii) once each truck  (iv) once each truck  (v) once when the	Construction Contractor	(i) Location of stockpiles; (ii) Complaints from sensitive receptors; (iii) Heavy equipment and machinery with air pollution control devices; (iv) Certification that vehicles are compliant with Air Act	PMDSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
	particulate matter, nitrous oxides, and hydrocarbons.	machinery with air pollution control devices which are operating correctly.	equipment is used SPM, RSPM, SO <sub>x</sub> , NO <sub>x</sub> Day and night time noise (dBA) Monitoring method As prescribed by Central Pollution Control Board Once before start of construction Quarterly (yearly 4-times) during construction period of 24 months – 108 samples				
Surface water quality	Mobilization of settled silt materials, and chemical contamination from fuels and lubricants during installation of pipelines can	(i) Prepare and implement a spoils management plan as the part of the Construction Management Plan. (ii) Avoid stockpiling of earth fill especially during the monsoon season unless covered by	(i) once before start of works, update as required.  (ii) once every day during rainy days	Construction Contractor	(i) Areas for stockpiles, storage of fuels and lubricants and waste materials; (ii) Number of silt traps installed along	PMD/CSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
	contaminate nearby surface water quality.	tarpaulins or plastic sheets; (ii) Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies; (iii) Place storage areas for fuels and lubricants away from any drainage leading to water bodies. Storage structure should consider 110% capacity bund; (iv) Dispose any wastes generated by installation of pipeline in designated sites; and (v) Conduct surface quality inspection according to the Environmental Management Plan (EMP).	(ii) as and when required  (iii) once every day  (iv) as and when required (v)  Water quality – standard parameters Once before start of construction Quarterly (yearly 4-times) during Construction (14 samples)		trenches leading to water bodies; (iii) Records of surface water quality inspection; (iv) Effectiveness of water management measures; (v) No visible degradation to nearby drainages, nallahs or waterbodies due to civil works		
Noise Levels	Increase in noise level due to earth-moving and excavation equipment,	(i) Plan activities in consultation with PIU/PMDCSC so that activities with the greatest potential to generate noise are	(i) once for each work site	Construction Contractor	(i) Complaints from sensitive receptors; (ii) Use of silencers in noise-	PMDCSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
	and the transportation of equipment, materials, and people	<p>conducted during periods of the day which will result in least disturbance;</p> <p>(ii) Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach;</p> <p>(iii) Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers the sound impact to surrounding sensitive receptor;</p> <p>(iv) Properly enclose the dismantling area with temporary noise barriers</p> <p>(v) Maintain maximum sound levels not exceeding 80 decibels (dbA) when measured at a distance of 10 m or more from the vehicle/s.</p>	<p>(ii) every day at each work site</p> <p>(iii) as and when required at each work site</p> <p>(iv) as and when required where dismantling takes place</p> <p>(v) once before using each equipment</p> <p>Noise level Once before start of construction Quarterly (yearly 4-times) during</p>		producing equipment and sound barriers; (iii) Equivalent day and night time noise levels (See Appendix 3 of this IEE)		

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
			construction period of 24 months – 108 samples				
Landscape and aesthetics	Impacts due to excess excavated earth, excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items. C & D materials after dismantling of the old WTP and old GLSR are identified	(i) Prepare and implement spoils management plan (ii) Avoid stockpiling of excess excavated soils; (iii) Coordinate with Puttur CMC for beneficial uses of excess excavated soils or immediately dispose to designated areas; (iv) Recover used oil and lubricants and reuse or remove from the sites; (v) Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; (vi) Remove all wreckage, rubbish, or temporary structures which are no longer required; and (vi) Request PMU/PMDSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work. (vii) C & D materials	(i) once and update as and when required (ii) once every day at stockpile location (iii) once before disposal of soil (iv) once in a month where oil/lubricants are used (v) once every day (vi) once in a month  (vi) once work is completed         (vii) before and after dismantling	Construction Contractor	(i) Complaints from sensitive receptors; (ii) Worksite clear of hazardous wastes such as oil/fuel (iiv) Worksite clear of any excess excavated earth, excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers	PMDSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.



Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		after dismantling of the old WTP and old GLSR shall be managed as per C & D Rules 2016,					
Existing Infrastructure and Facilities	Disruption of service and damage to existing infrastructure at specified project location	(i) Obtain from PIU/PMDCSC the list of affected utilities and operators if any; (ii) Prepare a contingency plan to include actions to be done in case of unintentional interruption of service (iii) The public should be given notice at least three days in advance and any accidental breaking should be rectified immediately.	(i) once when the service is disrupted (ii) once for the each area disrupted (iii) as and when required when the disruption is planned	Construction Contractor	Existing Utilities Contingency Plan	PMDSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.
Ecological Resources – Terrestrial	Loss of vegetation and tree cover	Minimal tree cutting is envisaged as part of this sub project. to safeguard any tree removal, following measures to be implemented (i) Minimize removal of vegetation and disallow cutting of trees; (ii) If tree-removal will be required, obtain tree-cutting permit from the Forest Department; and (iii) Plant two native trees for every one that is removed.	Once during design validation; once before removal of trees and after removal of tree after approval of FD; once in quarter after re-planning	Construction Contractor	Design validation report; no. of trees cut and no. of trees planned as per direction of FD	PMU/PMDCSC to report in writing the no of trees cut and planted.	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
Accessibility	Traffic problems and conflicts near project locations and haul road	<p>Traffic Management Plan (TMP) should be part of the Construction Management Plan.</p> <p>(i) Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites;</p> <p>(ii) Schedule transport and hauling activities during non-peak hours;</p> <p>(iii) Locate entry and exit points in areas where there is low potential for traffic congestion;</p> <p>(iv) Keep the site free from all unnecessary obstructions;</p> <p>(v) Drive vehicles in a considerate manner;</p> <p>(vi) Coordinate with Traffic Police for temporary road diversions and with for provision of traffic aids if transportation activities cannot be avoided during peak hours;</p> <p>(vii) Notify affected sensitive receptors 2 days in advance by providing sign boards informing nature and duration of construction works and contact numbers for concerns/complaints.</p>	<p>Once before the start of work</p> <p>(i) once for each work site.</p> <p>(ii) every day at all work fronts</p> <p>(iii) every day at all work fronts</p> <p>(iv) every day at all work fronts</p> <p>(iv) at all times</p> <p>(vi) everyday in high traffic work sites.</p> <p>(vii) at all work sites once</p>	Construction Contractor	<p>(i) Traffic route during construction works including number of permanent signages, barricades and flagmen on worksite (Appendix 7);</p> <p>(ii) Complaints from sensitive receptors;</p> <p>(iii) Number of signages placed at project location.</p>	PMD/CSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		(viii) Plan and execute the work in such a way that the period of disturbance/ loss of access is minimum. (xi) Provide pedestrian access in all the locations until normalcy is restored.	(viii) every day at each work site (x) every day at each work site				
Socio-Economic – Income.	Impede the access of residents and customers to nearby shops	(i) Prepare and implement spoils management plan (ii) Leave spaces for access between mounds of soil; and Provide walkways and metal sheets where required for people; (iii) Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools; (iv) Consult businesses and institutions regarding operating hours and factoring this in work schedules; and (v) Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.	(i) once for each work site (ii) as and when required (iii) as and when required  (iv) once at each work site/front  (v) once for each work site	Construction Contractor	(i) Complaints from sensitive receptors; (ii) Spoils management plan (iii) Number of walkways, signages, and metal sheets placed at project location.	PMD CSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.
Socio-Economic - Employment	Generation of contractual employment	(i) Employ local labor force to the maximum	(i) once at the beginning of	Construction Contractor	(i) Employment records;	PMD CSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
	and increase in local revenue	extent, if manpower is available; (ii) Comply with labor laws	start of construction (ii) everyday		(ii) Records of sources of materials (iii) Compliance to core labor laws (See appendix 2 of this IEE)		measures responsibility of contractor.
Occupational Health and Safety	Occupational hazards which can arise during work	(i) Comply with all national, state and local core labor laws (See Appendix 2 of this IEE) (ii) Develop and implement site-specific occupational health and safety (OHS) Plan, and include in the Construction Management plan. The OHS plan will include measures such as: (a) excluding public from the site; (b) ensuring all workers are provided with and use personal protective equipment like helmet, gumboot, safety belt, gloves, nose mask and ear plugs; (c) OHS Training for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents; (ii) Ensure that qualified first-aid can be provided	(i) every day  (ii) once before construction of each component of the water supply system  (ii) every day	Construction Contractor	(i) Site-specific OHS Plan; (ii) Equipped first-aid stations; (iii) Medical insurance coverage for workers; (iv) Number of accidents; (v) Supplies of potable drinking water; (vi) Clean eating areas where workers are not exposed to hazardous or noxious substances; (vii) record of health and safety orientation trainings (viii) personal protective equipment;	PMD/CSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		at all times. Equipped first-aid stations shall be easily accessible throughout the site; (iii) Provide medical insurance coverage for workers; (iv) Secure all installations from unauthorized intrusion and accident risks; (v) Provide supplies of potable drinking water; (vi) Provide clean eating areas where workers are not exposed to hazardous or noxious substances; (vii) Provide health and safety orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protective protection, and preventing injuring to fellow workers; (viii) Provide visitor orientation if visitors to the site can gain access to areas where hazardous conditions or substances may be present. Ensure also that visitor/s do not enter hazard areas unescorted;	(iii) once after employment renewed annual (iv) every day (v) as and when required (vi) as required (vii) once before starting of work and every month to the key workers changed (viii) when visitor visit the site as authorized by PIU (ix) as and when required		(ix) % of moving equipment outfitted with audible back-up alarms; (xi) permanent sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. (xii) Compliance to core labor laws (See appendix 2 of this IEE)		

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		(ix) Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; (x) Ensure moving equipment is outfitted with audible back-up alarms; (xi) Mark and provide sign boards for hazardous areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; and (xii) Disallow worker exposure to noise level greater than 85 dBA for a duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.	(x) every day if fitted with alarms when such equipment is used. (xi) once after construction is completed and revisit and take action following incidents  (xii) every day once				

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
Community Health and Safety.	Traffic accidents and vehicle collision with pedestrians during material and waste transportation	(i) Plan routes to avoid times of peak-pedestrian activities. (ii) Liaise with PIU/PMDSC in identifying high-risk areas on route cards/maps. (iii) Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure. (iv) Provide road signs and flag persons to warn of on-going trenching activities.	(i) every day at each work site (ii) every day once especially in dense traffic areas  (iii) every day as required  (iv) once before commence of work at each work site	Construction Contractor	(i) Traffic Management Plan; (ii) Complaints from sensitive receptors	PMDSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.
Work Camps and worksites	Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants  Unsanitary and poor living conditions for workers	(i) Consult with PIU before locating workers camps/sheds, and construction plants; as far as possible located at least 200 m from residential areas. (ii) Minimize removal of vegetation and disallow cutting of trees (iii) Living facilities shall be built with adequate materials, and should be in good	(i) once before locating the same  (ii) once before setup of location (iii) every day once	Construction Contractor	(i) Complaints from sensitive receptors; (ii) Drinking water and sanitation facilities for employees	PMDSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsibl e for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>condition and free from rubbish and other refuge</p> <p>(iv) The camp site should be adequately drained to avoid the accumulation of stagnant water</p> <p>(v) Provide water and sanitation facilities; water, meeting Indian drinking water standards shall be provided, in adequate quantities (supply of 60- 80 LPCD); all water storage structures must be cleaned regularly and covered properly to avoid any contamination</p> <p>(vi) Provide separate facilities for men and women; sanitary facilities shall be properly build and well maintained; toilet and bath facilities should be provided on basis of 1 per 15 or less persons</p> <p>(vii) Train employees in the storage and handling of materials which can potentially cause soil contamination;</p> <p>(viii) Recover used oil and lubricants and reuse or remove from the site;</p> <p>(ix) Manage solid waste according to the following preference</p>	<p>(iv) every day once</p> <p>(v) every day once</p> <p>(vii) once in the establish-ment of facility and every day maintenanc e</p> <p>(vii) once before start of work at each worksite and when there is a change in key workers</p> <p>(viii) once every month</p>				



Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>hierarchy: reuse, recycling and disposal to designated areas;</p> <p>(x) Remove all wreckage, rubbish, or temporary structures which are no longer required; and</p> <p>(xi) Report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.</p> <p>(xii) The work camp details should be included in the Construction Management Plan.</p>	<p>(ix) every day once</p> <p>(x) as and when required with minimum of once per month</p> <p>(xi) one time once vacated</p> <p>(xii) once before setup and once before change in plan</p>				
Social and Cultural Resources	Risk of archaeological chance finds	<p>(i) Create awareness among the workers and supervisors about the chance finds during excavation work</p> <p>(ii) Stop work immediately if any finds are suspected to allow further investigation</p> <p>(iii) Inform archaeological agencies promptly if a find is suspected, and take any action they require to ensure its removal or protection in situ.</p>	<p>(i) once before construction and repeat when key workers are changed</p> <p>(ii) as and when required</p> <p>(iii) as and when required</p> <p>(iv) as and when required</p>	Construction Contractor	Records of chance finds	PMD/CSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		(iv) Adjacent to important religious sites, undertake excavation and construction work in such a way that no structural damage is caused to the building.					
Submission of EMP implementation report	Unsatisfactory compliance to EMP	(i) Appointment of EHS engineer to ensure EMP implementation (ii) Timely submission of monitoring reports including pictures	(i) once before start of construction and once after replacement (ii) monthly once	Construction contractor	Availability and competency of appointed EHS engineer  Monthly report	PMD CSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.
Post-construction clean-up	Damage due to debris, spoils, excess construction materials	(i) Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; and (ii) All excavated roads shall be reinstated to original condition. (iii) All disrupted utilities restored (iv) All affected structures rehabilitated/compensated (v) The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up.	(i) every day or as and when required  (ii) every day or as and when required (iii) every day or as and when required (iv) every day or as and when required (v) once after	Construction Contractor	PMU/PMD CSC report in writing that (i) worksite is restored to original conditions; (ii) camp has been vacated and restored to pre-project conditions; (iii) all construction related structures not relevant to O&M are removed; and (iv) worksite clean-up is satisfactory.	PMD CSC/PIU/RPMU/PMU/ULB	Cost for implementation of mitigation measures responsibility of contractor.

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		(vi) All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be topsoiled and regrassed using the guidelines set out in the revegetation specification that forms part of this document. (vii) The contractor must arrange the cancellation of all temporary services. (viii) Request PMU/PMDCSC to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.	vacating the camp (vi) once after vacating the site (vii) once after vacating the site and follow up as required till completion of task (viii) once after all above tasks are complete				

**Table 15: Environmental Management Plan for Anticipated Impacts – Operation**

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
Operation & Maintenance of 24x7 Water supply system and WTP	Poor quality of supply water due to improper maintenance	ULB shall ensure that all water supply pipelines are maintained well and water is treated to the required Drinking Water Standards	Every day	Operator/ Puttur CMC	No. of Maintenance activities Water Quality at user end	Puttur CMC	CMC cost
Water Quality Monitoring	Non-availability of potable water for drinking	Treated water shall be tested for drinking water quality standards – parameters on regular basis and residual chlorine, E-coli to be tested at consumer end point.	Every day  As per O&M plan	Operator/ Puttur CMC	Water quality at user end	Puttur CMC	CMC cost
Check for blockage and leakage problems reducing the water losses	It may affect the water supply system	Effectiveness of leak detection and water auditing to reduce the water losses	As and when required	Operation and maintenance (O&M) Contractor/Puttur City Municipal Council (CMC)	No. of leaks detected Water auditing	Puttur CMC	CMC cost
Emergency Response Plan	Non-availability of Emergency Response Plan affects water supply system	An Emergency Response Plan (ERP) for emergencies such as indications of terrorism or acts of terrorism; Major disasters such as earthquakes, fires, flood, or explosion and Catastrophic incidents that leave extraordinary levels of	Once prepare ERP and update as required (minimum once in a year)	Operator/ Puttur CMC	Report submission and updated report submission.	Puttur CMC	CMC cost

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>mass casualties, damage, and disruption severely affecting the population, infrastructure, environment, economy, etc. Emergency Response Plan shall be prepared to address the eight core elements such as System Specific Information; Community Water System - Roles and Responsibilities; Communication Procedures: Who, What and When; Personnel Safety; Identification of alternate water sources in emergencies; Replacement equipment and chemical supplies; Property protection and Water sampling and Monitoring. Appropriate safety measures like fencing, notice boards to prevent entry of unauthorized persons shall be provided</p>					

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
Asset management	Reduction in NRW Increased efficiency of the system	Preparation of O&M Manual	As per O&M manual	Operator/ Puttur CMC	NRW reduction activities conducted as per Manual	Puttur CMC	CMC cost
Repair works during O&M	Local disturbances during maintenance work	<p>Contractor shall inform shopkeepers, residents and road users of repair works in advance.</p> <p>If trenches are dug to locate and repair leaks or remove and replace lengths of pipe or illegal connections, the removed material will be replaced in the trench so there will be no waste. The refilled trench shall be re-compacted and brought to the original condition as soon as the repair works are over. Works shall be completed quickly at sensitive areas.</p> <p>Proper access shall be provided to the residents during the repair works</p> <p>If any major maintenance works is to be taken up contractor shall prepare and operate</p>	As and when required	O&M Contractor / Puttur CMC	Timeline for each repair	Puttur CMC	CMC cost

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		Health and safety plan to protect workers and public. Contractor may request police to divert traffic if necessary. All guide and hand railings shall be maintained in a safe and firm condition with WTP to ensure the safety of Personnel working at the plant.					
Health and Safety during O&M period	Impact on human health and safety issues	<p><b>Precautionary Working Practices:</b></p> <p>When working with pipes and fittings on site, ensure that they are protected from contamination by storing off the ground, capping the ends of pipes and liners, and keeping fittings in wrappings until the time of use.</p> <p>Excavate trenches to below the pipe level to provide a sump, and keep as dry as possible to prevent water entering a pipe or fitting.</p> <p>Ensure that sealing materials and lubricants are clean and certified as suitable for contact</p>	Every day or as required	Operator/ Puttur CMC	No. of practices/ procedures conducted	Puttur CMC	CMC cost

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>with potable water supplies.</p> <p>If a part of the distribution system has been taken out of service for an extended period, treat it as a potentially contaminated new installation. Apply the flushing, disinfection and microbiological sampling procedures that are normally applied to new installations.</p> <p>As far as is practicable, if general purpose or specialized vehicles are used for water supply construction and repair duties, do not use those vehicles for other duties where contamination may be prevalent (e.g. sewerage work).</p> <p>Employees and contractors involved in restricted operations should be trained in the hygienic implications of their work and basic hygienic practices. This training should include details of the personal symptoms</p>					



Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>that indicate a potential waterborne disease. All staff (employees and contractors) should be encouraged to report such symptoms without prejudice to their employment prospects. Employers should provide adequate toilet and washing facilities to maintain personal hygiene. Wastes from portable or temporary arrangements should be disposed of without risk to water supplies or the environment.</p> <p><b>Cleaning and Disinfection Procedures:</b></p> <p>Before putting into service new, repaired, rehabilitated or modified water main carrying potable water, the main must first be cleaned, disinfected, flushed and sampled to ensure that it is free from contamination. Contractors and his employees involved in restricted operations</p>					

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>should be trained in the hygienic implications of their work and basic hygienic practices. This training should include details of the personal symptoms that indicate a potential waterborne disease. All staff should be encouraged to report such symptoms without prejudice to their employment prospects. Employees should be provided with adequate toilet and washing facilities to maintain personal hygiene. Wastes from portable or temporary arrangements should be disposed of without risk to water supplies or the environment.</p> <p><b>Handling Chlorine gas cylinders during O&amp;M period:</b></p> <p><b>Technical precautions:</b></p> <p>Ventilate chlorine rooms adequately. Use only suitable and tested chlorine gas equipment. Use only approved gas warning</p>					

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>equipment and water spraying equipment (external operation). Ensure that there are short escape routes into the open. (Escape doors must open outwards.) Renew the connection seal every time the chlorine cylinders are exchanged.</p> <p><b>Handling Chlorine cylinders:</b> Proper training shall be given to the staff handling Chlorine gas cylinders and be repeated at least once a year. Only trained and designated staff shall handle gas cylinders containing chlorine. Chlorine cylinders shall be stored with the valve cap attached securely together, with a suitable seal and the should be stored separately.</p> <p>To prevent heating of the chlorine cylinders, they should be kept out of direct sunlight. Valves on chlorine gas cylinders should be operated by hand without use of force.</p>					

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>Valves of filled or empty chlorine cylinders should always be closed securely with the correct cap. It is advised to store chlorine gas cylinders in an adequately ventilated room and ensure short escape routes into the open air.</p> <p>Operating instructions Material safety Data Sheet (MSDS) shall be displayed in accordance with the regulations on hazardous substances.</p> <p>When exchanging chlorine cylinders and performing vacuum and pressure tests, suitable breathing mask with filter like full face mask shall be used along with protective gloves and shoes.</p> <p><b>Procedure in the case of Emergency:</b>          Proceed according to Emergency plan and inform the concerned authority immediately          If leakage of chlorine gas cannot be</p>					

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		<p>controlled using the water spray equipment, call the fire brigade immediately If the chlorine concentration is above the maximum workplace concentration level (0.5 ppm), use suitable compressed air breathing apparatus and a protective chemical suit.</p> <p><b>First Aid:</b> Persons who have inhaled chlorine gas shall be moved to a site with fresh air and they require immediate medical attention. If the injured persons are breathless, artificial respiration is necessary. Otherwise, they should be made to inhale nebulized dexamethasone. If chlorine comes into contact with eyes or skin, it should be rinsed off immediately with plenty of water and consult doctor. Contaminated clothing</p>					

Field	Anticipated Impact	Mitigation Measures	Frequency	Responsible for Mitigation	Monitoring of Mitigation		Cost and Source of Funds
					Activity	Responsibility	
		should be removed immediately.					
Grievance redressal during O&M	Non attending of grievances affect water supply system	Appropriate registers shall be maintained to record complaints and Junior Engineer/s from ULB shall be assigned to track follow up action to ensure that the complaint is addressed in a timely manner by the contractor. If the complaint is such that it cannot be dealt with at his level, it can be referred to higher authority to take the required decision and followed up with the contractor for the compliance. Concerned engineer from ULB shall do frequent vigilant checks at the areas from where maximum complaints have been received.	Every day	Operator/ Puttur CMC	No. of complaints received	Puttur CMC	
Increase of sewage	Increased quantity of sewage leads to open area/drain and creates health problems	Develop a comprehensive sewerage system	Every quarter	CMC, Puttur		Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC)/ Government of Karnataka	CMC cost

**Table 16: Environmental Monitoring Plan**

<b>Sample</b>	<b>Site/s</b>	<b>Responsibility</b>	<b>Parameter to Monitor</b>	<b>Frequency</b>	<b>Cost(₹)</b>
Ambient air quality	112 points Six overhead tank (OHT) locations viz., Mura Shantinagra - Padnur, Karmala near Microwave station, CTO-Darbe, Lingadagudda-Kabaka, Balnad Helipad, BalnadKelyadi -Vitla Road, and one GLSR at Seethigudda and remaining five points for pipeline works. (shall be selected during construction) See Appendix 15	Contractor	SPM, RSPM, SOx, NOx Day and night time noise (dBA) Monitoring method as prescribed by Central Pollution Control Board	Once before start of construction Quarterly (yearly 4-times) during construction period of 24 months – 9 times	₹5000 per sample – sum ₹540,000 for 108 samples
Noise Level	112 points. Six OHT locations viz., Mura Shantinagra - Padnur, Karmala near Microwave station, CTO-Darbe, Lingadagudda-Kabaka, Balnad Helipad, BalnadKelyadi Vitla Road, and one GLSR at Seethigudda and remaining five points during execution of pipeline works. during construction) See Appendix 15 for location maps	Contractor	Noise level	Once before start of construction Quarterly (yearly 4-times) during construction period of 24 months – 9 times	₹2500 per sample - ₹270,000 for 108 samples
Surface Water Quality	2 points in nearest water bodies/ rivers that are on the downstream side of work sites (exact points to be selected during implementation)	Contractor	River Water quality – standard parameters	Once before start of construction Quarterly (yearly 4-times) during construction	14 samples (@ 2 points in 18 months) x 10000 = ₹140,000
<b>Operation Stage</b>					
Source (raw) water quality	Intake in Tungabhadra River	Contractor/ operation and maintenance (O&M) Operator	Water quality parameters (all including pesticides, heavy metals)	Once prior to start of operation and monthly during operation	12 measurements per year x 12000 = ₹144,000
Treated water quality	At the water treatment plant (WTP) outlet	Contractor/ O&M Operator	All Drinking water parameters	Monthly once during operation	Operating costs (water quality will be tested at the internal laboratory to be established in the project at WTP)

Supplied water at consumer end	Consumer end- random sampling in all zones (at least 1 sample from 1 zone/ward)	Contractor/ O&M Operator	All Drinking water parameters	Monthly once during operation	Operating costs (water quality will be tested at the internal laboratory to be established in the project at WTP)
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₹ = Indian rupee, NOx = Nitrogen oxide, O&M = operation and maintenance, OHT = overhead tank, RSPM = Respirable Suspended Particulate Matter, SOx = Sulphur oxide, WTP = water treatment plant.



## **B. Institutional Arrangements**

147. **Executing Agency.** KUIDFC is the executing agency responsible for overall technical supervision and execution of all subprojects funded under the Investment Program. Implementation activities is overseen by Project Management Unit (PMU) established in its head office at Bangalore exclusively for KIUWMIP. PMU is supported by Regional PMU (RPMU) established in Mangalore headed by Deputy Project Director, to support and monitor implementation in PIUs of Tranche 2 program towns. PMU and RPMU are staffed with technical, administrative and financial officials, including safeguards specialists, to manage and monitor program implementation.

148. **Implementing Agency.** The implementing agencies are the respective ULBs, in this case City Municipal Council (CMC) of Puttur. Program Implementation Units (PIUs) are set up in each program ULB for implementation of day-to-day activities in the field.

149. Other than the above institutional setup, District Level Implementation Committee (DLIC) will be set up in each district to monitor implementation of subprojects and institutional reforms. The DLIC shall consist of Deputy Commissioner of District, Deputy Project Director (DPD) RPMU, Municipal Commissioners'/Chief Officers of ULB and PMDCSC.

150. **Safeguards Implementation.** The SCMU will ensure that all subprojects comply with environmental safeguards. In each regional office in Mangalore and Davangere, a Safeguards Officer will assist in and coordinate safeguard tasks. For enhancing the monitoring role of environmental safeguards, KUIDFC will consider assigning the environmental officers at the regional officers in implementation stage. In each PIU, an Assistant Engineer (safeguards) will coordinate the safeguard tasks at PIU/town level. For Tranche 2, PIUs are established at Kundapura, Mangalore, Puttur, and Udupi. A Project Management, Design and Construction Supervision Consultant (PMDSCS) will assist PMU and PIUs in the implementation of the entire investment program including compliance with the EARF and RF. PMDCSC is stationed in Mangalore with the field teams in each of the PIUs. PMDCSC team includes an Environmental Specialist and a Social Development Specialist to prepare, implement and monitor all safeguard activities and ensure safeguards compliance. At the civil works stage, Contractor staff will include Safeguards/Environment, Health and Safety (EHS) engineer to supervise and report on EMP implementation.

