

# Environmental Monitoring Report

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Project Number: 43253-027  
Semestral Report (July – December 2019)  
January 2020

## INDIA: Karnataka Integrated Urban Water Management Investment Program (Tranche 2)

### Main Report

Prepared by Karnataka Urban Infrastructure Development and Finance Corporation, Government of Karnataka for the Asian Development Bank.

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# Semi Annual Environmental Monitoring Report

**ADB Loan Number: 3726 -IND  
Period Covered: July to December 2019**

**India: Karnataka Integrated Urban Water  
Management Investment Program (KIUWMIP)**

**Tranche 2- 2<sup>nd</sup> SEM Report**

**January 2020**



**Prepared by  
Karnataka Urban Infrastructure Development Finance Corporation  
(KUIDFC) Government of Karnataka for Asian Development Bank**

## **ABBREVIATIONS**

ADB	Asian Development Bank
ADB SPS	Asian Development Bank Safeguard Policy Statement
APMC	Agricultural Produce Market Committee
BOD	Bio-Chemical Oxygen Demand
BPL	Below Poverty Line
CAP	Corrective Action Plan
CBO	Community Based Organizations
CC	Complaint Cell
CC Drain	Cement Concrete Drain
CFE	Consent for Establishment
CFO	Consent for Operation
CGWB	Central Ground Water Board
CMC	City Municipal Council
CPCB	Central Pollution Control Board
dbA	Decibels
DI	Ductile Iron
DPR	Detailed Project Report
DS	Double Suction
EA	Executing Agency
EAC	Expert Appraisal Committee
EC	Environmental Clearance
EIA	Environmental Impact Assessment
ELSR	Elevated Storage Reservoir
EMP	Environmental Management Plan
GDP	Gross Domestic Product
GIL	Grasim Industries Limited
GoI	Government of India
GoK	Government of Karnataka
GLSR	Ground Level Service Reservoir
GRC	Grievance Redress Committee
HDPE	High Density Polyethylene
H&S	Health and Safety
IA	Implementing Agency
IEE	Initial Environmental Examination
IWRM	Integrated Water Resource Management
KIUWMIP	Karnataka Integrated Urban Water Management Investment Program
KMRP	Karnataka Municipal Reforms Project
KSPCB	Karnataka State Pollution Control Board
KSRTC	Karnataka State Road Transport Corporation
KTCP	Karnataka Town and Country Planning
KUIDFC	Karnataka Urban Infrastructure Development & Finance Corporation
KUWSDB	Karnataka Urban Water Supply & Drainage Board
M&M	Major and Medium
MFF	Multitranchise Financing Facility
MoEFCC	Ministry of Environment, Forest & Climate Change
MSL	Mean Sea Level
NGO	Non-Government Organization

NKUSIP	North Karnataka Urban Sector Investment Program
NO <sub>2</sub>	Nitrogen Oxide
NRW	Non Revenue Water
OCRP	Office of Compliance Review Panel
OHT	Over Head Tank
OSPF	Office of the Special Project Facilitator
O&M	Operation & Maintenance
PC	Program Consultants
PCU	Project Co-ordination Unit
PMU	Program Management Unit
PMDSC	Project Management Design and Construction Supervision Consultant
PMSC	Project Management and Construction Supervision Consultant
PIU	Program Implementation Unit
PWD	Public Works Department
RCC	Reinforced Cement Concrete
REA	Rapid Environmental Assessment
RF	Resettlement Framework
RP	Resettlement Plan
RPMU	Regional Program Management Unit
RSPM	Residual Suspended Particulate Matter
SC	Scheduled Caste
SEIAA	State Environmental Impact Assessment Authority
SPM	Suspended Particulate Matter
SPS	Sewage Pumping Station
ST	Scheduled Tribe
STP	Sewage Treatment plant
SW	Stone Ware
TMC	Town Municipal Council
ToR	Terms of References
UGD	under Ground Drainage
ULB	Urban Local Body
UDWSP	Urban Drinking Water & Sanitation Policy
USD	US Dollars
(U)WSS	(Urban) Water Supply & Sanitation

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## I. INTRODUCTION

### A. Overall Project Description and Objectives

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 & 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 & sanitation within an IWRM context.

2. The Program is being implemented over a four-year period and will be funded by a loan via the Multitranche Financing Facility (MFF) of Asian Development Bank (ADB). The Executing Agency is the Karnataka Urban Infrastructure Development Finance Corporation (KUIDFC) and implementing agencies for the Investment Program will be respective Urban Local Bodies (ULBs). Initially Mangalore and Kundapura are the 2 towns chosen to benefit from the tranche-2 of the investment. As the Detailed Project Report costs have exceeded substantially compared to the costs indicated on the basis of feasibility studies, ADB would finance 24X7 water supply in 4 towns namely (1) Kundapura, (2) Puttur (3) Udupi (4) Mangalore under Tranche-2 and UGD in one town namely Mangalore.

3. The programme proposes the MFF spread across two tranches over a period of ten years (2014-2024) with the total size of \$225 M. The shares of ADB propose to be \$150 million and counterpart funding from the state Government is estimated at \$75 million. In addition to the Loan funds of \$150M, the ADB has agreed to support the programme with an additional amount of \$1.8 M as a grant fund out of its urban financing partnership facility.

4. In Tranche-2, main outcome will be providing 24 x 7 Water Supply at Kundapura, Puttur and Udupi towns and replacement of Old Sewerage Pumping Mains at Mangalore. Location of Project Towns is shown in **Figure-1**. ADB requires the consideration of environmental issues in all aspects of the Bank's operations, and the requirements for Environmental Assessment are described in ADB's SPS (2009). This Initial Environmental Examination (IEE) addresses 24 x 7 water supply components proposed under Tranche 2.

5. The Program Management Unit (PMU) is located in Bangalore, Regional Program Management Unit (RPMU) in Mangalore and Program Implementation Unit is also placed in Mangalore city. The Project Management Construction Supervision Consultant (PMSCS, Egis India Consulting Engineers Pvt.Ltd) is also in placed.

### B. Environment Category as per ADB Safeguard Policy Statement, 2009

6. **Environmental Categorization.** KIUWMIP Tranche-2 towns have been classified as ADB Environmental Category B as per the SPS as no significant impacts are envisioned. Accordingly this Initial Environmental Examination (IEE) has been prepared, and assesses the environmental impacts and provides mitigation & monitoring measures to ensure no significant impacts as a result of the subproject.

7. **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

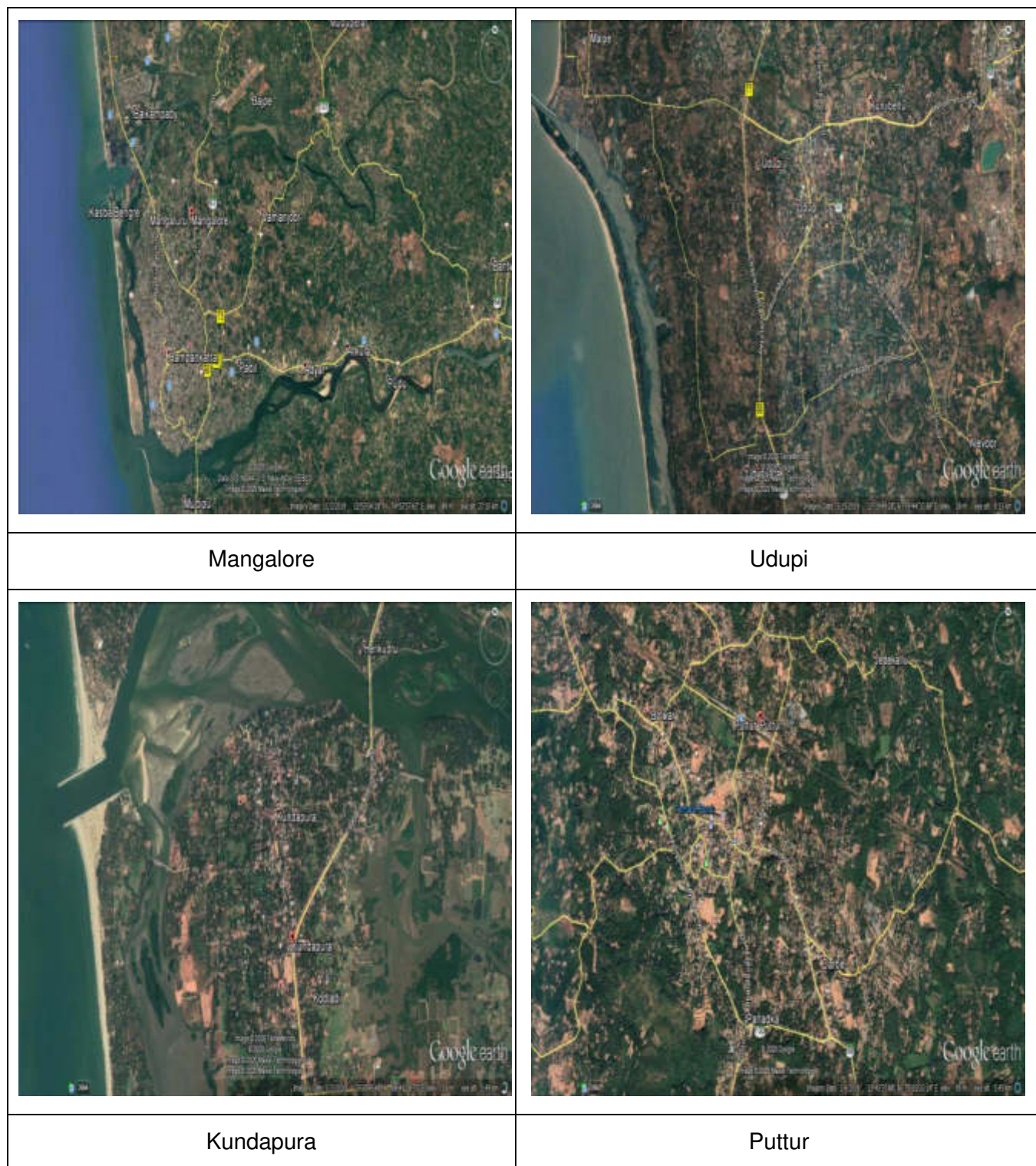
8. **Public Disclosure.** The IEE will be put in an accessible place (e.g., local government offices, libraries, community centers, etc.), and a summary translated into local language for the project affected people and other stakeholders. The following safeguard documents will be put up in ADB's website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

9. 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>)

10. 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; and (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

11. 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 2 and 3 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.

12. This report is the semi-annual environment monitoring report (SEMR) covering period **July to December 2019** i.e. 24X7 water supply and underground drainage sub project. This SEMR describes the implementation of the environmental management plan (EMP) in Mangalore, Kundapura, Puttur and Udupi city subprojects IEE.



**Figure 1: Location of Project Towns**

## II. PROJECT SAFEGUARDS TEAM

13. Overall Implementation Arrangement. Karnataka Urban Infrastructure Development & Finance Corporation (KUIDFC) is the Executing Agency (EA) responsible for implementing the Investment Program. Investment Program implementation activities is monitored by KUIDFC through a separate Investment Program Management Unit (PMU) for the IWRM Project, which setup within KUIDFC.

14. At the Executing Agency (i.e. KUIDFC), environmental issues will be coordinated centrally by an Environmental Specialist (Designated as Assistant Executive Engineer–Environment), reporting to the Task Manager, Assistant Executive Engineer– Environment will ensure that all subprojects comply with environmental safeguards. The IEE/ EIA reports prepared by the Consultant, and will be reviewed by the Assistant Executive Engineer–Environment as per the ADB’s Environmental Guidelines and forwarded to ADB for review and approval

15. The consultant team includes an Environmental Specialist to supervise the implementation of environmental safeguards at the divisional level. The consultant team also includes a Construction Supervisor at each ULB/CMC/TMC responsible for the supervision of project implementation including environmental safeguards at the ULB/CMC/TMC level.

16. The contractor shall appoint one supervisor (environment & safety officer) who will be responsible on a day-to day basis for i) ensuring implementation of EMP ii) Coordinating the CS Engineer and environment specialists(all levels) iii) community liaison, consultation with interested/affected parties and grievance redressal and iv) reporting.

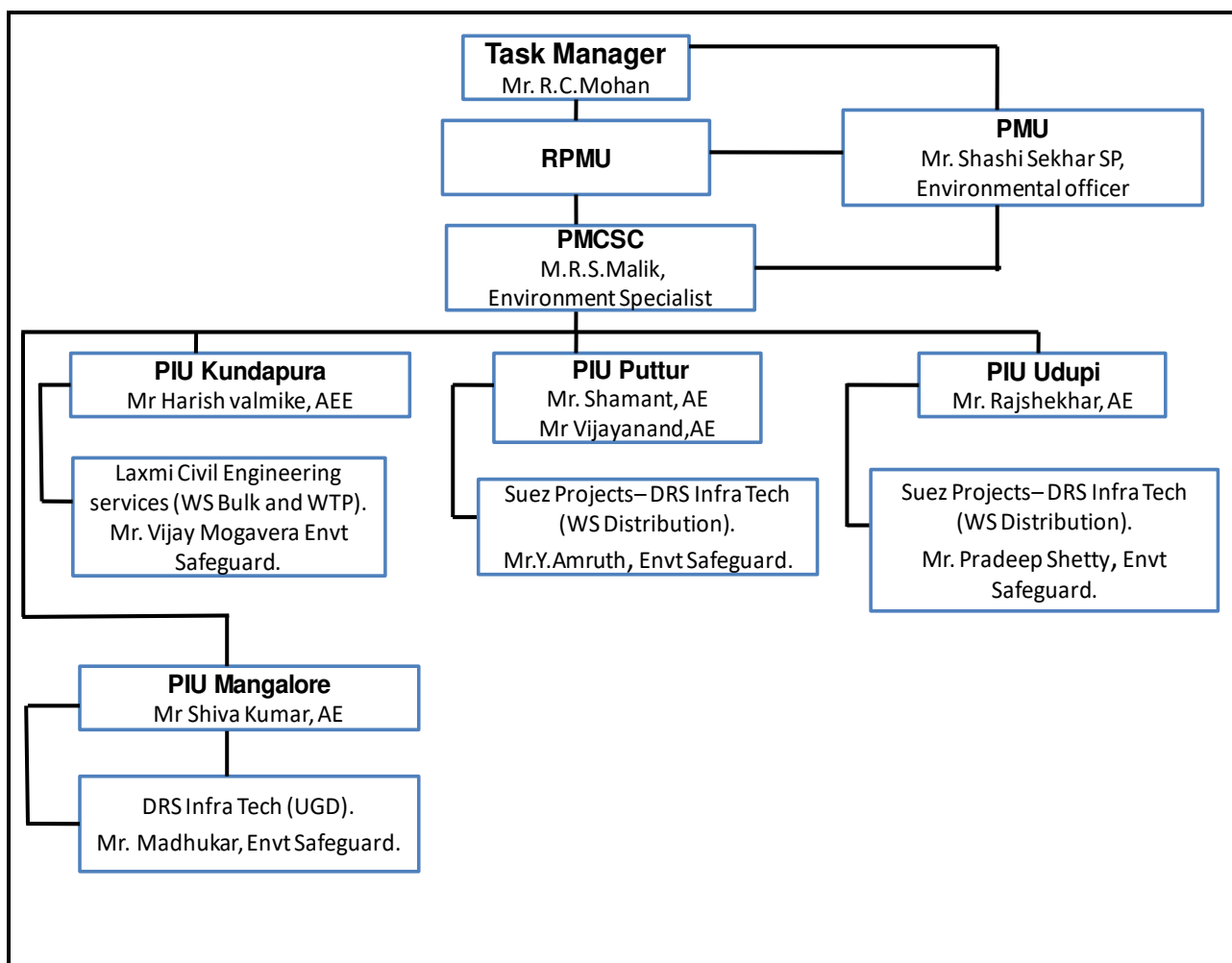
17. **Reporting arrangement.** Construction contractor monitoring safeguard implementation daily basis, while construction Supervisor (Resident Engineer) reviewed safeguard implementation weekly. After review they advised construction contractor for corrective measures. Monthly report summarizing observation, compliance & corrective measures is prepared by Environment Specialist of consultant on monthly basis. Then reports are forwarded from PIU to PMU for their observation and record. Based on monthly reports and site observations, Assistant Executive Engineer (Environment) of PMU, will review and consolidated the semi-annual environment monitoring report for onward submission to ADB. **Table 1** shows activity, Roles, responsibility on safeguard implementation.

**Table1: Activity, Roles and Responsibility – Safeguard Implementation**

Investment Program Phase	Activity	Details	Responsible Agency
Pre-construction phase	Investment Program Categorization	Conduct Rapid Environmental Assessment (REA) for each subcomponents using REA checklists	ULB
		Reviewing the REA and assigning Investment Program category (A/B/C) based on KIUWMIP Environmental Assessment Guidelines and ADB Guidelines	PMU

<b>Investment Program Phase</b>	<b>Activity</b>	<b>Details</b>	<b>Responsible Agency</b>
	Conducting EA	Conducting IEE / EIA based on the Investment Program categorization Conducting Public Consultation and information disclosure Preparation of IEE / EIA	PMDCS consultant
	Investment program clearances	Fulfilling GoK/Gol requirement such as clearances from other Government Agencies	ULB
	Review of EIA/IEE	Reviewing the EIA/IEE Reports to ensure compliance thereof as per ADB Guidelines and approval of the same	PMU
	Disclosure of EIA/IEE	Information disclosure – IEE/EIA reports should be made available to the public, and on request IEE/EIA also made available.	ULB
	Incorporation of mitigation measures into Investment Program design	Incorporation of necessary mitigation measures identified in IEE/EIA in Investment Program design and in contract documents.	PMDCS consultant
	Review of design documents	Review of design and contractual documents for compliance of mitigation measures	PMDCS consultant
<b>Construction Phase</b>	Implementation of mitigation measures	Implementation of necessary mitigation measures	Contractor
	Environmental Monitoring	Environmental monitoring as specified in monitoring plan during construction stage; Monitoring of implementation of mitigation measures	PMDCS consultant
	Preparation of progress reports	Preparation of monthly progress reports to be submitted to PMU including a section on implementation of the mitigation measures	PMDCS consultant
	Review of progress reports	PMU to review the progress reports, consolidate and send to ADB review	PMU
<b>Operation Stage</b>	Environmental Monitoring	Conducting environmental monitoring, as specified in the environmental monitoring plan.	ULB/ Contractor
	Compliance Monitoring	Compliance monitoring to review the environmental performance of sub-project component, if required and as specified in Monitoring Plan.	ULB/KSPCB

18. **Figure 2** shows the implementation arrangement for environment safeguard. PMU includes a full-time Assistant Executive Engineer (Environment). As on December 2019, position of Assistant Executive Engineer (Environment) is filled up and also Environment Specialist of PMDCS (Program Consultant) has been placed.



AEE: Assistant Executive Engineer, PIU: Project Implementation Unit, PMCSC: Project Management & Construction Supervision Consultant, PMU: Project Management Unit, RPMU: Regional Project Management Unit

**Figure 2: KIUWMIP Safeguards Implementation Arrangement**

19. **Table 2** shows detail of environment safeguard team for KIUWMIP. Environment Specialist of PMCSC and Asst. Executive Engineer (Environment) KIUWMIP-KUIDFC visit to project site almost every month to review EMP implementation

**Table 2: Details of KIUWMIP Environmental Safeguard Team**

Name	Designation/Office	Email Address	Contact Number
<b>1. PMU</b>			
Mr. Shashi Sekhar SP	Environment Expert, KIUWMIP-KUIDFC	shashisekharasp@kuidfc.com	9343434900
<b>2. PIUs</b>			
Mr. Shiva Kumar	Assistant Executive Engineer, PIU, Mangalore	Jalasiritranch2eemng@gmail.com	07019199457
Mr. Harish Valmike	Assistant Executive Engineer, AEE, PIU, Kundapura,	jalasiritranch2aekdp@gmail.com	09030145862



Mr.Shamant	Assistant Engineer,	jalasiritranche2eept@gmail.com	08904616043
Mr Vijayanand	AE, PIU, Puttur Assistant Engineer, AE, PIU, Puttur		9448581143
Mr.Rajshekhar	Assistant Engineer, AE, PIU, Udupi	jalasiritranche2eeudp@gmail.com	9741412058
<b>3. Consultants</b>			
M.R.S.Malik	PMCSC, Environment Specialist	mahmad.m@egis-india.com	9177390560

### III. OVERALL PROJECT AND SUBPROJECT PROGRESS AND STATUS

20. There are 5 sub projects in Tranche 2 (Project 2). Physical construction has been started for one sub-project at Mangalore (UGD), One sub project at Kundapura (24x7 water supply), two sub projects at Puttur and Udupi (24x7 water supply). One sub project at Mangalore (24x7 water supply) is in DPR stage. Out of 5 sub projects 4 projects are presently under implementation. Status of sub-projects is given in **Table 3**. Site photographs are attached as Appendix 1, Monitoring Budget as Appendix 2 and MPR - Monthly Progress report attached as **Appendix 3**.



**Table 3: Status of Sub Project under Tranche 2 (Upto 31<sup>st</sup> December 2019)**

Package Number	Components/List of Works	Type of Contract (specify if DBO, DB or civil works)	Status of Implementation (specify if Preliminary Design, Detailed Design, On-going Construction, Completed Works, or O&M phase)1	Contract Status (specify if under bidding or contract awarded)	If On-going Construction	
					%Physical Progress	Expected Completion Date
<b>02MNG02</b>	<ul style="list-style-type: none"> <li>Replacement of existing 750 mm dia CI pumping main with 1100 mm dia DI-K9 pipe( 7.60km) from wet well-3 Kudroli to Kavoor STP.</li> <li>Replacement of existing 600 mm dia CI pumping main with 900 mm dia DI-K9 pipe ( 0.95 km) from wet well-4 at Kandathpalli to wet well-3 at Kudroli.</li> <li>Replacement of existing 225mm dia CI pumping main with 450 mm dia DI-K9 pipe (1.7 km) from wet well-6 Mulihitlu to ridge manhole near Casia Church.</li> <li>Replacement of existing 450 mm dia CI pumping main with 450 mm dia DI-K9 pipe ( 1.1 km) from wet well-7 Jeppubappal to ridge manhole near wet well-8</li> </ul>	Civil Works	On-going Construction	Contract Awarded: 06.06.2018	<b>56.6%</b>	05.03.2021
<b>02KDP01</b>	1. Laying of clear water feeder mains of 200Mn dia for 4.8 Kms to OHT at Kodi.	Civil Works and services	On-going Construction	Contract awarded: 19.12.2017	<b>54.33%</b>	22.01.2028

	<ul style="list-style-type: none"> <li>2. Construction of 2 OHTs total capacity 0.9ML. (5LL at Halekote and 4LL at Kodi )</li> <li>3. Laying of Distribution network for 31.64 kms of HDPE&amp;DI pipes.</li> <li>4. Replacement of non-functioning water for existing connection and providing new water supply connection of 2250 to un-covered households with class B Multijet water meters.</li> <li>5. Providing 15 Nos of 24X7 Water flow meters</li> <li>6. O &amp; M for 8 years.</li> </ul>					
<b>02PTR01</b>	<ul style="list-style-type: none"> <li>1. Up gradation of electromechanical equipment's in services Jack well</li> <li>2. 400 mm dia DI Pipe Raw Water Pumping Main – 1.68 Kms from Jack well to proposed WTP</li> <li>3. Construction of 8.7 MLD WTP at Nekkilady</li> <li>4. 400 mm dia DI pipe clear water transmission main from WTP to MBR at Thenkila for 12.42 Kms</li> <li>5. Clear Water Feeder Mains for 5.06 Kms for OHTs</li> <li>6. Construction of 6 OHTs &amp; 2 GLSRs of total capacity 4.55 ML</li> <li>7. Laying of Distribution network for 142.66 kms of HDPE &amp; DI pipes</li> <li>8. Replacement of non-functioning 9226 water meters for existing connections and providing new water supply connections of 4500 to un-covered households with Class B MultiJet water meters</li> <li>9. Providing 29 Nos of 24X7 Water Flow meters</li> </ul>	Civil Works and services	On-going Construction	Contract awarded: 16.11.2018	<b>10.65%</b>	03.06.2030 (Phase -4)

	10. O & M for 8 Years					
<b>02UDP01</b>	11. 8.07 kms clear water feeder mains 12. 7 OHTs 13. 358.17 kms distribution net work 14. 15000 HSC with Class B MultiJet Water Meters 15. SCADA 16. O&M for 8 years	Civil Works and services	On-going Construction	Contract awarded: 16.11.2018	<b>8.87%</b>	15.08.2030 (Phase -4)
<b>02MNG01</b>	17. Construction of 24X7 & Distribution Network -Operator assisted in Mangalore	Civil Works and services	Design Validation	Contract awarded: 21.11.2019	-	23-08-2031 Including (O & M)

21. Package-wise Contractor/s' Nodal Persons for Environmental Safeguards shown in **Table 4**

**Table 4 Package-wise Contractor/s' Nodal Persons for Environmental Safeguards**

Package Name	IEE Cleared by ADB (provide date)	Contractor	HSE Nodal Person	Email Address	Contact Number
24 x 7 Water Supply System for Kundapura Town (Construction of 24X7 & Distribution Network -Operator assisted in Kundapura)	Draft IEE Cleared by ADB in May 2018, Final IEE Cleared by ADB in April 2019	Laxmi Civil Engineering services Pvt,Ltd	Mr. Vijay Monaveera	Vijayshankat1999@gmail.com	8861926473
UGD Mangalore, Replacement of pumping mains Mangalore City	Draft IEE Cleared by ADB dated May 2018 Final IEE Cleared by ADB in April 2019	DRS Engineering services Pvt,Ltd.,	Mr.Madhukar	Madhukars267@gmail.com	7349265529
24 x 7 Water Supply System for Puttur Town	Draft IEE Cleared by ADB in May 2018 Final IEE Cleared by ADB in April 2019	Suez Projects-DRS Infra Tech	Mr. Y. Amruth	amruthsairam@gmail.com	07676075582
24 x 7 Water Supply System for Udupi Town	IEE Cleared by ADB in May 2018 Final IEE Cleared by ADB in April 2019	Suez Projects-DRS Infra Tech	Mr. Pradeep Shetty	Pradeepyellur@gmail.com	09652627322
24 x 7 Water Supply System for Mangalore City	Draft IEE Cleared by ADB in May 2019	Suez Projects-DRS Infra Tech	The Project is in Design Validation Period.		

22. Status Of IEE Per Subproject/Package shown in Table 5

**Table 5 Status of IEE as per Subproject/Package**

Package Number	Final IEE based on Detailed Design				Site-specific EMP (or Construction EMP) approved by Project Director) (Yes/No)	Remarks
	Not yet due (detailed design not yet completed)	Submitted to ADB (provide date of submission)	Disclosed on project website (provide link)	Final IEE provided to Contractor/s (Yes/No)		
<b>02MNG02</b>	Detailed design completed	Submitted on Jan 2019	Disclosed on PMU ( <a href="http://www.kuidfc.com/ENG/project_jalasiri.htm">www.kuidfc.com/ENG/project_jalasiri.htm</a> ), and will be disclosed on ULB website ( <a href="http://www.Mangalorecity.mrc.gov.in">www.Mangalorecity.mrc.gov.in</a> ).	Yes	Yes	Already in Construction Phase
<b>02KDP01</b>	Detailed design completed	Submitted on Jan 2019	Disclosed on PMU website <a href="http://www.kuidfc.com/ENG/project_jalasiri.htm">www.kuidfc.com/ENG/project_jalasiri.htm</a> , and ULB web site <a href="http://www.kundapurtown.mrc.gov.in">www.kundapurtown.mrc.gov.in</a>	Yes	Yes	Already in Construction Phase
<b>02PTR01</b>	Detailed design completed	Submitted on Jan 2019	Disclosed on PMU website ( <a href="http://www.kuidfc.com/ENG/project_jalasiri.htm">www.kuidfc.com/ENG/project_jalasiri.htm</a> ), and ULB website ( <a href="http://www.Putturcity.mrc.gov.in">www.Putturcity.mrc.gov.in</a> )	Yes	Yes	Already in Construction Phase
<b>02UDP01</b>	Detailed design completed	Submitted on Jan 2019	Disclosed on PMU website ( <a href="http://www.kuidfc.com/ENG/project_jalasiri.htm">www.kuidfc.com/ENG/project_jalasiri.htm</a> ), and ULB website <a href="http://www.udupicity.mrc.gov.in">www.udupicity.mrc.gov.in</a>	Yes	Yes	Already in Construction Phase
<b>02MNG01</b>	Detailed design completed	Yet to be submitted	-	No	No	In Design Validation Phase

#### IV. Status of Compliance with National/State/Local Statutory Environmental Requirements

23. Table 6 provides the status of compliance of subprojects to national and state laws, rules, policies and regulations applicable to KIUWMIP Project 2

**Table 6: Status of Compliance with National/State/Local Statutory Environmental Requirements (31<sup>st</sup> December 2019)**

Package No.	Statutory Environmental Requirements	Status of Compliance (Specify if obtained, submitted and awaiting approval, application not yet submitted )	Validity Date(s) (if already obtained)	Action Required	Specific Conditions that will require environmental monitoring
02MNG02	Water (Prevention and Control of Pollution) Act, 1974  The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Also for setting up diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	During implementation of project compliance with Air Act, Noise Rules and Water Act will be required For acoustic type of Generator – not required.  Without acoustic measures- Generator used by Contractor by hiring on rental basis.	-	Acoustic type of Generator must be used.	-
	Statutory permission from National Highways Authority for road cutting	Awaiting approval - 1100 WW-3, Kudroli To STP at Kavoor NH-66, at Kuntikan Junction NH Crossing.  Awaiting approval-NH4 crossing -NOC from National highway authority applied on 17-07-2017. Charges paid to National Highways Authority Application enclosed as <b>Appendix 3</b>	-	Awaiting for approval from NHA  Awaiting for approval from NHA	-

Statutory permission from Railway authority	Obtained - 450 WW-7, Jeppu Bappal to RMH at Ekkur Near Sooterpete railway level Crossing  Obtained- Railway crossing- NOC from Railway authority. The permission id enclosed as <b>Appendix 4</b>	-	-	-
Utility shifting	Obtained - Electrical pole Ashok nagar -Mangalore UGD enclosed as <b>Appendix 53</b>  Obtained-Utility Sifting - MESCOM -Electrical pole. enclosed as <b>Appendix 54</b>			
Labour licence under The Contract Labour (Regulation & Abolition) Act, 1970. (Central Act w.e.f. 07-09-70)	Obtained - Labour license enclosed as <b>Appendix 5</b>	valid up to 06.06.2020	Further renewal needs to be done on 06.06.2020.	Worker attendance register and Minimum wages register have to maintained by contractor
Labour compensation insurance	Obtained Insurance Validity upto 20.02.2020. Further renewal has been done on 04.02.2019. Labour compensation insurance policy enclosed as <b>Appendix 6</b>	valid up to 20.02.2020	Further renewal has been done on 20.02.2020	Worker attendance register and Minimum wages register have to maintained by contractor
Tree felling permission from forest department under Karnataka Preservation of Trees Act,1976 and Karnataka Preservation of Trees Rules,1977 and Forest (Conservation) Act	No tree was affected			-

	1980 and Indian Forest (Amendment) bill 2017.				
02KDP01	Water (Prevention and Control of Pollution) Act, 1974  The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Also for setting up diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	During implementation of project compliance with Air Act, Noise Rules and Water Act will be required For acoustic type of Generator – not required	-	-	-
	Statutory permission from National Highways Authority for road cutting	Obtained - on 25 /04/2019 – A Stretch of 0.11 km for laying clear water main is proposed along the service lane of NH-66 which needs permission from National Highway Authority of India.  Awaiting-Approval-NH4 crossing -NOC from National highway authority was applied on 25-01-2019.	NOC Obtained on 25/04/2019 enclosed as <b>Appendix 7</b>	NH-66 Permission not Required as Laying of pipe is done within municipal premises	
	Statutory permission from PWD	Obtained - on 25 /04/2019 - Laying rider main of length 1.8 km for Zone-1 along SH-52 permission will be required from State PWD.	NOC Obtained on 25/04/2019. enclosed as <b>Appendix 8 &amp; 8a</b>	Contractor has to meet the NOC conditions	-
	Utility shifting	BSNL - Copper cable damaged – BSNL Copper cable damage charge letter enclosed as <b>Appendix 55</b>		List of utility shifting has to be maintained by Contractor.	All payments to BSNL cables damages paid up to date.
	Labour licence under The Contract Labour (Regulation & Abolition) Act, 1970. (Central Act w.e.f. 07-09-70)	Obtained. Labour license enclosed as <b>Appendix 9</b> The license was valid up to 19-12-2019 and subsequently renewed on 10-12-2019.	Valid up to 19.12.2020.	Contractor has to meet the conditions as specified by the License.	Worker attendance register enclosed and Minimum wages register have to maintained by contractor

Labour compensation insurance	Obtained - on 07-02-2019 and the Labour compensation insurance policy enclosed as <b>Appendix 10</b> and Contractor's All Risk Policy id attached as <b>Annexure 11</b>	Validity upto 06.08.2020	Further renewal has been done on 06.08.2020.	Worker attendance register and Minimum wages register have to maintained by contractor
Tree felling permission from forest department under Karnataka Preservation of Trees Act,1976 and Karnataka Preservation of Forest (Conservation) Act, 1980 and Indian Forest (Amendment) bill 2017.	Not Obtained - 6 nos. Tree felling (at Kodi Beach OHT site) 2,28,000 Rs Compensation paid to the affected person for Cutting of coconut trees enclosed as <b>Appendix 12 and 12a.</b> <b>Note:</b> Coconut Trees are in the list of tree feeling exemption list. If exemption list of trees in Govt. Land then permission should be taken from Tree officer	Permission yet to be obtained from forest dept	PIU have to apply for the tree cutting permission	
CRZ Clearance under Coastal Regulation Zone Notification Ministry of Environment and Forests 2011  The proposed OHT site and some pipelines in Kodi area falls under Coastal Regulation Zone (CRZ)II.  CRZ-II,includes the "developed area" within the existing municipal limits or in other existing legally designated urban areas which are substantially built-up and has been provided with drainage and approach roads and other infrastructural facilities, such as water supply and	Obtained – The proposed OHT site and some pipelines in Kodi area falls under Coastal Regulation Zone (CRZ)II.  CRZ clearance for Kodi beach OHT from KSCZMA NOC obtained enclosed as <b>Appendix 13 &amp; 13a</b>	Obtained on 11/07/2017	Contractor and PIU have to Meet /maintain the NOC condition.	<ol style="list-style-type: none"> <li>1. Project promoters Government order no: FEB1062 CRZ 2014 dated 16/01/2015 in accordance with application processing payment of the fees.</li> <li>2. Precaution should be taken at the time of construction of OHT without impairment to environment and storm water.</li> <li>3. Without approval of authority couldn't any change and expansion of proposed project</li> <li>4. For the proposed project implementation of all work</li> </ol>



	sewerage mains; buildings shall be permitted only on the landward side of the existing road.				and activity to be subjected under CRZ notification dated:06/01/2011
	Construction involving more than 20,000 m2built-up area in CRZ-II shall be considered in accordance with EIA notification, 2006 and in case of projects less than 20,000 m2built-up area shall be approved by the concerned State Planning authorities in accordance with this notification after obtaining recommendations from the concerned CZMA and prior recommendations of the concern CZMA shall be essential.	Obtained - CRZ clearance for Pipe Line laying NOC obtained enclosed as <b>Appendix 14 and 14 a</b>	Obtained on 11/07/2017.	Contractor and PIU have to Meet /maintain the NOC condition.	<p>5. Project promoters Government order no: FEB1062 CRZ 2014 dated 16/01/2015 in accordance with application processing payment of the fees.</p> <p>6. Precaution should be taken at the time of construction of OHT without impairment to environment and storm water.</p> <p>7. Without approval of authority couldn't any change and expansion of proposed project</p> <p>8. For the proposed project implementation of all work and activity to be subjected under CRZ notification dated:06/01/2011</p>
<b>02PTR01</b>	Water (Prevention and Control of Pollution) Act, 1974  The Air (Prevention and Control of Pollution) Act, 1981, as amended by	During implementation of project compliance with Air Act, Noise Rules and Water Act will be required For acoustic type of Generator – not required If required, Contractor using			

	Amendment Act, 1987 Also for setting up diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	acoustic type of Generator			
	Statutory permission from National Highways Authority for road cutting	Not Applicable			
	Statutory permission from Railway authority	Submitted the Documents		Bank Guarantee is to be submitted to the Railway Department	
	Statutory permission from PWD	Yet to Apply			
	Utility shifting	Yet to Apply			
	Labour licence under The Contract Labour (Regulation & Abolition) Act, 1970. (Central Act w.e.f. 07-09-70)	Obtained - Labour licence is valid up to 10-01-2020. It is attached as <b>Appendix-15</b>	- Labour license is valid up to 10-01-2020	- It is renewed up to 11-01-2021	- Worker attendance register and Minimum wages register have to maintained by contractor
	Labour compensation insurance	Obtained - Labour compensation insurance is attached as <b>Appendix-16</b> and Marine-cum-Insurance Policy is attached as <b>Appendix-17</b>	Labour compensation insurance is valid up to 04-07-2020	Policy is to be renewed on 04-07-2020	-
	Tree felling permission from forest department under Karnataka Preservation of Trees Act,1976 and Karnataka Preservation of Trees Rules,1977 and Forest (Conservation) Act 1980 and Indian Forest (Amendment) bill 2017.	No tree cutting noted during the design validation and survey			
02UDP01	Water (Prevention and Control of Pollution) Act, 1974. The Air (Prevention and Control of Pollution) Act,	During implementation of project compliance with Air Act, Noise Rules and Water Act will be required	-	-	-

	1981, as amended by Amendment Act, 1987 Also for setting up diesel generator Consent to Establish (CTE) and Consent to Operate (CTO)	For acoustic type of Generator – not required. If required, Contractor using acoustic type of Generator			
	Statutory permission from National Highways Authority for road cutting	Yet to Apply			
	Statutory permission from Railway authority	Yet to Apply			
	Statutory permission from PWD	Yet to Apply			
	Utility shifting	Not Applicable			
	Labour licence under The Contract Labour (Regulation & Abolition) Act, 1970. (Central Act w.e.f. 07-09-70)	Obtained – and is enclosed as <b>Appendix 18</b>	Validity up to 11/01/2021	Further renewal has been done on 11/01/2021.	Worker attendance register and Minimum wages register have to maintained by contractor
	Labour compensation insurance	Obtained – and is enclosed as <b>Appendix 19</b>	Labour compensation insurance is valid upto 04-07-2020	Policy is to be renewed on 04-07-2020	
	Tree felling permission from forest department under Karnataka Preservation of Trees Act, 1976 and Karnataka Preservation of Trees Rules, 1977 and Forest (Conservation) Act 1980 and Indian Forest (Amendment) bill 2017.	No tree cutting noted during the design validation and survey			
<b>02MNG01</b>	Design Validation Stage	-	-	-	-

## V. Compliance Status with Environmental Loan Covenants

24. The loan agreement for KIUWMIP Project 2 was signed on 27 November 2018 and available in ADB website (<https://www.adb.org/sites/default/files/project-documents/43253/43253-027-lna-en.pdf>). Table 7 provides a summary of compliance to the loan covenants related to environmental safeguards.