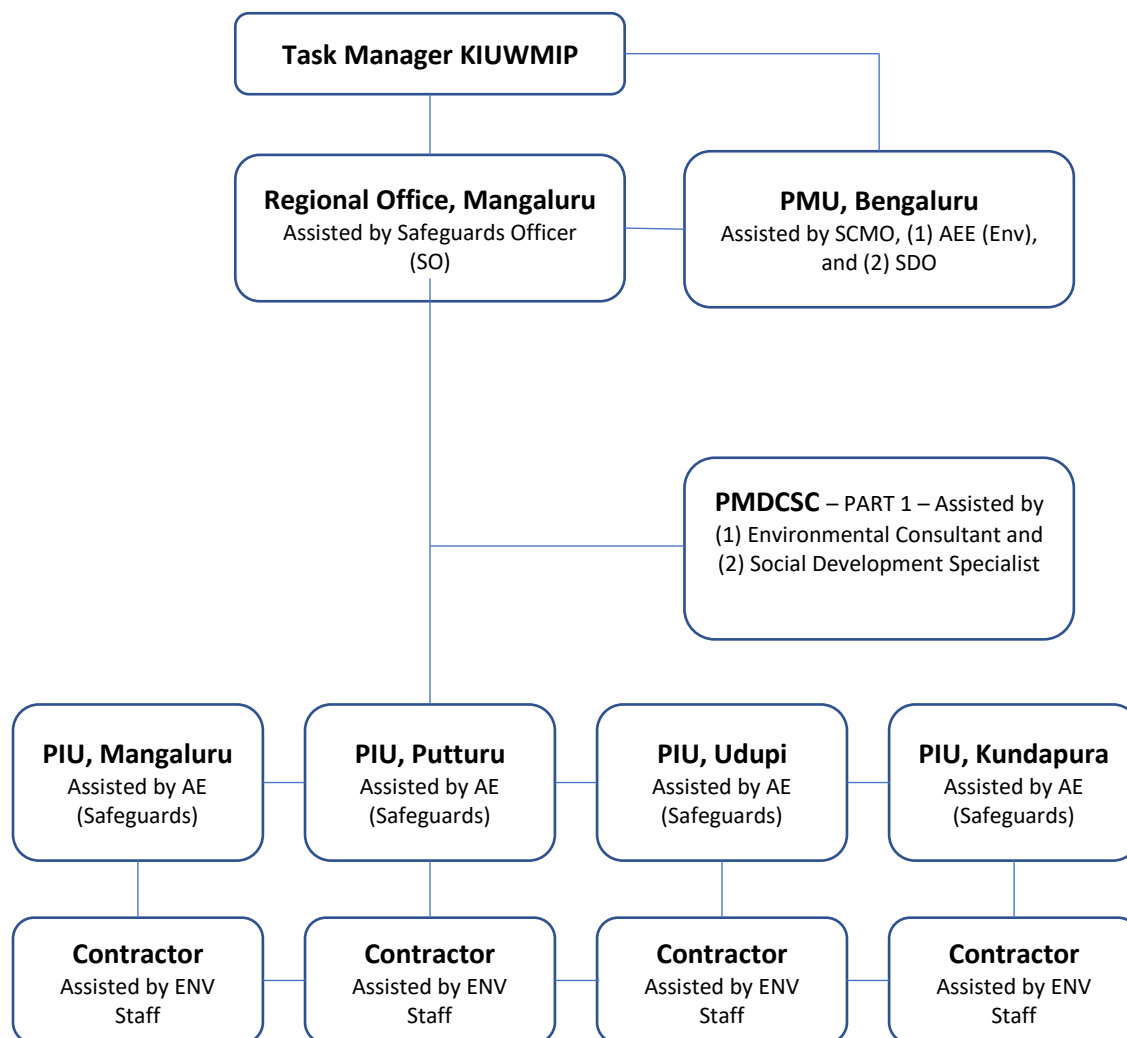
151. The responsibility fulfilling environmental requirements of Government of India and Government of Karnataka and conducting required level of environmental assessment as per ADB guidelines lies with the PIUs/ implementing agency, i.e. Puttur CMC. Consultant Team will assist the CMC in this regard.

152. The mitigation measures identified through IEEs and EMP will be incorporated into the Investment Program implementation cycle. Mitigation measures, which are to be implemented by the Contractor, shall form part of the Contract Documents. The other mitigation measures will be implemented by the IA/PIU/PMU as specified in the IEE. During the construction phase, PIU with the support of consultant team will monitor the implementation of the EMP and report to the PMU. Implementation of EMP and other environmental related measures and the results of environmental monitoring conducted during implementation will be reported to ADB through semi-annual Environmental Monitoring Reports. These will also be made available on executing agency (KUIDFC) website for wider public access.

153. **Consultant Support.** A consultant team (Project Management, Design and Supervision Consultant), based in Mangalore and with field teams in tranche 2 program towns will assist PIUs, RPMU and PMU in day-to-day implementation of the investment program. PMDCSC will be involved in all activities including in project planning, preparation, design of subproject and cost estimates, co-ordination, procurement, technical guidance, construction supervision, contract management, safeguards implementation and monitoring, capacity development and training etc., PMDCSC includes an Environmental Specialist consultant to implement the subprojects in compliance with EARF, and will be responsible for all safeguards tasks – preparation, implementation, monitoring and reporting. In each program town, a field team of PMDCSC will be mobilized and will include an Environmental Engineer for day-to-day implementation and monitoring of EMP implementation, and also to assist Environmental Specialist of PMDCSC.

154. **Contractor.** The contractor shall appoint a Safeguards (EHS) Engineer who will be responsible on day-to-day implementation at field level, for (i) preparation of SEMP with inputs from technical team and ensuring implementation of SEMP/EMP; (ii) Coordinating the PMDCSC and environment specialists (all levels); (iii) community liaison, consultation with interested/ affected parties and grievance redressal; and (iv) reporting.

155. KUIDFC will ensure that bidding and contract documents include specific provisions requiring contractors to comply with all: (i) applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation for construction and maintenance activities, on (b) equal pay for equal work of equal value regardless of gender, ethnicity or caste, and on (c) elimination of forced labor; and (ii) the requirement to disseminate information on sexually transmitted diseases including HIV/AIDS to employees and local communities surrounding the project sites. The following Figure 46 and Table 17 summarizes the institutional responsibility of environmental safeguards at all stages of the project.

**Figure 46: Environmental Safeguard Implementation Arrangements**

AE = Assistant Engineer, ENV = environment, KIUWMIP = Karnataka Integrated Urban Water Management Investment Program, PIU = Project Implementation Unit, PMDCSC = Project Management Design and Construction Supervision Consultant, SCMO = safeguards and community mobilizer officer, SDO = Social Development Officer

**Table 17: Institutional Roles and Responsibilities**

<b>Responsible Agency</b>	<b>Responsibility</b>		
	<b>Pre-Construction Stage</b>	<b>Construction Stage</b>	<b>Post-Construction</b>
Task Manager	(i) Review rapid environmental assessment (REA) checklists and assign categorization based on ADB Safeguard Policy Statement (SPS) (ii) Review and approve environmental impact assessment (EIA)/initial environmental examination (IEE) (iii) Submit EIA/IEE to ADB for approval and disclosure in ADB website (iv) Ensure approved IEEs are disclosed in Karnataka Urban Infrastructure Development and Finance Corporation (KUIDFC) website and summary posted in public areas	(i) Task Manager is responsible for over-all environmental safeguards compliance of the project (ii) Review and submit to ADB semi-annual monitoring reports (iii) Review and submit Corrective Action Plans to ADB (iv) Organize capacity building programs on environmental safeguards (iv) Coordinate with national and state level government agencies (vi) Assist in addressing any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs.	Compliance monitoring to review the environmental performance of project component, if required and as specified in EMP
Assistant Executive Engineer (Environment)	accessible and understandable by local people. (v) Ensure environmental management plans (EMPs) are included in the bid documents and contracts (vi) Organize an orientation workshop for Project Management Unit (PMU), urban local bodies (ULBs)/ City Municipal Councils (CMCs), and all staff involved in the project implementation on (a) ADB SPS, (b) Government of India national, state, and local environmental laws and regulations, (c) core labor standards, (d) Occupational health and safety (OHS), (e) EMP implementation especially spoil management, working in congested areas, public relations and	(i) Assist in the preparation of semi-annual monitoring reports (ii) Monitor and ensure compliance of EMPs as well as any other environmental provisions and conditions. (iv) If necessary prepare Corrective Action Plan and ensure implementation of corrective actions to ensure no environmental impacts; (v) Organize capacity building programs on environmental safeguards at regional / divisional level (vi) Coordinate with regional level government agencies (vii) Assist in addressing any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs (viii) Assist in overseeing implementation of the EMP during construction	Compliance monitoring to review the environmental performance of project component, if required and as specified in EMP

Responsible Agency	Responsibility		
	Pre-Construction Stage	Construction Stage	Post-Construction
	<p>ongoing consultations, grievance redress, etc.  (vii) Assist in addressing any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs  (viii) Organize an induction course for the training of contractors preparing them on EMP implementation, environmental monitoring requirements related to mitigation measures; and taking immediate actions to remedy unexpected adverse impacts or ineffective mitigation measures found during the course of implementation.  (ix) Ensure compliance with all government rules and regulations regarding site and environmental clearances as well as any other environmental requirements  (x) Assist PMU, PIUs, and project nongovernment organizations (NGOs) to document and develop good practice construction guidelines to assist the contractors in implementing the provisions of IEE.  (xi) Assist in the review of the contractors' implementation plans to ensure compliance with the IEE.</p>	<p>including environmental, health and safety monitoring of contractors;  (ix) Coordinate with the General Manager, environmental Experts, ULBs/CMCs, NGOs, consultants and contractors on mitigation measures involving the community and affected persons and ensure that environmental concerns and suggestions are incorporated and implemented</p>	
Safeguards Officer	<p>Coordinate public and consultation and information disclosure  Liaise with local offices of regulatory agencies in obtaining clearances/approvals  Assist PMU for clearances obtained at state level</p>	<p>Oversee day-to-day implementation of EMP by contractors, including compliance with all government rules and regulations  Ensure continuous public consultation and awareness</p>	<p>Review and forward quarterly monitoring reports to PMU  Inform PMU of unanticipated impacts and formulate corrective action plan  Recommend issuance of work construction</p>

Responsible Agency	Responsibility		
	Pre-Construction Stage	Construction Stage	Post-Construction
	<p>Review and approve contractors' updated EMPs</p> <p>Take necessary action for obtaining rights of way</p> <p>Inform affected persons on: (a) project cutoff date; (b) public notice for schedule of land acquisition/occupation; (c) entitlement matrix; (d) compensation packages against different categories of loss and tentative schedule of land clearing/acquisition for starts of civil works activities</p> <p>Coordinate valuation of assets such as land, trees of various species, etc.</p>	<p>Coordinate grievance redress process and ensure timely actions by all parties</p> <p>Review monthly contractors' EMP monitoring reports</p>	<p>work completion certification to the contractor upon verification of satisfactory post-construction clean-up</p> <p>Take corrective actions when necessary to ensure no adverse impacts</p> <p>Submit monthly social and environmental monitoring reports to PMU</p>
Puttur CMC	<p>(i) Conduct initial environmental assessment for proposed project using REA checklists and submit to PMU</p> <p>(ii) Prepare EIA/IEE based on categorization and submit to PMU for approval</p> <p>(iii) Ensure IEE is included in bid documents and contract agreements. Ensure cost of EMP implementation is provided.</p> <p>(iv) Disclose approved EIAs/IEEs.</p> <p>(v) Obtain all necessary clearances, permits, consents, NOCs, etc. Ensure compliance to the provisions and conditions.</p> <p>(vi) EMP implementation regarding sites for disposal of wastes, camps, storage areas, quarry sites, etc.</p> <p>(vii) Ensure contractors undergo EMP implementation orientation prior to start of civil works</p>	<p>(i) Ensure EMP implementation is included in measuring works carried out by the contractors and certifying payments.</p> <p>(ii) Ensure Corrective Action Plan is implemented.</p> <p>(ii) Conduct public awareness campaigns and participation programs</p> <p>(iii) Prepare monthly reports.</p> <p>(vi) Address any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs</p>	<p>(i) Conducting environmental monitoring, as specified in the EMP.</p> <p>(ii) Issuance of clearance for contractor's post-construction activities as specified in the EMP.</p>

Responsible Agency	Responsibility		
	Pre-Construction Stage	Construction Stage	Post-Construction
<p>Consultant Environment Specialist at Puttur CMC level</p> <p>Resident Engineer at Puttur CMC level</p>	<p>(i) Assist Puttur CMC in preparation of REA checklists and EIAs/IEEs</p> <p>(ii) Assist Puttur CMC in obtaining all necessary clearances, permits, consents, NOCs, etc. Ensure provisions and conditions are incorporated in the IEE and detailed design documents.</p> <p>(iii) Assist in ensuring IEE is included in bid documents and contract agreements. Assist in determining adequacy of cost for EMP implementation.</p> <p>(iv) Assist in addressing any concern related to IEE and EMP.</p> <p>(v) Assist in summarizing IEE and translating to language understood by local people.</p>	<p>(i) Monitor EMP implementation</p> <p>(ii) Recommend corrective action measures for non-compliance by contractors</p> <p>(iii) Assist in the review of monitoring reports submitted by contractors</p> <p>(iv) Assist in the preparation of monthly reports</p> <p>(vi) Assist in addressing any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs</p>	<p>(i) Assist in the inspection and verification of contractor's post-construction activities.</p>
Contractors	<p>(i) Ensure EMP implementation cost is included in the methodology.</p> <p>(ii) Undergo EMP implementation orientation prior to award of contract</p> <p>(iii) Provide EMP implementation orientation to all workers prior to deployment to worksites</p> <p>(iv) Seek approval for camp sites and sources of materials.</p> <p>(v) Ensure copy of IEE is available at worksites. Summary of IEE is translated to language understood by workers and posted at visible places at all times.</p>	<p>(i) Mobilize Safeguards (EHS) Engineer</p> <p>(ii) prepare SEMP and implement SEMP/ EMP and corrective actions if necessary.</p> <p>(iii) Prepare and submit monitoring reports including pictures to ULB/CMC</p> <p>(iv) Comply with all applicable legislation, is conversant with the requirements of the EMP;</p> <p>(v) Brief his staff, employees, and laborer about the requirements of the EMP and provide environmental awareness training to staff, employees, and laborers;</p> <p>(vi) Ensure any sub-contractors/ suppliers who are utilized within the context of the contract comply with all requirements of the EMP. The Contractor will be held</p>	<p>(i) Ensure EMP post-construction requirements are satisfactorily complied</p> <p>(ii) Request certification from ULBs/CMCs</p>

Responsible Agency	Responsibility		
	Pre-Construction Stage	Construction Stage	Post-Construction
		responsible for non-compliance on their behalf; (vii) Bear the costs of any damages/compensation resulting from non-adherence to the EMP or written site instructions; (viii) Ensure that Puttur CMC and PMDCSC are timely informed of any foreseeable activities related to EMP implementation. (vi) Address any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs	

### C. Training Needs

149. Table 18 presents the outline of capacity building program to ensure EMP implementation. The estimated cost is ₹85,000.00 (excluding trainings of contractors which will be part of EMP implementation cost during construction) to be covered by the project's capacity building program. The detailed cost and specific modules will be customized for the available skill set after assessing the capabilities of the target participants and the requirements of the project.

**Table 18: Outline of Capacity Building Program for Environmental Management Plan**

Description	Target Participants	Estimate (₹) (Lump sum)	Cost and Source of Funds
1. Introduction and sensitization to environment issues (1 day) - ADB Safeguards Policy Statement - Government of India and Karnataka applicable safeguard laws, regulations and policies including but not limited to core labor standards, OHS, etc. - Incorporation of EMP into the project design and contracts - Monitoring, reporting and corrective action planning	All staff and consultants involved in the project	10,000	PMU cost
2. EMP implementation (3 days) - Roles and responsibilities - OHS planning and implementation - Wastes management (water, hazardous, solid, excess construction materials, spoils, etc.) - Working in congested areas, - Public relations - Consultations - Grievance redress	All staff and consultants involved in the project  All contractors prior to award of contract	25,000	PMU cost



Description	Target Participants	Estimate (₹) (Lump sum)	Cost and Source of Funds
- Monitoring and corrective action planning - Reporting and disclosure - Post-construction planning			
3. Plans and Protocols (3 days) - Construction site standard operating procedures (SOP) - Site-specific EMP - Traffic management plan - Spoils management plan - Waste management plan - Chance find protocol - O&M plans - Post-construction plan	All staff and consultants involved in the project  All contractors prior to award of contract or during mobilization stage.	25,000  25,000	PMU cost  Contractors cost as compliance to contract provisions on EMP implementation (refer to EMP tables)
4. Experiences and best practices sharing - Experiences on EMP implementation - Issues and challenges - Best practices followed	All staff and consultants involved in the project All contractors All NGOs	25,000	PMU Cost
5. Contractors Orientation to Workers on EMP implementation (OHS, core labor laws, spoils management, etc.)	All workers (including manual laborers) of the contractor prior to dispatch to worksite	10,000	Contractors cost as compliance to contract provisions on EMP implementation (refer to EMP tables)
Total cost for Capacity Building Program on EMP Implementation		120,000	

PMU Fund	₹ 85,000
Contractor Cost	₹ 35,000
Total cost for Capacity Building Program	₹120,000

#### D. Monitoring and Reporting

156. Prior to commencement of the work, the contractor will submit a compliance report to PIU ensuring that all identified pre-construction environmental impact mitigation measures as detailed in the EMP will be undertaken. PIU with the assistance of the PMSCSC environmental consultant will review the report and thereafter PIU will allow commencement of works.

157. During construction, results from internal monitoring by the contractor will be reflected in their weekly EMP implementation reports to the Resident Engineer. These weekly reports will be retained in PMDCSC for reference. Resident Engineer will review and advise contractor for corrective actions if necessary. Monthly report summarizing compliance and corrective measures taken will be prepared by Resident Engineer to be reviewed and endorsed by PIU and consolidated monthly report will be submitted to PMU.

158. Based on monthly reports and measurements, PMU will draft, review, and submit to ADB, 6-monthly (twice a year) EMP implementation progress report (Appendix 14). Once concurrence from the ADB is received the report will be disclosed in the KUIDFC and ULB website.

159. ADB will review project performance against the KUIDFC's commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of environmental and social safeguards will be integrated into the project performance management system.

160. ADB's monitoring and supervision activities are carried out on an on-going basis until a Project Completion Report (PCR) is issued. ADB issues a PCR within 1-2 years after the project is physically completed and in operation.

#### **E. Environmental Management Plan Implementation Cost**

161. Most of the mitigation measures require the contractors to adopt good site practice, which should be part of their normal procedures already, so there are unlikely to be major costs associated with compliance. Regardless of this, any costs of mitigation by the construction contractors or consultants are included in the budgets for the civil works and do not need to be estimated separately here. Mitigation that is the responsibility of Puttur will be provided as part of their management of the project, so this also does not need to be duplicated here. Cost for the capacity building program is included as part of the project. The EMP cost includes the cost for providing water supply and sanitation facilities for the workers. In addition to this, hard barricades need to be provided at the work sites to prevent any entry of the public or animals into the worksite and to prevent any possible accidents.

**Table 19: Cost Estimates to Implement the Environmental Management Plan**

No.	Particulars	Stages	Unit	Number	Rate	Cost (₹)	Costs Covered By
<b>A</b>	<b>Implementation Staff</b>						
1	EHS Engineer	Construction	Per month	24	30,000	720,000	Civil works contract
<b>B.</b>	<b>Monitoring Measures</b>						
1	Air quality monitoring	Construction	Per location	9x12	5000	540,000	Civil works contract
2	Noise levels monitoring	Construction	Per location	9x12	2500	270,000	Civil works contract
	Sub Total					810,000	
<b>C</b>	<b>Capacity Building</b>						
1	Introduction and sensitization to environment issues	Pre-construction	lump sum			10,000	PMU
2	EMP implementation	Construction	lump sum			25,000	PMU
3	Plans and Protocols	Construction	lump sum			25,000	PMU
			lump sum			25,000	Civil works contract

No.	Particulars	Stages	Unit	Number	Rate	Cost (₹)	Costs Covered By
4	Experiences and best practices sharing	Construction/ Post-Construction	lump sum			25,000	PMU
5	Contractors Orientation to Workers on EMP implementation	Prior to dispatch to worksite	Lump sum			10,000	Civil works contract
	Subtotal (B)					1,20,000	
<b>D</b>	<b>Civil Works</b>						
	Construction of shelters for workers.	Construction	Lump sum			4,00,000	Civil works contract
	Providing Water Supply Facility for the workers	Construction	Lump sum			1,00,000	Civil works contract
	Providing Sanitation Facility for the workers	Construction	Lump sum			1,00,000	Civil works contract
	Barricades at the worksite (MS Sheet of 20 gauge of size 5 x 3 meters, having vertical support by MS flat (65 x 65 x 6 mm) along the sides and at 1.5 m and 3.5m, horizontal support by MS flat (65 x 65 x 6 mm) along the sides and at the center, supported by 50mm MS hollow pipes of 4 meter height at the ends and at the center.	Construction	Per unit	35	15,000	5,25,000	Civil works contract
	Retro reflectorized Traffic Signs as per IRC:67, M 15 grade, 80 x 60 mm rectangular; fixed over Aluminum sheeting supported on MS angle iron.	Construction	Per unit	6	3000	18,000	Civil works contract
	Retro reflectorized Traffic Signs as	Construction	Per unit	3	2500	7500	Civil works contract

No.	Particulars	Stages	Unit	Number	Rate	Cost (₹)	Costs Covered By
	per IRC:67, M 15 grade, 60 x 60 mm square; fixed over Aluminum sheeting supported on MS angle iron.						
	Sub Total (D)					1,150,500	
	Total (A+B+C+D)					2,800,500	

159. The air and noise quality monitoring will be done near to sensitive receptors like hospitals, educational institutions and major junctions. The total cost to implement EMP for water supply system is ₹2,800,500.

PMU Fund	₹85,000
Contractor Cost	₹2,715,500
<b>Total</b>	<b>₹2,800,500</b>

## IX. CONCLUSION AND RECOMMENDATIONS

162. The process described in this document has assessed the environmental impacts of all elements of the Puttur Water Supply System project. All potential impacts were identified in relation to pre-construction, construction, and operation phases. Planning principles and design considerations have been reviewed and incorporated into the site planning process whenever possible; thus, environmental impacts as being due to the project design or location were not significant.

163. The subproject components are located in Puttur urban area and surroundings. Intake is located outside the town in River Kumaradhara. However, no new works are proposed in the river, except replacement pumps in the existing jack well. No private land is required for this subproject. There are no environmentally-sensitive areas such as protected areas, wetlands, mangroves, or estuaries in or near the subproject locations. Subproject do not include any source augmentation interventions. The existing source – Kumaradhara River will provide water supply for the subproject, and the abstraction will be within the existing design capacity. Existing vented dam across the river has adequate capacity meet the demand. Environmental audit has been conducted for existing WTP, accordingly, it is proposed to develop backwash recirculation and sludge management facilities with required capacity in this subproject to meet the requirements of both the existing and proposed WTPs.

164. No significant impacts are anticipated whether due to location or design of the subproject as the sites are selected and fixed ensuring components are not located in environmentally-sensitive areas. However due to the project sites being in urban areas and nature of open cut method for pipelaying works, unavoidable impacts include (i) health and safety hazards to workers during construction and operation; (ii) noise and dust from construction activities; (iii) increased road traffic due to interference of construction activities; (iv) soil erosion/silt runoff

from construction waste soils;<sup>8</sup> and (v) increased sewage flow due to increased water supply. These impacts during construction and operation can be mitigated through good and high-quality construction and operations and maintenance (O&M) practices. In the operational phase, all facilities and infrastructure will operate with routine maintenance, which should not affect the environment. Facilities will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be affecting small areas only.

165. Mitigation will be assured by a program of environmental monitoring conducted during construction and operation to ensure that all measures are implemented, and to determine whether the environment is protected as intended. This will include observations on- and off-site, document checks, and interviews with workers and beneficiaries, and any requirements for remedial action will be reported to the PIU/PMU. There will also be longer-term surveys to monitor the expected improvements in the quality of domestic water and the health of the population. There will also be regular and periodic monitoring surveys for quality of water (at intake, reservoirs and at consumer end).

166. The public participation processes undertaken during project design ensured stakeholders are engaged during the preparation of the IEE. The planned information disclosure measures and process for carrying out consultation with affected people will facilitate their participation during project implementation.

167. The project's grievance redressal mechanism will provide the citizens with a platform for redressal of their grievances, and describes the informal and formal channels, time frame, and mechanisms for resolving complaints about environmental performance.

168. The EMP will assist the PMU, PIU, PMDCSC, and contractors in mitigating the environmental impacts, and guide them in the environmentally sound execution of the proposed project. The EMP will also ensure efficient lines of communication between the implementing agency, project management unit, and contractors.

169. The citizens of Puttur will be the major beneficiaries of this subproject as the environmental condition and over-all health of the community will be improved. With the improved water supply, they will be provided with a constant supply of better quality water, piped into their homes. The replacement of old distribution lines shall avoid cross contamination and have positive benefit on health by avoiding diseases such as diarrhea and dysentery, resulting in less expenses on healthcare, improve working days and their economic status.

170. The Puttur 24x7 Water Supply System subproject is unlikely to cause significant adverse impacts. The potential impacts that are associated with design, construction, and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures.

171. Based on the findings of the IEE, the classification of the Project as Category "B" is confirmed, and no further special study or detailed EIA needs to be undertaken to comply with ADB SPS (2009). This IEE is prepared based on detailed engineering design and update again to reflect the change in project scope/ components location based on design validation carried out by the contractor during implementation.

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<sup>8</sup> Quantity of waste soil to be generated from pipelaying works and OHT excavation is about 154,763 cubic meter (m<sup>3</sup>). Based on discussions with design engineers and PMDCSC, 90-95% of the waste soil will be utilized for refill and remaining soil (~15,476 m<sup>3</sup>) will need to be disposed-off safely.

172. Environmental Clearance requirement per Government of India Environmental Impact Assessment Act and its Notifications are not applicable to this subproject. No environment-related statutory clearance or permissions required.

### Appendix 1: Rapid Environmental Assessment Checklist

#### Puttur 24 x 7 Water Supply Subproject– 24x7 Water Supply System in Puttur

SCREENING QUESTIONS	Yes	No	REMARKS
Project Siting Is the project area			
Densely populated?	X		Subproject activities are limited to part of the city namely Nekkiladay, Seethigudda, Mura Shantinagra, Padnur, Karmala near Microwave station, CTO, Darbe, Lingadagudda, Kabaka, Balnad Helipad, BalnadKelyadi, Vitla Road, and surroundings. The distribution network will extend to the entire city including the densely populated areas. There are no major negative impacts envisaged, because water supply network will be located in unused government lands alongside the existing roads and can be constructed without causing disturbance to houses and commercial establishments. In narrow streets, disruption to road users is likely, and measures like best activity scheduling/ traffic management, alternative routes, and prior information to road users, houses and shops will minimize the impact to acceptable levels. The construction of the new overhead storage reservoir site is located on the outskirts
Heavy with development activities?	X		Puttur is a developing town; urban expansion is considerable.
Adjacent to or within any environmentally sensitive areas?		X	
Cultural heritage site		X	
Protected Area		X	
Wetland		X	
Mangrove		X	
Estuarine		x	
Buffer zone of protected area		x	
Special area for protecting biodiversity		x	
Bay		x	
3. Potential Environmental Impacts Will the Project cause			
Pollution of raw water supply from upstream wastewater discharge from communities, industries, agriculture, and soil erosion runoff?		x	Subproject will utilize the existing surface sources; no source improvement / augmentation proposed in the subproject
Impairment of historical/cultural monuments/areas and loss/damage to these sites?		x	There is no historical / cultural monument in the project location.
Hazard of land subsidence caused by excessive ground water pumping?		x	No ground water source will be used for this project.