**Table 7: Compliance to Loan Agreements (Environmental Safeguards)**

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
Schedule 4 Item 9	<p><b>Procurement of Goods, Works and Consulting Services</b>  <b>Conditions for Award of the Contract</b>  The Borrower shall ensure or cause the EA <b>to not award any Works contract</b> for a Subproject which <b>involves environmental impacts</b> until the EA has:</p> <p>a) Obtained the final approval of the IEE from the relevant environment authority of the Borrower and the State, and ADB; and  b) Incorporated the relevant provisions from the EMP into the Works contract.</p>	<p>a) Obtained concurrence from ADB for Updated IEE sewerage and water supply packages of Mangalore, Kundapura, Puttur, and Udupi.  b) Incorporated EMP into the works contract of Mangalore Sewerage, Kundapura, Puttur, and Udupi water supply works.</p>
Schedule 5 Item 10	<p><b>Safeguards –Environment</b>  The Borrower shall ensure or cause the EA to ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project, and all projects' facilities comply with (i) all applicable laws and regulations of the Borrower and the State relating to environment, health, and safety; (ii) the Environmental Safeguards; (iii) the EARF; and (iv) all measures and requirements set forth in the respective IEE and EMP, and any corrective or preventative actions set forth in a Safeguards Monitoring Report.</p>	<p><b>Under compliance</b>  Document is prepared by complying all relevant State and National Laws, Safeguard Policy Statement (SPS 2009) of ADB, Environment Assessment Review Framework (EARF) for Tranche-2 program. Same will be followed for subsequent Tranches.  For <b>Tranche 2</b> project Initial Environmental Examination (IEE), Environment Management Plan (EMP) report prepared and approved by ADB. IEE has been updated for Mangalore UGD and Kundapura, Puttur and Udupi WSS, IEE reports submitted to ADB on Jan 2019 was accepted by ADB on Feb 2019. Further review will be conducted at implementation phase.</p> <p>Final design for Mangalore UGD. Kundapura, Puttur and Udupi WSS have been reviewed. IEE and EMP have been updated as per final design and scope at implementation stage. Updated Mangalore UGD and Kundapura WSS IEE/EMP accepted by ADB on August 2018 and Putture and Udupi WSS February 2019 respectively.</p> <p>All updated reports already disclosed in ADB website.</p> <p>All safeguard measures and requirements as prescribed in IEE/EIA and EMP being</p>

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
		considered during implementation. Corrective or preventive action plans including personal protection will be reflected in Environment Monitoring Report and project implementation authority will be taken care
Schedule 5 Item 10	Human and Financial Resources to Implement Safeguards Requirements The Borrower shall make available, or cause the EA to make available, all necessary budgetary and human resources to fully implement the EMP required.	<b>Complied</b> Budgetary provisions have been included in EMP of Tranche 2 sub projects attached as <b>Appendix 2</b> Environment Engineer (Asst. Executive Engineer) is placed in PMU Human resource (project consultant, i.e. Environmental Specialist of PMSCS) for implementation of EMPs is in place for regular compliance.
Schedule 5 Item 11	The Borrower shall ensure, or cause the EA to ensure, that all bidding documents and contracts for Works contain provisions that require contractors to: comply with the measures and requirements relevant to the contractor set forth in the IEE, the EMP, the RP and the IPP (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set out in a Safeguards Monitoring Report;  (b) make available a budget for all such environmental measures;  (c) provide the EA with a written notice of any	<b>Under compliance</b>  Approved IEE, EMP for Tranche-2 project is attached in Bidding documents. This process will be followed for all the sub projects within the present Tranche and subsequent Tranches. In case of any change of scope, revised IEEs, EMPs will be prepared and corrective measures will be disclosed to contractor and same will be reflected in the "Environment Monitoring Report"  For <b>Tranche-2</b> project Initial Environmental Examination (IEE), Environment Management Plan (EMP) report prepared and approved by ADB. IEE has been prepared for water supply Distribution Network packages at Davangere, Harihara and Byadgi and all the reports accepted by ADB and disclosed on March 2017, November 2016 and December 2016 respectively on ADB website.  Corrective actions were taken on the contractor regarding 1) To ensure PPE at all on-going sites, 2) arrangement of public safety, 3) disposal of waste and 4) camp site management (b) IEE indicates budgetary provisions for implementation of EMP <b>Appendix 2</b> shows budgetary provision for safeguard implementation under different packages  (c) With the development of sub project and

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
	<p>unanticipated environmental risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP, the RP or the IPP;</p> <p>(d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; and</p> <p>(e) fully reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.</p>	<p>implementation, in case of additional impacts/risks due to change in scope/area, that will be reflected in the revised IEEs, EMPs and Environment Monitoring Report and accordingly project Executing Agency will inform the Construction Agency for taking relevant corrective measures.</p> <p>Till date no unanticipated environmental risks or impacts reported</p> <p>(d) Haul roads will be marked properly (by avoiding residences and agricultural land) before commencement of transportation of materials.</p> <p>(e) Pathways, land which are likely to be affected for a short period during implementation of the sub project will be restored by concerned construction agency before acceptance of the work. Restoration status will be reflected in post construction monitoring report</p>
Schedule 5 Item 12	<p><b>Safeguards Monitoring and Reporting</b></p> <p>The Borrower shall cause the EA to do the following:</p> <p>(a) submit semi-annual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission;</p> <p>(b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEEs, the EMPs, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; and</p> <p>(c) Report any breach of compliance with the measures and requirements set forth in the EMPs, promptly after becoming aware of the breach.</p>	<p><b>Under compliance</b></p> <p>(a) This is 2<sup>nd</sup> semi-annual Safeguards Monitoring Report is prepared for the period July to December 2019.</p> <p>(b) With the development of project and implementation, in case of additional impacts/risks due to change in scope/area, will be reflected in revised IEEs, EMPs and accordingly Executing Agency (EA) will inform the ADB along with corrective action plan which will be reflected in the Monitoring Report.</p> <p>(c) In case of any breach of compliance with the measures and requirements set forth in the EMP, EA will be promptly informed to ADB and suitable corrective action plan will be planned.</p>
Schedule 5 Item 13	<p><b>Prohibited List of Investments</b></p> <p>The Borrower shall ensure or cause the State to ensure that no proceeds of the Loan are used to finance any activity included in the list of prohibited investment activities provided in Appendix 5 of the SPS.</p>	<p><b>Complied</b></p> <p>Under Tranche -2, there is no violation of prohibited investment activities as per ADB SPS (2009) Appendix 5. Same will be followed in subsequent Tranches</p>

Serial no. as per loan agreement	Program Specific Covenants	Status / Issues
Schedule 5 Item 16	<p><b>Other Social Measures</b></p> <p>The EA shall ensure that civil works contracts under the Project follow all applicable labor laws of the Borrower and the State, and that these further include provisions to the effect that contractors: (i) carry out HIV/AIDS awareness programs for labor and disseminate information at worksites on risks of sexually transmitted diseases and HIV/AIDS as part of health and safety measures for those employed during construction; and (ii) follow and implement all statutory provisions on labor (including not employing or using children as labor, equal pay for equal work), health, safety, welfare, sanitation, and working conditions. Such contracts will also include clauses for termination in case of any breach of the stated provisions by the contractors.</p>	<p><b>Complied in document and during implementation</b></p> <p>Provisions are included and carried out (as per EMP &amp; BID document) HIV/AIDS awareness programs for construction contractor, application of all relevant labour laws for health and safety including child labour law and engagement of local labours (preferably from economically backward group) covering women labours.</p> <p>In case of any breach of provision, necessary corrective measures as per contract clauses shall be taken.</p> <p>All activities including awareness program will be reflected in "Monitoring Report".</p>

25. Contractor team carried out regular environment monitoring. Budget for environment monitoring is disclosed in the **Appendix 2**.

#### VI. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

26. Mangalore UGD, Kundapura, Puttur and Udupi 24x7 water supply sub project Contractors submitted site-specific EMP Included as **Appendix 23 to Appendix 26**.

27. Over-all compliance of the contractors with SEMP given in **Table 8**. contractors' monthly monitoring reports to PIU(s) and monthly environmental site inspection reports of consultants Included as an **Appendix 23-26**

**Table 8: Overall Compliance with SEMP**

Package No.	Status of SEMP/CEMP Implementation (Excellent/ Satisfactory/ Partially Satisfactory/ Below Satisfactory)	Action Proposed and Additional Measures Required
02MNG02	Satisfactory	<ul style="list-style-type: none"> <li>• Arrangement of proper project information display board and caution and hazard sign boards.</li> <li>• Use of PPE should be at all times as per site condition and work type.</li> <li>• Improvement is required for Housekeeping at site areas and labour camp as well.</li> <li>• Improvement is required for first aid box - First aid materials should be as per the standards.</li> </ul>

		<ul style="list-style-type: none"> <li>• Worker Wages register has to be maintained.</li> <li>• Proper care should be taken for electrical safety at labor camp and sites.</li> <li>• Improvement at labour camp which include separate cooking facility and enhancement in sanitation facility.</li> </ul>
02KDP01	Satisfactory	<ul style="list-style-type: none"> <li>• Arrangement of display board in English with all relevant project information along with contact numbers</li> <li>• Proper caution and hazard boards.</li> <li>• Use of PPE should be at all times as per site condition and work type.</li> <li>• Immediate Improvement of housekeeping at the project sites</li> <li>• Improvement of material storage is required.</li> <li>• Proper Scaffoldings have to be used for OHT Construction site.</li> <li>• CRZ, NOC conditions have to be meet by the Contractor and PIU.</li> <li>• Worker Wages register has to be maintained</li> </ul>
02PTR01	Satisfactory	<ul style="list-style-type: none"> <li>• Proper Project information board in Kannada and English with all necessary details</li> <li>• First aid box should be provided at all working sites</li> <li>• Hygiene of the labor camp to be improved</li> <li>• Use of PPE should be at all times as per site condition and work type</li> </ul>
02UDP01	Satisfactory	<ul style="list-style-type: none"> <li>• Ensure the PPEs by labours at all times as per site conditions.</li> <li>• Project Information board along with relevant details and contact number is to be provided at working sites both English and kannada</li> <li>• Improvement in Caution sign boards at pipe laying areas</li> <li>• Amenities to the labours to be enhanced.</li> </ul>
02MNG01	-	<ul style="list-style-type: none"> <li>• Under Design Validation Period</li> </ul>

#### A. Provide description based on the observations and records

28. During the reporting period minimum dust was noted and water sprinkling techniques followed at peek construction period at construction sites.

29. During the reporting period Muddy water was not escaping trough site boundaries or muddy tracks were not seen on adjacent roads restoration was done after work completed.

30. For 24x7 water supply Kundapura, the designated storage area of construction materials at Kodi beach needs to improve with proper storage method of materials. For concrete works, chemical storage will be designated. Photographs of each area attached as **Appendix 1**.



31. Spillage is not observed at time of inspection. The contractor has been recommended to provide Spill kits and site procedure for handling emergencies.

32. Spoil management Plan Submitted by Udupi, Puttur, Mangalore and Kundapura 24x 7 water supply Contractors. The spoil management plans enclosed as **Appendix 27, 28**. Recommended for Improvement each sub project identified the disposal areas to dispose Spoils. Mangalore UGD and Puttur approved letter for disposal area from PIU enclosed as **Appendix 29** and **Appendix 30**

33. Solid waste management plan submitted by Udupi 24x7 water supply Contractor enclosed as **Appendix 31** and identified the location to dispose the solid waste. The Spoil/solid waste disposal plan of Puttur sub project and Udupi Sub project enclosed as **Appendix 27, 28**. Mangalore UGD and Puttur WSS approved letter for disposal area from PIU enclosed as **Appendix 29** and **30**. Proper details of waste like quantity generated, transport, storage and disposal details not maintained by Mangalore and Kundapura 24x7 water supply sub Project. Puttur and Udupi sub projects are in preconstruction phase

**Table 9: Spoil /Solid waste details**

Project No	Quantity generated	Transport	Storage	Disposal details
<b>02MNG02</b>	Spoil and Solid waste Quantity generated from construction not maintained by contractor and not mention in the Spoil management plan. recommended to update the plan maintain record.	Transport route and mode of transport not mention in the Spoil /Solid /Traffic Plan recommended to update	No storage of waste	Contractor Dumping surplus soil in the Pachanady Solid waste management treatment plant. Location is approved by permission of PIU enclosed as <b>Appendix 29</b>
<b>02KDP01</b>	Spoil and Solid waste Quantity generated from construction not maintained by contractor and not mention in the Spoil management plan. recommended to update the plan maintain record.	Transport route and mode of transport not mention in the Spoil /Solid /Traffic Plan recommended to update	No storage of Waste	Contractor Coordinated with PIU / Kundapura TMC surplus soils and Solid waste Disposed of in Authorized landfill.
<b>02PTR01</b>	Sub project is in pre-construction Phase Spoil and Solid waste Quantity generated from construction not maintained by contractor and not mention in the Spoil management plan.	Transport route and mode of transport not mention in the Spoil /Solid /Traffic Plan	Location identified	Spoil Management Plan and Permission to Dispose the Waste in the Disposal are enclosed as <b>Appendix 27,30</b>

	recommended to update the plan maintain record.			
<b>02UDP01</b>	Sub project is in pre-construction Phase Spoil and Solid waste Quantity generated from construction not maintained by contractor and not mention in the Spoil management plan. recommended to update the plan maintain record.	Transport root and mode of transport not Spoil /Solid /Traffic Plan recommended to update	Location identified	Spoil Management Plan and Waste Disposal plan in the Disposal area enclosed as <b>Appendix 28,31</b>

34. Barricades, signages, and on-site boards provided by contractor but List of number of barricades, signages, and on-site boards provided by contractor is not maintained and not submitted to PIU in monthly report. Photographs enclosed as **Appendix 1**.
35. Kundapura 24x7 water supply Project Workers labor camp provided at Halkote. For Mangalore UGD Workers' labour camp provided at Shakti Nagar. Puttur and Udupi 24x7 water supply sub projects have been started in the month of November 2019.
36. Recommended contractor of Kundapura 24x7 water supply and Mangalore UGD to maintain Work-related accidents and incidents record till now no accidents and incidents recorded. The works in the Puttur and Udupi 24x7 water supply sub projects have been started recently. The accident register details are given as **Annexure 45, 46**.

**B Provide the monitoring results as per the parameters outlined in the approved EMP**

37. Daily, weekly and monthly monitoring is continued for all the running packages. The overall compliance status for all the 4 running packages during report period is satisfactory. Improvement is noted for all the running packages. Persons monitored and mitigation measures against impact field is given in **Table 10 to 14**.
38. There are few partial compliance status has been noted for the running packages.
39. Advance information to the locals and shopkeepers at some pipe laying areas of Mangalore, Kundapura, Puttur, Udupi is not always provided. Time period for construction work for particular area and contact details of PIU, consultant in project display board for any grievances or suggestion should be included at all work sites.

40. Partial use of project display board for Mangalore UGD package and Kundapura 34x7 water supply observed.
41. Need to improve use of PPE by contractor's workers. Use of PPE should be at all times as per site condition and work type. Particularly use of shoes, hand gloves and safety belt (when working at height)
42. Temporary placement of caution tape is noted for all the packages. Improvement/ complete use of caution tape at working areas required
43. Improvement of housekeeping and labour staying arrangement is required for Mangalore.
44. There is a need for the Improvement of material storage for Kundapura 24X7 water supply at Kodi store yard and Mangalore UGD packages
45. Improvement is required for first aid box. First aid materials are not sufficient. Environmental Management Plan for Anticipated Impacts are given as **Annexure 23** to **26-**

**Table 10: Summary of Environmental Monitoring Activities (July to December - 2019)- UGD in Mangalore City, Package No.02MNG02**

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
Impacts due to excess excavated earth, excess construction materials, solid waste etc.; and Occupational hazards which can occur to workers and public during work.	<p>Prepare and submit a Method Statement for pumping main pipeline works in a table format with appended site layout map and cover the following:</p> <ol style="list-style-type: none"> <li>1. Work description; No. of workers (skilled and unskilled); Details of Plant, equipment and machinery, vehicles;</li> <li>2. Work duration (total, and activity-wise, for example for pipe laying, from excavation to road resurfacing/testing);</li> <li>3. Personal Protection Equipment (PPE) (helmet, gloves, boots, etc.) details for each type of work;</li> <li>4. Details of materials at each site (type and quantity);</li> <li>5. 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,</li> </ol>	<ol style="list-style-type: none"> <li>a) Site inspection and record verification; - Done.</li> <li>b) Appointment of Environmental, Health and Safety (EHS) Engineer by contractor prior to start of work - Done</li> <li>c) Site specific Occupational Health and Safety (OHS) plan;</li> <li>d) Spoil and waste management plan; and</li> <li>e) Complaints from sensitive receptors and public.</li> </ol>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	-	<ol style="list-style-type: none"> <li>1. Daily construction by supervisor- Resident Engineer</li> <li>2. Weekly / bi weekly by Construction Manager.</li> <li>3. Verification by Environment Specialist of PMCSC and Asst .Executive Engineer (Environment) KIUWMIP- KUIDFC On monthly basis:</li> </ol> <p>(a) Dates of Verification by Environment Specialist of PMCSC : July – 24-07-2019  August – 27-08-2019</p>	<p>Construction supervisor - Mr. Prakash and Resident Engineer - Mr. Shahir.</p> <p>Mr. Rajendra Kalghade</p> <p>M.R.S.Malik Environment Specialist of PMCSC.</p> <p>Mr.Shashi SP Asst. Executive Engineer (Environment) KIUWMIP-KUIDFC</p>

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>infrastructure etc.);</p> <p>6. Construction waste/debris generated (details and quantity);</p> <p>7. Detail the sequence of work process (step-by-step) including specific details of each work;</p> <p>8. Contractor's supervision and management arrangements for the work;</p> <p>Emergency: Designate</p> <p>(i) responsible person on site, and</p> <p>(ii) first aider; and</p> <p>(iii) Typical site layout plan including pipe trenching, placement of material, excavated earth, barricading, etc.</p> <p>9. The pumping main lines are to be laid along the roads, Roads are provided with side drains to carry rain water. 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.</p>				<p>September - 24-09-2019</p> <p>October – 29-10-2019</p> <p>November- 21-11-2019</p> <p>December- 19-12-2019</p> <p>(b) Dates of Verification by Asst Executive Engineer (Environment) KIUWMIP-KUIDFC</p> <p>August – 27-08-2019</p> <p>October – 29-10-2019</p> <p>December- 19-12-2019</p>	

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p><b>The following should be included in the site layout plan:</b></p> <ul style="list-style-type: none"> <li>a) Provide barricading/security personnel at the site to prevent entry/trespassing of pedestrian/vehicles into the work zone;</li> <li>b) Location of temporary stockpiles and provision of bunds;</li> <li>c) Separation of stockpiles areas with workers/vehicle movement paths to avoid disturbing the stockpiled soil;</li> <li>d) Wetting of soil to arrest dust generation by sprinkling water; and</li> <li>e) Waste/surplus soil 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 program implementation unit (PIU).</li> </ul>					

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
Disturbance/ damage to existing utilities on the sites  (Telephone lines, electric poles and wires, water lines within proposed project sites)	10. At least two-weeks prior to start of work at any section, Identify utilities that will be required to be temporarily disturbed / shifted for the construction work; 11. Liaise with the respective utility department, provide prior information to the affected public and restore the utilities as soon as the work is complete 12. Provide contingency services where required (temporary diversion of drains, provision of water supply by tankers, etc.,) 13. Coordinate with the respective department and ensure that electricity and telephone services are restored quickly 14. Reconstruct the damaged compound walls, culverts and drains immediately after the completion of pipeline work in that particular section	Section-wise list of utilities to be shifted / disturbed to be submitted to PIU two-weeks prior to start of work at that section along with a plan to shift and contingency steps to be taken Record to confirm that contingency services are provided and all damaged utilities are restored after the work	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
Disruption to traffic flow and sensitive areas and receptors	15. Prioritize areas within or nearest possible vacant space in the subproject location; 16. Avoid locating construction	List of selected sites for construction work camp, storage area and disposal	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>		Do	Do

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	17. work camps close (100 m away) to residential areas; Do not consider residential areas; for stockpiling the waste/surplus soil; and 18. Material stockpiles shall be protected by bunds during the monsoon to arrest the silt laden runoff into drains.	area. Complaints from sensitive receptors				
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	19. Contractor should obtain material from existing mines approved/licensed by Mines and Geology Department/ Revenue Department only; 20. Verify suitability of all material sources and obtain approval of implementing agency; 21. No new quarry sites shall be developed for the subproject purpose; and 22. Submit a monthly statement of construction material procured indicating material type, source and quantity.	Check Sources and approval	<ul style="list-style-type: none"> <li>• Checking of records visual inspection of sites</li> <li>•</li> </ul>	All construction site,	Do	Do
Dust and emissions from construction activity may de-grade the air quality	23. Consult with PIU on the designated areas for stockpiling of clay, soils, gravel, and other construction materials; 24. Damp down exposed soil	Site observations Informal Ambient air quality monitoring (4 locations, frequency - quarterly - 4	<ul style="list-style-type: none"> <li>• Checking of records visual inspection of sites</li> <li>•</li> </ul>	All construction site,	Do	Do



Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>and any stockpiled on site by spraying with water when necessary during dry weather;</p> <p>25. Bring materials (aggregates, sand, etc. gravel) as and when required;</p> <p>26. Use tarpaulins to cover sand and other loose material when transported by vehicles;</p> <p>27. Stockpile sand and other loose material only in barricaded area and protect/cover by tarpaulins to avoid dust generation</p> <p>28. Clean wheels and undercarriage of vehicles prior to leaving construction site;</p> <p>29. 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; and</p> <p>30. Carry out air quality monitoring.</p>	<p>times a year, 9 times in 24 months, parameters - SPM, RSPM, SOx, NOx)</p>				
High noisy construction activities	31. Plan activities in consultation with the PIU	Complaints from sensitive	• Checking of	All construction site,	Do	Do

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
may have adverse impacts on sensitive receptors and structures	<p>so that activities with the greatest potential to generate noise (road cutting activity) are conducted during periods of the day which will result in least disturbance;</p> <p>32. Construction work shall be limited to day light hours (6 AM to 6 PM) for all the works located within the town; Provide prior information to the local public about the work schedule;</p> <p>33. 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;</p> <p>34. 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; and</p> <p>35. Maintain maximum sound levels not exceeding 80 decibels (dB) when</p>	<p>receptors</p> <p>Site observations</p> <p>Ambient noise monitoring (day and night time / 24 hours monitoring at 4 locations, frequency – quarterly - 4 times a year, 9 times in 24 months)</p>	<ul style="list-style-type: none"> <li>records visual inspection of sites</li> </ul>			

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	measured at a distance of 10 m or more from the vehicles					
Impacts on surface drainage and water quality due to contaminated runoff from construction areas in monsoon	<p>36. Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;</p> <p>37. Stockpiles shall be provided with temporary bunds;</p> <p>38. Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, consult with Implementing Agency or designated disposal areas;</p> <p>39. Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies;</p> <p>40. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. Storage structure should consider 110% capacity bund;</p> <p>41. Dispose any wastes generated by construction activities in designated sites and,</p> <p>42. Ensure that there is no spill over of excavated earth construction materials like</p>	Site observations	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	cement concrete into the drain near wet well no. 3; also ensure that the drain flow is not blocked / disturbed during the work					
Impacts on landscape and aesthetics due to construction activity	<p>43. Manage surplus soil construction debris and solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;</p> <p>44. Coordinate with PIU / MCC for beneficial uses of road debris and surplus soils in ongoing construction works or for temporary storage for future use or disposal in landfill</p> <p>45. In unavoidable case of disposal, debris shall be disposed at landfill site or site approved by PIU / MCC. waste shall not be disposed in the forest areas and in or near water bodies/ rivers;</p> <p>46. Prepare and implement Waste Management Plan – it should present how the surplus waste generated will temporarily stocked at the site, transported, reused and disposed properly;</p> <p>47. Surplus soil and debris from</p>	<p>Work site inspection</p> <p>Complaints from public</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>work site shall be removed cleared at the end of each day of work; there shall be no stock piling of debris / surplus soil at the site</p> <p>48. Recover used oil and lubricants and reuse or remove from the sites;</p> <p>49. Remove all wreckage rubbish, or temporary structures which are no longer required; and</p> <p>50. Request program implementation unit (PIU) project management, design and construction supervisor consultant (PMD CSC) to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.</p>					
Hindrance to traffic movement / Accessibility	<p>51. Plan pipeline work in consultation with the traffic police; Prepare a Traffic Management Plan – a template is provided for reference at Appendix 8.</p> <p>52. Strictly follow the pipe laying method presented in the Table so that trench excavation, pipe laying, and refilling including compacting, at a stretch is</p>	Work Program Review	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>completed in a minimum possible time</p> <p>53. Provide for immediate consolidation of backfilling material to desired compaction – this will allow immediate road restoration and therefore will minimise disturbance to the traffic movement;</p> <p>54. Do not close the road completely, ensure that work is conducted onto edge of the road; allow traffic to move on one line;</p> <p>55. In narrow roads with considerable traffic (Jama Masjid- Road, Ashok Nagara road, and old port / Kandathapalli Road), work shall be undertaken between two intersections and diverting traffic in that section to a parallel road, so that through traffic is not blocked fully.</p> <p>56. In some sections on Jama Masjid- Road, Old Port Road and Kandathapalli Road there are no parallel roads to divert traffic; in those sections work shall be conducted in the nights or in low traffic hours in day</p>					

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>time; but in case of day-time work traffic shall not be blocked for more than 2-3 hours at a stretch; prior information shall be provided to public – a week before and a day before work, about the schedule of the work and temporary road closure; proper signage shall be provided</p> <p>57. Maintain safe pedestrian access at all times to the houses along the work site</p> <p>58. 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.</p> <p>59. In densely populated areas like market place or layouts, roads with heavy traffics additional care has to be taken.</p>					

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	60. Hard barricades should be mandatorily provided along with caution board and traffic diversion boards. Some of the densely populated area identified in project area are Old Port Road, Jeppubappal to Suterpete					
Schools, hospitals and religious places) due construction work in the proximity (within 250 m of such place)	61. No material should be stocked in this area; material shall be brought to the site as and when required 62. Conduct work manually with small group of workers and less noise; minimize use of equipment and vehicles 63. No work should be conducted near the religious places during religious congregations 64. Material transport to the site should be arranged considering school timings; material should be in place before school starts; 65. Notify concerned schools, hospitals, etc. 2 weeks prior to the work; conduct a 30 minutes awareness program at on nature of work, likely disturbances	Complaints from sensitive receptors  Work program	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do



Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	and risks and construction work, mitigation measures in place, entry restrictions and dos and don'ts Implement all measures suggested elsewhere in this report – dust and noise control, public safety, traffic management, strictly at the sites.					
Impediment of access to houses and business	66. Leave space for access between mounds of excavated soil, where required 67. Provide wooden planks/footbridges for pedestrians and metal sheets for vehicles to allow access across trenches to premises where required. 68. Consult affected business people to inform them in advance when work will occur 69. Address livelihood issues, if any; implement the Resettlement Plan to address these issues 70. Provide sign/caution/warning boards at work site indicating work schedule and traffic information; prevent public entry into	Number of walkways, wooden planks and foot bridges; Complaints from public; Spoil Management Plan; and Traffic Management plan.	• Checking of records • visual inspection of sites	All construction site,	Do	Do

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>work sites through barricading and security; and</p> <p>71. Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.</p> <p>72. Prepare a Traffic Management Plan – a template is provided for reference at <b>Appendix 8</b> in IEE. The site-specific traffic management plan should be part of the Construction Management Plan.</p>					
Impact on local employment generation	76. Employ local labour force to the maximum extent, if manpower is available	Employment Records Compliance to labour laws	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
Workers occupational health and safety	<p>77. Develop and implement site-specific Health and Safety (H&amp;S) Plan which will include measures such as:</p> <p>(a) excluding public from the site;</p> <p>(b) ensuring all workers are provided with and use Personal Protective Equipment (PPE);</p> <p>(c) H&amp;S Training for all site personnel;</p>	<p>Site specific OHS Equipped first aid station.</p> <p>Potable water supply and clean eating area.</p> <p>PPE and medical insurance</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site, and Camp site	Do	Do

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>(d) documented procedures to be followed for all site activities; and (e) documentation of work- related accidents;</p> <p>78. All trenches in sandy and mixed sandy soils irrespective of depth and trenches deeper than 2m (or less, if designed by the engineer) in other soils shall be protected against collapse to avoid safety risks to workers, public and nearby buildings/structures; provision has been made for well point type dewatering, sheet piling for shoring and strutting etc., precaution shall be taken at the time of execution;</p> <p>79. Take all necessary precaution during isolation and blocking of existing pumping main and connecting the new main to the existing system. Skilled supervision, appropriate apparatus and PPEs must be used;</p> <p>80. Extreme care shall be taken while working on existing sewer lines/ manholes, where they are required to be shifted, to</p>					

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>safeguard the workers against the gaseous emissions and hazardous working conditions</p> <p>81. Create awareness among all workers, supervisors and site engineers on potential hazard conditions and safety risks in working with existing/old sewer lines; working conditions may be hazardous with harmful gaseous emissions (hydrogen sulphide, carbon monoxide, methane, etc.) and oxygen deficiency;</p> <p>82. Provide all necessary personnel protection equipment; including oxygen masks for emergency use;</p> <p>83. Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;</p> <p>84. Provide medical insurance coverage for workers;</p> <p>85. Secure all installations from unauthorized intrusion and accident risks;</p> <p>86. Provide supplies of potable drinking water;</p>					

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>87. Provide clean eating areas where workers are not exposed to hazardous or noxious substances;</p> <p>88. Provide H &amp; S 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;</p> <p>89. 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;</p> <p>90. Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;</p> <p>91. Ensure moving equipment is outfitted with audible back-up alarms;</p> <p>92. Mark and provide sign boards for hazardous areas such as energized</p>					

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal.</p> <p>93. 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;</p> <p>94. Disallow worker exposure to noise level greater than 85 dB for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively; and</p> <p>95. Overall, the contractor should comply with IFC EHS Guidelines on Occupational Health and Safety (this can be downloaded from <a href="http://www1.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2BOccupational%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES">http://www1.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2BOccupational%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES</a>).</p>					
Danger due to deep excavations, hindrance to traffic and chances of	96. All trenches in sandy and mixed sandy soils irrespective of depth, and	Traffic Management Plan	• Checking of records	All construction site,	Do	Do

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
accident,	<p>trenches deeper than 2m (or less, if desired by engineer) shall be protected against collapse to avoid safety risks to workers, public and nearby buildings/structures; provision has been made for well point type dewatering, sheet piling for shoring and strutting etc., precaution shall be taken at the time of execution;</p> <p>97. Plan material and waste routes to avoid times of peak-pedestrian activities;</p> <p>98. One week prior to start of work at any section, a joint inspection shall be conducted along with PIU and MCC to identify risk areas and buildings and take necessary precautions for safe conduct of work;</p> <p>99. Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure;</p> <p>100. Provide road signs and flag persons to warn of</p>	Complaints from public	• visual inspection of sites			

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>dangerous conditions, for all the sites along the roads; and</p> <p>101. Overall, the contractor should comply with IFC EHS Guidelines Community Health and Safety (this can be downloaded from <a href="http://www1.ifc.org/wps/wcm/connect/dd673400488559ae83c4d36a6515bb18/3%2BCommunity%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES">http://www1.ifc.org/wps/wcm/connect/dd673400488559ae83c4d36a6515bb18/3%2BCommunity%2BHealth%2Band%2BSafety.pdf?MOD=AJPERES</a>).</p>					
102. Temporary worker camps	<p>103. The contractor should operate the temporary worker camps in compliance with IFC EHS Guidelines specific to workers accommodation (this can be downloaded from <a href="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</a>), including the following:</p> <p>104. Consult with PIU before locating workers</p>	List of selected sites. Written consent of land owner Waste Management plan	Checking of records visual inspection of sites	At workers camp	Do	Do



Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>camps/sheds, and construction plants; as far as possible located within reasonable distance of work site;</p> <p>105. Minimize removal of vegetation and disallow cutting of trees;</p> <p>106. Labour camps shall include accommodation for workers/labourers along with other basic amenities such as kitchen, potable water supply, sanitation (toilets, bathrooms, washing areas and water supply for such needs), first aid room as well as garbage collection and disposal facility.</p> <p>107. The roof height of the worker's and labour camp shall not be less than 3 m from floor level to the lowest part of the roof.</p> <p>108. The camps shall be floored with concrete, shall be kept clean, and with proper cross ventilation, and the space provided shall be on the basis of one sq.mt per head or as per the relevant regulation, whichever is higher.</p>					

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>109. Fire and electrical safety pre-cautions shall be adhered to.</p> <p>110. Cooking, sanitation and washing areas shall be provided separately.</p> <p>111. The Contractor shall maintain necessary living accommodation and ancillary facilities (including provision of clean fuel to prevent damage to forests and to prevent fuel wood cutting and burning by labor) in functional and hygienic manner.</p> <p>112. The site must be graded and rendered free from depressions such that water does not get stagnant anywhere.</p> <p>113. The entire boundary of the site should be fenced all around with barbed wire so as to prevent the trespassing of humans and animals.</p> <p>114. Provide water and sanitation facilities; water, meeting Indian drinking water standards shall be</p>					

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	<p>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>115. 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>116. Train employees in the storage and handling of materials which can potentially cause soil contamination;</p> <p>117. Recover used oil and lubricants and reuse or remove from the site;</p> <p>118. Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;</p> <p>119. Remove all wreckage, rubbish, or temporary structures which are no longer required; and</p> <p>120. Report in writing that the</p>					

Impact	Mitigation Measures	Parameters Monitored	Method of Monitoring	Location of Monitoring	Date of Monitoring Conducted	Name of Person Who Conducted the Monitoring
<b>Construction Period</b>						
	camp has been vacated and restored to pre-project conditions before acceptance of work.					

**Table 11: Summary of Environmental Monitoring Activities of the Package-24X7 Water Supply System in Kundapura Town, Package No.02KDP01 (July to December - 2019)**

Impact	Mitigation Measures	Parameters Monitored	Method of monitoring	Location of Monitoring	Date of Monitoring Conducted	
Impacts on the environment, workers, and community due to improper implementation of EMP	1. 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.; and	a) Certificate of Completion (Safeguards Compliance Orientation) b) Posting of Certification of Completion at worksites c) Posting of EMP at worksites.	• Checking of records • visual inspection of sites	-	1. Daily by construction supervisor- Resident Engineer 2. Weekly / bi weekly by Construction Manager. 3. Verification by Environment Specialist of PMCSC and Asst .Executive Engineer (Environment) KIUWMIP- KUIDFC On monthly basis:	Construction supervisor - Mr. Sadanand Kamate and Resident Engineer - Mr. Raghav
	2. Appointment of Environmental, Health and Safety (EHS) Engineer by contractor prior to start of work.				(b) Dates of	Mr. Gopikumar / Mr. Rajendra Kalghade

					<p>Verification by M.R.S.Malik Environment Specialist of PMCSC : July – 23/07/2019</p> <p>August – 26/08/2019</p> <p>September - 23-09-2019</p> <p>October – 22-10-2019</p> <p>November- 20/11/2019</p> <p>December- 17/12/2019</p> <p>(b) Dates of Verification by Asst Executive Engineer (Environment) KIUWMIP-KUIDFC</p> <p>August – 26/08/2019</p> <p>October – 22-10-2019</p> <p>December- 17/12/2019</p>	<p>Environment Specialist of PMCSC.</p> <p>Mr.Shashi SP Asst. Executive Engineer (Environment) KIUWMIP- KUIDFC</p>
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<p>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, sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons.</p>	<p>1. Consult with PMU/PMCSC on the designated areas for stockpiling of clay, soils, gravel, and other construction materials;  2. Damp down exposed soil and any stockpiled on site by spraying with water when necessary during dry weather;  3. Use tarpaulins to cover sand and other loose material when transported by trucks; and  4. Stockpile sand and other loose material only in barricaded area and protect/cover by tarpaulins to avoid dust generation  5. Clean wheels and undercarriage of vehicles prior to leaving construction site; and  6. Fit all heavy equipment and machinery with air pollution control devices which are operating correctly.</p>	<p>a) Location of stockpiles;  b) Complaints from sensitive receptors;  c) Heavy equipment and machinery with air pollution control devices;  d) Certification that vehicles are compliant with Air Act</p>	<p>• Checking of records  • visual inspection of sites</p>	<p>Working locations</p>	<p>Do</p>	<p>Do</p>
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Mobilization of settled silt materials, and chemical contamination from fuels and lubricants during installation of pipelines can contaminate nearby surface water quality.	1. Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets; 2. Laying of pipelines during dry season and closing off all trenches before rainy season and avoid any chances of collecting the water in the trenches or pumping; 3. Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, dispose in municipal landfill (Sample Spoils Management Plan in Appendix 10); 4. Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies; 5. Provide temporary bunds for stockpiles and materials; 6. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. Storage structure should consider 110% capacity bund; and 7. Dispose any wastes generated by construction activities in landfill or reuse in beneficial purposes	a) Areas for stockpiles, storage of fuels and lubricants and waste materials; b) Number of silt traps installed along trenches leading to water bodies; c) Records of surface water quality inspection; d) Effectiveness of water management measures; e) No visible degradation to nearby drainages, nallahs or waterbodies due to civil work	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site, stockpile areas	Do	Do
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Contamination of coastal water due to works in coastal zone	In addition to the above measures following measures given below for piling works:  1. Piling activities for OHT foundation work at Kodi shall be conducted carefully; there shall no spillage of bentonite on the ground; bentonite slurry shall be properly collected in leak proof containers and re-circulated in the piling activity; excess bentonite slurry shall be dried properly in containers, and disposed in landfill safely		<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>		Do	Do
Increase in noise level due to earth-moving and excavation equipment, and the transportation of equipment, materials, and people	1. Plan activities in consultation with PMU/PMCSC so that activities with the greatest potential to generate noise (road cutting and piling activity) are conducted during periods of the day which will result in least disturbance; 2. Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; 3. Minimize noise from construction equipment by using vehicle silencers, fitting jackhammers with noise-reducing mufflers, and portable street barriers the sound impact	a) Complaints from sensitive receptors; b) Use of silencers in noise-producing equipment and sound barriers; and c) Equivalent day and night time noise levels (Appendix 3)	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do



	4.	to surrounding sensitive receptor; and Maintain maximum sound levels not exceeding 80 decibels (dB) when measured at a distance of 10 m or more from the vehicle/s.					
Impacts due to excess excavated earth, excess construction and demolition materials and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items.	1. 2. 3. 4. 5.	Manage surplus soil, debris and solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; Coordinate with PIU / Kundapura TMC for beneficial uses of road debris and surplus soils in on-going construction works or for temporary storage for future use or disposal in landfill In unavoidable case of disposal, debris shall be disposed at landfill site or site approved by PIU / Kundapura; waste shall not be disposed in the forest areas and in or near water bodies/ rivers / coast Prepare and implement spoils management plan; Surplus soil and debris from work site shall be removed / cleared at the end of each day of work; there shall be no stock piling of debris / surplus soil at the site	a) Complaints from sensitive receptors; b) Worksite clear of hazardous wastes such as oil/fuel; and Worksite clear of any excess excavated earth, excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

	6. Recover used oil and lubricants and reuse or remove from the sites; 7. Remove all wreckage, rubbish, or temporary structures which are no longer required; and 8. Request PIU/PMCSC to report in writing that the necessary environmental restoration works has been adequately performed before acceptance of work.					
Disruption of service and damage to existing infrastructure at specified project location	1. At least two-weeks prior to start of work at any section, Identify utilities that will be required to be temporarily disturbed / shifted for the construction work; 2. Liaise with the respective utility department, provide prior information to the affected public and restore the utilities as soon as the work is complete 3. Provide contingency services where required (temporary diversion of drains, provision of water supply by tankers, etc.,) 4. Coordinate with the respective department and ensure that electricity and telephone services are restored quickly 5. Reconstruct the damaged footpath and drains immediately after the	a) Section-wise list of utilities to be shifted / disturbed to be submitted to PIU two-weeks prior to start of work at that section along with a plan to shift and contingency steps to be taken b) Record to confirm that contingency services are provided and all damaged utilities are restored after the work	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

		completion of pipeline work in that particular section					
Loss of vegetation and tree cover	1.	Except four (4) coconut trees at Kodi OHT site, and pruning of large tree to the minimum required extent at Halekote OHT site, no trees shall be removed for the subproject.	a) PMU/PMCSC to report in writing the number of trees cut and planted.	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
	2.	Trees in the pipeline alignments shall be avoided during construction by locally altering the alignment.					
	3.	Obtain tree cutting and pruning permission from Tree Officer; plant and maintain 10 trees for each tree that is removed					
Traffic problems and conflicts near project locations and haul road	1.	Plan pipeline work in consultation with the traffic police; prepare a Traffic Management Plan – a template is provided for reference at Appendix 11.	a) Traffic route during construction works including number of permanent signages, barricades and flagmen on worksite (Appendix 11); Complaints from sensitive receptors; and Number of signages placed at project location.	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
	2.	Strictly follow the pipe laying method presented in Table 7 so that trench excavation, pipe laying, and refilling including compacting, at a stretch is completed in a minimum possible time;					
	3.	Provide for immediate consolidation of backfilling material to desired compaction – this will					