SCREENING QUESTIONS	Yes	No	REMARKS
▪ Social conflicts arising from displacement of communities?		x	The subproject for Puttur City Water Supply Scheme requires eight lands, all are government land and one government land for construction of GLSR is to be procured. Action initiated to buy the land.
▪ Conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters?		x	No source improvement/ augmentation proposed in the subproject
▪ Unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)?		x	Subproject involves supply of treated water.
▪ Delivery of unsafe water to distribution system?		X	Subproject involves distribution of treated water supplies
▪ Inadequate protection of intake works or wells, leading to pollution of water supply?		X	Subproject will utilize the existing surface sources; no source improvement/augmentation proposed in the subproject
▪ Over pumping of ground water, leading to salinization and ground subsidence?		X	No ground water is proposed to be abstracted.
▪ Excessive algal growth in storage reservoir?		X	Regular cleaning of storage reservoir shall be ensured to avoid algal growth in the reservoir
▪ Increase in production of sewage beyond capabilities of community facilities?		X	Sewerage system of adequate capacity including treatment is being proposed under the KIUWMIP
▪ Inadequate disposal of sludge from water treatment plants?		x	
▪ Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?		x	
▪ Impairments associated with transmission lines and access roads?	X		Anticipated during construction activities. However, impacts are temporary and short in duration. The EMP includes measure to mitigate impacts.
▪ Health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals.		x	Subproject includes chlorine dispersion tank near chlorination unit.
▪ Health and safety hazards to workers from the management of chlorine used for disinfection and other contaminants?		x	Subproject include chlorine dispersion tank near chlorination unit.
▪ Dislocation or involuntary resettlement of people	X		There may be temporary disturbance to business and squatters/vendors during construction. A resettlement plan shall mitigate/compensate these impacts.
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		x	Not applicable



SCREENING QUESTIONS	Yes	No	REMARKS
noise and dust from construction activities?	X		Short term impact on air quality due to dust generation during construction activities is anticipated. Appropriate dust suppression measures will be taken to minimize dust generation due to construction activities at site. No significant increase in noise level is anticipated due to construction. All equipment and machineries will conform to the Statutory norms.
Increased road traffic due to interference of construction activities? Proper traffic management and planning will be ensured during construction	X		Proper traffic management and planning will be ensured during construction.
continuing soil erosion/silt runoff from construction operations?	X		Construction activities (pipe laying, etc.) on hill slopes may increase the chance of land slide and soil erosion. Careful stacking of excavated materials will be ensured to avoid slippage and erosion especially on hill slopes (GLSR site). Construction work during monsoon shall be carried out with due care so that silt run off due to construction operation is prevented. No construction will be allowed during rains.
delivery of unsafe water due to poor O&M treatment processes (especially mud accumulations in filters) and inadequate chlorination due to lack of adequate monitoring of chlorine residuals in distribution systems?		x	Trained and skilled staff will be deployed for O&M. Also, quality of treated water will be regularly monitored through water sample testing to ensure delivery of safe water to consumers
delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals?		x	High Density Poly Ethylene pipes will be used for distribution system and are non-corrosive in nature.
accidental leakage of chlorine gas?		x	Subproject include chlorine dispersion tank near chlorination unit.
Excessive abstraction of water affecting downstream water users?		x	Subproject will utilize the existing surface sources; no source improvement / augmentation proposed in the subproject.
competing uses of water?		x	Not applicable.
increased sewage flow due to increased water supply	X		Sewerage system of adequate capacity including treatment is being proposed under KIUWMIP
increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant	X		Sewerage system of adequate capacity including treatment is being proposed under KIUWMIP
large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		x	No such impact anticipated as the import of workforce will be limited to skilled workers; local communities in the vicinity of the project would be employed as much as possible.

SCREENING QUESTIONS	Yes	No	REMARKS
▪ social conflicts if workers from other regions or countries are hired?		x	Not anticipated as local communities within the project vicinity will be employed as much as possible.
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during operation and construction?		x	Not applicable. Construction will not involve use of explosives and chemicals.
▪ community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning.		x	Operational area will be clearly demarcated and access will be controlled. Only workers and project concerned members will be allowed to visit the operational sites

## **Appendix 2: Environmental and Labour Related Legislations in India**

### **1. Environmental Related Legislations**

1. The Water (Prevention and Control of Pollution) Act, 1974, amended 1988
2. The Water (Prevention and Control of Pollution) Rules, 1975
3. The Water (Prevention and Control of Pollution) Cess Rules, 1971
4. The Air (Prevention and Control of Pollution) Act 1981, amended 1987
5. The Air (Prevention and Control of Pollution) Rules, 1982
6. The Environment (Protection) Act, 1986, amended in 1991 and including the following Rules/Notification issued under this Act
7. The Environment (Protection) Rules, 1986, including amendments
8. The Solid Wastes Management Rules, 2016
9. The Hazardous Wastes (Management and Handling) Rules, 1989
10. The Bio-Medical Waste (Management and Handling) Rules, 1998
11. Noise Pollution (Regulation and Control) Rules, 2000,
12. Wild Life (Protection) Amendment Act, 2002
13. Environmental Impact Assessment Notification, 2006
14. Environmental Standards of Central Pollution Control Board (CPCB)
15. The Indian Wildlife (Protection) Act, 1972, amended 1993
16. The Wildlife (Protection) Rules, 1995
17. The Indian Forest Act, 1927
18. Forest (Conservation) Act, 1980, amended 1988
19. Forest (Conservation) Rules, 1981 amended 1992 and 2003
20. Guidelines for Diversion of Forest Lands for Non-Forest Purpose under the Forest (Conservation) Act, 1980
21. Ancient Monuments and Archaeological Sites and Remains Act 1958
22. Ancient Monuments and Archaeological Sites and Remains Rules 1959
23. Government of India Notification of 1992 under the above-stated Rules
24. Coastal Regulation Zone (CRZ) Notification from MoEF.

### **2. Salient Features of Major Labour Laws in India**

Including Amendments Issued from Time to Time Applicable to Establishments Engaged in Construction of Civil Works

- (i) Workmen Compensation Act, 1923 - The Act provides for compensation in case of injury by accident arising out of and during the course of employment;
- (ii) Payment of Gratuity Act, 1972 - Gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years' service or more or on death at the rate of 15 days wages for every completed year of service. The Act is applicable to all establishments employing 10 or more employees;
- (iii) Employees' PF and Miscellaneous Provisions Act, 1952 - The Act provides for monthly contributions by the employer plus workers @10 % or 8.33 %. The benefits payable under the Act are:
  - (a) Pension or family pension on retirement or death as the case may be;
  - (b) deposit linked insurance on the death in harness of the worker; and
  - (c) payment of PF accumulation on retirement/death etc.

- (iv) Maternity Benefit Act, 1951 - The Act provides for leave and some other benefits to women employees in case of confinement or miscarriage etc;
- (v) Contract Labor (Regulation and Abolition) Act, 1970 - The Act provides for certain welfare measures to be provided by the Contractor to contract labor and in case the Contractor fails to provide, the same are required to be provided by the Principal Employer by Law. The principal employer is required to take Certificate of Registration and the Contractor is required to take a License from the designated Officer. The Act is applicable to the establishments or Contractor of principal employer if they employ 20 or more contract labor;
- (vi) Minimum Wages Act, 1948 - The employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government as per provisions of the Act if the employment is a scheduled employment. Construction of Buildings, Roads, Runways are scheduled employment;
- (vii) Payment of Wages Act, 1936 - It lays down as to by what date the wages are to be paid, when it will be paid and what deductions can be made from the wages of the workers;
- (viii) Equal Remuneration Act, 1979 - The Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees in the matters of transfers, training and promotions etc;
- (ix) Payment of Bonus Act, 1965 - The Act is applicable to all establishments employing 20 or more workmen. The Act provides for payments of annual bonus subject to a minimum of 8.33% of wages and maximum of 20% of wages to employees drawing ₹3,500 per month or less. The bonus to be paid to employees getting ₹2,500 per month or above up to ₹3,500/- per month shall be worked out by taking wages as ₹2,500 per month only. The Act does not apply to certain establishments. The newly set up establishments are exempted for five years in certain circumstances. Some of the State Governments have reduced the employment size from 20 to 10 for the purpose of applicability of the Act;
- (x) Industrial Disputes Act, 1947 - The Act lays down the machinery and procedure for resolution of industrial disputes, in what situations a strike or lock-out becomes illegal and what are the requirements for laying off or retrenching the employees or closing down the establishment;
- (xi) Industrial Employment (Standing Orders) Act, 1946 - It is applicable to all establishments employing 100 or more workmen (employment size reduced by some of the States and Central Government to 50). The Act provides for laying down rules governing the conditions of employment by the employer on matters provided in the Act and get the same certified by the designated Authority;
- (xii) Trade Unions Act, 1926 - The Act lays down the procedure for registration of trade unions of workmen and employees. The trade unions registered under the Act have been given certain immunities from civil and criminal liabilities;
- (xiii) Child Labor (Prohibition and Regulation) Act, 1986 - The Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of child labor is prohibited in Building and Construction Industry; and
- (xiv) Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979 - The Act is applicable to an establishment which employs 5

or more inter-state migrant workmen through an intermediary (who has recruited workmen in one state for employment in the establishment situated in another state). The inter-state migrant workmen, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home up to the establishment and back, etc.

The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996 and the Cess Act of 1996 - All the establishments who carry on any building or other construction work and employ 10 or more workers are covered under this Act. All such establishments are required to pay Cess at rate not exceeding 2% of the cost of construction as may be notified by the Government. The employer of the establishment is required to provide safety measures at the building or construction work and other welfare measures, such as canteens, first-aid facilities, ambulance, housing accommodation for workers near the workplace etc. The employer to whom the Act applies has to obtain a registration certificate from the Registering Officer appointed by the Government.

**Appendix 3: Applicable Ambient Air Quality and Noise Standards**  
**Table 3a.1: Applicable Ambient Air Quality Standards**

Parameter	Location <sup>a</sup>	Applicable Standards Per ADB SPS <sup>e</sup> (µg/m <sup>3</sup> )
PM <sub>10</sub>	Industrial Residential, Rural and Other Areas	20 (Annual) <sup>c</sup> 50 (24-hr) <sup>c</sup>
	Sensitive Area	20 (Annual) <sup>c</sup> 50 (24-hr) <sup>c</sup>
PM <sub>25</sub>	Industrial Residential, Rural and Other Areas	10 (Annual) <sup>c</sup> 25 (24-hr) <sup>c</sup>
	Sensitive Area	10 (Annual) <sup>c</sup> 25 (24-hr) <sup>c</sup>
SO <sub>2</sub>	Industrial Residential, Rural and Other Areas	50 (Annual) <sup>b</sup> 20 (24-hr) <sup>c</sup> 500 (10-min) <sup>c</sup>
	Sensitive Area	20 (Annual) <sup>b</sup> 20 (24-hr) <sup>c</sup> 500 (10-min) <sup>c</sup>
NO <sub>2</sub>	Industrial Residential, Rural and Other Areas	40 (Annual) <sup>b</sup> 80 (24-hr) <sup>b</sup> 200 (1-hr) <sup>c</sup>
	Sensitive Area	30 (Annual) <sup>b</sup> 80 (24-hr) <sup>b</sup> 200 (1-hr) <sup>c</sup>
CO	Industrial Residential, Rural and Other Areas	2,000 (8-hr) <sup>b</sup> 4,000 (1-hr) <sup>b</sup> 100,000 (15-min) <sup>d</sup>
	Sensitive Area	2,000 (8-hr) <sup>b</sup> 4,000 (1-hr) <sup>b</sup> 100,000 (15-min) <sup>d</sup>
Ozone (O <sub>3</sub> )	Industrial Residential, Rural and Other Areas	100 (8-hr) <sup>b</sup> 180 (1-hr) <sup>b</sup>
	Sensitive Area	100 (8-hr) <sup>b</sup> 180 (1-hr) <sup>b</sup>
Lead (Pb)	Industrial, Residential, Rural and Other Areas	0.5 (Annual) <sup>b</sup> 1.0 (24-hr) <sup>b</sup>
	Sensitive Area	0.5 (Annual) <sup>b</sup> 1.0 (24-hr) <sup>b</sup>
Ammonia (NH <sub>3</sub> )	Industrial Residential, Rural and Other Areas	100 (Annual) <sup>b</sup> 400 (24-hr) <sup>b</sup>
	Sensitive Area	100 (Annual) <sup>b</sup> 400 (24-hr) <sup>b</sup>
Benzene (C <sub>6</sub> H <sub>6</sub> )	Industrial Residential, Rural and Other Areas	5 (Annual) <sup>b</sup>
	Sensitive Area	5 (Annual) <sup>b</sup>
Benzo(o)pyrene (BaP) particulate phase only	Industrial Residential, Rural and Other Areas	0.001 (Annual) <sup>b</sup>
	Sensitive Area	0.001 (Annual) <sup>b</sup>
Arsenic (As)	Industrial Residential, Rural and Other Areas	0.006 (Annual) <sup>b</sup>
	Sensitive Area	0.006 (Annual) <sup>b</sup>
Nickel (Ni)	Industrial Residential, Rural and Other Areas	0.02 (Annual) <sup>b</sup>

	Sensitive Area	0.02 (Annual) <sup>b</sup>
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<sup>a</sup> Sensitive area refers to such areas notified by the India Central Government.

## Appendix 4: Applicable Ambient Air Quality and Noise Standards

**Table 1: Applicable Ambient Air Quality Standards**

Parameter	Location <sup>a</sup>	Applicable Standards Per ADB SPS <sup>e</sup> ( $\mu\text{g}/\text{m}^3$ )
PM <sub>10</sub>	Industrial Residential, Rural and Other Areas	20 (Annual) <sup>c</sup> 50 (24-hr) <sup>c</sup>
	Sensitive Area	20 (Annual) <sup>c</sup> 50 (24-hr) <sup>c</sup>
PM <sub>25</sub>	Industrial Residential, Rural and Other Areas	10 (Annual) <sup>c</sup> 25 (24-hr) <sup>c</sup>
	Sensitive Area	10 (Annual) <sup>c</sup> 25 (24-hr) <sup>c</sup>
SO <sub>2</sub>	Industrial Residential, Rural and Other Areas	50 (Annual) <sup>b</sup> 20 (24-hr) <sup>c</sup> 500 (10-min) <sup>c</sup>
	Sensitive Area	20 (Annual) <sup>b</sup> 20 (24-hr) <sup>c</sup> 500 (10-min) <sup>c</sup>
NO <sub>2</sub>	Industrial Residential, Rural and Other Areas	40 (Annual) <sup>b</sup> 80 (24-hr) <sup>b</sup> 200 (1-hr) <sup>c</sup>
	Sensitive Area	30 (Annual) <sup>b</sup> 80 (24-hr) <sup>b</sup> 200 (1-hr) <sup>c</sup>
CO	Industrial Residential, Rural and Other Areas	2,000 (8-hr) <sup>b</sup> 4,000 (1-hr) <sup>b</sup> 100,000 (15-min) <sup>d</sup>
	Sensitive Area	2,000 (8-hr) <sup>b</sup> 4,000 (1-hr) <sup>b</sup> 100,000 (15-min) <sup>d</sup>
Ozone (O <sub>3</sub> )	Industrial Residential, Rural and Other Areas	100 (8-hr) <sup>b</sup> 180 (1-hr) <sup>b</sup>
	Sensitive Area	100 (8-hr) <sup>b</sup> 180 (1-hr) <sup>b</sup>
Lead (Pb)	Industrial, Residential, Rural and Other Areas	0.5 (Annual) <sup>b</sup> 1.0 (24-hr) <sup>b</sup>
	Sensitive Area	0.5 (Annual) <sup>b</sup> 1.0 (24-hr) <sup>b</sup>
Ammonia (NH <sub>3</sub> )	Industrial Residential, Rural and Other Areas	100 (Annual) <sup>b</sup> 400 (24-hr) <sup>b</sup>
	Sensitive Area	100 (Annual) <sup>b</sup> 400 (24-hr) <sup>b</sup>
Benzene (C <sub>6</sub> H <sub>6</sub> )	Industrial Residential, Rural and Other Areas	5 (Annual) <sup>b</sup>
	Sensitive Area	5 (Annual) <sup>b</sup>
Benzo(o)pyrene (BaP) particulate phase only	Industrial Residential, Rural and Other Areas	0.001 (Annual) <sup>b</sup>
	Sensitive Area	0.001 (Annual) <sup>b</sup>
Arsenic (As)	Industrial Residential, Rural and Other Areas	0.006 (Annual) <sup>b</sup>
	Sensitive Area	0.006 (Annual) <sup>b</sup>
Nickel (Ni)	Industrial Residential, Rural and Other Areas	0.02 (Annual) <sup>b</sup>
	Sensitive Area	0.02 (Annual) <sup>b</sup>

<sup>a</sup> Sensitive area refers to such areas notified by the India Central Government.



<sup>b</sup> Notification by Ministry of Environment and Forests, Government of India Environment (Protection) Seventh Amendment Rules, 2009

<sup>c</sup> WHO Air quality guidelines for particulate matter, ozone, nitrogen dioxide and sulfur dioxide. *Global update 2005*. WHO. 2006

<sup>d</sup> Air Quality Guidelines for Europe Second Edition. WHO 2000.

<sup>e</sup> Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

**Table 2: Applicable Ambient Noise Standards**

Receptor/ Source	Applicable Standards Per ADB SPS <sup>c</sup> (dBA)	
	Day time	Night time
Industrial area	70 <sup>b</sup>	70 <sup>b</sup>
Commercial area	65 <sup>a</sup>	55 <sup>a</sup>
Residential Area	55 <sup>a</sup>	45 <sup>a</sup>
Silent Zone	50 <sup>a</sup>	40 <sup>a</sup>

<sup>a</sup> Noise Pollution (Regulation and Control) Rules, 2002 as amended up to 2010.

<sup>b</sup> Guidelines for Community Noise. WHO. 1999

<sup>c</sup> Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

### Appendix 5: Applicable Standards for Discharge of Environmental Pollutants (Effluent)

Pollutants	Units	Applicable Standard per ADB SPS <sup>a, b, c</sup>
pH	pH	6 – 9 <sup>b</sup>
BOD	mg/l	20 <sup>a</sup>
COD	mg/l	125 <sup>b</sup>
Total nitrogen	mg/l	10 <sup>b</sup>
Total phosphorus	mg/l	2 <sup>b</sup>
Oil and grease	mg/l	10 <sup>b</sup>
Total suspended solids	mg/l	<50 <sup>a</sup>
Total coliform bacteria	MPN b / 100 ml	400a <sup>b</sup>

<sup>a</sup> Environment (Protection) Amendment Rules, 2017.

<sup>b</sup> Health-based guideline values.

<sup>c</sup> Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

### Appendix 6: Applicable Drinking Water Standards

Group	Parameter	Unit	Applicable Standards Per ADB SPS <sup>a, c, d</sup>
	<b>Parameter</b>		
Physical	Turbidity	NTU	1 (5) <sup>a</sup>
	pH		6.5 – 8.5 <sup>a</sup>
	Color	Hazen units	5 (15) <sup>a</sup>
	Taste and Odor		Agreeable <sup>a</sup>
	TDS	mg/l	500 (2,000) <sup>a</sup>
	Iron	mg/l	0.3 <sup>a</sup>
	Manganese	mg/l	0.1 (0.3) <sup>a</sup>
	Arsenic	mg/l	0.01 <sup>a</sup>
	Cadmium	mg/l	0.003 <sup>a</sup>
	Chromium	mg/l	0.05 <sup>a</sup>
	Cyanide	mg/l	0.05 <sup>a</sup>
	Fluoride	mg/l	1 (1.5) <sup>a</sup>
	Lead	mg/l	0.01 <sup>a</sup>
	Ammonia	mg/l	0.5 <sup>a</sup>
Chemical	Chloride	mg/l	250 (1,000) <sup>a</sup>
	Sulphate	mg/l	200 (400) <sup>a</sup>
	Nitrate	mg/l	45 <sup>a</sup>
	Copper	mg/l	0.05 (1.5) <sup>a</sup>
	Total Hardness	mg/l	200 (600) <sup>a</sup>
	Calcium	mg/l	75 (200) <sup>a</sup>
	Zinc	mg/l	5 (15) <sup>a</sup>
	Mercury	mg/l	0.001 <sup>a</sup>
	Aluminum	mg/l	0.1 (0.3) <sup>a</sup>
	Residual Chlorine	mg/l	0.2 <sup>a</sup>
Micro Germs	E-coli	MPN/100ml	Must not be detectable in any 100 ml sample <sup>a</sup>
	Total Coliform	MPN/100ml	

<sup>a</sup> Bureau of India Standard 10200: 2012.

<sup>b</sup> Health-based guideline values.

<sup>c</sup> Per ADB SPS, the government shall achieve whichever of the ambient air quality standards is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the executing agency of the government will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

<sup>d</sup> Figures in parenthesis are maximum limits allowed in the absence of alternate source.

## Appendix 7: Water Quality Test Results of Kumaradhara River, Puttur



NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL  
P.O. SRINIVASNAGAR - 575 025

DEPARTMENT OF CIVIL ENGINEERING

Date : 19.06.2015

### TEST REPORT ON WATER SAMPLES

Ref: Letter No. 23-35-00020/05-15/111 dated 16.06.2015 of Team Leader, CKW Consult GmbH, WBVHA Towers, 11 Floor, 580, Anandapur, Kolkata-700 107.

Sample No. 1: Mangalore Dam site, Tumbhe (Before treatment)

Sample No. 3: Puttur Dam site, (Before treatment)

Sample No. 2: Mangalore WTP-treated

Sample No. 4: Puttur WTP-treated

### SAMPLING WAS DONE BY THE PARTY

Sl. No.	Test parameter	Result Unit	RESULT				Acceptable Upper Limit for Drinking (IS10500-1992)
			Sample No. 1	Sample No. 2	Sample No. 3	Sample No. 4	
	pH		7.09	6.74	6.88	6.8	From 6.50-8.50
	Total Hardness, as $\text{CaCO}_3$	mg/L	23	22	16	18	300.00
	Iron Content, as Fe	mg/L	0.38	0.14	0.33	0.1	0.30
	Chloride, as $\text{Cl}^-$	mg/L	6.5	7	5.5	6	250.00
	Nitrate, as $\text{NO}_3$	mg/L	N.D.	N.D.	N.D.	N.D.	45.00
	Sulfate, as $\text{SO}_4$	mg/L	N.D.	N.D.	N.D.	N.D.	200.00
	Most Probable Number	MPN Index /100ml	39	Nil	32	Nil	Nil

(N.D. : Not Detectable)

REPORT : Provided water samples 1 & 3 are found not suitable for drinking purposes.

(B. MANU)  
FACULTY MEMBER  
DEPT. OF CIVIL ENGG.



(K. N. LOKESH)  
PROF. AND HEAD  
DEPT. OF CIVIL ENGG.

### Appendix 8 - List of Clearances Required

No.	Permission	Water Supply Network	Responsibility
1	KSPCB	NA	NA
2	National Highways / PWD	Parallel to NH-275 rider lines are proposed. Clearance required for distribution package  Clear Water rising Main of 400 mm dia DI pipe passes all along Highway for 2051 m require permission from NH.	ULB/PIU
3	Railway	Railway crossing at chainage 140/400 at Bolwar near Kabaka Puttur railway station for transmission main component	ULB/PIU
4	Utilities (HESCOM, BSNL)	Clearance Required, if crossing	ULB/PIU
5	Labour License	License Required.	Contractor
6	Forest	NA	NA

### Appendix 9: Analysis of Kumaradhara River Discharges

1. There is no gauging station on river Kumaradhara. The confluence point of Kumaradhara and Nethravathi rivers is at Uppinangadi which is about 400 m downstream from the barrage site. There are two river gauging stations established on Nethravathi River for monitoring the discharge in the river. Index map (Drawing no. 1) showing the barrage site and its catchment area is enclosed. The Water Resource Development Dept. of GOK monitors the gauging station on upstream of confluence point. The Central Water Commission (CWC) Department monitors the gauging station at Bantwal, which is about 20 KM on down stream of confluence point.

2. Discharge data has been collected for both the gauging stations for studying the quantum of water available during summer period. Data for upstream gauging station is available from 1996 to 2002, whereas for downstream gauging station data is available from 1990 to 1998. For the remaining period from 1999 to 2002 the data of downstream gauging station has not yet been compiled by CWC and hence could not be obtained. In this, the daily discharge data is available from 1990 to 1995 and 10 days average discharge data from 1996 onwards, as the CWC has discontinued publishing daily discharge data from 1996 onwards. The minimum and maximum discharges recorded at Bantwal gauging station for 1990 to 1998 are given in the table 1.

**Table A9.1: Min and Max Daily Discharges of River Nethravati at Bantwal in Cumecs**

Year		March	April	May
1990	Min	0.514	.121	0.05
	Max	4.099	1.19	251.8
1991	Min	0.632	0.637	1.381
	Max	5.5	6.595	15.96
1992	Min	0.769	0.507	58.35
	Max	4.632	1.54	1.36
1993	Min	3.995	3.379	1.688
	Max	5.847	4.141	25.24
1994	Min	6.064	5.935	7.783
	Max	6.095	7.874	20.74
1995	Min	1.23	0.57	2.683
	Max	7.22	4.507	171.6
1996	Min	.836	1.486	1.084
	Max	2.888	6.495	1.988
1997	Min	1.421	0.76	1.386
	Max	4.5	2.87	5.546
1998	Min	2.334	1.315	0.885
	Max	7.63	3.307	4.606

3. The flow data from upstream gauging station is not available for this period of 1990-98. As such the flow in the Kumaradhara River during the above lean period cannot be established. However, there will be considerable reduction in the flow of Kumaradhara. The flow patterns vary to a considerable extent as indicated in Table A9.1.

For water supply schemes the percentage of dependability has to be 100 %. The estimated water demand for Puttur town for next 25 years is around 9.5 mld corresponding to 0.11 cumecs. Atleast twice the requirement is to be ensured, since water is drawn from particular location of river where

there is no collection of water from the entire cross sectional area of river. The width of the water is about 200 m with formation of channels within the river bed with obstructions. So, it is clear that some barrier is necessary to divert the flow towards the intake well.

5. As per the river gauge data at Bantwal a minimum discharge of 0.05 Cumecs has been recorded on 6 May 1990. The discharge at Bantwal gauging station is the cumulative discharges of Nethravathi and Kumaradhara rivers. Hence the flow in Kumaradharariver has to be arrived at after deducting the discharges in upstream of Nethravathi river. This will be very much less than the observed discharges at Bantwal. From the daily discharge data at Bantwal during the year 1990, the number of days falling short of the required discharge of 0.22 Cumecs is 21 days. Detailed analysis showing daily discharge is shown in table 2. This could be more on worst rainfall year as well as the lift irrigation demand is considered.

6. Catchment area of Nethravati river at Bantwal gauging station is 3,300 km<sup>2</sup> and in Kumaradharariver at Barrage site is 1,930 km<sup>2</sup>. In the absence of gauge data of Kumaradharariver at barrage site, the probable discharge is estimated at 60 % of the discharge of Netravathi based on proportional catchment area. The short fall in discharge requirement at the barrage site works out to 24 days. Details showing daily discharge and shortfall is enclosed for reference.

## Appendix 10: Environmental Audit of The Existing Water Treatment Plant In Puttur

### I. Introduction

The objectives of this environmental audit are to (i) assess the compliance of the existing water treatment plant (WTP) to be rehabilitated/augmented during the implementation of KIUWMIP with environmental legislation; (ii) improve environmental performance through monitoring the effectiveness of the management system; and (iii) increase the PutturCMC's knowledge of itself and its activities, thus increasing its ability to continually improve and minimize future potential liabilities.

The environmental audit was carried out for the existing WTP. The methodology adopted for this audit was to initially review existing plans and technical information and list various activities being carried out in the WTP. Due diligence was carried out to physically check whether environmental performance, health and safety, etc. were in compliance with national and state prescribed standards and guidelines. Team visited the WTP and observed operations. Meetings and discussions with key personnel were held in the various stages of the audit. Various documentations regarding the operational aspects were also checked.

### II. Description of Existing Water Treatment Plant at Puttur

Location	Puttur Town Latitude:12°77'N Longitude:75°22'E
Start of operation (year)	2005-2006
Owned by	CMC Puttur
Contact person and designation	Mr. Thulasidas Junior Engineer +9194492209204
Capacity	6.8 million liters per day (MLD)
Water supply source	River Kumaradhara, (intake well is 12km from Puttur)
Water treatment process	Technology: The treatment process is conventional, and has following units: Cascade Aerator, Raw Water Channel with Parshall Flume or continuous flow measurement, Coagulant & Flocculent chemical make up tanks, Flash Mixing tank, Tube Settler including a flocculation zone in the center, Four sand filters, Chlorination system and Clear water Sump.
	Materials: All civil structures are made of reinforced cement concrete, and mechanical units like the of mild steel.
	Process: the water from raw water pumping main enters into the inlet, and the first unit is cascade aerator. After aeration water passes through Parshall flume, where flow is measured. Coagulant and flocculent chemicals (alum and Lime) are added to the water, and mixed in the flash mixer tank, and then flows into flocculator and tube settler and Clarified water flows into sand filters (4 numbers) for filtration and the filtered water is disinfected with chlorine, and allowed to flow into clear water tank from where water pumped into service reservoirs for distribution.
Backwash water and sludge management	-filter backwash water is let into open drains as there is no recycling of backwash into inlet - the settled sludge from the bottom of the clarifier tank is periodically flushed into the drains.  -the untreated backwash and sludge flushing ultimately reaches and



	disposed off into River Kumaradhara.
Chlorination system	<p>Chlorine dosage system is not proper; there are no safety precautions in place.</p> <p>Chlorine cylinders (900 kg tonners) are placed haphazardly at the facility; the dosage system is not properly functional; no safety systems like leak detection or emergency alarm or lime slurry pit available in the facility. Operators are not aware of safety measures or actions to be performed during any emergency.</p>

## **Appendix 11: Sample Outline Spoil Management Plan**

- The Spoil Management Plan should be site specific and be part of the monthly Construction Management Plan.
- The contractor, in consultation with the PIU, has to find out appropriate location/s for the disposal of the excess soil generated. The spoils should be deposited only at these sites.
- Further precautions need to be taken in case of the contaminated spoils
- The vehicle carrying the spoil should be covered properly.
- The spoils generating from each site should be removed on the same day or immediately after the work is complete. The site / road should be restored to the original condition.

### **I. Spoils information**

The spoil information contains the details like a) The type / material, b) Potential contamination by that type, c) Expected volume (site / component specific), d) Spoil Classification etc.

### **II. Spoils management**

The Spoil Management section gives the details of a) Transportation of spoil b) disposal site details c) Precautions taken d) Volume of contaminated spoil, if present, d) Suggested reuse of disposal of the spoil

### **III. Documentation**

The volume of spoil generated (site specific, date wise), site disposed, reuse / disposal details should be documented properly.

## **Appendix 12: Traffic Management Plan**

### **A. Principles for Traffic Management Plan Around the Water Pipes Construction Sites**

1. One of the prime objectives of this TMP is to ensure the safety of all the road users along the work zone, and to address the following issues:
  - (i) the safety of pedestrians, bicyclists, and motorists travelling through the construction zone;
  - (ii) protection of work crews from hazards associated with moving traffic;
  - (iii) mitigation of the adverse impact on road capacity and delays to the road users;
  - (iv) maintenance of access to adjoining properties; and
  - (v) Addressing issues that may delay the project.

### **B. Operating Policies for Traffic Management Plan**

2. The following principles will help promote safe and efficient movement for all road users (motorists, bicyclists, and pedestrians, including persons with disabilities) through and around work zones while reasonably protecting workers and equipment.
  - (i) Make traffic safety and temporary traffic control an integral and high-priority element of every project from planning through design, construction, and maintenance.
  - (ii) Inhibit traffic movement as little as possible.
  - (iii) Provide clear and positive guidance to drivers, bicyclists, and pedestrians as they approach and travel through the temporary traffic control zone.
  - (iv) Inspect traffic control elements routinely, both day and night, and make modifications when necessary.
  - (v) Pay increased attention to roadside safety in the vicinity of temporary traffic control zones.
  - (vi) Train all persons that select, place, and maintain temporary traffic control devices.
  - (vii) Keep the public well informed.
  - (viii) Make appropriate accommodation for abutting property owners, residents, businesses, emergency services, railroads, commercial vehicles, and transit operations.

3. **Figure A2 to Figure A12** illustrates the operating policy for TMP for the construction of water pipes and the sewers along various types of roads.

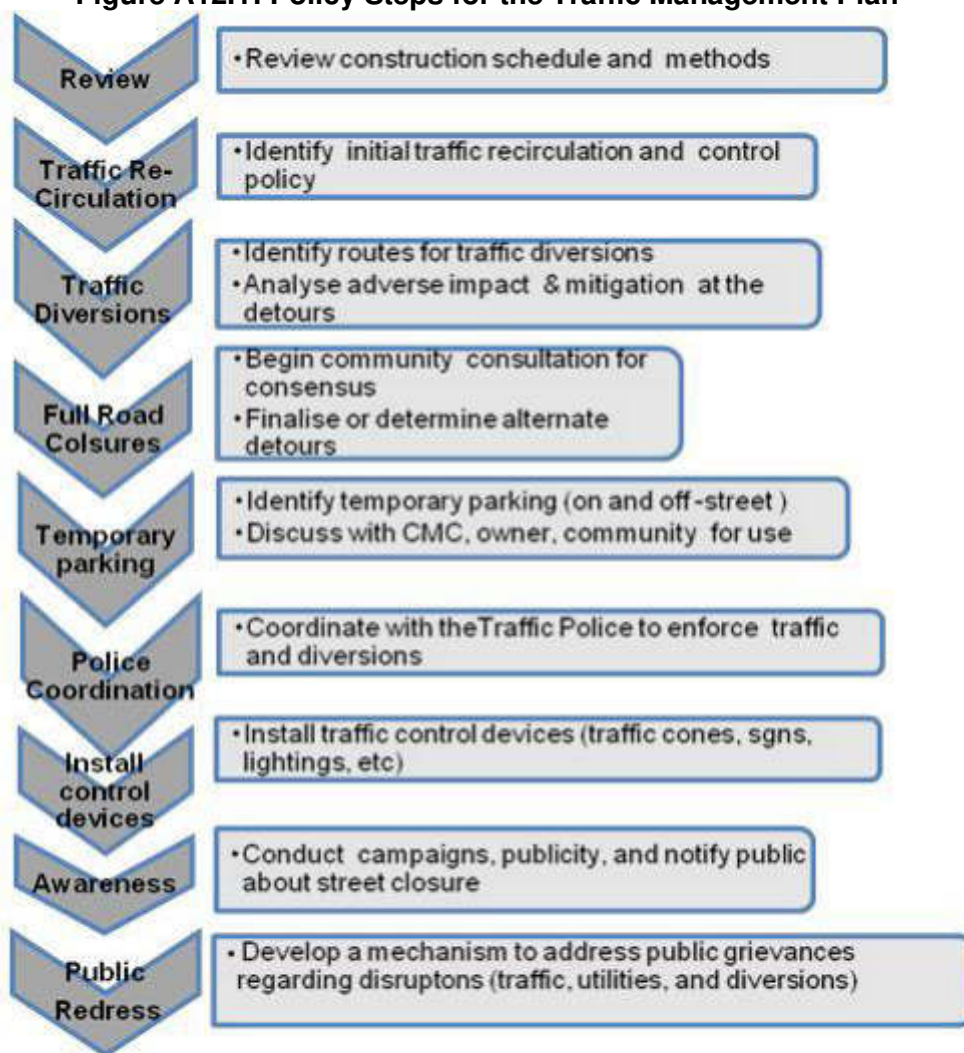
### **C. Analyze the Impact due to Street Closure**

4. Apart from the capacity analysis, a final decision to close a particular street and divert the traffic should involve the following steps:
  - (i) Approval from the Puttur City Corporation/Public Works Department (PWD) to use the local streets as detours;
  - (ii) consultation with businesses, community members, traffic police, PWD, etc., regarding the mitigation measures necessary at the detours where the road is diverted during the construction;
  - (iii) determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents;

- (iv) determining if additional traffic control or temporary improvements are needed along the detour route;
- (v) considering how access will be provided to the worksite;
- (vi) contacting emergency service, school officials, and transit authorities to determine if there are impacts to their operations; and
- (vii) Developing a notification program to the public so that the closure is not a surprise. As part of this program, the public should be advised of alternate routes that commuters can take or will have to take as result of the traffic diversion.

5. If full road-closure of certain streets within the area is not feasible due to inadequate capacity of the Detour Street or public opposition, the full closure can be restricted to weekends with the construction commencing on Saturday night and ending on Monday morning prior to the morning peak period.

**Figure A12.1: Policy Steps for the Traffic Management Plan**



#### **D. Public awareness and notifications**

6. As per discussions in the previous sections, there will be travel delays during the constructions, as is the case with most construction projects, although on a reduced scale if utilities and traffic management are properly coordinated. There are additional grounds for travel delays in the area, as most of the streets lack sufficient capacity to accommodate additional traffic from diverted traffic as a result of street closures to accommodate the works.

7. The awareness campaign and the prior notification for the public will be a continuous activity which the project will carry out to compensate for the above delays and minimize public claims as result of these problems. These activities will take place sufficiently in advance of the time when the roadblocks or traffic diversions take place at the particular streets. The reason for this is to allow sufficient time for the public and residents to understand the changes to their travel plans. The project will notify the public about the roadblocks and traffic diversion through public notices, ward level meetings and city level meeting with the elected representatives.

8. The PIU will also conduct an awareness campaign to educate the public about the following issues:

- (i) Traffic control devices in place at the work zones (signs, traffic cones, barriers, etc.);
- (ii) Defensive driving behavior along the work zones; and
- (iii) Reduced speeds enforced at the work zones and traffic diversions.

9. It may be necessary to conduct the awareness programs/campaigns on road safety during construction.

10. The campaign will cater to all types of target groups i.e. children, adults, and drivers. Therefore, these campaigns will be conducted in schools and community centers. In addition, the project will publish a brochure for public information. These brochures will be widely circulated around the area and will also be available at the PIU, and the contractor's site office. The text of the brochure should be concise to be effective, with a lot of graphics. It will serve the following purpose:

- (i) Explain why the brochure was prepared, along with a brief description of the project;
- (ii) Advise the public to expect the unexpected;
- (iii) Educate the public about the various traffic control devices and safety measures adopted at the work zones;
- (iv) Educate the public about the safe road user behavior to emulate at the work zones;
- (v) Tell the public how to stay informed or where to inquire about road safety issues at the work zones (name, telephone, mobile number of the contact person; and
- (vi) Indicate the office hours of relevant offices.

#### **E. Install Traffic Control Devices at the Work Zones and Traffic Diversion Routes**

11. The purpose of installing traffic control devices at the work zones is to delineate these areas to warn, inform, and direct the road users about a hazard ahead, and to protect them as well as the workers. As proper delineation is a key to achieve the above objective, it is important

to install good traffic signs at the work zones. The following traffic control devices are used in work zones:

- Signs
- Pavement Markings
- Channelizing Devices
- Arrow Panels
- Warning Lights

12. Procedures for installing traffic control devices at any work zone vary, depending on road configuration, location of the work, construction activity, duration, traffic speed and volume, and pedestrian traffic. Work will take place along major roads, and the minor internal roads. As such, the traffic volume and road geometry vary. The main roads carry considerable traffic; internal roads in the new city areas are wide but in old city roads very narrow and carry considerable traffic. However, regardless of where the construction takes place, all the work zones should be cordoned off, and traffic shifted away at least with traffic cones, barricades, and temporary signs (temporary “STOP” and “GO”).

13. **Figure A2 to Figure A12:** illustrates a typical set-up for installing traffic control devices at the work zone of the area, depending on the location of work on the road way, and road geometrics:

- Work on shoulder or parking lane
- Shoulder or parking lane closed on divided road
- Work in Travel lane
- Lane closure on road with low volume
- Lane closure on a two-line road with low volume (with yield sign)
- Lane closure on a two-line road with low volume (one flagger operation)
- Lane closure on a two lane road (two flagger operation)
- Lane closure on a four lane undivided Road
- Lane closure on divided roadway
- Half road closure on multi-lane roadway
- Street closure with detour

14. The work zone should take into consideration the space required for a buffer zone between the workers and the traffic (lateral and longitudinal) and the transition space required for delineation, as applicable. For the works, a 30 cm clearance between the traffic and the temporary STOP and GO signs should be provided. In addition, at least 60 cm is necessary to install the temporary traffic signs and cones.

15. Traffic police should regulate traffic away from the work zone and enforce the traffic diversion result from full street closure in certain areas during construction. Flaggers/ personnel should be equipped with reflective jackets at all times and have traffic control batons (preferably the LED type) for regulating the traffic during night time.

16. In addition to the delineation devices, all the construction workers should wear fluorescent safety vests and helmets in order to be visible to the motorists at all times. There should be provision for lighting beacons and illumination for night constructions.

**Figure A2 & A3: Work on shoulder or parking lane & Shoulder or parking lane closed on divided road**

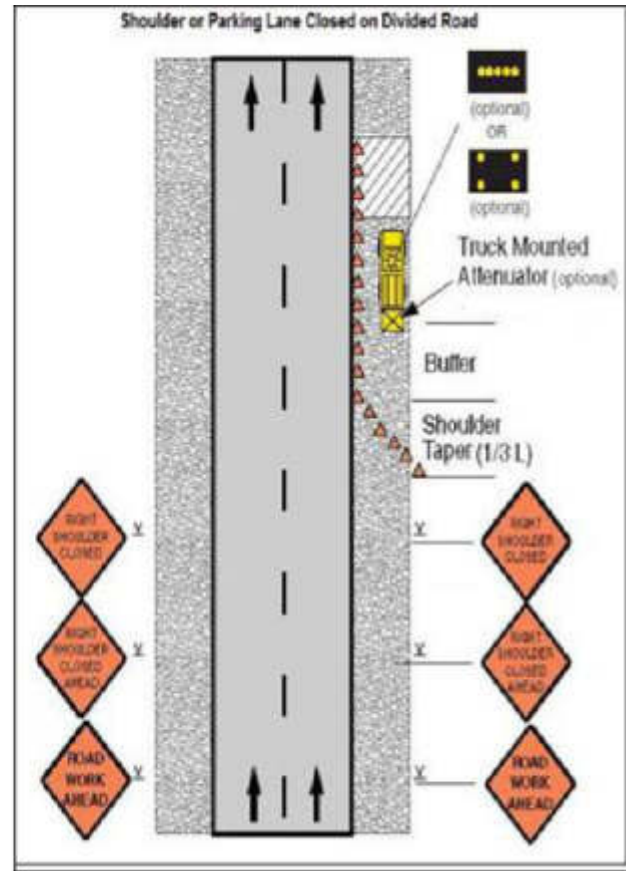
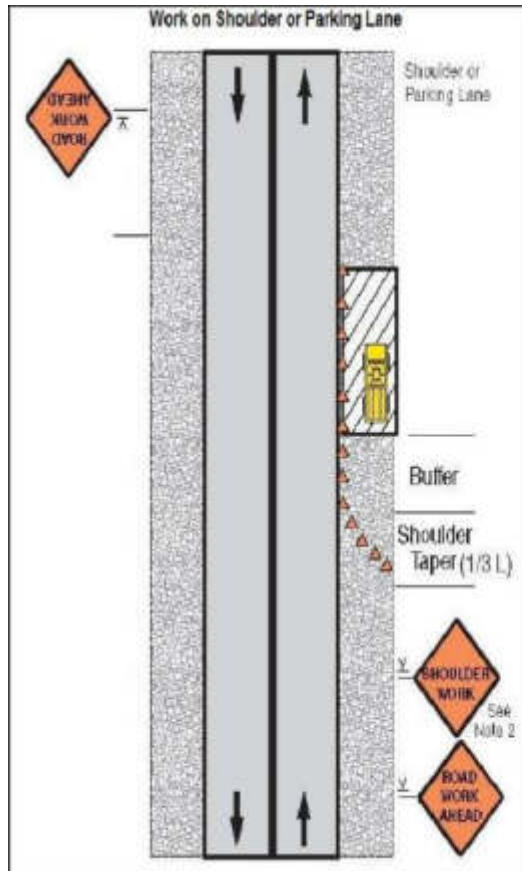
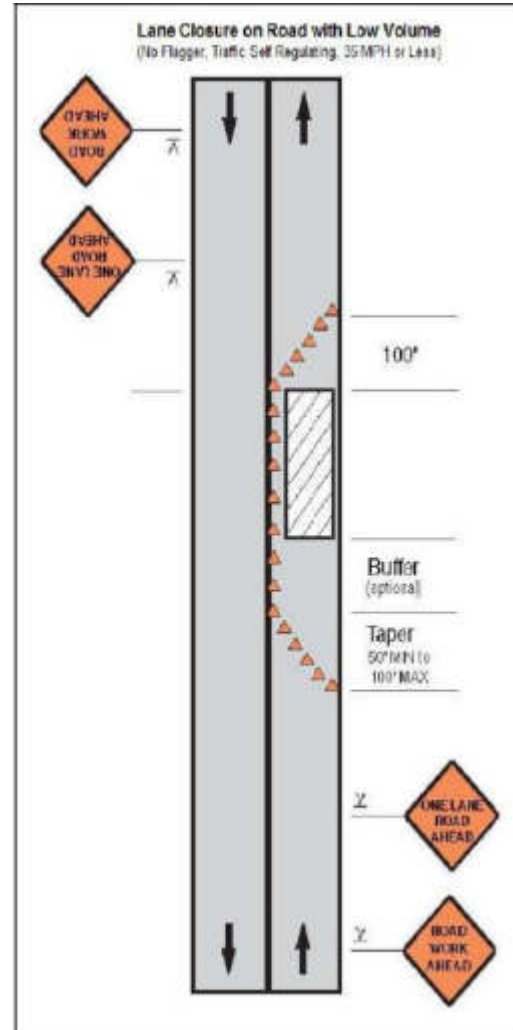
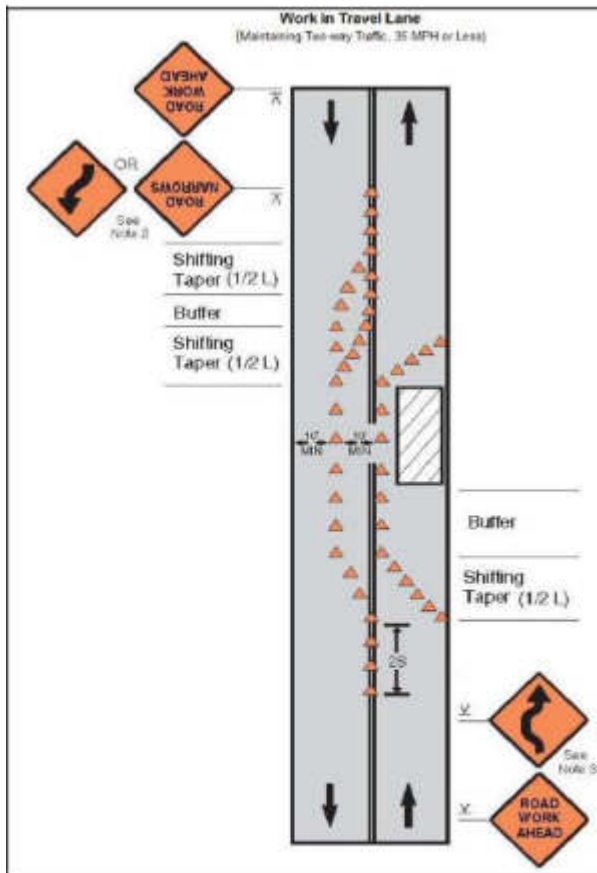
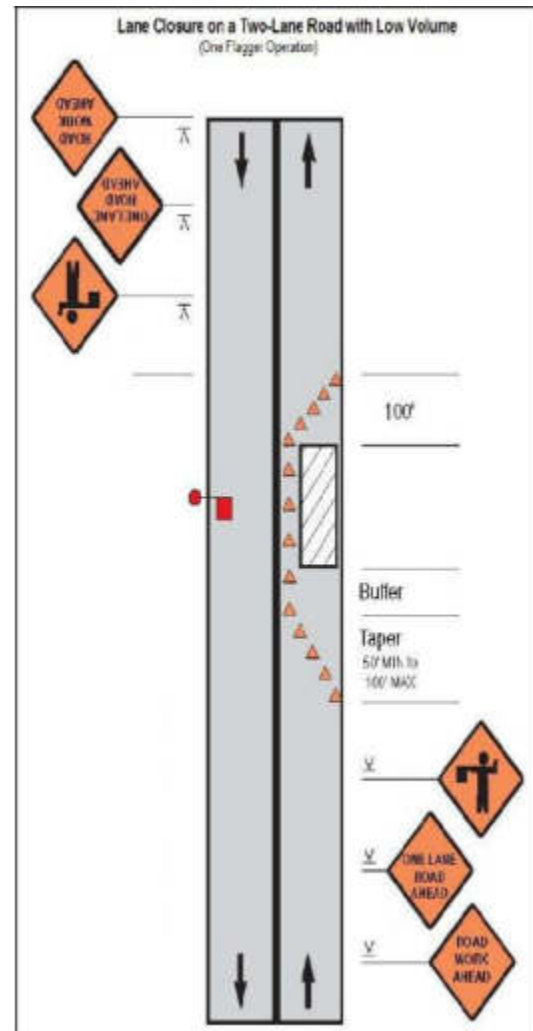
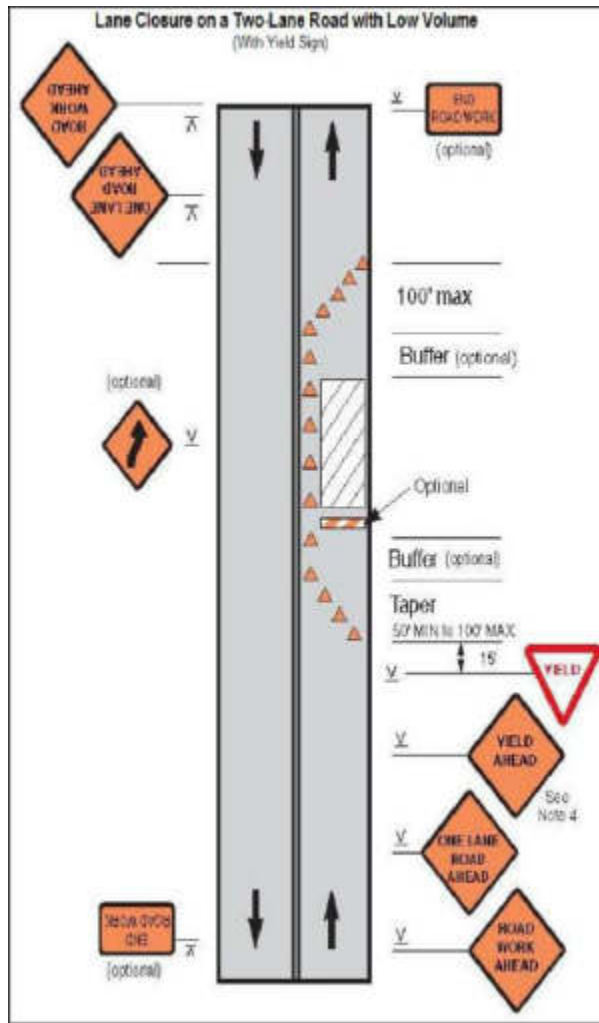


Figure A4 and A5: Work in Travel Lane & Lane Closure on Road with Low Volume

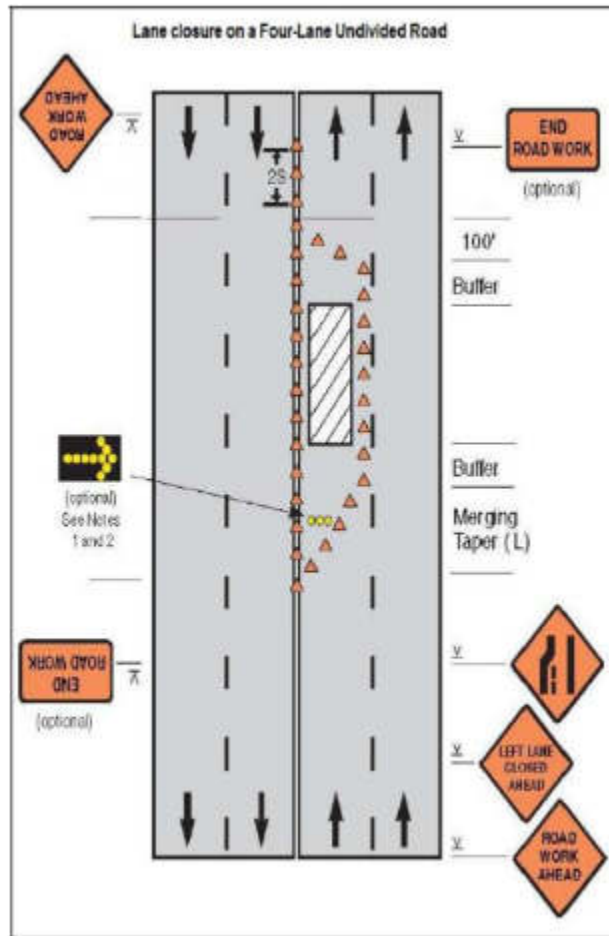
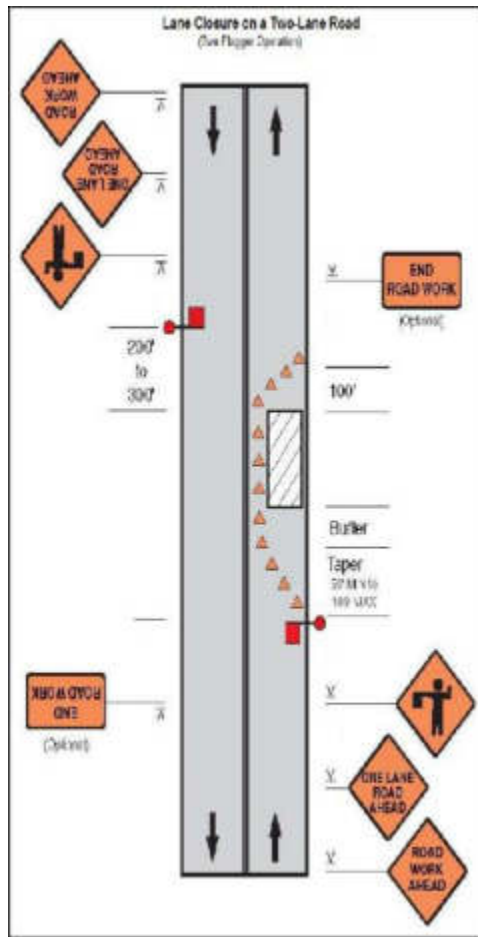