	<p>allow immediate road restoration and therefore will minimize disturbance to the traffic movement;</p> <p>4. Schedule transport and hauling activities during non-peak hours;</p> <p>5. No road shall be completely closed for traffic; in unavoidable circumstances of road closure (eg, NH service road closure at Shastri Circle for trenchless work), provide alternative route, and ensure that public is informed about such traffic diversions;</p> <p>6. Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites;</p> <p>7. Maintain safe pedestrian access at all times to the houses along the work site;</p> <p>8. Hard barricades should be mandatorily provided for work sites in residential and commercial areas, along with caution board.</p> <p>9. At all work sites public information/caution boards shall be provided – information shall inter-alia include: project name, cost and schedule; executing agency and</p>					
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	<p>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;</p> <p>10. Keep the site free from all unnecessary obstructions;</p> <p>11. Drive vehicles in a considerate manner</p> <p>In narrow roads listed above, Inform the affected local population on week in advance, and again a day before the work</p>					
Impede the access of residents and customers to nearby shops	<p>1. Strictly follow the pipe laying method presented in Table 7 so that trench excavation, pipe laying, and refilling including compacting, at a stretch is completed in a minimum possible time;</p> <p>2. Leave spaces for access between mounds of soil;</p> <p>3. Provide walkways and metal sheets where required for people;</p> <p>4. Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools;</p> <p>5. Consult businesses and institutions regarding operating hours and factoring this in work</p>	<p>a) Complaints from sensitive receptors;</p> <p>b) Spoils management plan; and</p> <p>c) Number of walkways, signs, and metal sheets placed at project location</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

	6.	schedules; and Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.					
Disturbance to socio cultural resources (religious, educational, health care etc.), access disruptions etc.,	1. 2. 3. 4. 5. 6.	1. No material should be stocked close to these areas; material shall be brought to the site as and when required; 2. Conduct work manually with small group of workers and less noise; minimize use of equipment and vehicles; 3. Strictly follow the pipe laying method presented in Table 7 so that trench excavation, pipe laying, and refilling including compacting, at a stretch is completed in a minimum possible time; 4. No work should be conducted near the religious places during religious congregations; 5. Material transport to the site should be arranged considering school timings; material should be in place before school starts; 6. Notify concerned schools, hospitals etc., 2 weeks prior to the work; conduct a 30-minute awareness program on nature of	a) Visual site observations b) Public complaints	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

	7.	work, likely disturbances and risks and construction work, mitigation measures in place, entry restrictions and dos and don'ts; and Implement all measures suggested elsewhere in this report – dust and noise control, public safety, traffic management, strictly at the sites.					
Generation of contractual employment and increase in local revenue	1. 2.	1. Employ local labor force to the maximum extent, if manpower is available; and 2. Comply with labor laws	a) Employment records; b) Records of sources of materials; and c) Compliance to core labor laws (See Appendix 2 of this IEE)	• Checking of records • visual inspection of sites	All construction site and Proposed camp site	Do	Do
Occupational hazards which can arise during work	1. 2.	1. Comply with all national, state and local core labor laws (See Appendix 2 of this IEE); 2. 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 for all site personnel;	a) Site-specific OHS Plan; b) Equipped first-aid stations; c) Medical insurance coverage for workers; d) Number of accidents; e) Supplies of potable drinking water; f) Clean eating areas where	• Checking of records • visual inspection of sites	All construction site, stockpile areas and Proposed camp site	Do	Do

	<p>(d) documented procedures to be followed for all site activities; and</p> <p>(e) documentation of work-related accidents;</p> <p>3. All trenches in sandy and mixed sandy soils irrespective of depth shall be protected with safety shoring / strutting to avoid safety risks to workers, public and nearby buildings/structures</p> <p>4. Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;</p> <p>5. Provide medical insurance coverage for workers;</p> <p>6. Secure all installations from unauthorized intrusion and accident risks;</p> <p>7. Provide supplies of potable drinking water;</p> <p>8. Provide clean eating areas where workers are not exposed to hazardous or noxious substances</p> <p>9. Provide H&amp;S 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;</p> <p>10. Provide visitor orientation</p>	<p>workers are not exposed to hazardous or noxious substances;</p> <p>g) record of H&amp;S orientation trainings</p> <p>h) personal protective equipment;</p> <p>i) % of moving equipment outfitted with audible back-up alarms;</p> <p>j) 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.</p> <p>k) Compliance to core labor laws (Appendix 2)</p>				
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	<p>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;</p> <p>11. Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;</p> <p>12. Ensure moving equipment is outfitted with audible back-up alarms;</p> <p>13. 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;</p> <p>14. Disallow worker exposure to noise level greater than 85 dB for duration of more than 8 hours per day without hearing protection. The use of hearing</p>					
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	15.	protection shall be enforced actively; and 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 <a href="http://www1.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2Boccupational%2Bhealth%2Band%2Bsafety.pdf?MOD=AJPERES">http://www1.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2Boccupational%2Bhealth%2Band%2Bsafety.pdf?MOD=AJPERES</a> )					
Traffic accidents and vehicle collision with pedestrians during material and waste transportation	1. 2. 3. 4.	1. Provide protective shorting / strutting hard barricading for all deep excavations in sandy and mixed sandy that may require especially for pipe lines soils (>1m); 2. One week prior to start of work at any section, a joint inspection shall be conducted along with PIU and Kundapura TMC to identify risk areas and buildings at risk (due to excavation, vibration and noise) and take necessary precautions for safe conduct of work. 3. identify buildings at risk prior to start of excavation work and take necessary precautions for safe conduct of work; 4. Plan material and waste	a) Traffic Management Plan; and b) Complaints from sensitive receptors	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

	<p>5. routes to avoid times of peak-pedestrian activities; Liaise with Kundapura TMC in identifying risk areas on route cards/maps;</p> <p>6. Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure;</p> <p>7. Provide road signs and flag persons to warn of dangerous conditions, for all work sites along the roads; and</p> <p>8. Overall, the contractor should comply with IFC EHS Guidelines Community Health and Safety (this can be downloaded from <a href="http://www1.ifc.org/wps/wcm/connect/dd673400488559ae83c4d36a6515bb18/3%2Bcommunity%2Bhealth%2Band%2BSafety.pdf?MOD=AJPERES">http://www1.ifc.org/wps/wcm/connect/dd673400488559ae83c4d36a6515bb18/3%2Bcommunity%2Bhealth%2Band%2BSafety.pdf?MOD=AJPERES</a>).</p>					
Temporary air and noise pollution from machine operation, water pollution from storage and use of	<p>1. Consult with PIU before locating workers camps/sheds, and construction plants; as far as possible located within reasonable distance of work site;</p> <p>2. Minimize removal of</p>	<p>a) Complaints from sensitive receptors;</p> <p>b) Drinking water and sanitation facilities for employees</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

<p>fuels, oils, solvents, and lubricants</p> <p>Unsanitary and poor living conditions for workers</p>	<p>vegetation and disallow cutting of trees;</p> <p>3. Labor camps shall include accommodation for workers/laborers along with other basic amenities such as kitchen, potable water supply, sanitation (toilets, bathrooms, washing areas and water supply for such needs), first aid room as well as garbage collection and disposal facility.</p> <p>4. The roof height of the worker's and labor camp shall not be less than 3 m from floor level to the lowest part of the roof.</p> <p>5. The camps shall be floored with concrete, shall be kept clean, and with proper cross ventilation, and the space provided shall be on the basis of one sq.mt per head or as per the relevant regulation, whichever is higher.</p> <p>6. Fire and electrical safety precautions shall be adhered to.</p> <p>7. Cooking, sanitation and washing areas shall be provided separately.</p> <p>8. The Contractor shall maintain necessary living accommodation and ancillary facilities (including provision of clean fuel to prevent damage to forests and to prevent fuel wood cutting and burning by labor) in functional and hygienic manner.</p> <p>9. The site must be graded and rendered free from</p>					
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	<p>depressions such that water does not get stagnant anywhere.</p> <p>10.The entire boundary of the site should be fenced all around with barbed wire so as to prevent the trespassing of humans and animals.</p> <p>11.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>12.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>13.Train employees in the storage and handling of materials which can potentially cause soil contamination;</p> <p>14.Recover used oil and lubricants and reuse or remove from the site;</p> <p>15.Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;</p> <p>16.Remove all wreckage, rubbish, or temporary structures which are no longer required;</p> <p>17. Report in writing that the camp has been vacated and restored</p>					
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	to pre-project conditions before acceptance of work.					
Risk of archaeological chance finds	<ol style="list-style-type: none"> <li>1. Create awareness among the workers and supervisors about the chance finds during excavation work;</li> <li>2. Stop work immediately if any finds are suspected to allow further investigation;</li> <li>3. Inform archaeological agencies promptly if a find is suspected, and take any action they require to ensure its removal or protection in site; and</li> <li>4. Adjacent to important religious sites, undertake excavation and construction work in such a way that no structural damage is caused to the building.</li> </ol>	Records of chance finds	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
Unsatisfactory compliance to EMP	<ol style="list-style-type: none"> <li>1. Timely submission of monitoring reports including pictures.</li> </ol>	Availability and competency of appointed supervisor Monthly report	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>		Do	Do
Damage due to debris, spoils, excess construction materials	<ol style="list-style-type: none"> <li>1. Remove all spoils, wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required;</li> <li>2. All excavated roads shall be reinstated to original condition.</li> <li>3. All disrupted utilities restored.</li> <li>4. All affected structures</li> </ol>	<ol style="list-style-type: none"> <li>a) PMU/PMDCSC report in writing that (i) worksite is restored to original conditions;</li> <li>b) camp has been vacated and restored to pre-project conditions;</li> <li>c) all construction</li> </ol>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

	rehabilitated/compensated .	related structures not relevant to operation and maintenance (O&M) are removed; and				
5.	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; d)	Worksite clean-up is satisfactory.				
6.	All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the revegetation specification that forms part of this document;					
7.	The contractor must arrange the cancellation of all temporary services; and					
8.	Request PMU/PMCSC to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.					

**Table 12: Summary of Environmental Monitoring Activities of the 24x7 Water supply system in Udipi Town – Package No. 02UDP01- Pre-Construction**

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
Unsatisfactory compliance to EMP	<p>1. Appoint Safeguards (Environmental, Health and Safety or EHS) Engineer to ensure EMP implementation</p> <p>2. Submission of updated EMP/site-specific environmental management plan (SEMP)</p> <p>3. Timely submission monthly of monitoring reports including documentary evidence on EMP implementation</p>	<p>(i) mobilization of EHS engineer</p> <p>(ii) submission of SEMP prior to start of works</p> <p>(iii) submission of monthly reports</p>	Contractor and PIU office	<ul style="list-style-type: none"> <li>Checking of records</li> <li>visual inspection of sites</li> </ul>	Contractor and PIU office	<p>1. Daily construction supervisor- Resident Engineer</p> <p>2. Weekly / bi weekly by Construction Manager.</p> <p>3. Verification Environment Specialist of PMCSC and Asst . Executive Engineer (Environment) KIUWMIP-KUIDFC On monthly basis:</p> <p><b>a. Dates of Verification by Environment Specialist of PMCSC :</b> July – 22/07/2019 August – 22/08/2019</p>	<p>1. Construction supervisor - Mr. Sadanandh and Resident Engineer - Mr. Aneesh Suvarna. Mr.Meghshyam Hebbar</p> <p>2. Mr. Gopi Kumar</p> <p>3. M.R.S.Malik Environment Specialist of PMCSC.</p>



Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	on such as photographs					September - 25-09-2019 October – 25-10-2019 November- 21/11/2019 December- 18/12/2019  <b>b. Dates of Verification by Asst Executive Engineer (Environment) KIUWMIP-KUIDFC</b> August – 22/08/2019 October – 25-10-2019 December- 18/12/2019	4. Mr.Shashi SP Asst Executive Engineer (Environment) KIUWMIP-KUIDFC
Tree cutting	1. Further minimize removal of trees, if possible, by/ adopting to site condition and with appropriate layout design (Overhead tank or OHT sites) and alignments	(i) Layout plan of OHTs (ii) tree cutting pruning permission (iii) Compensatory tree plantation as part of the project	Contractor and PIU office and site	Checking of records	Contractor and PIU office and site		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<p>(pipelines)</p> <p>2. For any tree cutting that may be required, obtain prior permission from Forest Department</p> <p>3. Plant and maintain 10 trees for each tree that is removed</p>						
Telephone lines, electric poles and wires, water lines within proposed project area	1. Identify and include locations and operators of these utilities in the detailed design documents, during design validation phase and preconstruction phase, to prevent unnecessary	List of affected utilities and operators; (ii) Bid document to include requirement for a contingency plan for service interruptions (example provision of water if disruption is more than 24	Contractor and PIU office	• Checking of records	Contractor and PIU office		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<p>disruption of services during construction phase</p> <p>2. Conduct detailed site surveys with the construction drawings and discuss with the respective agencies before ground clearance; and</p> <p>3. Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.</p>	<p>hours), spoil management plan, and traffic management plan</p>					

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
Ground disturbance can uncover and damage archaeological and historical remains	<ol style="list-style-type: none"> <li>1. Create awareness among the workers and supervisors about the chance finds during excavation work</li> <li>2. Stop work immediately if any finds are suspected to allow further investigation</li> <li>3. Inform archaeological agencies promptly if a find is suspected, and take any action they require to ensure its removal or protection in situ.</li> </ol>	Chance Finds Protocol	Contractor and PIU office	Checking of records	Contractor and PIU office		
Disruption to traffic flow and	<ol style="list-style-type: none"> <li>1. Prioritize areas within</li> </ol>	(i) List of selected sites	Contractor and PIU	Checking of records	Contractor and PIU		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
sensitive receptors	<p>or nearest possible vacant space in the project location;</p> <p>2. If it is deemed necessary to locate elsewhere, consider sites that will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems;</p> <p>Do not consider residential areas;</p> <p>Take extreme care in selecting sites to avoid direct disposal to water body which will inconvenience the community.</p> <p>(v) For excess spoil</p>	<p>for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas.</p> <p>(ii) Written consent of landowner/s (not lessee/s) for reuse of excess spoils to agricultural land</p>	office		office		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	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 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.						
Extraction of materials can disrupt natural land contours and vegetation	1. Use quarry sites and sources permitted by Mines and Geology	(i) List of approved quarry sites and sources of	Contractor and PIU office	Checking of records	Contractor and PIU office		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution.	<p>Department only</p> <p>2. No new quarry sites shall be developed for the subproject</p> <p>Verify suitability of all material sources and obtain approval of implementing agency</p> <p>3. Submit on a monthly basis documentation of sources of materials to PMDCSC.</p>	<p>materials;</p> <p>(ii) Bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary.</p>					
Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or	<p>1. Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.</p> <p>2. Acknowledge in writing and</p>	Incorporated in final design and communicated to contractors.	Contractor and PIU office	Checking of records	Contractor and PIU office		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
stoppage of works	provide report on compliance all obtained consents, permits, clearance, NOCs, etc. Include in detailed design drawings and documents all conditions and provisions if necessary						
Use of approved construction practices to minimize construction impacts	1. 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)	Review of method statement and implementation of work	Contractor and PIU office	Checking of records	Contractor and PIU office		



Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<p>(iii) Details of plant, equipment and machinery, vehicles</p> <p>(iv) Work duration (total, and activity-wise, for example for pipe laying, from excavation to road 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>						

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<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> <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</p>						

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	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.						

**Table 13: Summary of Environmental Monitoring Activities of the 24x7 Water supply system in Udupi Town – Package No. 02UDP01- Construction**

Impact	Mitigation Measures	Parameters Monitored	Method of monitoring	Location of Monitoring	Date of Monitoring Conducted	
Impacts on the environment, workers, and community due to improper implementation of EMP	1. 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	a) Certificate of Completion (Safeguards Compliance Orientation) b) Posting of Certification of Completion at worksites c) Posting of	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	-	1. Daily construction by supervisor- Resident Engineer  2. Weekly / bi weekly by Construction Manager.	1. Construction supervisor - Mr. Sadanandh and Resident Engineer - Mr. Aneesh Suvarna. & Mr. Meghshyam Hebbar  2. Mr. Gopi Kumar / Rajendra Kelghade

	<p>laws, applicable environmental laws, etc.; and</p> <p>2. Appointment of Environmental, Health and Safety (EHS) Engineer by contractor prior to start of work.</p>	EMP at worksites.			<p>3. Verification by Environment Specialist of PMCSC and Asst. Executive Engineer (Environment) KIUWMIP-KUIDFC On monthly basis:</p> <p><b>a. Dates of Verification by Environment Specialist of PMCSC :</b>  July – 22/07/2019  August – 22/08/2019  September - 25-09-2019  October – 25-10-2019  November- 21/11/2019  December- 18/12/2019</p> <p><b>b. Dates of Verification by Asst Executive Engineer (Environment) KIUWMIP-KUIDFC</b>  August – 22/08/2019  October – 25-10-2019  December- 18/12/2019</p>	<p>3. M.R.S.Malik Environment Specialist of PMCSC.</p> <p>4. Mr.Shashi SP Asst Executive Engineer (Environment) KIUWMIP-KUIDFC</p>
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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, sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons.	<p>1. Consult with PMU/PMCSC on the designated areas for stockpiling of clay, soils, gravel, and other construction materials;</p> <p>2. Damp down exposed soil and any stockpiled on site by spraying with water when necessary during dry weather;</p> <p>3. Use tarpaulins to cover sand and other loose material when transported by trucks; and</p> <p>4. Clean wheels and undercarriage of vehicles prior to leaving construction site; and</p> <p>5. Fit all heavy equipment and machinery with air pollution control devices which are operating correctly.</p>	<p>a) Location of stockpiles;</p> <p>b) Complaints from sensitive receptors;</p> <p>c) Heavy equipment and machinery with air pollution control devices;</p> <p>d) Certification that vehicles are compliant with Air Act</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	Working locations	Do	Do
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<p>Mobilization of settled silt materials, and chemical contamination from fuels and lubricants during installation of pipelines can contaminate nearby surface water quality.</p>	<p>1. Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;  2. Laying of pipelines during dry season and closing of all trenches before rainy season and avoid any chances of collecting the water in the trenches or pumping;  3. Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, dispose in municipal landfill (Sample Spoils Management Plan in Appendix 10);  4. Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies;  5. Provide temporary bunds for stockpiles and materials;  6. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. Storage structure should consider 110% capacity bund; and  7. Dispose any wastes generated by construction activities in landfill or reuse in beneficial purposes  8. Conduct surface quality inspection &amp; Monitoring</p>	<p>a) Areas for stockpiles, storage of fuels and lubricants and waste materials;  b) Number of silt traps installed along trenches leading to water bodies;  c) Records of surface water quality inspection;  d) Effectiveness of water management measures;  e) No visible degradation to nearby drainages, nallahs or water bodies due to civil work</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	<p>All construction site, stockpile areas</p>	<p>Do</p>	<p>Do</p>
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Increase in noise level due to earth-moving and excavation equipment, and the transportation of equipment, materials, and people	<ol style="list-style-type: none"> <li>1. Plan activities in consultation with PMU/PMCSC so that activities with the greatest potential to generate noise (road cutting and piling activity) are conducted during periods of the day which will result in least disturbance;</li> <li>2. Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach;</li> <li>3. 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; and</li> <li>4. Maintain maximum sound levels not exceeding 80 decibels (dB) when measured at a distance of 10 m or more from the vehicle/s.</li> <li>5. Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach;</li> </ol>	<ol style="list-style-type: none"> <li>a) Complaints from sensitive receptors;</li> <li>b) Use of silencers in noise-producing equipment and sound barriers; and</li> <li>c) Equivalent day and night time noise levels (Appendix 3 of IEE)</li> </ol>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
Impacts due to excess excavated earth, excess construction	<ol style="list-style-type: none"> <li>1. Prepare and implement spoils management plan</li> <li>2. Avoid stockpiling of excess excavated soils;</li> <li>3. Coordinate with Udupi</li> </ol>	<ol style="list-style-type: none"> <li>a) Complaints from sensitive receptors;</li> <li>b) Worksite clear of hazardous wastes</li> </ol>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

and demolition materials and solid waste such as removed concrete, wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items.	4. 5. 6. 7.	CMC for beneficial uses of excess excavated soils or immediately dispose to designated areas; Recover used oil and lubricants and reuse or remove from the sites; Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; Remove all wreckage, rubbish, or temporary structures which are no longer required; and Request PMU/PMCSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work.	such as oil/fuel; and c) Worksite clear of any excess excavated earth, excess construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers				
Disruption of service and damage to existing infrastructure at specified project location	1. 2. 3.	1. Obtain from PIU/PMCSC the list of affected utilities and operators if any; 2. Prepare a contingency plan to include actions to be done in case of unintentional interruption of service 3. The public should be given notice at least three days in advance and any accidental breaking should be rectified immediately	a. once when the service is disrupted b. once for the each area disrupted c. as and when required when the disruption is planned	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
Traffic problems and	1.	Plan pipeline work in consultation with the traffic	a) Traffic route during	• Checking of records	All construction site,	Do	Do