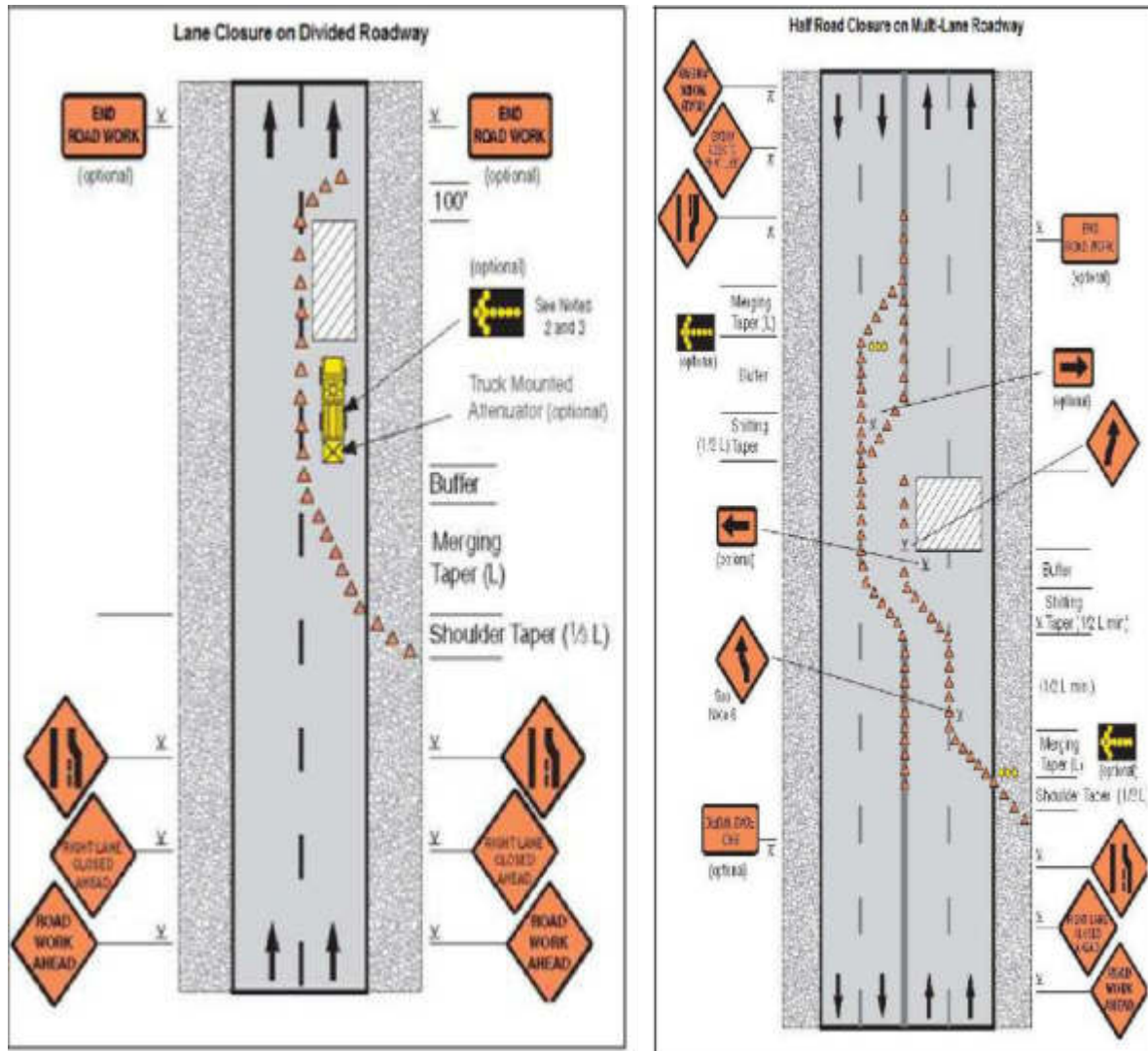
**Figure A6 and A7: Lane Closure on a Two-Line Road with Low Volume (with yield sign) and Lane Closure on a Two-Line Road with Low Volume (one flagger operation)**

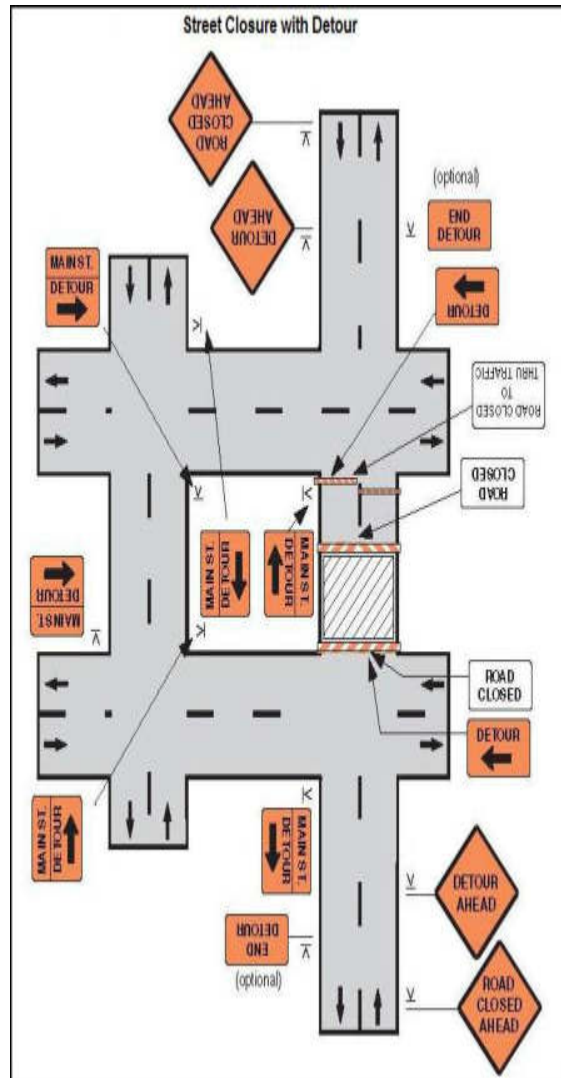


**Figure A8 and A9: Lane closure on a Two-Lane Road (two flagger operation) and Lane Closure on a Four-Lane Undivided Road**



**Figure A10 and A11: Lane Closure on Divided Roadway and Half Road Closure on Multi-Lane Roadway**



**Figure A12: Street Closure with Detour**

### Appendix 13: Minutes of The Stakeholder Consultation Meeting

#### A. Public Workshop on Detailed Project Report at Town Hall Puttur on 28 June 2016

The meeting was attended by key stakeholders from Puttur CMC including public/elected representatives, ULB officials, officials from other line departments and executing agency KUIDFC, and non-government organizations (NGOs)/community-based organizations (CBOs). The meeting was chaired by Commissioner CMC.

The consultants made detailed presentations – in Kannada and English on overall program, technical studies, poverty social development aspects, and environmental and social safeguard issues related to proposed subprojects.

Minutes of Meeting enclosed.

#### Meeting Session

- Consultant Engineers presented 24x7 water supply project report to the meeting.
- Publics informed and suggested CMC, that ADB-1 stage, KUDCEMP is a failure in Puttur, hence it is better to confirm the success of the scheme before implementation of ADB-2.
- Publics suggested to Puttur CMC to consider rain water harvesting.
- Publics suggested Puttur CMC, while executing the works all CMC council members should check the work in site.
- Publics requested to consider role of public in this project.
- Member of the Legislative assembly suggested to consult PWD / NH/ railway department before implementation.
- President, CMC Puttur, stated that to make success of this project, it is decided to place project report in front of public and get approval from public itself.
- Commissioner, Puttur CMC offered help to resolve issues of water supply and to finalize the proposals to improve water systems.
- Commissioner, Puttur CMC, promised support and coordination during project implementation.
- CMC Commissioner suggested that Maps or drawings showing the proposals to be placed in public places while executing the works.



Public Workshop in Puttur Town Hall on Detailed Project Report (DPR)



Public Workshop in Puttur Town Hall on DPR





Public Workshop in Puttur Town Hall on DPR



Public Workshop in Puttur Town Hall on DPR

#### **B. Stakeholder Consultation at Various Sites in Puttur**



Site inspection @ Seethigudda by Assistant Commissioner, Puttur

### C. Stakeholder Consultation with Elected Representatives



Inception Report Approval Meeting @ Council Hall Puttur CMC



Preliminary Design Report Approval Meeting @ Council Hall Puttur CMC



Preliminary Design Report Approval Meeting @ Council Hall Puttur CMC



Preliminary Design Report Approval Meeting @ Council Hall Puttur CMC



Public Workshop in Puttur Town Hall on DPR



Public Workshop in Puttur Town Hall on DPR



Public Workshop in Puttur Town Hall on DPR  
DPR



Public Workshop in Puttur Town Hall on



**PROCEEDINGS OF THE TOWN LEVEL PUBLIC CONSULTATION MEETING HELD AT  
PUTTUR ULB ON 8 FEBRUARY 2018 at 4.00PM**

Public consultation workshop was held at Puttur under the chairmanship of Smt Jayanthi Ballnad for the provision of 24 X 7 water supply under KUIDFC Bengaluru and KIUWMIP Tranche II Project.

The following members were present

- (i) Vice President of CMC Puttur
- (ii) Deputy Project Director(DPD) KIUWMIP, RPMU Mangalore
- (iii) Commissioner CMC Puttur
- (iv) Executive Engineer KUIDFC, KIUWMIP Puttur
- (v) Assistant Executive Engineer KUIDFC, KIUWMIP Puttur
- (vi) Assistant Executive Engineer PIU- Puttur
- (vii) GKW Consultants
- (viii) President Secretary
- (ix) Members of the press (Journalists Association)
- (x) Self Help Group members
- (xi) Employees
- (xii) Officials and Subordinates
- (xiii) General Public Puttur

The Honourable Commissioner CMC Puttur welcomed the Chairman, Vice Chairman and all the members for the workshop.

DPD KIUWMIP RPMU Mangalore explained briefly the 24 x7 water supply in the Puttur Town, technical assistance to the project and the allocation of funds. He explained that the provision of 24 X 7 water supply would be for the welfare of the people and would provide for the supply of water till 2046.

He explained that the KIUWMIP- PIU Office will be in-house in the Municipal Commercial complex for better coordination and connectivity with the CMC Puttur

The Deputy Project Director re-emphasized the purpose of implementing this project is to provide 24 x 7 water supply to all residents of Puttur CMC, and any inconvenience or problems faced by the general public, organizations or departments may be brought to the notice of the Regional Office at Mangalore .

Member of CMC Puttur stated that the DPR for 24 x 7 water supply has been prepared by GKW consultants and expressed support for the Project

GKW Consultant Mr Praveen Rego made a powerpoint presentation on the salient features of the project, and asked all participants for feedback. He explained that the 24 x 7 water supply to Puttur city has been sanctioned an amount of Rs 63.11 crores. He explained the breakup of the expenditure to all the participants and explained that the tender had been floated and bids were called on 1 February 2018 and that work would commence soon.

Mr Rammanna and Smt Vanishree members and councillors indicated that there is no proper water supply in their wards and that their wards were not included in the project. The

consultants explained the DPR has been prepared to cater to all household in all the wards, and that there would not be any water related problems in the future.

Mr Dinesh Sameer Dakar asked if permission has been obtained from NHAI for laying a drinking water pipe line along NH 275. He was informed that all information would be uploaded on the PIU website.

Former President of the ULB, Sri Lokesh Hegde sought information regarding dates of commencement and completion of the project. The consultants have explained that the tender has already been called for and work will commence in 4 months and the construction period will be 30 months after issue of work order.

Sri D'Souza sought information on the supervisory agency and its proper implementation; it was explained by the consultants that the project will be supervised by PMDCSC and Executive Engineer of KUIDFC- KIUWMIP.

Sri I.K. Badawara asked about the source of the water, its sustainability and the capacity for supplying the required amount of water. The consultants explained that the source of water is Kumara Dhara River near Nikkilegude which already has been envisaged under KUDSEMP project and that the river has the capacity to sustain supply till 2046.

No other objections were raised by the assembled public or any of the organizations there. The body expressed satisfaction with the information and hoped that there would be no problems in the water supply in the near future and hoped for successful completion of the project.

The Assistant Executive Engineer KIUWMIP- PIU proposed a vote of thanks to all the participants for their time and participation.



**ATTENDANCE SHEET OF THE TOWN LEVEL PUBLIC CONSULTATION MEETING HELD  
AT PUTTUR ULB ON 8 FEBRUARY 2018.**

<b>S.N</b>	<b>Name</b>	<b>Designation</b>
1	Deputy Project Director	RPMU Mangalore
2	Executive Engineer	
3	Assistant Commissioner CMC	
4	Commissioner CMC	
5	Balakrishna	GKW
6	members	
7	Rajesh Bujjur	
8	Sunder Poojari Badav	
9	Ragesh Baggu	
10	Ms Jayalakshmi Suresh	
11	Sailaja Pai	
12	Usha Rajani	
13	Nalani	
14	Zohan Nisan	TMC member
15	Swarnalatha Hedge	TMC member
16	Vinaya Bhandari	TMC member
17	Mulkesh K	
18	Abbas K Mura	Tax consultant
19	Xavier O Souza	Principal
20	A.B Vengar	
21	Fazul Raheem	Advocate
22	Purshotam Shetty	
23	A Jagajundan Rai	President- Rotary club
24	K Abaibakar	Retd Dist Health Supervisor
25	Chandrashekar Patel	
26	Dr Ashok Patil	Mahaveer Hospital
27	L Damodhar Bhandakar	
28	K Divakar	
29	B Mohul Shareef	
30	Veeresh Das	
31	Dr U.S. Rao	Pragathi Hospital
32	Dr Gayathri	
33	I. K. Bolwar	
34	Dinesh K Bai	
35	Abdul Aziz	
36	Sanam	
37	Yogini	
38	Asha	
39	Praveen	
40	Naveen	
41	Roopakala K	Head Mistress
42	Sri Praba K	
43	seeyneela	
44	Jayalakshmi	CDPO
45	Vinod Joshi	IT staff

46	K Divakar	
47	Shwethakiran	
48	Jayalakshmi	
49	Laami B	
50	Santosh Kumar	
51	JalaJakshi	
52	B. Ramappa Gowda	
53	Saraswathi	
54	Seetha	
55	Dinesh P Shetty	
56	Gangadhar	Assistant Sub Inspector
57	K. Venugopal	
58	K Prakash Kellali	
59	K Sudesh Kumar	
60	N.K. Purshottam	
61	Ahamed Basheer	
62	Yoshoda P	
63	Jayashree	
64	lalitha	
65	Navneena	
66	Leela	
67	Mithul Kurvin Pereiva	
68	Kishore	
69	Usman	
70	Haneef Poonchatter	
71	Abdul Razak	Nayak Sports
72	Leela	
73	M G Rafeel Melmajalu	
74	Joe D Souza	
75	Shamath Kumar	AE
76	Modesh	AEE

**Attendance at the Meeting**

## **MINUTES OF WARD LEVEL CONSULTATION ON 26th OCT 2018**

A ward level public consultation meeting was conducted on 26.10.2018 at 3.30PM for city municipal council ward no 1,2,3,16 at Bharath Matha samudaya Bhavan kallega, Puttur for KIUWMIP Tranche -2 24\*7, Water Supply Project

Sri Shirk Hassan CDA, KIUWMIP Mangalore invited the all participants and meeting was presided by the Honorable CMC member Sri K. Jeevinder Jain.

### **Attendees-**

1. Shivarama K Member of ward number 1, CMC Puttur.
2. Vasantha Karekkadu Member of ward number 2, CMC Puttur.
3. K. Jeevendhar Jain Member of ward number 3, CMC Puttur.
4. Naveen Kumar Member of ward number 16, CMC Puttur.
5. Roopa T Shetty Citizenship CMC, Puttur.
6. Madesh C.M AEE KUIDC, KIUWMIP, PIU Puttur.
7. Shamanth Kumar HR AE KUIDC, KIUWMIP, PIU Puttur.
8. Praveen R Rego, G.K.W Consultants, Mangalore.
9. Sheik Hassan Sahib, ICE cum CDA RMPMU, Mangalore.
10. H. Sanjeev, SDO (Sarver) RMPMU, Mangalore.
11. Staff Members, CMC Puttur.
12. Public, Puttur.

Sri Jeevendhar Jain Member ward no 1, CMC Puttur, Sri Vasantha Karekkadu Member Ward no-2, sri Shivarama Ward no- 1, Sri Naveen Kumar-ward no,16, Smt Roopa T. Shetty Commissioner CMC Puttur, sri Madesh, AEE, Puttur, sri Shamanth Kumar AE, Puttur, Sri Praveen Rego GKW. Consult, Sri Sheik Hassan CDO SRI H. Sanjana SDO, Staff CMC Puttur and publics of the Ward was also present.

Sri Jeevandhana Jain requested KIUWMIP and GKW officials to provide details of the 24\*7 water supply project to Puttur city. He stated that the project office would be at CMC Commercial Complex and requested the public to support the project.

The GKW Consult Design Engineer Mr Praveen Rego described the 24\*7 water supply project with details of expenditure and timeline and requested suggestions and support from the public.

All attendees assured to full co-operation and support to the project.

Sri Sheik Hassan conveyed the thanks for all the participants and the meeting was ended.

Sd-  
Commissioner  
CMC Puttur

### **Copy to**

1. Deputy Project Director- KIUWMIP, RPMU, Mangaluru.
2. Task Manager KUIDFC Bangalore.
3. Assistant Executive Engineer Puttur.
4. Team Leader GKW Consultants Mangaluru.










1852	Station Name	Count
1852	Manchete	115
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1852	Manchete 3	115
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1852	Manchete 100	115



4. ಶ್ರೀ. ಬಾಲಕೃಷ್ಣಪ್ಪವ್ವ ರವರು ಮಾತನಾಡಿ, ಹಿಂದಿನ ವ್ಯವಸ್ಥೆಯು ಅನ್ವೇಷಣಿಕೆ ಪೈಪ್ ಲೈನ್ ಹಾಗೂ ರೋಪವೂರಿಕ ನಿರ್ವಹಣೆಯಿಂದಾಗಿ ನಗರದಲ್ಲಿ ಕುಡಿಯುವ ನೀರಿನ ಸಮಸ್ಯೆಯಿರುವುದರಿಂದ ಇವುಗಳನ್ನು ಗಮನದಲ್ಲಿಟ್ಟುಕೊಂಡು ಯೋಜನೆ ಕಡೆಗಳು ನಡೆಸಬೇಕು.

5. ಇದ್ದಕ್ಕಿಂತ ಹೆಚ್ಚು ಶ್ರೀ.ಪಿ.ಜಿ. ಜಗದೀಶ್ವರ್ ಹಾಗೂ ಸದಸ್ಯರಾದ ಶ್ರೀ.ಸಂತೋಷ್ ಕುಮಾರ್‌ರವರು ಕೂಡ ಯೋಜನೆ ಅನುಷ್ಠಾನದಲ್ಲಿ ಪಾಲ್ಗೊಳ್ಳತಕ್ಕ ಹಾಗೂ ವಿಚಾರಕ್ಕೆಡೆಯಲ್ಲಿ ಇವುಗಳ ಕಡೆಗಳು ಬೇಕೆಂದು ಸಾರ್ವಜನಿಕರ ಸಂಖ್ಯಾತರ ಸಹಕಾರದ ಭರವಸೆ ನೀಡಿದರು.

ಶ್ರೀ.ಕೆ.ಎ. ಹರ್ಷ್ ಸಾಹೇಬ್‌ರವರು ಅನುಬಂಧ ಸಮಾಧಾನಕ್ಕೆ ಭದ್ರವಾಗಿ ತೀರಿಸಿ ಕಾರ್ಯಕ್ರಮವನ್ನು ಮುಗಿಸಿದರು.

ಸಮಾವೇಶಕ್ಕೆ  
  
 ಮಹಾಪಂಚಾಯತ್  
 ಕುಣಿಗಲ್, ಮಂಡ್ಯ.

ಪ್ರತಿಯನ್ನು

ಉಪ ಯೋಜನಾ ನಿರ್ದೇಶಕರು, ಕೈಮಹಿ, ಆರ್.ಪಿ.ಎಂ.ಯು. ಮಂಗಳೂರು.

ಟಾಕ್ಸ್ ಮ್ಯಾನೇಜರ್, ಕೆ.ಎಂ.ಪಿ.ಎಂ.ಫೌ.ಸಿ., ಮಂಗಳೂರು.

ಕಾರ್ಯಪಾಲಕ ಅಭಿಯಂತರರು, ಕೈಮಹಿ, ಕೆ.ಎಂ.ಯು. ಮಂಡ್ಯ.

ಜನಪ್ರದೇಶ, ರಾಜ್ಯ ಕೃಷಿಭಂಡಾರ್, ಮಂಗಳೂರು.

ಜನಪ್ರದೇಶ, ಕೆ.ಕೆ.ಜಿ.ಎಸ್. ಕೃಷಿಭಂಡಾರ್, ಮಂಗಳೂರು.

## Attendees

Ward Wise Public Consultation Attendance Sheet		
Ward No. 14 - Ward 14		
Date: 27/11/2018 Time: 2.30pm to 4.30 pm		
Venue: Kumbhari Nagar Sanjay Mandir, Paltan		
Sl No	Attendee Name	Signature
1	Dr. Jagdish Chandra - Chairperson - Ward No 14 - Paltan Kumbhari	<i>[Signature]</i>
2	Dr. Jagdish Chandra - Chairperson - Ward No 14 - Paltan Kumbhari	<i>[Signature]</i>
3	Dr. Jagdish Chandra - Chairperson - Ward No 14 - Paltan Kumbhari	<i>[Signature]</i>
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25	Dr. Jagdish Chandra - Chairperson - Ward No 14 - Paltan Kumbhari	<i>[Signature]</i>

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Sl No	Attendee Name	Signature
26	B. VISHWANATH	<i>[Signature]</i>
27	M. Jaganmohan	<i>[Signature]</i>
28	Dr. Jagdish Chandra - Chairperson - Ward No 14 - Paltan Kumbhari	<i>[Signature]</i>
29	Dr. Jagdish Chandra - Chairperson - Ward No 14 - Paltan Kumbhari	<i>[Signature]</i>
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49	Dr. Jagdish Chandra - Chairperson - Ward No 14 - Paltan Kumbhari	<i>[Signature]</i>
50	Dr. Jagdish Chandra - Chairperson - Ward No 14 - Paltan Kumbhari	<i>[Signature]</i>

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	Members Present	Signature
11	W. B. B. B. B. B.	
12	Rajendra K. S.	
13	B. B. B. B. B.	
14	B. B. B. B. B.	
15	G. B. B. B. B.	
16	S. B. B. B. B.	
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4. ಶ್ರೀ. ಶಿಂಗಪ್ಪಗೌಡರವರು ಪಾಠಶಾಲೆ, ಹಿರಿಯ ಪ್ರವರ್ಧನಾ ಅಭಿವೃದ್ಧಿ ಕ್ಷೇತ್ರ ಹಾಗೂ ಬೋಧಕರಾಗಿ ನಿರ್ವಹಿಸುವುದಾಗಿ ಸೇರದಲ್ಲಿ ಕುಡಿಯುವ ನೀರಿನ ಸಮಸ್ಯೆಯನ್ನು ದೃಢೀಕರಿಸಿ, ಸಮಸ್ಯೆಯನ್ನು ಬೋಧನೆ ಮತ್ತು ಸಂಶೋಧನೆಯ ಮೂಲಕವಾಗಿ ಪರಿಹರಿಸುವ ಮಾರ್ಗವನ್ನು ಹುಡುಕುವುದು.

5. ಶ್ರೀಮತಿ. ಎಸ್. ಸಿ. ರವರು ಕೂಡ ಬೋಧಕೆಯಾಗಿ ಸೇರಿಕೊಳ್ಳುವುದಾಗಿ ಸಮಸ್ಯೆಯ ಬಗ್ಗೆ ಸಾರ್ವಜನಿಕರ ಸಂಪರ್ಕ ಸಹಾಯದ ಮೂಲಕ ಪರಿಹರಿಸುವುದು.

ಶ್ರೀ. ಶಿಂಗಪ್ಪಗೌಡರವರು ಅಧಿಕಾರ ಸರ್ವ ಸಂಸ್ಥೆಯಲ್ಲಿ ದೃಢೀಕರಿಸುವ ಅರ್ಹತೆ ಸಾರ್ವಜನಿಕರನ್ನು ಮುಗಿಸುವುದು.

ಕಮಲಾಕ್ಷಿ  
ಪ್ರಾಚಾರ್ಯರು.  
14/12

ಪ್ರತಿಪದ್ಯ

1. ಕುಡಿಯುವ ನೀರಿನ ಸಮಸ್ಯೆ, ಶ್ರೀಮತಿ. ಅರ್. ಸಿ. ರವರು, ಮಂಗಳೂರು.
2. ಪಾಪ್ ಮ್ಯಾಜಿಸ್ಟ್ರೇಟ್, ಕೆ.ಎಂ.ಸಿ.ಎಸ್.ಎ. ಮಂಗಳೂರು.
3. ಸಾರ್ವಜನಿಕ ಸಂಪನ್ಮೂಲಗಳು, ಕೆ.ಎಂ.ಸಿ.ಎಸ್.ಎ. ಮಂಗಳೂರು.
4. ಬಿ.ಎಸ್. ಶಿಂಗಪ್ಪ, ಪಾಪ್ ಮ್ಯಾಜಿಸ್ಟ್ರೇಟ್, ಮಂಗಳೂರು.
5. ಕಮಲಾಕ್ಷಿ, ಪಿ. ಸಿ. ಎಸ್. ಕೆ.ಎಂ.ಸಿ.ಎಸ್.ಎ. ಮಂಗಳೂರು.



## Attendees

Ward Wise Public Consultation Attendance Sheet		
Ward No. 18-19 and 20		
Date : 20/11/2018	Time : 3.30pm to 4.30 pm	
Village : Municipality Sattarjala Bhimav, Puttur		
Sr No	Members Present	Signature
1	Chandrabha Dhandi (poor) - Councilor - Ward No 18 - Puttur Kaula II	
2	Vijaya Ganesi - Councilor - Ward No 19 - Puttur Kaula II	
3	Debdatta Das - Councilor - Ward No 20 - Puttur Kaula II	
4	Ranga P Sathy - City Municipal Commissioner - Puttur	
5	K Burali - Executive Engineer - KUWMBP - Tranche 2 - Puttur	
6	Ashish C A - Assistant Executive Engineer - KUWMBP - Puttur	
7	Shanmugha Kumar H R - Assistant Engineer - KUWMBP - Puttur	
8	Shankar Narayan Sathu - IEC cum CDS - KUWMBP - Puttur	
9	H. Srinivas - IEO (Revenue) - KUWMBP - Puttur	
10	Praveen K Raja Devaraj Engineer - KUWMBP - Puttur	
11	K. P. Gouda - Ward 18-19 - Puttur	
12	B. Ananthakrishna Reddy - Darbarhalla	
13	P. Shrinivas Prasad - Darbar	
14	Shrinivas Reddy - Darbar	
15	Shrinivas Reddy - Darbar	
16	Shrinivas Reddy - Darbar	
17	Shrinivas Reddy - Darbar	
18	Shrinivas Reddy - Darbar	
19	Shrinivas Reddy - Darbar	
20	Shrinivas Reddy - Darbar	
21	Shrinivas Reddy - Darbar	
22	Shrinivas Reddy - Darbar	
23	Shrinivas Reddy - Darbar	
24	Shrinivas Reddy - Darbar	
25	Shrinivas Reddy - Darbar	
26	Shrinivas Reddy - Darbar	

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	Madras	Madras
27	N. S. Srinivas Rao W. no 19	W. no 19
28	S. Venkatarao Karaman W. no 19	W. no 19
29	M. Umashankar Beemanna No. 21	M. 21
30	M. Venkata Rao Beemanna, No. 21	M. 21
31	X. Narasimha Rao No. 21	No. 21
32	H. Narayana Rao No. 20	No. 20
33	K. Narayana Rao Beemanna No. 20	No. 20
34	K. Narayana Rao Beemanna No. 20	No. 20
35	H. Narayana Rao Beemanna No. 20	No. 20
36	K. Narayana Rao Beemanna No. 20	No. 20
37	K. Narayana Rao Beemanna No. 20	No. 20
38	K. Narayana Rao Beemanna No. 20	No. 20
39	K. Narayana Rao Beemanna No. 20	No. 20
40	K. Narayana Rao Beemanna No. 20	No. 20
41	K. Narayana Rao Beemanna No. 20	No. 20
42	K. Narayana Rao Beemanna No. 20	No. 20
43	K. Narayana Rao Beemanna No. 20	No. 20
44	K. Narayana Rao Beemanna No. 20	No. 20
45	K. Narayana Rao Beemanna No. 20	No. 20
46	K. Narayana Rao Beemanna No. 20	No. 20
47	K. Narayana Rao Beemanna No. 20	No. 20
48	K. Narayana Rao Beemanna No. 20	No. 20
49	K. Narayana Rao Beemanna No. 20	No. 20
50	K. Narayana Rao Beemanna No. 20	No. 20
51	K. Narayana Rao Beemanna No. 20	No. 20
52	K. Narayana Rao Beemanna No. 20	No. 20
53	K. Narayana Rao Beemanna No. 20	No. 20
54	K. Narayana Rao Beemanna No. 20	No. 20
55	K. Narayana Rao Beemanna No. 20	No. 20


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## MINUTES OF WARD LEVEL CONSULTATION ON 10th December 2018

A ward level public consultation meeting was conducted on 10.12.2018 at 3.30PM for city municipal council ward no 4,6 , 7 & 8 for KIUWMIP Tranche -2 24\*7, Water Supply Project



### Report on Ward level Public Consultation

**Date of the Meeting :** 10.12.2018  
**Place of the Meeting :** Community Hall of Shiva Parvathi Mandir  
 Ayudhya Nagar  
 Bannur, Puttur  
**Wards covered for consultation :** Participants from Ward No. 4, 6, 7 and 8

Details of the participants:

**A. Client:**

1. Mr. Madesh, Assistant Executive Engineer, PIU Puttur
2. Mr. Shamanth, Assistant Engineer, PIU Puttur
3. Mr. Sanjeev, Social Development Officer, RPML, Mangalore
4. Mr. Hassan, Community Development Assistant, RPMU, Mangalore

**B. Councillors:**

1. Mrs. Gowri Bannur
2. Mrs. Mohini Vishwanth Gowda
3. Mrs. Leelavathi Annu Naik
4. Mr. Balappa

**C. Consultants:**

**M/s. GKW Consult GmbH:**

1. Mr. Praveen Ivan Rego, Design Engineer
2. Mr. Balakrishna M. R, Social Development Specialist

**M/s. EGIS India Consulting Engineers Pvt Ltd:**

1. Mr. Prakash. B, Construction Supervision Specialist
2. Mr. Vinayak Astekar, Residential Engineer
3. Mr. Sandesh, Residential Engineer

Participants attended: 39 Nos (As per attendance)

**Brief History:** This was the First Ward Level Meeting in Ward No. 4, 6, 7 and 8 to create awareness among the local residents who are going to be benefitted from the 24X7 water supply project under KIUWMIP- Jalasiri of KUIDFC.