<p>conflicts near project locations and haul road</p>	<p>police; prepare a Traffic Management Plan – a template is provided for reference at Appendix 7.</p> <p>2. Strictly follow the pipe laying method so that trench excavation, pipe laying, and refilling including compacting, at a stretch is completed in a minimum possible time;</p> <p>3. 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;</p> <p>4. Schedule transport and hauling activities during non-peak hours;</p> <p>5. No road shall be completely closed for traffic; in unavoidable circumstances of road closure (eg, NH service road closure at Shastri Circle for trenchless work), provide alternative route, and ensure that public is informed about such traffic diversions;</p> <p>6. Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites;</p> <p>7. Maintain safe pedestrian</p>	<p>construction works including number of permanent signages, barricades and flagmen on worksite (Appendix 7);</p> <p>b) Complaints from sensitive receptors; and</p> <p>c) Number of signages placed at project location.</p>	<ul style="list-style-type: none"> <li>• visual inspection of sites</li> </ul>			
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	<p>access at all times to the houses along the work site;</p> <p>8. Hard barricades should be mandatorily provided for work sites in residential and commercial areas, along with caution board.</p> <p>9. 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;</p> <p>10. Keep the site free from all unnecessary obstructions;</p> <p>11. Drive vehicles in a considerate manner</p> <p>12. Prepare a Traffic Management Plan – a template is provided as an Appendix 7.</p>					
Impede the access of residents and customers to nearby shops	<p>1. Prepare and implement spoils management plan</p> <p>2. Leave spaces for access between mounds of soil;</p> <p>3. Provide walkways and metal sheets where required for people;</p> <p>4. Increase workforce in front</p>	<p>a) Complaints from sensitive receptors;</p> <p>b) Spoils management plan; and</p> <p>c) Number of walkways,</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

	<p>of critical areas such as institutions, place of worship, business establishment, hospitals, and schools;</p> <p>5. Consult businesses and institutions regarding operating hours and factoring this in work schedules; and</p> <p>6. Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.</p>	<p>signs, and metal sheets placed at project location</p>				
<p>Disturbance to socio cultural resources (religious, educational, health care etc.), access disruptions etc.,</p>	<p>1. No material should be stocked close to these areas; material shall be brought to the site as and when required;</p> <p>2. Conduct work manually with small group of workers and less noise; minimize use of equipment and vehicles;</p> <p>3. Strictly follow the pipe laying method so that trench excavation, pipe laying, and refilling including compacting, at a stretch is completed in a minimum possible time;</p> <p>4. No work should be conducted near the religious places during religious congregations;</p> <p>5. Material transport to the site should be arranged considering school</p>	<p>c) Visual site observations</p> <p>d) Public complaints</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

	6.	timings; material should be in place before school starts; 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					
	7.	Implement all measures suggested elsewhere in this report – dust and noise control, public safety, traffic management, strictly at the sites.					
Generation of contractual employment and increase in local revenue	1.	Employ local labor force to the maximum extent, if manpower is available; and	a) Employment records; b) Records of sources of materials; and c) Compliance to core labor laws (See Appendix 2 of this IEE)	• Checking of records • visual inspection of sites	All construction site and Proposed camp site	Do	Do
	2.	Comply with labor laws					
Occupational hazards which can arise during work	1.	Comply with all national, state and local core labor laws (See Appendix 2 of this IEE);	a) Site-specific OHS Plan; b) Equipped first-aid stations; c) Medical insurance coverage for workers;	• Checking of records • visual inspection of sites	All construction site, stockpile areas and Proposed camp site	Do	Do
	2.	Develop and implement site-specific health and safety (H&S) plan which will include measures such as:					

	<p>(a) excluding public from the site;</p> <p>(b) ensuring all workers are provided with and use Personal Protective Equipment;</p> <p>(c) H&amp;S Training for all site personnel;</p> <p>(d) documented procedures to be followed for all site activities; and</p> <p>(e) documentation of work-related accidents;</p> <p>3. All trenches in sandy and mixed sandy soils irrespective of depth shall be protected with safety shoring / strutting to avoid safety risks to workers, public and nearby buildings/structures</p> <p>4. Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;</p> <p>5. Provide medical insurance coverage for workers;</p> <p>6. Secure all installations from unauthorized intrusion and accident risks;</p> <p>7. Provide supplies of potable drinking water;</p> <p>8. Provide clean eating areas where workers are not exposed to hazardous or noxious substances</p> <p>9. Provide H&amp;S orientation</p>	<p>d) Number of accidents;</p> <p>e) Supplies of potable drinking water;</p> <p>f) Clean eating areas where workers are not exposed to hazardous or noxious substances;</p> <p>g) record of H&amp;S orientation trainings</p> <p>h) personal protective equipment;</p> <p>i) % of moving equipment outfitted with audible back-up alarms;</p> <p>j) 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.</p>				
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	<p>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;</p> <p>10. 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;</p> <p>11. Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;</p> <p>12. Ensure moving equipment is outfitted with audible back-up alarms;</p> <p>13. 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</p>	<p>k) Compliance to core labor laws (Appendix 2)</p>				
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	<p>14. general public as appropriate; Disallow worker exposure to noise level greater than 85 dB for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively; and</p> <p>15. 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 <a href="http://www1.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2Boccupational%2Bhealth%2Band%2Bsafety.pdf?MOD=AJPERES">http://www1.ifc.org/wps/wcm/connect/9aef2880488559a983acd36a6515bb18/2%2Boccupational%2Bhealth%2Band%2Bsafety.pdf?MOD=AJPERES</a>)</p>					
Traffic accidents and vehicle collision with pedestrians during material and waste transportation	<p>1. Provide hard barricading for all deep excavations that may require especially for pipe lines; identify buildings at risk prior to start of excavation work and take necessary precautions for safe conduct of work</p> <p>2. Plan material and waste routes to avoid times of peak-pedestrian activities;</p> <p>3. Liaise with Udipi CMC in identifying risk areas on route cards/maps;</p>	<p>a) Traffic Management Plan; and</p> <p>b) Complaints from sensitive receptors</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction sites,	Do	Do

	<p>4. Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure;</p> <p>5. Provide road signs and flag persons to warn of dangerous conditions, for all work sites along the roads; and</p> <p>6. Overall, the contractor should comply with IFC EHS Guidelines Community Health and Safety (this can be downloaded from <a href="http://www1.ifc.org/wps/wcm/connect/dd673400488559ae83c4d36a6515bb18/3%2Bcommunity%2Bhealth%2Band%2Bsafety.pdf?MOD=AJPERES">http://www1.ifc.org/wps/wcm/connect/dd673400488559ae83c4d36a6515bb18/3%2Bcommunity%2Bhealth%2Band%2Bsafety.pdf?MOD=AJPERES</a>).</p>					
<p>Temporary air and noise pollution from machine operation, water pollution from storage and use of fuels, oils, solvents, and lubricants</p> <p>Unsanitary and poor living</p>	<p>1. Consult with PIU before locating workers camps/sheds, and construction plants; as far as possible located within reasonable distance of work site;</p> <p>2. Minimize removal of vegetation and disallow cutting of trees;</p> <p>3. Labor camps shall include accommodation for workers/laborers along with other basic amenities such as kitchen, potable water supply,</p>	<p>c) Complaints from sensitive receptors;</p> <p>d) Drinking water and sanitation facilities for employees</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do



conditions for workers	<p>sanitation (toilets, bathrooms, washing areas and water supply for such needs), first aid room as well as garbage collection and disposal facility.</p> <p>4. The roof height of the worker's and labor camp shall not be less than 3 m from floor level to the lowest part of the roof.</p> <p>5. The camps shall be floored with concrete, shall be kept clean, and with proper cross ventilation, and the space provided shall be on the basis of one sq.mt per head or as per the relevant regulation, whichever is higher.</p> <p>6. Fire and electrical safety precautions shall be adhered to.</p> <p>7. Cooking, sanitation and washing areas shall be provided separately.</p> <p>8. The Contractor shall maintain necessary living accommodation and ancillary facilities (including provision of clean fuel to prevent damage to forests and to prevent fuel wood cutting and burning by labor) in functional and hygienic manner.</p> <p>9. The site must be graded and rendered free from depressions such that water does not get stagnant anywhere.</p> <p>10. The entire boundary of the site should be fenced all around with barbed wire so as to prevent the trespassing of</p>					
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	<p>humans and animals.</p> <p>11. 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>12. 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>13. Train employees in the storage and handling of materials which can potentially cause soil contamination;</p> <p>14. Recover used oil and lubricants and reuse or remove from the site;</p> <p>15. Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas;</p> <p>16. Remove all wreckage, rubbish, or temporary structures which are no longer required;</p> <p>17. Report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.</p>					
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Risk of archaeological chance finds	<ol style="list-style-type: none"> <li>1. Create awareness among the workers and supervisors about the chance finds during excavation work;</li> <li>2. Stop work immediately if any finds are suspected to allow further investigation;</li> <li>3. Inform archaeological agencies promptly if a find is suspected, and take any action they require to ensure its removal or protection in site; and</li> <li>4. Adjacent to important religious sites, undertake excavation and construction work in such a way that no structural damage is caused to the building.</li> </ol>	Records of chance finds	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
Unsatisfactory compliance to EMP	<ol style="list-style-type: none"> <li>1. Appointment of EHS engineer to ensure EMP implementation</li> <li>2. Timely submission of monitoring reports including pictures.</li> </ol>	<ul style="list-style-type: none"> <li>• Availability and competency of appointed supervisor</li> <li>• Monthly report</li> </ul>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>		Do	Do
Damage due to debris, spoils, excess construction materials	<ol style="list-style-type: none"> <li>1. Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required;</li> <li>2. All excavated roads shall be reinstated to original condition.</li> <li>3. All disrupted utilities restored.</li> <li>4. All affected structures a) rehabilitated/compensated .</li> </ol>	<p>PMU/PMCSC report in writing that (i) worksite is restored to original conditions;</p> <p>(ii) camp has been vacated and restored to pre-project conditions;</p> <p>(iii) all construction related</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

	<p>5. 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;</p> <p>6. All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the revegetation specification that forms part of this document;</p> <p>7. The contractor must arrange the cancellation of all temporary services; and</p> <p>8. Request PMU/PMCSC to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.</p>	<p>structures not relevant to operation and maintenance (O&amp;M) are removed; and (iv) Worksite clean-up is satisfactory.</p>				
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**Table 14: Summary of Environmental Monitoring Activities of the 24x7 Water supply system in Puttur Town – Package No. 02PTR01- Pre-Construction**

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
Unsatisfactory compliance to EMP	<p>1. Appoint Safeguards (Environmental, Health and Safety or EHS) Engineer to ensure EMP implementation</p> <p>2. Submission of updated EMP/site-specific environmental management plan (SEMP)</p> <p>3. Timely submission monthly of monitoring reports including documentary evidence on EMP implementation such as</p>	<p>(i) mobilization of EHS engineer</p> <p>(ii) submission of SEMP prior to start of works</p> <p>(iii) submission of monthly reports</p>	Contractor and PIU office	<ul style="list-style-type: none"> <li>Checking of records</li> <li>visual inspection of sites</li> </ul>	Contractor and PIU office	<p>1. Daily construction supervisor- Resident Engineer</p> <p>2. Weekly / bi weekly by Construction Manager.</p> <p>3. Verification by Environment Specialist of PMCSC and Asst . Executive Engineer (Environment) KIUWMIP-KUIDFC On monthly basis:</p> <p><b>a. Dates of Verification by Environment Specialist of PMCSC :</b>  July – 23/07/2019  August – 28/08/2019  September - 26-09-2019  October – 24-10-2019</p>	<p>1. Construction supervisor - Mr. Sadanandh and Resident Engineer - Mr. Raghav</p> <p>2. Mr. Gopi Kumar/ Mr.Rajendra Kalghade</p> <p>3. M.R.S.Malik Environment Specialist of PMCSC.</p>

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	photographs					November- 19/11/2019 December- 19/12/2019  <b>b. Dates of Verification by Asst Executive Engineer (Environment) KIUWMIP-KUIDFC</b> August – 28/08/2019 October – 24-10-2019 December- 19/12/2019	4. Mr.Shashi SP Asst Executive Engineer (Environment) KIUWMIP-KUIDFC
Tree cutting	1. 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)  2. For any tree cutting that may be	(i) Layout plan of OHTs (ii) tree cutting permission (iii) Compensatory tree plantation as part of the project	Contractor and PIU office and site	Checking of records	Contractor and PIU office and site		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<p>required, obtain prior permission from Forest Department</p> <p>3. Plant and maintain 10 trees for each tree that is removed</p>						
Telephone lines, electric poles and wires, water lines within proposed project area	<p>1. 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 services during construction</p>	<p>(i) List of affected utilities and operators;</p> <p>(ii) Bid document to include requirement for a contingency plan for service interruptions (example provision of water if disruption is more than 24 hours), spoil management plan, and traffic management</p>	Contractor and PIU office	<ul style="list-style-type: none"> <li>Checking of records</li> </ul>	Contractor and PIU office		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<p>phase</p> <p>2. Conduct detailed site surveys with the construction drawings and discuss with the respective agencies before ground clearance; and</p> <p>3. Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.</p>	plan					
Ground disturbance can uncover and damage	1. Create awareness among the workers and	Chance Finds Protocol	Contractor and PIU office	Checking of records	Contractor and PIU office		



Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
archaeological and historical remains	<p>supervisors about the chance finds during excavation work</p> <p>2. Stop work immediately if any finds are suspected to allow further investigation</p> <p>3. Inform archaeological agencies promptly if a find is suspected, and take any action they require to ensure its removal or protection in situ.</p>						
Disruption to traffic flow and sensitive receptors	1. Prioritize areas within or nearest possible vacant space in the project	(i) List of selected sites for construction work camps, stockpile areas, storage areas,	Contractor and PIU office	Checking of records	Contractor and PIU office		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<p>location;</p> <p>2. If it is deemed necessary to locate elsewhere, consider sites that will not promote instability and result in destruction of property, vegetation, irrigation, and drinking water supply systems;</p> <p>3. Do not consider residential areas</p> <p>4. Take extreme care in selecting sites to avoid direct disposal to water body which will inconvenience the</p>	<p>and disposal areas.</p> <p>(ii) Written consent of landowner/s (not lessee/s) for reuse of excess spoils to agricultural land</p>					

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<p>community.</p> <p>5. 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 water bodies; (c) no residential areas shall be located within 50 m</p>						

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	downwind side of the site; and (d) site is minimum 250 m away from sensitive locations like settlements, ponds/lakes or other water bodies.						
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.	<p>1. Use quarry sites and sources permitted by Mines and Geology Department only</p> <p>2. No new quarry sites shall be developed for the subproject</p> <p>Verify suitability of all material sources and obtain approval of implementing</p>	<p>(i) List of approved quarry sites and sources of materials;</p> <p>(ii) Bid document to include requirement for verification of suitability of sources and permit for additional quarry sites if necessary.</p>	Contractor and PIU office	Checking of records	Contractor and PIU office		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	agency 3. Submit on a monthly basis documentation of sources of materials to PMDCSC.						
Failure to obtain necessary consents, permits, NOCs, etc. can result to design revisions and/or stoppage of works	1. Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works. 2. Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc. Include in detailed design drawings and documents all conditions and	Incorporated in final design and communicated to contractors.	Contractor and PIU office	Checking of records	Contractor and PIU office		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	provisions if necessary						
Use of approved construction practices to minimize construction impacts	<p>1. Method Statement should be in a Table format with appended site layout map and cover the following:</p> <p>(i) Work description</p> <p>(ii) Number of workers (skilled and unskilled)</p> <p>(iii) Details of plant, equipment and machinery, vehicles</p> <p>(iv) Work duration (total, and activity-wise, for example for pipe laying, from excavation to road resurfacing/testing)</p>	Review of method statement and implementation of work	Contractor and PIU office	Checking of records	Contractor and PIU office		

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<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</p>						

Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	<p>each work</p> <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</p>						



Impact	Mitigation Measures	Parameters monitored	Location	Method of monitoring	Location of Monitoring	Date of Monitoring	Compliance status
	spill onto road way – disturbing road users, creating dust, road safety issues, etc., and also into nearby open drains.						

**Table 15: Summary of Environmental Monitoring Activities of the 24x7 Water supply system in Puttur Town – Package No. 02PTR01- Construction**

Impact	Mitigation Measures	Parameters Monitored	Method of monitoring	Location of Monitoring	Date of Monitoring Conducted	
Impacts on the environment, workers, and community due to improper implementation of EMP	<p>1. 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.; and</p> <p>2. Appointment of Environmental, Health and Safety (EHS) Engineer by contractor prior to start of work.</p>	<p>a) Certificate of Completion (Safeguards Compliance Orientation)</p> <p>b) Posting of Certification of Completion at worksites</p> <p>c) Posting of EMP at worksites.</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	-	<p>1. Daily construction by supervisor- Resident Engineer</p> <p>2. Weekly / bi weekly by Construction Manager.</p> <p>3. Verification by Environment Specialist of PMCSC and Asst Executive Engineer (Environment)</p>	<p>1. Construction supervisor - Mr. Sadanandh and Resident Engineer - Mr. Raghav</p> <p>2. Mr. Gopi Kumar/ Mr. Rajendra Kalghade</p> <p>2. M.R.S. Malik Environment Specialist of PMCSC.</p>