**Ward Councillor:** Mrs. Mohini Vishwanath presided over the Public Consultation Meeting. Mr. Hassan, CDA of RPMU Mangalore welcomed the participants and requested Mr. Prakash B of EGIS to provide details of project components. Accordingly, Mr. Prakash B briefly provided the project details as follows:

- The Karnataka Urban Development and Coastal Environment Management Project (KUDCEMP) was implemented to serve the water supply demand of Puttur City.
- The current capacities of existing WTPs are 6.8 MLD and 2.7 MLD which are not sufficient to meet the water demand of Puttur City by 2045.
- To fulfill the current shortage and future demands upto 2045 for Puttur CMC, KIUWMIP undertake a new project 24X7 Bulk Water Supply and Distribution Network including 8 years of O & M for Puttur City with the assistance of ADS. The scope of the project is as follows:

**MECHANICAL ENGINEER**  
**GKW CONSULT GmbH**  
**MANGALORE**

EE, PIU (Mangalore)/AEE (Puttur)  
 Please find the first public  
 consultation meeting at Puttur  
 for information and  
 necessary action for  
 updating DDA/ RP/ SDA  
 as per ADS norms  
 [Signature]  
 T. GKW

- A new WTP of 8.7 MLD capacity in addition to the existing 6.8 and 2.7 MLD capacities of WTPs.
- Total 1.68 kms of raw water rising main was proposed to pump raw water from jack well to WTP.
- Construction of 6 new ELSRs for temporary storage of treated water prior to distribution.
- Construction of 2 new G.SRs at Seelagudda and Tenkila for temporary storage of treated water prior to distribution.
- Laying of 142.65 kms of distribution network.
- Installation of 29 Nos. of Bulk meters for Water Audit.
- Installation of 4500 New House Service Connections with water meters and replacement of 8441 meters.

After completion of the above session Mr. Vishwanath Gowda raised the following questions for better understanding of the project:

Q 1: Uninterrupted power supply is required to provide 24X7 water supply. But, Puttur City is facing power load shedding problem which will affect on pumping of water. How will you address this problem in this project?

Ans: Mr. Prakash explained that express feeder line is proposed in this project to ensure continuous power supply to the water project. Diesel generators also proposed to meet the power supply problems.

Q 2: Road restoration also included in the project? Almost all the roads became new and how will you restore the roads to its original condition?

Ans: While replying to the above question Mr. Prakash told that the cost of the restoration is included in the DPR and roads will be restored to its original condition.

Q 3: From which OHT water will be supplied to the Ward where Ward level public consultation has been conducted?

Ans: Mr. Praveen Rego explained about the water supply project components in detail and told that water will be supplied to their area from Chikkamudnur OHT on gravity. In continuation he explained the details of zones formed to supply water from the different OHTs. He also discussed the present problems faced in the present water supply system and further he explained how the present problems will be addressed in the proposed KIUWMP water supply project. He clearly explained that the ownership of this project is belongs to CMC Puttur and it is the responsibility of every citizen of Puttur to support the project for its effective implementation. After the presentation Mr. Praveen Rego requested the participants to ask questions for better understanding of the project. The questions asked by the participants and the answers provided them are as follows:

  
 MECHANICAL ENGINEER  
 GKW CONSULT GMBH  
 MANGALORE



Mr. P. C Nayak SBI Puttur asked the following questions.

Q 1: Whether new pipe line will be laid to supply raw water from Kumaradhara River to WTP or not?

Ans: New pipe line of 400 mm diameter DI K9 class will be laid to supply raw water from Kumaradhara River to WTP and also transmission of clear water from WTP to proposed GLSR at Thenkila.

Q 2: Whether separate water tariff payment counter will be opened to avoid delay in receiving tariff from the end users. He explained the delay in receiving water tariff by the CMC from its customers.

Ans: All the House Service Connections are provided meters from the project and volumetric bill will be raised regularly by the service provider. Customers paying the water tariff not for the contractor but for the CMC. Separate counters will be established by the CMC to receive water tariff by the customers without any delay. The contractor will be paid on performance basis by the CMC. The contractor should run the whole water supply system for 8 years in their O&M period. Customer service centre will be established to address the grievances of the customers.

Q 3: What is the period of construction?

Ans: Construction period is 33 months and operation and maintenance period is 8 years.

Q 4: CMC Councilor Mr. Vishwanth raised the issue of illegal connections and loss of revenue to CMC due to unauthorized connections. In continuation he also told that there many houses which do not have house numbers and they have taken unauthorized water connections and using water recklessly and it creates inconveniences to the other residents having authorized house service connections. Mr. Vishwanath urged to take appropriate action on those persons who have taken unauthorized connections.

Ans: Replying to the above question Mr. Praveen Rega told that CMC Puttur has to pass a resolution to take appropriate action on unauthorized house service connections. He also told that all the house service connections will be provided new meters. CMC has to formulate an appropriate policy to regularize the unauthorized connections.

Q 5: To maintain the pressure in the house service connection water boosting system can be taken up in the project?

Ans: The quality of the pipe for water boosting system is much higher than the proposed pipe line in the DPR and the cost will also increase. Moreover boosting system completely depends on electricity and it will be added to the cost. In the proposed system if there is water in the DHT, water can be distributed on gravity.

Q 6: Whether the existing dam height will be increased? If no, the water stored in the dam is sufficient for providing 24X7 water supply?

Ans: Increasing of the dam height is not proposed in the DPR and the stored water in the existing dam will be sufficient to provide 24X7 water supply to Puttur City till 2046.

Ward level Public Consultation at Banner is concluded with vote of thanks to all the participants by Mr. Hassan, CDA of RPMU Mangalore.



## Attendees

[illegible]







## **MINUTES OF WARD LEVEL CONSULTATION ON 20th December 2018**

A ward level public consultation meeting was conducted on 20.12.2018 at 3.30PM for city municipal council ward no 10 & 12 for KIUWMIP Tranche -2 24\*7, Water Supply Project

Details of the participants:

**A. Client:**

1. Mr. Sanjeev, Social Development Officer RPMU Mangalore
2. Mr. Hassan Community Development Assistant RPMU Mangalore
3. Mr. Shamanth, Assistant Engineer, PIU Puttur

**B. Councilors:**

1. Mr. Padmanabha Nayak
2. Mr. Prem Kumar

**Consultants:**

**GKW:**

1. Mr. Praveen Ivan Rego, Design Engineer
2. Mr. Balakrishna M. R, Social Development Specialist

**EGIS:**

1. Mr. Prakash. B, Construction Supervision Specialist
2. Mr. Sandesh, Residential Engineer

Participants attended: 40 Nos (As per attendance)

**Brief history:** This was the **first Ward level meeting** in Ward No 10 and 12 to create awareness among the local residents who are going to be benefitted from the 24X7 water supply project under KIUWMIP- Jalsiri of KUIDFC.

Ward Councilor Mr. Padmanabha Nayak presided over the Ward level Public Consultation meeting.

Mr. Hassan Vitla explained briefly about KIUWMIP- Jalsiri Project and also the purpose of organizing Ward level public consultation. He told that 24X7 water supply will be provided to Puttur city through KIUWMIP- Jalsiri Project with the assistance of ADB. In continuation he also told that any project will be successful only if there is public participation from the planning stage to implementation followed by operation and maintenance. ADB also insisted to organize extensive Public Consultations to ensure public participation and as per the guidelines of ADB, the present Public Consultation has been organized.

Mr. Prakash B of EGIS explained the components of 24X7 water supply project designed for Puttur city in brief.

But later Mr. Praveen Rego provided the complete details of the components of the proposed 24X7 water supply project designed for Puttur city. In his presentation he highlighted the issues in the present intermediate water supply and people are affected. He also explained how the issues will be addressed in the proposed 24X7 water supply project funded by ADB.

- The Karnataka Urban Development and Coastal Environment Management Project (KUDCEMP) was implemented to serve the water supply demand of Puttur city.
- The current capacities of existing WTPs are 9.5 MLD and 2.7 MLD which are not sufficient to meet the water demand of Puttur city by 2046.
- To fulfill the current shortage and future demands upto 2046 for Puttur CMC, KIUWMIP undertake a new project 24X7 Bulk Water Supply and Distribution Network including 8 years of O & M for Puttur City with the assistance of ADB. The scope of the project is as follows:
- A new WTP of 8.7 MLD capacity in addition to the existing 6.8 and 2.7 MLD capacities of WTPs.
- Total 1.68 kms of raw water rising main was proposed to pump raw water from jack well to WTP.
- Construction of 6 new ELSRs for temporary storage of treated water prior to distribution.
- Construction of 2 new GLSRs at Seetigudda for temporary storage of treated water prior to distribution.
- Laying of 142.66 kms of distribution network.
- Installation of 29 Bulk meters for Water Audit.
- Installation of 4500 new House Service Connections with water meters and replacement of 8441 meters.

After completion of the presentation Mr. Valerian Lobo and Mr. Ranjan Das asked the following questions for better understanding of the 24X7 water supply project and Mr. Praveen Rego of GKW provided details for them.

1. Whether water tariff will be increased in 24X7 water supply project?

Ans: Based on the Government of Karnataka order pertaining to water supply, CMC Puttur will decide the water tariff.

2. At present we are getting water from the previous ADB project which is not sufficient to meet our water demands. More over there is leakage problem. How will you address this problem in the proposed project?

Ans: Considering the current issues and water demands up to 2046, the present proposed 24X7 water supply project has been designed. To provide 24X7 water supply, required pipe lines, OHTs, WTP etc has been assessed and included in the DPR. To assess the water flow, flow meters will be installed and each House Service Connection will be provided meters and volumetric water bills will be generated. Customer Service Centres will be initiated to address the grievances including the leakage and wastage of water.

3. When the project will start?

Ans: Tender process and work awarded for SUEZ Company. They need to complete the design validation process. Total construction period is 33 months and O & M period is 8 years.

4. There is power supply problem in Puttur. But 24X7 water supply required uninterrupted power supply. How will you address this problem?

Ans: Express feeder line will be provided to 24X7 water supply project to avoid power fluctuations. Moreover provisions for diesel generators are also made to address the issue of power fluctuations.

5. Which OHT will supply 24X7 water supply to Ward No 10 and 12?

Ans: The existing OHT at Chikkamadhnur will supply water for Ward No 10 and 12 and the capacity of the OHT is 15 lakh literes.

6. If there is problem in the HSC (House Service Connection) water meter, how will you address?

Ans: Water meter will be provided by the project. If there is any problem in the meter will be addressed through customer service centre. The pipe line will be always full while supplying 24X7 water supply and the problems in the meter will be comparatively less than the present intermediate water supply system. Mr. Praveen Rego explained that House Service Connections will be provided through the new pipe lines and old pipes will be disconnected.

7. What is the Pro-poor poly to get water connection?

Ans: CMC Udupi will decide its Pro-poor policy in its Council considering the Government policies and guidelines.

8. How will you address the delay in receiving water tariff by the CMC from its customers?

Ans: Monthly volumetric water tariff bills will be generated by the contractor and the water tariff will be collected by the CMC and arrangements will be made by the CMC to avoid the delay in receiving the water tariff from the end users.

Ward level Public Consultation at Padil is concluded with vote of thanks to all the participants by Mr. Hassan, CDA of RPMU Mangalore.

Sd-

Commissioner  
CMC Puttur







## Appendix 14: Monitoring and Reporting Formats

### Semi-Annual Environmental Monitoring Report Template

#### I. INTRODUCTION

- Overall project description and objectives
- Environmental category as per ADB Safeguard Policy Statement, 2009
- Environmental category of each subproject as per national laws and regulations
- Project Safeguards Team

Name	Designation/Office	Email Address	Contact Number
1. PMU			
2. PIUs			
3. Consultants			

- Overall project and sub-project progress and status
- Description of subprojects (package-wise) and status of implementation (preliminary, detailed design, on-going construction, completed, and/or O&M stage)

Package Number	Components/List of Works	Status of Implementation (Preliminary Design/Detailed Design/On-going Construction/Completed/O&M) <sup>a</sup>	Contract Status (specify if under bidding or contract awarded)	On-going Construction	
				%Physical Progress	Expected Completion Date

<sup>a</sup> If on-going construction, include %physical progress and expected date of completion.

#### II. COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS<sup>a</sup>






- Identify the role/s of Safeguards Team including schedule of on-site verification of reports submitted by consultants and contractors.
- For each package, provide name/s and contact details of contractor/s' nodal person/s for environmental safeguards.
- Include as appendix all supporting documents including **signed** monthly environmental site inspection reports prepared by consultants and/or contractors.
- With reference to approved EMP/site-specific EMP/construction EMP, complete the table below
- Provide the monitoring results as per the parameters outlined in the approved EMP (or site-specific EMP/construction EMP when applicable).
- In addition to the table on EMP implementation, the main text of the report should discuss in details the following items:
  - (i) **Grievance Redress Mechanism.** Provide information on establishment of grievance redress mechanism and capacity of grievance redress committee to address project-related issues/complaints. Include as appendix Notification of the GRM (town-wise if applicable).
  - (ii) **Complaints Received during the Reporting Period.** Provide information on number, nature, and resolution of complaints received during reporting period. Attach records as per GRM in the approved IEE. Identify safeguards team member/s involved in the GRM process. Attach minutes of meetings (ensure English translation is provided).
- Confirm if any dust was noted to escape the site boundaries and identify dust suppression techniques followed for site/s.
- Identify muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads.
- Identify type of erosion and sediment control measures installed on site/s, condition of erosion and sediment control measures including if these were intact following heavy rain;
- Identify designated areas for concrete works, chemical storage, construction materials, and refueling. Attach photographs of each area.
- Confirm spill kits on site and site procedure for handling emergencies.
- Identify any chemical stored on site and provide information on storage condition. Attach photograph.
- Describe management of stockpiles (construction materials, excavated soils, spoils, etc.). Provide photographs.
- Describe management of solid and liquid wastes on-site (quantity generated, transport, storage and disposal). Provide photographs.
- Provide information on barricades, signages, and on-site boards. Provide photographs.
- Provide information on
- Checking if there are any activities being under taken out of working hours and how that is being managed.

**Summary of Environmental Monitoring Activities (for the Reporting Period)<sup>a</sup>**

Impacts (List from IEE)	Mitigation Measures (List from IEE)	Parameters Monitored (As a minimum those identified in the IEE should be monitored)	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Design Phase</b>						
<b>Pre-Construction Phase</b>						
<b>Construction Phase</b>						
<b>Operational Phase</b>						

<sup>a</sup> Attach Laboratory Results and Sampling Map/Locations

**Overall Compliance with CEMP/EMP**

No.	Sub-Project Name	EMP/ CEMP Part of Contract Documents (Y/N)	CEMP/ EMP Being Implemented (Y/N)	Status of Implementation (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)	Action Proposed and Additional Measures Required

**V. APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT**

- Brief description on the approach and methodology used for environmental monitoring of each sub-project

**VI. MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS (ambient air, water quality and noise levels)**

- Brief discussion on the basis for monitoring
- Indicate type and location of environmental parameters to be monitored
- Indicate the method of monitoring and equipment to be used
- Provide monitoring results and an analysis of results in relation to baseline data and statutory requirements

*As a minimum the results should be presented as per the tables below.*

**Air Quality Results**

Site No.	Date of Testing	Site Location	Parameters (Government Standards)		
			PM10 µg/m <sub>3</sub>	SO2 µg/m <sub>3</sub>	NO2 µg/m <sub>3</sub>

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM10 µg/m <sub>3</sub>	SO2 µg/m <sub>3</sub>	NO2 µg/m <sub>3</sub>

**Water Quality Results**

Site No.	Date of Sampling	Site Location	Parameters (Government Standards)					
			pH	Conductivity µS/cm	BOD mg/L	TSS mg/L	TN mg/L	TP mg/L


Site No.	Date of Sampling	Site Location	Parameters (Monitoring Results)					
			pH	Conductivity $\mu\text{S/cm}$	BOD mg/L	TSS mg/L	TN mg/L	TP mg/L

### Noise Quality Results

Site No.	Date of Testing	Site Location	LA <sub>eq</sub> (dBA) (Government Standard)	
			Day Time	Night Time

Site No.	Date of Testing	Site Location	LA <sub>eq</sub> (dBA) (Monitoring Results)	
			Day Time	Night Time

## VII. SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

- Summary of follow up time-bound actions to be taken within a set timeframe.

### APPENDIXES

- Photos
- Summary of consultations
- Copies of environmental clearances and permits
- Sample of environmental site inspection report
- Other

## SAMPLE ENVIRONMENTAL SITE INSPECTION REPORT

Project Name  
Contract Number

NAME: \_\_\_\_\_ DATE: \_\_\_\_\_

TITLE: \_\_\_\_\_ DMA: \_\_\_\_\_

LOCATION: \_\_\_\_\_ GROUP: \_\_\_\_\_

WEATHER CONDITION:

\_\_\_\_\_

INITIAL SITE CONDITION:

\_\_\_\_\_

CONCLUDING SITE CONDITION:

Satisfactory \_\_\_\_\_ Unsatisfactory \_\_\_\_\_ Incident \_\_\_\_\_ Resolved \_\_\_\_\_ Unresolved \_\_\_\_\_

INCIDENT:

Nature of incident:

\_\_\_\_\_

Intervention Steps:

\_\_\_\_\_

Incident Issues

Resolution

Project Activity Stage	Survey	
	Design	
	Implementation	
	Pre-Commissioning	
	Guarantee Period	

### Inspection

Emissions	Waste Minimization
Air Quality	Reuse and Recycling
Noise pollution	Dust and Litter Control
Hazardous Substances	Trees and Vegetation
Site Restored to Original Condition	Yes <input type="checkbox"/> No <input type="checkbox"/>

Signature

---

**Sign off**

**Name**

---

**Name**

**Position**

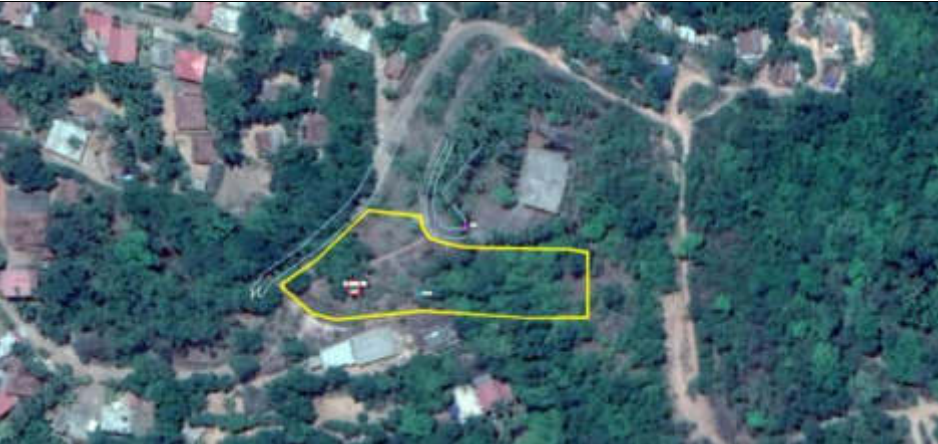
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**Position**

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**Appendix 15: Ambient Air Quality and Noise Level Monitoring Locations**

LOCATION 1: OHT PADNUR(ZONE-2)



LOCATION 2: OHT KARMALA ZONE 3



LOCATION 3: OHT CTO ZONE-4A



LOCATION 4: OHT KABAKA(ZONE-5)



LOCATION 5: OHT BALNADHELIPAD ZONE 6A



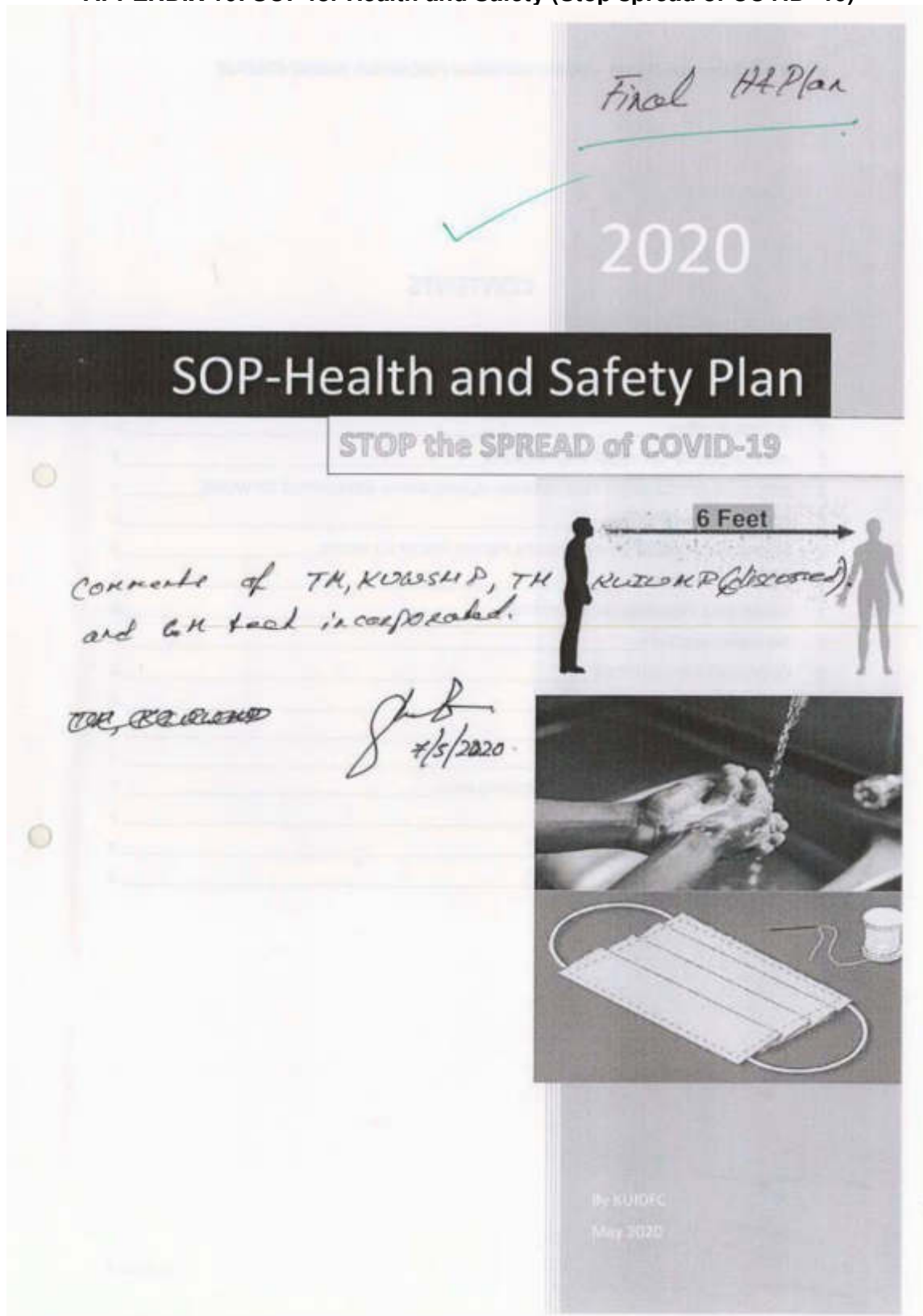
LOCATION 6: OHT VITTAL ROAD ZONE-8





LOCATION 7: GLSR SEETHIGUDDA ZONE-4

**APPENDIX 16: SOP for Health and Safety (Stop spread of COVID -19)**



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## Health and Safety Plan (H&SP) – TAKING MAXIMUM PRECAUTION DURING COVID-19

### 1 INTRODUCTION<sup>1</sup>

- This document is intended to supplement formal H&S policies, procedures and plans that the contractor/agency has in place for its employees and staff working on KUIDFC projects. Hence, this document is not intended to replace any formalized procedures currently in place for the Contractor. Where this guideline does not meet or exceed the standards put forth by the Contractor, the Contractor shall abide by the most stringent procedure available.
- This approved project specific Health and Safety Plan (H&SP) shall be modified to require that the COVID-19 Officer<sup>2</sup> at the Contractor's worksite (appointed by Contractor and agreed by PIU) submit a written daily report to the Client's Representative (PIU Head). The COVID-19 Officer shall certify that the Contractor and all subcontractors are in full compliance with these guidelines.
- The COVID-19 officer should be present on site at all times, when the work is on at the premise.
- Any issue of non-compliance with these guidelines shall be a basis for the suspension of work. The Contractor will be required to submit a corrective action plan (on the next day or immediately as per the nature of issue) detailing each issue of non-conformance and a plan to rectify the issue(s). The Contractor will not be allowed to resume work until the plan is approved by the Client (PIU). Any (additional) issues of non-conformance may be subject to action against the Contractor's health & safety/safeguard clauses of the contract.
- Construction sites operating during the Covid-19 pandemic need to ensure that they are protecting their WORKFORCE and minimising the risk of spread of infection.
- This guidance is intended to introduce consistent measures on sites of all sizes in line with the Government's recommendations on social distancing.
- These are exceptional circumstances and the industry must remain abreast of and comply with the latest Government advice on COVID-19 at all times.
- The health and safety requirements of any construction activity must also not be compromised at this time. If an activity cannot be undertaken safely due to a lack of suitably qualified personnel being available or social distancing being implemented, it should not take place.
- It is to be noted that emergency services are also under great pressure and may not be in a position to respond as quickly as usual.
- Sites should remind the workforce at every opportunity of the Worksite Procedures which are aimed at protecting them, their colleagues, their families and the Karnataka population.

**If a worksite is not consistently implementing the measures in this document, it may be required to shut down, till corrective measures are implemented and approved by employer.**

<sup>1</sup> This document may be made available in the local language, and the salient features would be displayed through signages at the appropriate locations throughout work sites and stretches by the Contractor for wider dissemination and awareness.

<sup>2</sup> The existing safeguards officer OR health & safety officer OR supervisor of the contractor OR PMC-team member can be designated as COVID-19 officer by undergoing the training available at

(a) <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/training/online-training>

(b) <https://openwho.org/courses/eprotect-acute-respiratory-infections>

(c) <https://openwho.org/courses/COVID-19-IPC-EN>



## Health and Safety Plan (H&SP) – TAKING MAXIMUM PRECAUTION DURING COVID-19

### 2 PRINCIPLES OF WORKER PROTECTION

- Consistently practice social distancing
- Cover coughs and sneezes
- Maintain hand hygiene
- Clean surfaces frequently

### 3 MAXIMUM PRECAUTION FOR PERSONS/LABOURERS REPORTING TO WORK

- IF SICK, STAY HOME!
- IF SICK, GO HOME!
- IF SOMEONE SICK, SEND THEM HOME AND REPORT TO COVID OFFICER !

Contractor to provide face masks (of the type approved by Government for use to protect persons from COVID-19) to all persons working in or visiting the worksite. This along with procedures set out in this document is for maximum precaution to protect all persons/labourers at all times.

### 4 COVID-19 TYPICAL SYMPTOMS

- Fever
- Cough
- Shortness of Breath
- Sore Throat

**All persons at the worksite should have their temperature screened by COVID-19 officer with Infrared Thermometer daily before start of work (handheld non-contact), twice a day (both morning and evening)**

### 5 SELF-ATTESTATION BY PERSONS/LABOUR PRIOR TO WORK

Prior to starting a work (on daily basis), each labour /worker will self-attest to the supervisor:

- no signs of COVID-19 symptoms within the past 24 hours.
- No contact with an individual diagnosed with COVID-19. (contact means living with a positive person, being within 6 ft of positive person OR sharing things of positive person)
- Not undergone quarantine or isolation (in case of any labourer /worker who has been quarantined or isolated previously, the engagement shall be only after obtaining the requisite clearance)

The engagement of workers falling in the high-risk category such as workers over the age of 55 years, with underlying medical conditions or health issues, etc. should be done only after obtaining the requisite clearance from trained and registered medical practitioners.

The self-attestation would be verified in collaboration with trained and registered medical practitioners deployed at site through discussions with laborers /workers and/or preliminary checks such as temperature checks, etc. prior to their engagement at site.

In addition, the Contractor shall mandatorily follow all medical test requirements for the workers prior to their engagement and/or mobilization at site as per the guidelines issued by the Central and State government agencies and WHO from time to time.

## Health and Safety Plan (H&SP) – TAKING MAXIMUM PRECAUTION DURING COVID-19

**Persons/Labourers showing COVID-19 symptoms or not providing self-attestation shall be directed to leave the work site and transported to/report to the fever clinic/quarantine centre immediately, at the cost of contractor. Labour not to return to the work site until cleared by fever clinic/quarantine centre.**

### 6 GENERAL DIRECTION

- No handshake, Only Namaste
- Non-essential physical work that requires close contact between workers should not be carried out
- Work requiring physical contact should not be carried out. Scope for automation/mechanisation shall be explored in such cases
- Plan all other work to avoid contact between workers and/or ensure social distancing
- Wash hands often (every 1-2 hrs or as frequently as possible) with soap for at least 20 seconds
- Use hand sanitizer
- No person should enter the work site other than the authorized persons mentioned by supervisor during start of work
- Everyone at work site should practice social distancing by maintaining a minimum distance of 6-feet from others<sup>3</sup> at all times to eliminate the potential of cross contamination.
- Avoid face to face meetings – critical situations requiring in-person discussion must follow social distancing i.e., 6 ft from others.
- Conduct all meetings via conference calls/video, if possible. Do not convene meetings of more than 10 people. Recommend use of cell phones, texting, web meeting sites and conference calls for project discussion
- All individual work group meetings/ talks should follow social distancing
- At each job briefing /toolbox talk, employees are to be asked if they are experiencing any symptoms, and are sent home if they reply in positive
- Each worksite should display laminated COVID-19 safety guidelines and handwashing instructions at suitable locations
- All restroom /toilet facilities should be cleaned (min twice a day), and handwashing facility must be provided with soap, hand sanitizer and paper towels
- All surfaces should be regularly cleaned, including mobiles, tabletops /surfaces, door handles, laptops, records, etc.
- All common areas and meeting areas are to be regularly cleaned (min twice a day) and disinfected at least twice a day
- All persons to maintain their own water bottle, and should not be shared.
- To avoid external contamination, it is recommended everyone bring food from home
- Please maintain Social Distancing separation during breaks and lunch.
- Cover coughing or sneezing with a tissue, then throw the tissue in the trash and wash hands, if no tissue is available then cough /sneeze into your upper sleeves or elbow. Do not cough or sneeze into your hands.
- Clean your hands after coughing or sneezing thoroughly by using soap and water (minimum for 20 seconds). If soap and water are not available, please use a hand sanitizer. The Contractor shall ensure adequate quantities of sanitizer and soap are

<sup>3</sup> Social distancing may not be practical for undertaking certain specific activities within the workplace. It is therefore important to review the work method statements for these types of activities to assess impact and how to find safe ways of doing in line with best available guidance.



### Health and Safety Plan (H&SP) – TAKING MAXIMUM PRECAUTION DURING COVID-19

made available at all locations including site offices, meeting rooms, corridors, washrooms /toilets, etc. as appropriate.

- Avoid touching eyes, nose, and mouth with your hands
- To avoid sharing germs, please clean up after Yourself. DO NOT make others responsible for moving, unpacking and packing up your personal belongings
- If you or a family member is feeling ill, stay home!<sup>4</sup>
- Work schedules are adjusted to provide time for proper cleaning and disinfecting as required.
- Ensure separate disposal of used masks/used hand tissues, etc.

#### 7 WORK-SITE PREVENTION PRACTICES

- At the start of each shift, confirm with all employees that they are healthy and inform all workers of reusable and disposable PPE.
- Outside person(s) should be strictly prohibited at worksite
- All construction workers will be required to wear cut-resistant gloves or the equivalent.
- Use of eye protection (reusable safety goggles/face shields) is recommended. The supply of eye protection equipment to the workers is considered as a standard part of PPE during construction works.
- In work conditions where required **social distancing is impossible** to achieve, such employees shall be supplied with standard face mask, gloves, and eye protection.
- All employees shall drive to work site in a single occupant vehicle. Staff shall not ride together in the same vehicle
- When entering a machine or vehicle which you are not sure whether you were the last person to enter, make sure that you wipe down the interior and door handles with disinfectant (with 1% sodium hypochlorite solution daily) prior to entry. Adequate quantity of the disinfectant shall be provided by the Contractor at all such site-specific locations.
- Workers should maintain separation of 6' from each other.
- Multi person activities will be limited where feasible (two persons lifting activities)
- Gathering places on the site such as sheds and/or break areas will be eliminated, and instead small break areas will be used with seating limited to ensure social distancing.
- Contact the cleaning person of the worksite and ensure proper COVID-19 sanitation processes. Increase cleaning/disinfection visits to at least 2 times a day. Cleaning person(s) to be provided with gloves, gown and face mask for each cycle of cleaning. The Contractor shall make available adequate supply of PPE and chemicals while the threat of COVID-19 continues.
- Clean all high contact surfaces a minimum of twice a day in order to minimize the spread of germs in areas that people touch frequently. This includes but is not limited to desks, laptops and vehicles
- All employees to maintain good health by getting adequate sleep; eating a balanced, healthy diet, avoid alcohol/tobacco; and consume plenty of fluids.
- Continuation of works in construction project with workers available on site and no workers to be brought in from outside, without prior approval of Deputy Commissioner of originating and destination locations.

<sup>4</sup> The workers with no sick-leave would be supported with additional leave while affected by COVID-19 by the Contractor. The workers who have to stay home because of COVID19 affected family member(s), the Contractor shall pay for the days for staying away from the work.

#### Health and Safety Plan (H&SP) – TAKING MAXIMUM PRECAUTION DURING COVID-19

- The site offices shall have adequate ventilation. The air conditioning or ventilation systems installed at the site offices would have high-efficiency air filters to reduce the risk of infection. The frequency of air changes may be increased for areas where close personal proximity cannot be fully prevented such as control rooms, elevators, waiting rooms, etc.
- The Contractor shall carry out contactless temperature checks for the workers prior to site entrance, during working hours and after site works to identify persons showing signs of being unwell with the COVID-19 symptoms

#### 8 WASHING FACILITY

- All worksites should have access to toilet and hand washing facility.
- Providing hand cleaning facilities at entrances and exits. There should be soap and water wherever possible or hand sanitiser if water is not available
- Washing facility with hot water, and soap at fire hydrants or other water sources to be used for frequent handwashing for all onsite employees
- All onsite workers must help to maintain and keep stations clean
- If a worker notices soap or towels are running low or out, immediately notify supervisors. Proactively supervisor should make sure shortage situation never occurs.
- Garbage bins to be placed next to the hand wash facility for discarding of used tissues/towels with regular removal and disposal facility (end of each day)

#### 9 CLEANING PROCEDURES

Increase cleaning/disinfection visits to at least 2 times a day. Cleaning person(s) to be provided with gloves, gown and face mask for each cycle of cleaning.

Each worksite should have enhanced cleaning and disinfection procedures that are posted and shared including sheds, gates, equipment, vehicles, etc. and shall be posted at all entry points to the sites, and throughout the project site. These include common areas and high touch points like

- Taps and washing facilities
- Toilet flush and seats
- Door handles and push plates
- Handrails on staircases and corridors
- Lift and hoist controls
- Machinery and equipment controls
- Food preparation and eating surfaces
- Telephone equipment / mobiles
- Keyboards, photocopiers and other office equipment

Re-usable PPE should be thoroughly cleaned after use and not shared between workers

#### 10 LABOUR CAMP

Contractor shall follow a zero-tolerance policy on wearing of masks.

Masks (homemade<sup>5</sup> can be thought of) to be provided to all the persons/labourers for use at the camp site as well as at the worksite. Increase cleaning/disinfection visits to at least 2 times

<sup>5</sup> Advisory on use of Homemade Protective Cover for Face & Mouth by GOI



## Health and Safety Plan (H&SP) – TAKING MAXIMUM PRECAUTION DURING COVID-19

a day. Cleaning person(s) to be provided with disposable gloves, gown and face mask for each cycle of cleaning.

### 10.1 Toilet Facility

- Restrict the number of people using toilet facility at any one time e.g. appoint one welfare attendant among the labours.
- Wash hands before and after using the facilities
- Enhance the cleaning regimes for toilet facilities particularly door handles, locks and the toilet flush
- Portable toilets should be avoided wherever possible, but where in use these should be cleaned and emptied more frequently
- Provide suitable and sufficient rubbish bins for hand towels with regular removal and disposal.

### 10.2 Eating/snacks Arrangements

- With eateries having been closed (restricted) across Karnataka, providing permanent (till society is safe from COVID-19) on-camp/off-camp cook/helpers can be implemented. Make sure that the "Guidelines for food handling, preparation and distribution during COVID-19" and its regular updates are being followed.
- Whilst there is a requirement for construction camps to provide a means of heating food and making hot water, these are exceptional circumstances and where it is not possible to introduce a means of keeping equipment clean between use, etc. must be removed from use.
- Contractor to arrange all daily need items and grocery at site itself and no worker is allowed to go to shops for daily need items.
- Dedicated eating areas should be identified on camp to reduce food waste and contamination
- Break times should be staggered to reduce congestion and contact at all times
- Hand cleaning facilities or hand sanitiser should be available at the entrance of any room where people eat and should be used by workers when entering and leaving the area
- Workers should sit 2 metres apart from each other whilst eating and avoid all contact
- Where catering is provided on camp, it should provide pre-prepared and wrapped food only
  - Payments should be taken by contactless options wherever possible
  - Crockery, eating utensils, cups etc. should be avoided wherever possible
- Drinking water should be provided with enhanced cleaning measures of the tap mechanism introduced
- Tables should be cleaned between each use
- All rubbish should be put straight in the bin and not left for someone else to clear up; only covered pedal operated bins should be used and the bins should be cleared and cleaned regularly, with strict adherence to safety protocols for disposal and hygiene maintenance (including proper PPE's such as gloves, mask and apron worn by the waste handler/cleaner and disposal at a designated place);
- All areas used for eating must be thoroughly cleaned at the end of each break and shift, including chairs, door handles, etc.

### 10.3 Changing Facilities, Showers and Drying Areas

- Introduce staggered start and finish times to reduce congestion and contact at all times
- Introduce enhanced cleaning of all facilities throughout the day and at the end of each day

**Health and Safety Plan (H&SP) – TAKING MAXIMUM PRECAUTION DURING COVID-19**

- Consider increasing the number or size of facilities available on camp if possible
- Based on the size of each facility, determine how many people can use it at any one time to maintain a distance of two metres
- Provide suitable and sufficient garbage bins in these areas with regular removal and disposal.
- Visitor log should be strictly maintained that the labour camp.

**COVID-19 officer will ensure compliance with prevention issues at the labour camp(s).**

**11 UPDATES ON COVID-19**

The Contractor shall be in touch with the Department of Health & Family Welfare and Labour Department to identify any potential worksite exposures relating to COVID-19, including:

- Strictly follow the guidelines issues by Ministry of health and OSHA
- Other workers, vendors, inspectors, or visitors to the worksite with close contact to the individual
- Labour Camps / Work areas such as designated workstations or rooms /sheds
- Work tools and equipment
- Common areas such as break rooms, tables and sanitary facilities
- Take up insitu health check up camps

Also refer the following websites from time to time for regular updates.

<https://www.mohfw.gov.in/>

<https://karunadu.karnataka.gov.in/hfw/Pages/home.aspx>

This document can be updated from time to time based on the advisories or directions of the Govt.

**12 TRAINING**

- RPMU/PIU to ensure all workers get training on above requirements before start of any construction activity
- During construction period frequent visual and verbal reminders to workers can improve compliance with hand hygiene practices and thus reduce rates of infection. Handwashing posters should also be displayed at work site and labour camps

**13 EMERGENCY CONTACT**


- Provide emergency contact number(s) at work site and labour camp for reporting COVID-19 symptoms

**Ensure all staff and personal use enrol and use the Aarogya Setu app, recommended by GOI for tracking COVID-19 patients.**

N. SRINIVAS  
General Manager (Technical)  
K.U.I.D.F.C Limited  
Govt. of Karnataka Undertaking  
Bangalore - 560 038.

Managing Director  
K.U.I.D.F.C, Bangalore

## Appendix 17: GRM Notification

 **Karnataka Urban Infrastructure Development & Finance Corp. Ltd.,**  
Karnataka Integrated Urban Water Management and Investment  
Programme (KIUWMIP) "Jalashri" - Tranche 2  
Regional Programme Management Unit (RPML),  
First Floor, Mangalore City Corporation Commercial Complex,  
Malikatta Kadri, Mangaluru - 575002  
E-mail: [jalashritranche2devd@kuidfc.com](mailto:jalashritranche2devd@kuidfc.com) Tel: 0824-2981109

No:KIUWMIP/RPMU/CR.88/2017-18 / 389 ದಿನಾಂಕ:23-08-2018

ಬಾಸ್, ಮ್ಯಾನೇಜರ್  
ಕರ್ನಾಟಕ ನಗರ ಮೂಲಸೌಕರ್ಯ ಅಭಿವೃದ್ಧಿ ಮತ್ತು ಹಣಕಾಸು ನಿಗಮ ನಿಯಮಿತ  
ನಗರಾಭಿವೃದ್ಧಿ ಭವನ, # 22, 17 ನೇ 'ಎಫ್' ಕ್ರಾಸ್ ರಸ್ತೆ,  
ಹೆಚ್ ಮದ್ರಾಸ್ ರಸ್ತೆ, ಇಂದಿರಾ ನಗರ, 2ನೇ ಹಂತ  
ಬಿಎಂಟಿಸಿ ಬಸ್ ಡಿಪೋ ಹತ್ತಿರ, ಬೆಂಗಳೂರು-560038  
ಮಾನ್ಯರೇ,

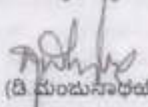
ವಿಷಯ: ಕೈಮಿಪ್ ಟ್ರಾಂಚ್ -2 ಯೋಜನೆಗೆ ಸಂಬಂಧಿಸಿದಂತೆ ನಗರಾಡಳಿತ ಸಂಸ್ಥೆಗಳ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ  
ಕೈಗೊಳ್ಳುವ ಕಾಮಗಾರಿಗಳ ಅನುಷ್ಠಾನ ಸಮಯದಲ್ಲಿ ಉದ್ಭವಿಸಬಹುದಾದ ಸಮಸ್ಯೆಗಳ  
ಬಗ್ಗೆ ಜಿಲ್ಲಾ ಮಟ್ಟದ "ಕುಂದುಕೊರತೆ ಪರಿಹಾರ ಸಮಿತಿ" ರಚನೆ ಧೃಢೀಕರಿಸುವ ಕುರಿತು.

ಉಲ್ಲೇಖ: 1)ತಮ್ಮ ಕಛೇರಿಯ ದೂರವಾಣಿ ಕರೆ. ದಿನಾಂಕ: 23-08-2018  
2)ಈ ಕಛೇರಿಯ ಪತ್ರ ಸಂಖ್ಯೆ:KIUWMIP/RPMU/CR.88/2017-18 / 54 ದಿನಾಂಕ:24-04-2018

\*\*\*\*\*

ಮೇಲಿನ ವಿಷಯಕ್ಕೆ ಸಂಬಂಧಪಟ್ಟಂತೆ ಮಂಗಳೂರು, ಉಡುಪಿ, ಕುಂದಾಪುರ ಮತ್ತು ಪುತ್ತೂರು ನಗರಗಳಲ್ಲಿ  
ಈಗಾಗಲೇ ಕುಂದುಕೊರತೆ ಪರಿಹಾರ ಸಮಿತಿ Grievance Redressal committee (GRC) ಗಳನ್ನು ರಚಿಸಲಾಗಿದೆ.  
ಕಾಮಗಾರಿ ಪ್ರಾರಂಭಿಸಿದ ನಂತರ ಬರಬಹುದಾದ ದೂರುಗಳು / ಕುಂದುಕೊರತೆಗಳನ್ನು ಪರಿಹರಿಸಲು ಈ ಸಮಿತಿ ಅಸ್ತಿತ್ವದಲ್ಲಿ  
ಇರುತ್ತದೆ.

ಈ ಬಗ್ಗೆ ಉಲ್ಲೇಖ(2) ರಂತೆ ದಿನಾಂಕ:24-04-2018 ರಂದು ತಮ್ಮ ಕಛೇರಿಗೆ ವರದಿ ಸಲ್ಲಿಸಲಾಗಿದೆ. ಅದರ ಪ್ರತಿಯನ್ನು  
ತಮ್ಮ ದಯಾಪರ ಅವಗಾಹನೆಗಾಗಿ ಇದೊಂದಿಗೆ ಲಗತ್ತಿಸಿ ಸಲ್ಲಿಸಿದೆ.

ತಮ್ಮ ವಿಶ್ವಾಸಿ  
  
(ಡಿ.ಮಂಡುಸಾಹೇಬ್)  
ಉಪಯೋಜನಾ ನಿರ್ದೇಶಕರು  
KIUWMIP-RPMU  
ಮಂಗಳೂರು  
20/8





Karnataka Urban Infrastructure Development & Finance Corp. Ltd.,  
Karnataka Integrated Urban Water Management and Investment  
Programme (KIUWMIP) "Jalasiri" - Tranche 2  
Regional Programme Management Unit (RPMU),  
First Floor, Mangalore City Corporation Commercial Complex,  
Malikatta Kadri, Mangaluru - 575002  
E-mail : [jalasiritranche2dpd@gmail.com](mailto:jalasiritranche2dpd@gmail.com) Tel : 0824-2981109

No: KIUWMIP/RPMU/CR.88/2017-18/54

Date:24-04-2018

Task Manager,  
KUIDFC- KIUWMIP,  
Nagarabhirudhi Bhavan, Indiranagar,  
Bengaluru 560038  
Sir,

Subject : ADB Assisted KIUWMIP-Tranche-2 Mangaluru-"Jalasiri"- Constitution of Grievance Redressal Committee to receive complaints, evaluate concerns and address grievances of the affected person-reg.

Ref: 1) Your office OM No: KUIDFC/KIUWMIP/DIJC/2014-15/228 /1393 Dated: 28/06/2017.

2) This office letter No : KIUWMIP/RPMU/CR-11/2016-17( Land acq GRC)/612

Dated: 16-02-2018 addressed to Deputy Commissioner, D.K,Mangaluru .

3) This office letter No : KIUWMIP/RPMU/CR-13/2016-17( Land acq GRC)/599

Dated : 16-02-2018 addressed to Deputy Commissioner , Udupi.

4) This Office letter No:KIUWMIP/RPMU/CR-88/2016-17(Land acq GRC)/629

Dated : 20-02-2018 addressed to S.L.A.O MCC Mangaluru.

5) This office letter No: KIUWMIP/RPMU/CR-88/2016-17( Land acq GRC)/627

Dated : 20-02-2018 addressed to Asst.Commr, Kundapura.

6) This office letter No: KIUWMIP/RPMU/CR-88/2016-17( Land acq GRC)/613

Dated : 16-02-2018 addressed to Chief Officer , TMC , Kundapura.

7) This office Letter No: KIUWMIP/RPMU/CR-88/2016-17( Land acq GRC)/628

Dated : 20-02-2018 addressed to AC Puttur.

8) Head Office Email message dated :10.04.2018 11.45AM.

\*\*\*\*\*

With reference to the above subject, the Grievance Redressal Committees have been formed in Mangaluru , Udupi , Puttur and Kundapura towns to receive complaints, evaluate concerns and address the grievance of Affected Persons (APs) under KIUWMIP Project while executing the works under KIUWMIP Project.

The details of the Committees Formed are as here under:

**Grievance Redressal Committee (GRC) of Mangaluru City**

1.	Special Land Acquisition Officer Mangaluru City Corporation, Mangaluru	President
2.	Commissioner Mangaluru City Corporation, Mangaluru	Member
3.	Executive Engineer KIUWMIP- PIU, Mangaluru (on behalf of DPD , KIUWMIP - RPMU )	Member Secretary
4.	Representative of PMDCSC (Project Management Design and Construction Supervision Consultant) Mangaluru	Member
5.	NGO / Affected Community member	Member
6.	SDO (Social Development Officer) RPMU- KIUWMIP, Mangaluru	Member

**Grievance Redressal Committee (GRC) of Udupi City**

1.	Assistant Commissioner Kundapura Sub division, Kundapura	President
2.	Commissioner Udupi City Municipal Council, Udupi	Member
3.	Executive Engineer KIUWMIP- PIU, Udupi (on behalf of DPD, KIUWMIP - RPMU )	Member Secretary
4.	Representative of PMDCSC (Project Management Design and Construction Supervision Consultant) Mangaluru	Member
5.	NGO / Affected Community Member	Member
6.	SDO (Social Development Officer) RPMU- KIUWMIP, Mangaluru	Member

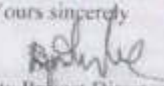
**Grievance Redressal Committee (GRC) of Kundapura Town**

1.	Assistant Commissioner Kundapura Sub division, Kundapura	President
2.	Chief Officer Town Municipal Council, Kundapura	Member
3.	Asst. Executive Engineer KIUWMIP- PIU, Kundapura (on behalf of DPD, KIUWMIP - RPMU )	Member Secretary
4.	Representative of PMDCSC (Project Management Design and Construction Supervision Consultant) Mangaluru	Member
5.	NGO / Affected Community member	Member
6.	SDO (Social Development Officer) RPMU- KIUWMIP, Mangaluru	Member

**Grievance Redressal Committee (GRC) of Puttur City**

1.	Assistant Commissioner Puttur Sub division, Puttur	President
2.	Commissioner City Municipal Council, Puttur	Member
3.	Executive Engineer KIUWMIP- PIU, Puttur (on behalf of DPD, KIUWMIP - RPMU )	Member Secretary
4.	Representative of PMDCSC (Project Management Design and Construction Supervision Consultant) Mangaluru	Member
5.	NGO / Affected Community member	Member
6.	SDO (Social Development Officer) RPMU- KIUWMIP, Mangaluru	Member

Yours sincerely

  
 Deputy Project Director  
 KIUWMIP-RPMU  
 Mangaluru

No: KIUWMIP/RPMU/CR.88/2017-18/389  
2018

Date: 23-08-

Task Manager  
Karnataka Urban Infrastructure Development Finance Corporation  
Urban Development Building, #22, 17<sup>th</sup> F cross road  
Old Madras road, Indhiranagar, 2<sup>nd</sup> Stage  
Near BMTC Bus Depot, Bangalore-560038

Sir,

Sub: Approval for the Grievance redressal committee formation in KIUWMIP Tranche-2 related to municipality during project implementation work arising issues at district level.

Ref: 1) Your office phone call date: 23/05/2018

2) Your office letter no: KIUWMIP/RPMU/CR.88/2017-18/54 date: 24/04/2018

With reference to the above mentioned subject of Mangalore, Udupi, Kundapura and Puttur town already Grievance Redressal committee has created and this is to essence for solving the issues after the start-up of up-coming work complaints and grievances / Grievance Redressal committee.

Report submitted to your office on ref (2) date 24/4/2018 with the attached copies.

Yours Faithfully

Manjunathaiah

Project Director

KIUWMIP/ RPMU

Mangalore

D.

Deputy

**APPENDIX 18: Negotiated Settlement for the Purchase of Proposed GLSR Land at  
Seetigudda, Puttur Town**

**KIUWMIP- Tranche-2, PUTTUR**

**Project Number: 43253-027**

**Package Number: 02PTR01.**

**FEBRUARY 2021**

**IND:**       Karnataka Integrated Urban Water Management  
Investment Program (Tranche2) – Improvements for 24  
x 7 Water Supply Systems for City Municipal Council in  
Puttur.

**Purchase of Land Through Negotiated Settlement for the proposed Ground Level Sump Reservoir (GLSR) at Seetigudda- Puttur town in Mangaluru District, Under ADB assisted KIUWMIPTranche-2 Project.**

**1. Introduction:**

Karnataka Integrated Urban Water Management Investment Program (KIUWMIP) was initiated by the Asian Development Bank (ADB) with the Government of India (GOI) on Dec 30, 2014 with the aim to improve water resource management in urban areas in a holistic and sustainable manner consistent with the principles of Integrated Water Resources Management (IWRM). Investment support is being provided to modernize and expand “Urban Water Supply and Sanitation” (UWSS), and to strengthen institutions to improve water use efficiency, productivity, and sustainability. The project will also improve water resource planning, monitoring, and service delivery.

Project 2 (Tranche 2) currently is being processed and will comprise of four water subprojects like Kundapura, Puttur, Udupi, and Mangalore

**2. Project Description:**

Based on the gap analysis of the water supply in Puttur City and enrooted villages, the following components have been proposed to remedy the inadequacies.

- Up-Gradation of Electro-Mechanical equipment's in Jack well and 6.8 MLD existing WTP.
- 400 mm dia DI K9 Pipe Raw Water Pumping Main – 1.7 Kms from Jack well to proposed 8.7 MLD WTP.
- Dismantling of old 2.7 MLD WTP & Proposed construction of 8.7 MLD WTP at Nekkilady
- 400 mm dia DI K9 pipe Clear Water Transmission Main from WTP to MBR at Seetigudda for 12.4kms.
- Clear Water Feeder Mains for 5.034 Kms for OHTs.
- Construction of 6 OHTs & 1 GLSR
- Laying of Distribution network for 150 kms of HDPE & DI pipes.
- Replacement of 9226 existing water meters and New 4910 nos of HSC.
- Providing 29 Nos of Bulk Water Flow meters.
  - & M for 8 Years.



**Table1: Proposed Components under Puttur Water Supply Project**

<b>Infrastructure</b>	<b>Function</b>	<b>Description</b>	<b>Location</b>
<b>Ground Level Sump Reservoir</b>	Storage of treated water prior to distribution & feeding to OHTs	Construction of new GLSR Capacity; 24.00 LL with Two Compartments Each Capacity:12.00 LL	Seetigudda, Puttur City, 1)2-1-3-124/1 RTC-19-1A2 4006.53 Sq. Mtr or 0-99 Cents <b>AND</b> 2) 2-1-3-124/2 RTC-280/1B1(P3) 728.46 Sq. Mtr or 0-18 Cents

### **3. Scope of Land Acquisition:**

The Detailed Project Report (DPR) indicated that, one site measuring 4734.99 (0 acre 117 cents from Ms. Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred D'Souza-Total of 117 cents) was purchased via negotiated settlement for GLSR at Seetigudda.

Executive Engineer- KIUWMIP- PIU Puttur Mr Ashok Burkule discussed with Souza Family on 27-11-2020, and explained the suitability of the land for the proposed GLSR. Souza family got convinced and now are satisfied with the transaction. Souza and his family were happy to know that their land to be used to provide 24X7 water supply to the Puttur city. On negotiated settlement, without any compulsion, the transaction was completed.