					<p>KIUWMIP- KUIDFC On monthly basis:</p> <p><b>a. Dates of Verification by Environment Specialist of PMSCS :</b> July – 23/07/2019  August – 28/08/2019  September - 26-09-2019  October – 24-10-2019  November- 19/11/2019  December- 19/12/2019</p> <p><b>b. Dates of Verification by Asst Executive Engineer (Environment) KIUWMIP-KUIDFC</b>  August – 28/08/2019  October – 24-10-2019  December- 19/12/2019</p>	<p>4. Mr.Shashi SP Asst Executive Engineer (Environment) KIUWMIP- KUIDFC</p>
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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, sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons.	<p>3. Consult with PMU/PMCSC on the designated areas for stockpiling of clay, soils, gravel, and other construction materials;</p> <p>4. Damp down exposed soil and any stockpiled on site by spraying with water when necessary during dry weather;</p> <p>5. Use tarpaulins to cover sand and other loose material when transported by trucks; and</p> <p>6. Clean wheels and undercarriage of vehicles prior to leaving construction site; and</p> <p>7. Fit all heavy equipment and machinery with air pollution control devices which are operating correctly.</p>	<p>a) Location of stockpiles;</p> <p>b) Complaints from sensitive receptors;</p> <p>c) Heavy equipment and machinery with air pollution control devices;</p> <p>d) Certification that vehicles are compliant with Air Act</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	Working locations	Do	Do
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<p>Mobilization of settled silt materials, and chemical contamination from fuels and lubricants during installation of pipelines can contaminate nearby surface water quality.</p>	<p>1. Avoid stockpiling of earth fill especially during the monsoon season unless covered by tarpaulins or plastic sheets;  2. Laying of pipelines during dry season and closing of all trenches before rainy season and avoid any chances of collecting the water in the trenches or pumping;  3. Prioritize re-use of excess spoils and materials in the construction works. If spoils will be disposed, dispose in municipal landfill (Sample Spoils Management Plan in Appendix 10);  4. Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies;  5. Provide temporary bunds for stockpiles and materials;  6. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. Storage structure should consider 110% capacity bund; and  7. Dispose any wastes generated by construction activities in landfill or reuse in</p>	<p>a) Areas for stockpiles, storage of fuels and lubricants and waste materials;  b) Number of silt traps installed along trenches leading to water bodies;  c) Records of surface water quality inspection;  d) Effectiveness of water management measures;  e) No visible degradation to nearby drainages, nallahs or water bodies due to civil work</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	<p>All construction site, stockpile areas</p>	<p>Do</p>	<p>Do</p>
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	8.	beneficial purposes Conduct surface quality inspection & Monitoring					
Increase in noise level due to earth-moving and excavation equipment, and the transportation of equipment, materials, and	1.	Plan activities in consultation with PMU/PMCSC so that activities with the greatest potential to generate noise (road cutting and piling activity) are conducted during periods of the day which	d) e)	Complaints from sensitive receptors; Use of silencers in noise-producing equipment and sound	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do
							Do

people	<p>will result in least disturbance;</p> <p>2. Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach;</p> <p>3. 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; and</p> <p>4. Maintain maximum sound levels not exceeding 80 decibels (dB) when measured at a distance of 10 m or more from the vehicle/s.</p> <p>5. Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach;</p> <p>6.</p>	f) barriers; and Equivalent day and night time noise levels (Appendix 4 of IEE)				
Impacts due to excess excavated earth, excess construction materials and solid waste such as removed concrete,	<p>1. Prepare and implement spoils management plan</p> <p>2. Avoid stockpiling of excess excavated soils;</p> <p>3. Coordinate with Puttur CMC for beneficial uses of excess excavated soils or</p> <p>4. immediately dispose to designated areas;</p> <p>5. Recover used oil and</p>	<p>a) Complaints from sensitive receptors;</p> <p>b) Worksite clear of hazardous wastes such as oil/fuel; and</p> <p>c) Worksite clear of any excess excavated earth, excess</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

wood, packaging materials, empty containers, spoils, oils, lubricants, and other similar items.	6. lubricants and reuse or remove from the sites; Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated areas; 8. Remove all wreckage, rubbish, or temporary structures which are no longer required; and 9. Request PMU/PMCSC to report in writing that the necessary environmental restoration work has been adequately performed before acceptance of work. 10.	construction materials, and solid waste such as removed concrete, wood, packaging materials, empty containers				
Disruption of service and damage to existing infrastructure at specified project location	1. Obtain from PIU/PMCSC the list of affected utilities and operators if any; 2. Prepare a contingency plan to include actions to be done in case of unintentional interruption of service 3. The public should be given notice at least three days in advance and any accidental breaking should be rectified immediately	a. once when the service is disrupted b. once for the each area disrupted c. as and when required when the disruption is planned	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
Traffic problems and conflicts near project locations and	Traffic Management Plan (TMP) should be a part of the Construction Management Plan 1. Plan transportation routes so that heavy	a) Traffic route during construction works including	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection</li> </ul>	All construction site,	Do	Do

haul road		vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites ;	number of permanent signages, barricades and flagmen on worksite (Appendix 12);	of sites			
	2.	Schedule transport and hauling activities during non-peak hours;					
	3.	Locate entry and exit points in areas where there is low potential for traffic congestion;	b) Complaints from sensitive receptors; and				
	4.	Coordinate with Traffic Police for temporary road diversions and with for provision of traffic aids if transportation activities cannot be avoided during peak hours;	c) Number of signages placed at project location.				
	5.	Maintain safe pedestrian access at all times to the houses along the work site;					
	6.	Hard barricades should be mandatorily provided for work sites in residential and commercial areas, along with caution board.					
	7.	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; 1. Keep the site free from all unnecessary obstructions; 2. Drive vehicles in a considerate manner 3. Prepare a Traffic Management Plan – a template is provided as an Appendix 12.					
Impede the access of residents and customers to nearby shops	1. Prepare and implement spoils management plan 2. Leave spaces for access between mounds of soil; 3. Provide walkways and metal sheets where required for people; 4. Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools; 5. Consult businesses and institutions regarding operating hours and factoring this in work schedules; and 6. Provide sign boards for pedestrians to inform nature and duration of construction works and contact numbers for concerns/complaints.	a) Complaints from sensitive receptors; b) Spoils management plan; and c) Number of walkways, signs, and metal sheets placed at project location	• Checking of records • visual inspection of sites	All construction site,	Do	Do
Disturbance to socio cultural	1. No material should be stocked close to these	a) Visual site observations	• Checking of records	All construction site,	Do	Do

resources (religious, educational, health care etc.), access disruptions etc.,	<p>2. areas; material shall be brought to the site as and when required; Conduct work manually with small group of workers and less noise; minimize use of equipment and vehicles;</p> <p>3. Strictly follow the pipe laying method presented in Table 10 so that trench excavation, pipe laying, and refilling including compacting, at a stretch is completed in a minimum possible time;</p> <p>4. No work should be conducted near the religious places during religious congregations;</p> <p>5. Material transport to the site should be arranged considering school timings; material should be in place before school starts;</p> <p>6. 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</p> <p>7. Implement all measures suggested elsewhere in this report – dust and noise control, public</p>	b) Public complaints	<ul style="list-style-type: none"> <li>visual inspection of sites</li> </ul>			
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		safety, traffic management, strictly at the sites.					
Generation of contractual employment and increase in local revenue	1.	Employ local labor force to the maximum extent, if manpower is available; and	a) Employment records; b) Records of sources of materials; and c) Compliance to core labor laws (See Appendix 2 of this IEE)	• Checking of records • visual inspection of sites	All construction site and Proposed camp site	Do	Do
	2.	Comply with labor laws					
Occupational hazards which can arise during work	1.	Comply with all national, state and local core labor laws (See Appendix 2 of this IEE);	a) Site-specific OHS Plan; b) Equipped first-aid stations; c) Medical insurance coverage for workers; d) Number of accidents; e) Supplies of potable drinking water; f) Clean eating areas where workers are not exposed to hazardous or noxious substances; g) record of H&S orientation trainings	• Checking of records • visual inspection of sites	All construction site, stockpile areas and Proposed camp site	Do	Do
	2.	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 for all site personnel; (d) documented procedures to be followed for all site activities; and (e) documentation of work-related accidents;					
	3.	All trenches in sandy and mixed sandy soils irrespective of depth shall be protected with safety					

	<p>shoring / strutting to avoid safety risks to workers, public and nearby buildings/structures</p> <p>4. Ensure that qualified first-aid can be provided at all times. Equipped first-aid stations shall be easily accessible throughout the site;</p> <p>5. Provide medical insurance coverage for workers;</p> <p>6. Secure all installations from unauthorized intrusion and accident risks;</p> <p>7. Provide supplies of potable drinking water;</p> <p>8. Provide clean eating areas where workers are not exposed to hazardous or noxious substances</p> <p>9. Provide H&amp;S 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;</p> <p>10. 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;</p> <p>11. Ensure the visibility of</p>	<p>h) personal protective equipment;</p> <p>i) % of moving equipment outfitted with audible back-up alarms;</p> <p>j) 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.</p> <p>k) Compliance to core labor laws (Appendix 2)</p>				
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	<p>workers through their use of high visibility vests when working in or walking through heavy equipment operating areas;</p> <p>12. Ensure moving equipment is outfitted with audible back-up alarms;</p> <p>13. 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;</p> <p>14. Disallow worker exposure to noise level greater than 85 dB for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively; and</p>					
Traffic accidents and vehicle collision with pedestrians during material	<p>1. Provide hard barricading for all deep excavations that may require especially for pipe lines; identify buildings at risk prior to start of excavation work</p>	<p>a) Traffic Management Plan; and</p> <p>b) Complaints from sensitive receptors</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction sites,	Do	Do

and waste transportation	<p>and take necessary precautions for safe conduct of work</p> <p>2. Plan material and waste routes to avoid times of peak-pedestrian activities;</p> <p>3. Liaise with Puttur CMC in identifying risk areas on route cards/maps;</p> <p>4. Maintain regularly the vehicles and use of manufacturer-approved parts to minimize potentially serious accidents caused by equipment malfunction or premature failure;</p> <p>5. Provide road signs and flag persons to warn of dangerous conditions, for all work sites along the roads; and</p>					
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	<p>6. Consult with PIU before locating workers camps/sheds, and construction plants; as far as possible located within reasonable distance of work site;</p> <p>7. Minimize removal of vegetation and disallow cutting of trees;</p> <p>8. Labor camps shall include accommodation for workers/laborers along with other basic amenities such as kitchen, potable water supply, sanitation (toilets, bathrooms,</p>	<p>a) Complaints from sensitive receptors;</p> <p>b) Drinking water and sanitation facilities for employees</p>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do

	<p>washing areas and water supply for such needs), first aid room as well as garbage collection and disposal facility.</p> <p>10. The roof height of the worker's and labor camp shall not be less than 3 m from floor level to the lowest part of the roof.</p> <p>11. The camps shall be floored with concrete, shall be kept clean, and with proper cross ventilation, and the space provided shall be on the basis of one sq.mt per head or as per the relevant regulation, whichever is higher.</p> <p>12. Fire and electrical safety pre-cautions shall be adhered to.</p> <p>13. Cooking, sanitation and washing areas shall be provided separately.</p> <p>14. The Contractor shall maintain necessary living accommodation and ancillary facilities (including provision of clean fuel to prevent damage to forests and to prevent fuel wood cutting and burning by labor) in functional and hygienic manner.</p> <p>15. The site must be graded and rendered free from depressions such that</p>					
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	<p>water does not get stagnant anywhere.</p> <p>16. The entire boundary of the site should be fenced all around with barbed wire so as to prevent the trespassing of humans and animals.</p> <p>17. 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>18. 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>19. Train employees in the storage and handling of materials which can potentially cause soil contamination;</p> <p>20. Recover used oil and lubricants and reuse or remove from the site;</p> <p>21. Manage solid waste according to the following preference hierarchy: reuse, recycling and disposal to designated</p>					
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	22. areas; Remove all wreckage, rubbish, or temporary structures which are no longer required;					
	23. Report in writing that the camp has been vacated and restored to pre-project conditions before acceptance of work.					
	24. The work camp details should be included in the Construction Management Plan					
Risk of archaeological chance finds	<p>1. Create awareness among the workers and supervisors about the chance finds during excavation work;</p> <p>2. Stop work immediately if any finds are suspected to allow further investigation;</p> <p>3. Inform archaeological agencies promptly if a find is suspected, and take any action they require to ensure its removal or protection in site; and</p> <p>4. Adjacent to important religious sites, undertake excavation and construction work in such a way that no structural damage is caused to the building.</p>	Records of chance finds	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual inspection of sites</li> </ul>	All construction site,	Do	Do
Unsatisfactory compliance to EMP	5. Appointment of EHS engineer to ensure EMP implementation	<ul style="list-style-type: none"> <li>• Availability and competency of appointed</li> </ul>	<ul style="list-style-type: none"> <li>• Checking of records</li> <li>• visual</li> </ul>		Do	Do

	6.	Timely submission of monitoring reports including pictures.	supervisor • Monthly report	inspection of sites			
Damage due to debris, spoils, excess construction materials	1.	Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required;	PMU/PMCSC report in writing that (i) worksite is to be restored to original conditions;	• Checking of records • visual inspection of sites	All construction site,	Do	Do
	2.	All excavated roads shall be reinstated to original condition.	(ii) camp has been vacated and restored to pre-project conditions;				
	3.	All disrupted utilities restored.	(iii) all construction related structures not relevant to operation and maintenance (O&M) are removed; and				
	4.	All affected structures rehabilitated/compensated.	(iv) Worksite clean-up is satisfactory.				
	5.	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;					
	6.	All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be top soiled and regressed using the guidelines set out in the revegetation specification that forms part of this document;					
	7.	The contractor must arrange the cancellation of all temporary services; and					

	8.	Request PMU/PMCSC to report in writing that worksites and camps have been vacated and restored to pre-project conditions before acceptance of work.					
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## VII. MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS

46. Monitoring of Environmental on Project Surroundings shown in **Table 16**

**Table 16: Monitoring Of Environmental Impacts on Project Surroundings**

<b>Package No.</b>	<b>Status of Pre-Work Conditions(Recorded / Not Recorded)</b>	<b>Baseline Environmental Conditions (air, water, noise) Documented(Yes / No)</b>	<b>Action Proposed and Additional Measures Required</b>
<b>02MNG02</b>	<b>Recorded</b>	<b>No</b>	Environmental monitoring of air and Noise is required for every 3months except monsoon season and water quality if any surface water bodies near project area.
<b>02KDP01</b>	<b>Recorded</b>	<b>No</b>	Environmental monitoring of air and Noise is required for every 3months except monsoon season and water quality if any surface water bodies near project area.
<b>02PTR01</b>	<b>Recorded</b>	<b>Yes</b>	Environmental monitoring of air and Noise is required for every 3months except monsoon season and water quality if any surface water bodies near project area
<b>02UDP01</b>	<b>Recorded</b>	<b>Yes</b>	Project is in preconstruction Phase Environmental monitoring of air and Noise is required which can be compared with construction Phase Monitoring results. For every 3months except monsoon season Monitoring has to be done. water quality monitoring is required if any surface water bodies near project area.
<b>02MNG01</b>	Project is in Design Validation Stage	No	Project is in Design Validation Stage. Environmental monitoring of air and Noise is required which

			can be compared with construction Phase Monitoring results. For every 3months except monsoon season Monitoring has to be done. Water quality monitoring is required if any surface water bodies near project area.
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47. In addition to desk reviews and site inspections, monitoring of selected environmental parameters have been conducted during the reporting period. The frequencies of the environmental monitoring activities are commensurate to the type and significance of the impacts. For Project 2 subprojects, the parameters to be monitored are ambient air quality and noise levels
48. The ambient air quality monitoring results are presented in Table 17. Results indicate that concentrations of parameters as measured “during construction” at Mangalore UGD is almost within the CPCB limit. Base line study data of ambient air quality not provided in IEE. Concentration levels at Udupi and Puttur 24X7 Water supply package in working locations “during construction” stage tested for PM<sub>10</sub>, PM<sub>2.5</sub>, SO<sub>2</sub>, NO<sub>2</sub> are within the standard. For the application of mitigation measures i.e. suppression of dust is required. Complete test result certificates are available as back up papers with PMCSC and PIU. **Appendix 32-33** shows monitoring locations. Mitigation measures, like dust suppression will be applied as per EMP. Instruction has been given to the contractor for improvement of application of mitigation measures.

**Table 17: Air Quality Monitoring Results**

Town	Phase	Sampling Locations	Date of Monitoring	Parameters			
				SO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>2</sub> µg/m <sup>3</sup>	PM <sub>2.5</sub> µg/m <sup>3</sup>	PM <sub>10</sub> µg/m <sup>3</sup>
<b>Mangalore (Package no. 02MNG02)</b>	During Construction	Near 4 <sup>th</sup> Mile Mullakad	17.12.2019	17.5	23.5	28.8	51.3
		Madatakani	9.12.2019	12.6	15.1	17.3	35.7
		Near Kundathpalle	18.12.2019	14.7	20.6	23.7	45.1
		Ashok Nagar	9.12.2019	11.3	13.1	14.0	30.9
	<b>Average During construction</b>			<b>14.0</b>	<b>18.0</b>	<b>20.0</b>	<b>40.7</b>
<b>Puttur Water Supply (02PTR01)</b>	Pre- Construction Phase monitoring	Near Settiguda	14.10.2019	10.9	18.3	26.3	56.9
		Mura Shantinagar	14.10.2019	9.4	12.5	13.8	52.7
		Padnur					
		Lingadagudda-Kabaka	14.10.2019	8.4	11.1	17.3	53.5
		KSRTC Bus Stand	14.10.2019	10.7	12.0	23.5	67.6
		Karmala Near Microwave Station	14.10.2019	10.3	11.2	21.8	66.5
		CTO-Darbe	14.10.2019	7.3	8.3	15.7	43.1
		Balnad Helipad	14.10.2019	6.7	8.2	13.6	42.3

Town	Phase	Sampling Locations	Date of Monitoring	Parameters			
				SO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>2</sub> µg/m <sup>3</sup>	PM <sub>2.5</sub> µg/m <sup>3</sup>	PM <sub>10</sub> µg/m <sup>3</sup>
		Balnad Keliyadi	14.10.2019	7.9	9.4	14	40.6
	<b>Average Pre-Construction Phase monitoring</b>			<b>8.95</b>	<b>11.37</b>	<b>18.25</b>	<b>52.9</b>
<b>Udupi Water Supply (02UDP01)</b>	Pre-Construction Phase monitoring	Indrali OHT	16.10.2019	8.4	17.0	29.3	66.9
		Tiger Circle	16.10.2019	9.5	19.1	27.1	73.4
		Prasanna Temple, Manipal	16.10.2019	7.8	13.4	23.2	47.2
		Santhekatte OHT	17.10.2019	7.7	12.5	23.4	57.3
		City Bus Stand, Udupi	17.10.2019	8.6	15.6	24.1	72.7
		District Hospital, Brahmagiri	17.10.2019	8.7	16.3	22.7	65.9
		ARS Memorial Hall	17.10.2019	8.7	13.4	21.8	56.1
	<b>Average Pre-Construction Phase monitoring</b>			<b>8.4</b>	<b>15.3</b>	<b>24.5</b>	<b>62.7</b>
		<b>Standard as per CPCB</b>		<b>80.0</b>	<b>80.0</b>	<b>60.0</b>	<b>100.0</b>

Note: CPCB – Central Pollution Control Board

**Package no. 02MNG02**=2 samples on 09.12.2019

**Package no. 02MNG02**=1 sample on 17.12.2019

**Package no. 02MNG02**=1 sample on 18.12.2019

**Package no. 02PTR01**= 8 samples on 14.10.2019

**Package no. 02UDP01**= 3 samples on 16.10.2019

**Package no. 02UDP01**= 4 samples on 17.10.2019

49. The noise level monitoring has also been carried out for construction sites of Mangalore UGD, Puttur and Udupi WSS. Table 18 shows noise level data. Complete test result certificates for Mangalore UGD, Puttur and Udupi WSS are available as back up papers with PMCSC and PIU. **Appendix 33** shows monitoring locations. It is noted from the results that noise levels at Mangalore UGD, Puttur and Udupi WSS project location is within the standard for commercial and residential areas. Base line study data of ambient Noise levels not provided in IEE. At sub-projects package locations, noise levels are above the residential area standard but below the commercial or industrial area standards. Noise level monitoring to be continued as per environment monitoring program throughout the construction period for understanding increase or decrease trend of noise level at project locations. To mitigate high noise levels contractor to apply mitigation measures like control use of noise producing equipment, maintenance of equipment's and finally use of PPE by worker or mitigation measures as prescribed in EMP.
50. The next environmental monitoring activities have to be conducted within January to June 2020 to measure concentrations of parameters as done earlier and covering all running construction sites. Due monsoon season the monitoring studies were be carried out in

November-December 2019. The cost of the environmental monitoring is arranged from contractor budget.

51. The next environmental monitoring activities will be conducted within January to June 2020 to measure concentrations of parameters as done earlier and covering all running construction sites. The cost of the environmental monitoring is arranged from contractor budget (Ref. **Appendix 2**).

**Table 18: Noise Level Monitoring at project sites**

Town	Phase	Sampling Locations	Date of Monitoring	Day Time			Night Time Leq dB(A)		
				L Min dB(A)	L Max dB(A)	Leq dB(A)	L Min dB(A)	L Max dB(A)	Leq dB(A)
<b>Mangalore (Package no. 02MNG02)</b>	During Construction	Near 4 <sup>th</sup> Mile Mullakad	17.12.2019	64.2	78.3	71.5	65.2	67.7	66.49
		Madatakani	9.12.2019	39.6	48.9	46.3	37.5	43.8	39.6
		Near Kundathpalle	18.12.2019	64.4	77.5	70.0	62.3	67.8	65.2
		Ashok Nagar	9.12.2019	46.2	50.2	48.0	39.1	45.2	42.0
	<b>Average During Construction</b>			<b>53.6</b>	<b>63.7</b>	<b>58.9</b>	<b>51.0</b>	<b>56.1</b>	<b>53.3</b>
<b>Puttur Water Supply (02PTR01)</b>	Pre- Construction Phase monitoring	Near Settiguda	16.10.2019	64.5	67.7	66.1	60.1	64.7	62.4
		Mura Shantinagar Padnur	16.10.2019	45.6	49.5	47.5	41.0	44.6	42.8
		Lingadagudda- Kabaka	16.10.2019	46.4	50.6	48.5	42.8	46.2	44.5
		KSRTC Bus Stand	16.10.2019	69.2	71.7	70.5	64.6	66.8	66.2
		Karmala Near Microwave Station	16.10.2019	41.2	45.8	43.5	36.9	39.5	38.2
		CTO-Darbe	16.10.2019	38.1	42.6	40.3	36.2	40.1	38.2
		Balnad Helipad	16.10.2019	35.9	38.2	37.0	33.4	35.8	34.6
		Balnad Keliyadi	16.10.2019	36.7	40.6	38.6	33.6	36.4	35.0
	<b>Average During Pre- Construction</b>			<b>47.2</b>	<b>50.8</b>	<b>49.0</b>	<b>43.5</b>	<b>46.7</b>	<b>45.2</b>
<b>Udupi Water Supply (02UDP01)</b>	Pre- Construction Phase monitoring	Indrali OHT	16.10.2019	46.8	47.2	46.5	36.8	39.4	38.1
		Tiger Circle	16.10.2019	66.4	69.2	67.8	64.1	67.4	65.8
		Prasanna Temple,Manipal	16.10.2019	41.9	45.6	43.8	39.1	42.5	40.8
		Santhekatte OHT	16.10.2019	34.2	38.4	36.3	32.4	35.7	34.1
		City Bus Stand, Udupi	16.10.2019	<b>68.7</b>	<b>72.8</b>	<b>70.8</b>	<b>56.4</b>	<b>60.6</b>	<b>58.5</b>
		District Hospital,Brahmagiri	16.10.2019	46.9	49.1	48.0	40.6	43.2	41.9
		ARS Memorial Hall	16.10.2019	39.0	41.7	40.4	34.2	38.1	36.2
	<b>Average During Pre- construction</b>			<b>49.1</b>	<b>52.0</b>	<b>50.5</b>	<b>43.3</b>	<b>46.7</b>	<b>45.0</b>

Monitoring conducted during report period from July to December 2019,  
Package no. 02MNG02=2 samples on 09.12.2019

**Package no. 02MNG02**=1 sample on 17.12.2019  
**Package no. 02MNG02**=1 sample on 18.12.2019  
**Package no. 02PTR01**= 8 samples on 16.10.2019  
**Package no. 02UDP01**= 7 samples on 16.10.2019

CPCB Limits for Industrial area (I): Day Time= 75 dB(A), Night Time (10 PM to 6 AM)= 70 dB(A)  
Commercial (C) area: Day Time= 65 dB(A), Night Time (10 PM to 6 AM)= 55 dB(A)  
Residential (R) area: Day Time= 55 dB(A), Night Time (10 PM to 6 AM)= 45 dB(A)  
Silence Zone (S): Day Time= 50 dB(A), Night Time (10 PM to 6 AM)= 40 dB(A)

52. For Mangalore UGD, Udupi, Kundapura and Puttur WSD packages, monitoring has been conducted for drinking water and bore well water. All concentrations are within the prescribed limits. Result certificates are available with PIU and PMCSC. The water quality monitoring results are given in Table 19.