During the site visit, it also has been confirmed that the private land acquisition will not adversely impact the livelihood of either the land owners or the agricultural labours working in the field.

**Table 2: Summary of Resettlement Impacts and Socio-Economic Details**

<b>S I N o</b>	<b>Name of the Head of the likely to be affected HH</b>	<b>Sta tus of Ow ner Shi p</b>	<b>Sale of land (in Acre and Cent s)</b>	<b>Loss of Structur es/ Buildin gs (Nos)</b>	<b>Loss of trees/Cr ops (Nos)/ Bushes</b>	<b>Surve y Numb er</b>	<b>Fair value (Rs)</b>
1	Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred	Ow ner	0-99 Cents	Nil	Bushes removed	2-1-3- 124/1 RTC- 19- 1A2 part	Rs.3,03,60,7 79/- (Rupees Three Crore, Three Lac, Sixty Thousand Seven Hundred and Seventy- Nine) only
2	Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred	Ow ner	0-18 Cents	Nil	Bushes removed	2-1-3- 124/2 RTC- 280/1 B1(P3 ) part	
						<b>Total Rs</b>	3,03,60,779

A consultative meeting was conducted with Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred D'Souza expressed her pride and satisfaction about the sale of the land for a community cause. The rate for the land offered by the government agency satisfied them.

Only one family is involved in this transaction. There are no disabled persons in their family. The couple are in their private business and they have a daughter who is studying in the college. This household is above the poverty level.

#### **1. Market Value of the Land**

The market value of this private land of 117 cents is exactly Rs. 3,03,60,779/- (Rupees Three Crore, Three Lac, Sixty Thousand Seven Hundred and Seventy-Nine) only was paid to Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred D'Souza. It has been confirmed that the private land acquisition is not adversely impact the livelihood of either the land owners.

#### **2. Number of farm workers affected by acquisition**

No farm workers/labourers are affected by land purchased through negotiated settlement of 117 Cents as it is a city residential area. More over this area is in Puttur- City Municipal Council, and there are no any agricultural activities in the above-mentioned site.

### 3. Conclusion:

Since Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred D'Souza sold total 117 cents, she was satisfactorily compensated for sale of Land, the details are as Follows:

Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred D'Souza, sold of 117 Cents Land for the amount paid Rs. 3,03,60,779/- (Rupees Three Crore, Three Lac, Sixty Thousand Seven Hundred and Seventy-Nine) only, by Cheque no -----dated 00-00-00, drawn on HDFC Bank in the name of Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred D'Souza and Rs. 3,03,60,779/- (Rupees Three Crore, Three Lac, Sixty Thousand Seven Hundred and Seventy-Nine) Only.

1) by HDFC Bank Cheque Number: 000245 dated drawn on 23/11/2020.

Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred D'Souza sold of 117cents land and an amount paid Rs. 3,03,60,779/- (Rupees Three Crore, Three Lac, Sixty Thousand Seven Hundred and Seventy-Nine) only

2) by HDFC Bank Cheque Number: 000245 dated drawn on 23/11/2020, in the name of Ms. Nora D'Souza Yane Leo Nora D'Souza W/O Wilfred D'Souza

**Photo:** There was no structure or agricultural activity on the site No trees will be cut.



K.F.C.(Article 187) form of Utilization Certificate  
(Article 187KFC1958) YEAR 2020-21 UP TO 05-12-2020

Sl No	Letter/Order No and Date	Amount in Rs
1	RECEIVED VIDE CH NO-000040 dated 04/11/2020 drawn on Bank of Baroda Favours Municipal Commissioner CMC Puttur	3,03,60,779.00

Certified that a sum Rs 3,03,60,779.00 is released by KUIDFC towards Purchase of land for the purpose of construction GLSR under "KIUWMIP " Jalasiri 24x7 water supply to Puttur City Project at Puttur Kasaba Survey no19/1a2 and 280/01/bp01 out of this amount a sum of Rs 3,03,60,779.00 has been utilized for purpose for which it has been sanctioned the balance amount is remaining unspent is Rs NIL as on 05-12-2020

Certified that I have satisfied myself the condition on which the grant was sanctioned has been duly fulfilled and that I have exercised checks to see that the money actually spent to the purposed to which grant was made.

Place: Puttur  
Date: 05-12-2020

  
 Municipal Commissioner  
 City Municipal Council Puttur  
 Puttur City Municipal Council





20.2.2021 ರೇ ಆದೇಶದ ಸಂಖ್ಯೆ 3963  
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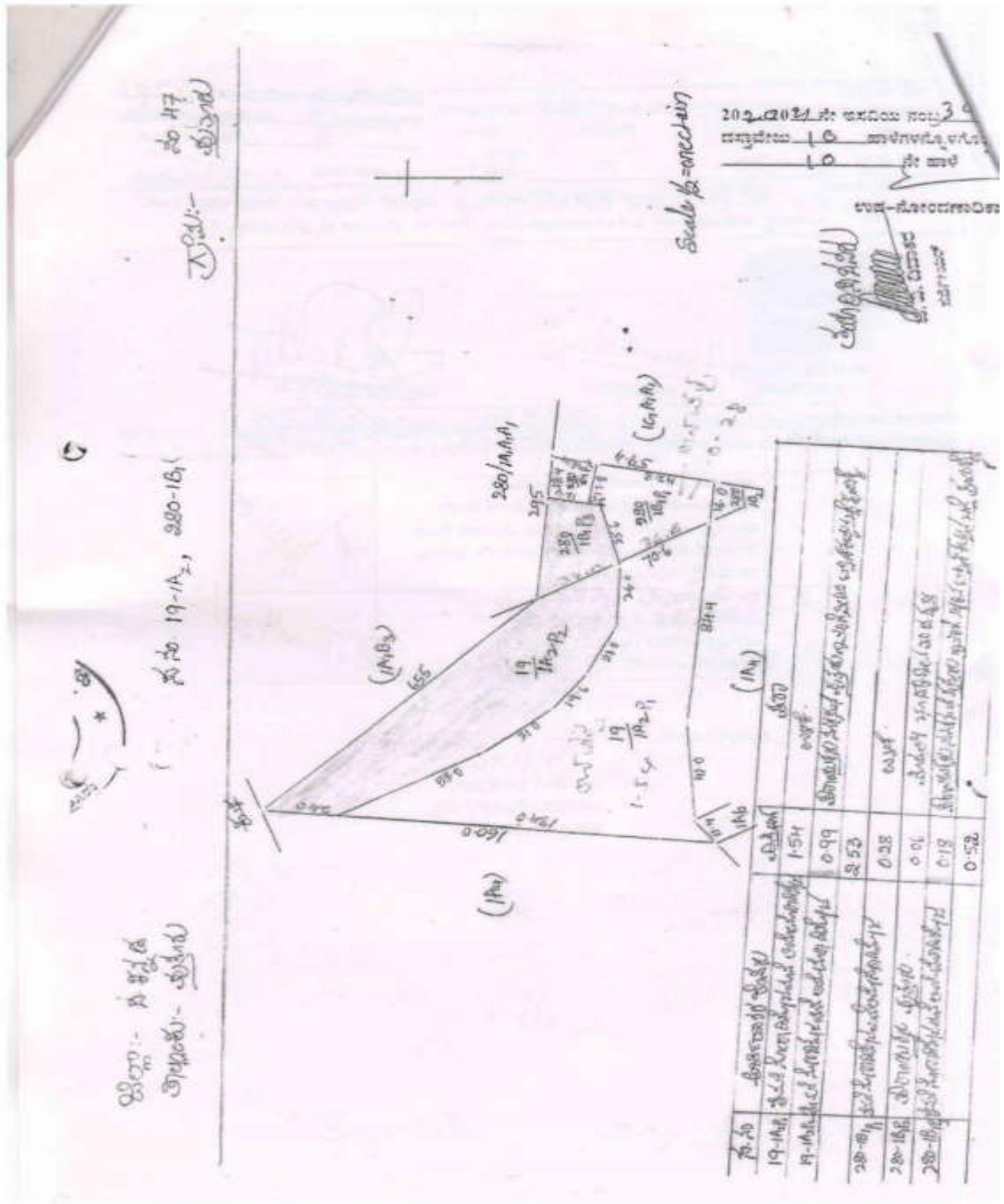
ದಕ್ಷಿಣ ಕನ್ನಡ ಜಿಲ್ಲಾ ಪುತ್ಥೂರು ತಾಲೂಕು, ಪುತ್ಥೂರು ಕಸಬಾ ಗ್ರಾಮದ ಬಾಬು.  
 ಪುತ್ಥೂರು ನಗರಸಭಾ ಮಿತಿಯಲ್ಲಿರುವ ಆಸ್ತಿ.

ಸ್ಥಿತಿ ಸಂಖ್ಯೆ	ಸ.ಸಂ. ಸಡಿ.ನಂಟು	ಕಸ್ತ	ಮೌಲ್ಯ
2-1-3-124/1 ಪೈಕಿ (ಸಮೂಹ 3 ರ ಪ್ರಕಾರ)	19-1A2 ಪೈಕಿ ಪಹಣಿ ಪ್ರಕಾರ.  19-1A2P2 ಲಗ್ನ ನಕ್ಷೆ ಪ್ರಕಾರ  <u>ಇದರ ಗಡಿಗಳು</u> ಪೂರ್ವ: ಸ.ಸಂಖ್ಯೆ 19/1A1B3 ಮತ್ತು ಸ.ಸಂಖ್ಯೆ 280/1B1 ಇದರ ಗಡಿ (165.0 ಮೀಟರ್) ಪಶ್ಚಿಮ: ಇದೇ ಸ.ಡಿ.ಯಲ್ಲಿ ಉಳಿಕೆ ಅಂಶ ಮತ್ತು ಸ.ಸಂಖ್ಯೆ 19/1A4ರ ಗಡಿ (89.0 ಮೀಟರ್) ಉತ್ತರ: ಸ.ಸಂಖ್ಯೆ 19/1A1B3 ಮತ್ತು ಕಬ್ಬೆ ಗ್ರಾಮದ ಗಡಿ (0.0 ಮೀಟರ್) ದಕ್ಷಿಣ: ಇದೇ ಸ.ಡಿ.ಯಲ್ಲಿ ಉಳಿಕೆ ಅಂಶ (66.6 ಮೀಟರ್)	ಭೂಪರಿವರ್ತಿತ	4006.53 ಚದರ ಮೀಟರ್ ಅಥವಾ ಎಕ್ರೆ-ಸೆಂಟ್ಸ್ 0-99 (ತೊಂಭತ್ತೊಂಭತ್ತು ಸೆಂಟ್ಸ್ ಮಾತ್ರ)
2-1-3-124/2 ಪೈಕಿ (ಸಮೂಹ 3 ರ ಪ್ರಕಾರ)	280/1B1(P3) ಪೈಕಿ ಪಹಣಿ ಪ್ರಕಾರ.  280/1B1P3 ಲಗ್ನ ನಕ್ಷೆ ಪ್ರಕಾರ  <u>ಇದರ ಗಡಿಗಳು</u> ಪೂರ್ವ: ಇದೇ ಸ.ಡಿ. ಯಲ್ಲಿ ಉಳಿಕೆ ಅಂಶ (15.4 ಮೀಟರ್) ಪಶ್ಚಿಮ: ಸ.ಸಂಖ್ಯೆ 19/1A2ರ ಗಡಿ. (34.0 ಮೀಟರ್) ಉತ್ತರ: ಸ.ಸಂಖ್ಯೆ 280/1A1A1A1 ರ ಗಡಿ (40.6 ಮೀಟರ್) ದಕ್ಷಿಣ: ಇದೇ ಸ.ಡಿ.ಯಲ್ಲಿ ಉಳಿಕೆ ಅಂಶ (35.6 ಮೀಟರ್)	ಭೂಪರಿವರ್ತಿತ	728.46 ಚದರ ಮೀಟರ್ ಅಥವಾ ಎಕ್ರೆ-ಸೆಂಟ್ಸ್ 0-18 (ಪದಿನೆಂಟು ಸೆಂಟ್ಸ್ ಮಾತ್ರ)



*Signature*

*Signature*  
 ಮುಖ್ಯಸ್ಥರು



## SAUW IEE Review - Information Log

**Instructions:** Provide information based on IEE submitted by Project Management Unit (PMU). This IEE log sheet will serve as record of the review findings, comments, and/or further actions required during implementation. A copy of the IEE log sheet should be (i) provided to PMU for their record and guidance on actions during implementation; (ii) attached in the cleared IEE to be disclosed; (iii) used as reference for review of updated/final IEE and (iv) inputted in the SARD Safeguards Compliance Tracking System.

<b>Project:</b>	<b>IND: Karnataka Integrated Urban Water Management Investment Program (Tranche 2) – Improvements for 24 x 7 Water Supply System for City Municipal Council in Puttur.</b>		
<b>Loan No.:</b>	43253-027	<b>Package No.:</b>	02PTR01
<b>Components:</b>	<ul style="list-style-type: none"> <li>(i) Replacement of two old pumps with new vertical turbine pumps in Jackwell at Nekkilady;</li> <li>(ii) construction of 1.70-kilometer (km) of raw water pumping main (400 millimeter (mm) diameter) from Jackwell to water treatment plant (WTP) at Nekkilady;</li> <li>(iii) construction of 9.96 km clear water main of 400 mm diameter from the proposed new Water Treatment Plant (WTP) at Nekkilady to ground level service reservoir (GLSR) at Seetiguda;</li> <li>(iv) construction of new WTP of capacity 8.7 million litres per day (MLD) at Nekkilady;</li> <li>(v) d tanks (OHTs) – (a) 300 kiloliters (kl) capacity in Zone-2 at Mura Shantinagra, Padnur, (b) 100 kl in Zone-3 at Karmala near Microwave station, (c) 600 kl in Zone-4A at Darbe; (d) 250 kl in zone-5 at Lingadagudda, Kabaka, (e) 400 kl in Zone-6A at Balnad Helipad, and (f) 100 kl zone-8 at BalnadKelyadi, Vitla Road;</li> <li>(vi) construction of two compartment GLSRs – of 2400 kl capacity at Seethigudda;</li> <li>(vii) Intermediate pumping station at Seethigudda;</li> <li>(viii) booster pumping station at Balnad Helipad,</li> <li>(ix) 29 bulk water meters;</li> <li>(x) 158.35 km of distribution network to cover 24x7 water supply to Puttur city for 10 zones; and</li> <li>(xi) Replacement of 9226 existing meters and providing new house service connections of 4,910 for un-covered households.</li> </ul>		
<b>Contract Type:</b>	Design validation, item rate contract.		
<b>Date of IEE:</b>	May 2021		
<b>Draft IEE?</b>	<b>Updated/Revised IEE?</b>		<b>Others</b>
	X		Final IEE submitted for disclosure at PMU and ADB websites after revision in original scope of work.

	Activity	Status		Detailed Comments and Further Actions Required
		Yes	No	
1.	Environmental assessment has been satisfactorily conducted based on ADB REA	x		The updation in Environmental Assessment has been conducted for the proposed Water Supply distribution system improvement using the design



	Activity	Status		Detailed Comments and Further Actions Required
	Checklist and scoping checklist. <sup>1</sup>			<p>validation surveys and secondary environmental baseline information for Improvements for 24 x 7 Water Supply System for City Municipal Council in Puttur” proposed under the tranche-2.</p> <p>Based on the project activities, the identified impacts are mitigated through suitable management measures that have been suggested in the EMP for various stages of the project viz. Design stage, Pre-construction stage, Construction stage and Operation stage.</p> <p>This IEE is updated and submitted for review after design validation survey by contractor.</p>
2.	Environmental assessment based on latest project components and design	<b>Yes</b>	<b>No</b>	This IEE is prepared based on on-ground design validation survey of proposed subproject components
		x		
3.	Statutory Requirements <sup>2</sup>		Forest Clearance	<b>Not applicable</b> , as per IEE there is no reserved forest / protected forest or environmental sensitive areas within or in the vicinity of the project area.
		x	No Objection Certificate	<p><b>Action required:</b></p> <p>The alignment proposed for the subproject is passing through various urban and rural roads and crossing rail lines, for pipe laying contractor required following permission</p> <ul style="list-style-type: none"> <li>• The road cutting permission from PWD,</li> <li>• Permission from National Highways for rider lines parallel to NH-275.</li> </ul>

<sup>1</sup> ADB Rapid Environmental Assessment Checklist for screening and categorization. Scoping Checklist (“No Mitigation Scenario” Checklist) for scope of IEE, identification of impacts and development of environmental management plan.

<sup>2</sup> If applicable, include date accomplished or obtained.

	Activity	Status		Detailed Comments and Further Actions Required
				<ul style="list-style-type: none"> <li>• Clear Water rising Main of 400 mm dia DI pipe passes all along Highway for 2051 m require permission from NH</li> <li>• Utility shifting permission required obtained from concern agencies.</li> <li>• Railway crossing at chainage 140/400 at Bolwar near Kabaka Puttur railway station for transmission main component</li> </ul> <p>Along with the applicable clearance for the subproject. The Contractor should obtain the NoC from the private land owners for the temporary storage of construction materials/ construction camp.</p> <p>The Contractor is also required to obtain:</p> <p>(i) Labour license from Labour department for the construction labours.</p> <p>(ii) PUC certificate from for the construction vehicles</p>
			Site Location Clearance	<p><b><u>Action required:</u></b> the contractor to update and report in SEMR the following during construction:</p> <ul style="list-style-type: none"> <li>• A road closure and traffic diversion plan for pipe laying on roads</li> <li>• Site clearance plan, including identified locations for disposal of excavated extra earth material and C&amp;D waste.</li> <li>• Table containing dia of pipe, width of road and ownership for road cutting permission to be updated in IEE and NOC status to be updated in progress reports</li> </ul>
			Environmental Compliance Certificate	<p><b>Not applicable,</b> the components are not listed in the Schedule 1 of the EIA</p>

	Activity	Status		Detailed Comments and Further Actions Required														
				Notification Act and its rules and regulations.														
		x	Permit to Construct (or equivalent)	<p>Under Water (Prevention and Control of Pollution) Act of 1974, Rules of 1975, and amendments, the components of Water Supply projects in Karnataka are exempted from taking CTE and CTO from Pollution Control board.</p> <p><u>Action required:</u> Under Air (Prevention and Control of Pollution) Act of 1981, Rules of 1982 and amendments, the CTE and CTO from KSPCB is required for (i) Batch mixing plant, DG set.</p> <p>If contractor is procuring from third party, contractor has to ensure that third party is having CTE/CTO from KSPCB and Contractor to collect the copy of these and submit to PIU for approval.</p> <p>CTE to be obtained prior to start of construction and CTO to be obtained prior to commissioning. CTO renewal to be undertaken during operations stage.</p>														
		x	Permit to Operate (or equivalent)															
		x	Others		<p>Per Table 5 of the IEE states – “No Tree cutting is envisaged”.</p> <p>Per Table 5 of the IEE states – “No protected monument near project area in Puttur</p>													
5.	Policy, legal, and administrative framework	<table><tr><th>Adequate</th><th>Not Adequate</th></tr><tr><td>x</td><td></td></tr><tr><td colspan="2">Included discussions and requirements of the:</td></tr><tr><td>X</td><td>National regulation/law on EIA</td></tr><tr><td>X</td><td>Environmental agency</td></tr><tr><td>X</td><td>Relevant international environmental agreements</td></tr><tr><td>x</td><td>Environmental standards (IFC’s EHS Guidelines)</td></tr></table>		Adequate	Not Adequate	x		Included discussions and requirements of the:		X	National regulation/law on EIA	X	Environmental agency	X	Relevant international environmental agreements	x	Environmental standards (IFC’s EHS Guidelines)	<p>The IEE includes discussions on applicable policy, acts and rules. Obtaining the required permits and NOC is the responsibility of PMU/PIU.</p> <p>The IEE also confirmed that international best practices (specified in EHS Guidelines) have been incorporated in the preliminary design.</p>
Adequate	Not Adequate																	
x																		
Included discussions and requirements of the:																		
X	National regulation/law on EIA																	
X	Environmental agency																	
X	Relevant international environmental agreements																	
x	Environmental standards (IFC’s EHS Guidelines)																	

	Activity	Status				Detailed Comments and Further Actions Required	
						<b>Further action/s:</b> the compliance to conditions in the permits/NOC will be reported in the SEMRs. PMU to report in SEMR, justification if (i) lesser stringent standards or lesser performance levels as per EHS Guideline will be followed in the detailed engineering design; (ii) operator will consider other standards/indicators not consistent with the cleared EMP.	
6.	Anticipated environmental impacts and mitigation measures	assessed impacts and risks:		mitigation measures included:			Contractor has already prepared and submitted site specific H&S plan including guidelines for COVID -19 to PMU and PMU reported same in SEMRs.
				Yes	No	n/a	
			Biodiversity conservation			x	<u>Not applicable:</u> As per IEE there is no protected forest area near proposed project area.
			Pollution prevention and abatement	X			Based on the predicted impacts from the proposed water supply subproject construction activities, suitable EMP (including pollution prevention and abatement measures) for various stages of the project viz. Design stage, Pre-construction stage, Construction stage and Operation stage has been prepared to mitigate significant environmental impacts.  The total cost to implement EMP for water supply system is ₹2,800,500.  Google map of identified sample monitoring sites are also attached in Appendix 15 of this IEE.
			Health and safety	X			A section on Occupational Health and Safety is included in the IEE, which covers site-specific occupational health and safety plan, use of

	Activity	Status					Detailed Comments and Further Actions Required
							<p>personal protective equipment's (PPE's), OH &amp;S Training, International Standards such as the World Bank Group's Environment, Health and Safety Guidelines etc.</p> <p>Contractor's SEMP provides specific information on (i) how contractor will implement occupational health and safety; (ii) contractor to confirm appointment/delegation of Site Health and Safety Officer; and (iii) include contractor's Healthy and Safety Plan.</p>
			Physical cultural resources			X	<p>There are no protected monuments near project area in Puttur.</p> <p><b>Action Required:</b> Regular trainings to be given to contractor for chance find and action to ensure its removal or protection in situ in case of any new finding.</p>
			Cumulative impacts			x	<p>The proposed subproject is to provide 24x7 water supply at a rate of 135 LPCD at consumer end, it will have a positive impact among the community. However, the same subproject will lead to the generation of wastewater/ sewage, which will be take care by sewerage system of adequate capacity including treatment is being proposed under the KIUWMIP.</p>
			Transboundary impacts			x	<p>Not applicable. The subproject/package is relatively small-scale in nature to have potential Trans boundary impacts</p>
7.	Impacts from Associated Facilities <sup>3</sup>	Addressed	Not Addressed	Not applicable			Not applicable. There are no associated facilities under this subproject/package.
				x			
8.	Analysis of Alternatives	Yes		No			

<sup>3</sup> ADB SPS (Appendix 1 para 6) defines associated facilities as not funded as part of the project (funding may be provided separately by the borrower/client or by third parties), and whose viability and existence depend exclusively on the project and whose goods or services are essential for successful operation of the project.

	Activity	Status		Detailed Comments and Further Actions Required
		x		<b>Not applicable</b> , this is a Category "B" Project. Due to the constraints in the availability of land, only feasible alignment is chosen for the subproject
9.	EMP budget included	<b>Yes</b>	<b>No</b>	The indicative cost of EMP for Package is INR <b>₹2,800,500</b> . The bid documents include BOQ item for items related to EMP implementation.
		x		
10.	EMP implementation integrated in FAM/PAM and bid documents	<b>Yes</b>	<b>No</b>	(i) The draft Project Administration Manual included sections on environmental safeguards. Information in the PAM has been considered in the preparation of the draft IEE. (ii) The EARF also provided detailed requirements on EMP implementation. These are included in the IEE. (iii) The draft IEE (cleared by ADB) was included in the contract documents and was provided to the contractor.
		x		
11.	Consultation and Participation	<b>Yes</b>	<b>No</b>	A public consultation workshop was conducted on 28 June 2016 in Puttur to discuss the proposed project and likely environmental issues and mitigation measures. Public representatives, officials from various agencies, district level officers, from each project town, including Puttur, were participated in the workshop. Details of this consultation meeting is appended at Appendix 13.  Other than above Various other meetings held in Puttur for the subproject, which included (i) elected representatives of ULB consultation held on 6 March 2015 and passed a resolution indicating the need of project, (ii) General Body meeting with all elected members/
		x		

	Activity	Status		Detailed Comments and Further Actions Required
				<p>Councilors meeting held on November 2015, (iii) Member of Legislative Assembly (MLA) held consultation meeting on 13 June 2016, (iv) site visit to all sites and consultation with local nearby residents.</p> <p>Further ward wise consultation with public and stakeholders were conducted in month of November and December 2018</p> <p>The summary of these consultations are presented in table 12 and Appendix 13 of IEE.</p>
12.	Grievance Redress Mechanism	Yes	No	<p>As per the IEE, grievance redress mechanism (GRM) for the subproject has been established in accordance with an official Memorandum issued upon the order of Joint Managing Director KUIDFC Official Memorandum dated 28 June 2017.</p> <p>The GRC for the project is headed by (a) Special Land Acquisition Officer/Assistant Commissioner of the concerned sub-Division as Chairman of the sub Division with members as follows: (i) ULB Commissioners/Chief Officer of the concerned ULB towns, (ii) Deputy Project Director as member Secretary and Convener, (iii) PMDCSC Engineer, (iv) Affected Community member/NGO, and (v) Safeguards Officer RPMU KIUWMIP Mangalore member and will shoulder responsibility of keeping records of grievances/ complaints in details</p>
		x		
		Description of GRM:		
		GRC members identified:		
		GRM established and notified?		
		Yes		Office order included in Appendix 17 IEE
13.	Disclosure		Endorsement to disclose on ADB website	The Draft and updated IEEs was already disclosed on web.

	Activity	Status		Detailed Comments and Further Actions Required
				The Final IEE to be disclosed on ADB web after fulfilling the requirements of the SPS, 2009
			Disclosed on project website	Upon endorsement, the Final IEE shall be disclosed on project website
			Relevant information available to stakeholders and affected people in language and form they understand.	The stakeholder's consultation and subsequent press release has helped the project information to reach the local people to some extent. However, upon disclosing the safeguard documents, the project relevant information shall be better understood by the local people
14.	Mobilized PMU Environment Specialist	Yes	No	Mr. Shashisekhar SP, PMU – KUIDFC, Environmental expert
		X		
15.	Mobilized PIU Environment Specialist	Yes	No	Mr. Shamant, Assistant Engineer, AE, PIU, Puttur, Package 02PTR01 In-charge Environment safeguard compliance
		X		
16.	Mobilized Environment Specialist at PMU level	Yes	No	Mr. Kiran Surya PMSCS Environment Specialist
		X		
17.	Mobilized Environment Specialist at PIU level	Yes	No	
		X		
18.	Confirm bid and contract documents and/or EMP include requirement for the contractor to appoint EHS supervisor and/or nodal person for environment safeguards	Yes	No	
		x		
19.	If contract awarded already, confirm contractor's appointment of EHS supervisor and/or nodal person for environmental safeguards	Yes	No	
		X		Mr. Y Amruth, SPPL– SIPL, DRS Infra Tech, Package 02PTR01
20.	Awareness training on compliance to safeguard requirements	Yes	No	Table 18 of IEE Outlines the details of training and capacity building program on EMP Implementation The training/ workshop to be conducted by the environmental safeguard's specialists of PMU/PIU.
		x		



	Activity	Status		Detailed Comments and Further Actions Required
21.	Monitoring and Reporting	Yes	No	
		x		Detailed in the EARF and the IEE.
22.	<b>Others/Remarks</b>	<ul style="list-style-type: none"> <li>Provide status of design validation survey and cut off date for submission of final IEE</li> </ul>		
	Prepared by: <i>(name, designation and date)</i>	Govind Singh Rathore, April 20, 2021		
	Noted and Checked By: <i>(name, designation and date)</i>			
	Documents/References:	1. The Draft IEE of February 2019 2. Final IEE of May 2021		