53. Sampling collection and analysis methodology yet to be submitted by the concerned and is to be suggested for updation in Environmental Management plan.



**Table 19: Water Quality Monitoring Results**

Town	Phase	Sampling Locations	Date of Monitoring	Parameters									
				Ph	Total Hardness	TDS	Ca	Magnesium as Mg	Chloride as Cl	Sulphate	Fluoride	Iron as Fe	Nitrate as NO3
<b>Mangalore (Package no. 02MNG02)</b>	During Construction	S Water	09.12.2019	6.54	26.0	137	6.4	2.43	32.75	37.4	0.02	0.24	2.1
		Ground Water 4 <sup>th</sup> Mile, Mullakkad	09.12.2019	6.6	82.0	170.0	17.0	9.7	14.9	39.09	0.07	0.27	3.4
		Ground Water Kandathpalle	09.12.2019	8.41	16.0	66.0	4.81	BDL	10.14	5.3	0.14	0.25	5.2
		Ground Water Matadakani	09.12.2019	7.46	84	210.3	24.04	5.83	26.36	34.4	0.12	0.21	3.7
		Ground Water Ashok Nagar	09.12.2019	6.69	168	340	46.49	12.64	40.84	33.76	0.14	BDL	0.2
	<b>Average During Construction</b>			<b>7.14</b>	<b>75.2</b>	<b>184.6</b>	<b>19.74</b>	<b>7.65</b>	<b>24.99</b>	<b>29.99</b>	<b>0.09</b>	<b>0.24</b>	<b>2.92</b>
<b>Puttur Water Supply (02PTR01)</b>	Pre-Construction Phase monitoring	Treated Water Kumardhara River	14.10.2019	6.77	-	38	-	-	-	3.49	-	-	
<b>Udupi Water Supply (02UDP01)</b>	Pre-Construction Phase monitoring	Well Water Santhe katte	18.10.2019	6.6	40.8	36	4.08	7.43	10.09	1.84	0.26	BDL	0.98
		Lake Water, Manipal Lake	18.10.2019	6.84	38.7	58	5.7	5.9	13.9	2.66	0.25	BDL	1.1
		Well Water AT Taluk Office, Bananje	18.10.2019	6.64	91.8	178	29.3	4.5	15.2	6.5	0.24	BDL	1.08
	<b>Average During Pre-construction</b>			<b>6.69</b>	<b>57.1</b>	<b>90.6</b>	<b>13.02</b>	<b>5.94</b>	<b>13.06</b>	<b>3.66</b>	<b>0.25</b>	<b>BDL</b>	<b>1.05</b>

## VIII. INFORMATION DISCLOSURES AND CONSULTATIONS

54. As per approved IEE, consultations and disclosure will be a continuous process throughout Project 2 implementation involving public consultations and focus group discussions. Field level consultation has been done at Kundapura, Mangalore, Udupi and Puttur during the report period.

55. During implementation of project general discussion has been done with the local public done at Kundapura, Mangalore, Udupi and Puttur along pipe laying locations of impact zone. Such consultation is basically one to one discussion with public and generally to be continued throughout the construction period. The issues like requirement of restoration of utility services, removal of overburden soil, road restoration done or not, dust and noise pollution during implementation of the project, community safety arrangement, availability of public access have been discussed and views has been tabulated.

56. Outcome of consultation as follows,

- ✓ There is no issue on impact of utility services like PHE line etc.
- ✓ Excess earth removed in most of the cases. Public have no complaint on that
- ✓ Road restoration done without affecting the public
- ✓ There is minimum impact due to generation of dust and noise from project activity
- ✓ Arrangement of caution tape is done in most of the cases. No public complaint
- ✓ Local movement of public is not affected. Alternate access provided

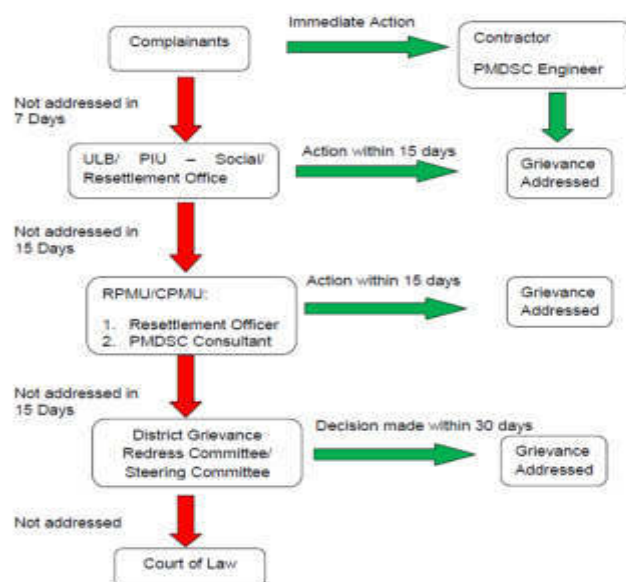
57. The Information of Public Consultations is attached as **Annexure 34**.

## IX. GRIEVANCE REDRESS MECHANISM

58. As per approved IEE, a project-specific grievance redress mechanism (GRM) has been established to receive, evaluate and facilitate the resolution of affected people's concerns, complaints and grievances about the social and environmental performance at the level of the Project. The GRM aims to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project. The project-specific GRM is not intended to bypass the government's own redress process; rather it is intended to address affected people's concerns and complaints promptly, making it readily accessible to all segments of the affected people and is scaled to the risks and impacts of the project.

59. The GRC/SC for the project will be headed by Dy. Commissioner (DC) of the district with members as followed: (1) ULB Commissioners of project towns, (2) Revenue Department (Registrar) official, (3) RPMU Social safeguard/ R&R Officer of KIUWMIP, (4) ULB officer who will convene the periodic meeting of GRC and will shoulder responsibility of keeping records of grievances/ complaints in details with help from resettlement NGO. Other members, such as, NGO/CBO representatives, wards council representatives, DPs' representatives will be selected by the ULB Commissioner to represent in the GRC/SC meeting. NGO should also deploy one person in the team who will be responsible for coordinating with all GRC members and the DPs for grievance redress.

60. In the event when the established GRM is not in a position to resolve the issue, Affected Person also can use the ADB Accountability Mechanism (AM) 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 be included in the PID to be distributed to the affected communities, as part of the project GRM. A Grievance Redress Mechanism is shown in the **Figure 3**.



**Figure 3: Grievance Redress Process**

61. The PIUs will make the public aware of the GRM through public awareness campaigns. Grievances can be filed in writing using the Complaint Register and Complaint Form or by phone with any member of the PIU. The contact phone number of the respective PIUs and the RPMU will serve as a hotline for complaints and will be publicized through the media and placed on notice boards outside their offices and at construction sites.

62. Already complaint register and accident register are kept at the contractor level. registration of grievances and addressing of grievances is attached as **Appendix 36 to 38**. Till date all grievances are resolved at the contractors' level. Accident record is available with the contractor and analysis of accidents provided in **Annexure 45 to 46**. There is not as such any accident from the working locations during the report period except a very few minor injuries resulted due to inattention of the labours during work period.

63. Project level GRC has been set up on 23rd August 2018. Office memorandum is attached as **Appendix 35 & 35a**.

## **X. SUMMARY OF KEY ISSUES/CONCERNS IDENTIFIED DURING THE REPORTING PERIOD AND REMEDIAL ACTIONS**

64. Based on environmental monitoring conducted during July to December 2019, KIUWMIP Project 2 is in mixed (partial to fully complied) compliance level of environmental safeguards. The main partial non-compliances include:
65. Keep the locals and shopkeepers in loop with respect to the advance information at pipe laying areas of Mangalore, Kundapura, and Puttur. Time period for construction work for particular area along with the contact details of PIU, consultant, contractor to be displayed on project display board for any grievances or suggestion for Mangalore UGD sites, Kundapura and Udupi.
66. No or partial use of project display board for Mangalore UGD package and Kundapura 24X7 water supply.
67. Need to improve use of PPE by contractor's workers. Use of PPE should be at all times as per site condition and work type. Particularly use of shoes, hand gloves and safety belt (when working at height). Ear plugs and nose masks should be provided for heavy vehicle drivers and in emergency for Mangalore UGD project.
68. Temporary placement of caution tape is noted for all the packages. Improvement/ complete use of caution tape at all working areas required
69. Improvement of housekeeping and labour staying arrangement is required for Kundapura camp and store yard.
70. Kundapura 24X7 water supply Project, at Kodi Beach OHT site Scaffolding should be used and proper safety measures should be taken.
71. Improvement of material storage for Kundapura 24X7 water supply and Mangalore UGD packages required.
72. Improvement of housekeeping and labour camp is required for Mangalore UGD
73. Improvement is required for first aid box. First aid materials are not sufficient.
74. Environmental monitoring for air and Noise quality should be done for Mangalore UGD.
75. Hard Barricading should be provided at Kodi beach OHT and CRZ compliance Condition should be followed by Contractor.
76. For Kundapura, Kodi beach OHT site, Compensation paid, regarding tree cutting permission from Forest Department needs reaffirmation.
77. HIV AIDS training programs not carried out at Mangalore UGD, Kundapura 24X7 water supply.
78. Table 18 provides the recommended corrective action plan to address the non-compliances and partially compliances.

## IX STATUS OF CORRECTIVE ACTIONS

79. The corrective actions to be implemented as reported in the visits and status of implementation of comments as provided by ADB, as shown in Table 20 and Compliance status Attached as **Appendix 38**

**Table 20: Corrective Action Plan Status**

Comments	Action required	PMU response with target date	Status as on date Feb 2020
<b>Environmental monitoring</b>			
Preconstruction phase monitoring for all 4 awarded packages and construction phase monitoring for Mangalore UGD is not conducted	Immediately conduct Air, water and noise monitoring for all four awards packages	Kundapura and Mangalore not conducted. Remaining will conduct before start of Construction	Kundapura monitoring was done in the month of Jan, 2020. Mangalore UGD monitored in Sep, Oct and Dec months. Yet to submit officially by contracting agencies to PMDCSC.  Puttur (Oct-Pre & Jan-Post) and Udupi (Nov-Pre & Jan-Post) monitoring conducted before construction.
As per IEE during construction phase once sampling per quarter is required but a monitoring only one-time monitoring is conducted for Kundapura package only	Conduct environment monitoring one in 3 month and report in SEMR	Will be submitted by contractor in this quarter (30.09.2019).	Contracting agency have not conducted environment monitoring like air, noise and water monitoring in this quarter as date given 30.09.2019.  Monitoring was done in the month of Jan, 2020 in Kundapura. The construction period is expected to end by Jun, 2020.

Comments	Action required	PMU response with target date	Status as on date Feb 2020
Rational for selected sampling location, is not provided in report methodology for collection and analysis of sample is not provide in report.	Select sampling location as describes in IEE and provide rational for selecting	Will be submitted by contractor  In this quarter (30.09.2019)	Contracting agency have not conducted environment monitoring like air, noise and water monitoring in this quarter as date given 30.09.2019.  But, purposive (convenient) sampling was done. (where maximum pollution can be expected or maximum expose to pollution). Report it is not provided (usually it will not be provided)
Comparison of monitoring result with ADB's SPS acceptable limits is not provided is SEMR  For Kundapura monitoring results are above acceptable limits as per ADB's SPS 2009	Compare result of monitoring with acceptable standard as per ADB's SPS Corrective actions to be taken , if needed	Will be submitted by contractor in this quarter (30.09.2019)	See appendix 3 & 5 of IEE of Kundapura. SEMR of PMDCSC to be compare with standards given in IEEs.
<b>02MNG02 – Mangalore UGD</b>			
<b>NOC Form NHAI –</b> Awaiting approval – 1100 WW-3 Kudroli to STP at Kavoore NH-66, at Kuntikan Junction NH Crossing.	Follow up from NHAI is required	KUIDFC RPMU and PIU is following up regularly will be monitored by TM on a regular basis	Under Progress  Awaiting for approval from NHAI (expected in one week)
<b>Railway NOC</b> -Awaiting approval -450 WW-7. JeppuBappal to RMH at Ekkur Near Sooterpete railway level crossing	Follow up from Railway authority is required	KUIDFC RPMU and PIU is following up regularly will be monitored by TM on a regular basis	Permission obtained  Work completed at site

Comments	Action required	PMU response with target date	Status as on date Feb 2020
railway crossing –NOC from Railway authority applied on 17-07-2017 NOC yet to be obtained Charges paid to Railway authorities			
Pending NoCs <ul style="list-style-type: none"> <li>Electrical poles at Ashok Nagar</li> <li>Utility Shifting - MESCOM for Electrical poles shifting.</li> </ul>	Follow up for department is required	KUIDFC RPMU and PIU is following up regularly will be monitored by TM on a regular basis	<ul style="list-style-type: none"> <li>•Permission obtained Work completed at site</li> <li>•Permission obtained Work completed at site</li> </ul>
<b>02KDP01 Kundapura 24X7</b>			
Details estimation of backwash and sludge management plan for Kundapur WTP is still pending	Provide sludge and back wash management plan with all proposed location	Will be provided by 20.9.2019. it is under review of RPMU office	It was informed by TMC chief officer that the backwash facility is not required as there is zero discharge and the water is utilized by farmers.
NOC from National Highway authority road cutting - NOC Obtained –on 25 /04/2019-No National Highway crossing but a stretch of 0.11 Km for laying clear water main is proposed along the service lane of NH-66 crossing –NOC from National highway authority was applied on 25-01-2019	Follow up from NHAI is required for proposed stretch of 0.11 km for laying clear water main	KUIDFC PRMU and PIU is following u regular will be monitored by TM on a regular basis	First Trenchless method not given approval by NHAI. For this work completion, the highway crossing is not required. A letter sent to NHAI for approval withdrawal. The feasible to complete the task was to execute through existing pipeline which has already crossed NH. So no need to send request letter to NHAI again.
Utility Shifting –payment for BSNL 's Copper cable damage charge is yet to be paid	Payment to be made to BSNL and get NOC	KUIDFC, RPMU and PIU is following up regular will be monitored by TM on a regular basis Payment is being made soon.	All payments to BSNL cables damages paid up to date.

Comments	Action required	PMU response with target date	Status as on date Feb 2020
Advance information to the locals and shopkeepers at pipe laying area of Mangalore and Kundapura is not always provided Time period for construction work for area not displayed	Inform at least 15 days in advance about upcoming construction works	Noted. As soon as work start same will be adhered to	Whenever work is in progress the public was informed. At pipeline, BOQ quality of pipeline is already executed as on date. Now, only 2 OHTs and SCADA and instrumentation and Valves and Bulk meters are left to be executed.  Mangalore UGD also advance information about the construction is being informed to the public.  Time period for construction work to be displayed regularly.
Contact details of PIU consultant displayed on project display board for any grievances or suggestion for Mangalore UGD sites and in Kundapura yet to be provided.	Display all details on all ongoing construction sites	It has been provided. Further strengthening will be done as per ADB suggestions.	Display Board contact details to be presented, directions are being given continuously.
Need to improve use of PPE by contractor's workers. Use of PPE should always be as per sit condition and work type. Particularly use of shoes. Hand gloves and safety belt (when working at height) ear plugs and nose masks Should be provided of heavy vehicle drivers and in emergency for Mangalore UGD project	Encourage use of PPEs on construction site in daily tool-box trainings	Noted and will be improved	Complied  Mangalore- contracting agency given PPEs like shoes, jackets, gloves and ear plugs to all the workers
Temporary placement of	Use of caution signs at	Noted and will be	Except KODI there are



Comments	Action required	PMU response with target date	Status as on date Feb 2020
caution is noted for all the package Improvement/complete use of caution tape at working areas required	working areas	improved further	no major work activities at site. If any work activities will be found contractor will ensure the initiation of using caution tape.
Improvement of housekeeping and labour staying arrangement is required for Kundapura camp and store yard	Design area for storage of waste and other material in store yards and keep all pathways clean	Noted and will be maintained as suggested.	At the moment, daily labours (for Halekote site) are only being used to complete the remaining work. No labour camp is there at the site.  At present KODI OHT work is under progress. A separate labour camp is made for labours with required facilities.
Kundapura 24X7 water supply Project, at Halekote OHT site scaffolding should be used and Proper safety measures should be taken	Use steel and tubular type scaffolding as describe in contract agreement	Noted and will be maintained as required	All structure work completed. The scaffolding is removed after the construction of Halekote OHT. Standard ladder is provided for safe lift.
Kundapura-Hard Barricading should be provided at Kodi beach OHT.	Hard barricading Should be provided at Kodi beach OHT	Noted and will be maintained as required	Partial barricading provided.
Health Check-up's and HIV AIDS training program not carried out for ongoing Kundapura 24X7 water supply and Mangalore UGD	Conduct health checkup and HIV AIDS awareness training to construction workers	Noted and Contractor /PMDSCC  Will arrange regularly in the following months.	Health checkups have been done in Dec for Mangalore UGD. No evidence of HIV and AIDs training programme. Evidence to be provided. Contract

Comments	Action required	PMU response with target date	Status as on date Feb 2020
			agency to conduct. Kundapura claim health check being done, yet to provide evidence.
Details of EHS and other trainings to be conducted	Conduct and provide details of EHS trainings	Training conducted on 13 <sup>th</sup> and 14 <sup>th</sup> June ,2019 Further trainings are planned by PMDCSC in the coming months	Contract agency to conduct EHS training at least once in a month. PMDCSC also to conduct training.

## SAUW Semi-Environmental Monitoring Report Review – Information Log

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

Project title:	India: Karnataka Integrated Urban Water Management Investment Program (KIUWMIP) – Tranche -2			
Loan Number:	3726-IND	Project Number:	43253-027	
Overall Project and Objectives	<p>1. The 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 &amp; 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 &amp; sanitation within an IWRM context.</p> <p>2. The Program will be implemented over a four-year period and will be funded by a loan via the Multitranche Financing Facility (MFF) of Asian Development Bank (ADB). The Executing Agency is the Karnataka Urban Infrastructure Development Finance Corporation (KUIDFC) and implementing agencies for the Investment Program will be respective Urban Local Bodies (ULBs). Initially Mangalore, and Kundapura are the 2 towns chosen to benefit from the 2 tranche of the investment. As the Detailed Project Report costs have exceeded substantially compared to the costs indicated on the basis of feasibility studies, ADB would finance water supply in 4 towns namely (1) Kundapura, (2) Puttur (3) Udupi (4) Mangalore under Tranche-2 and UGD in one town namely Mangalore.</p> <p>3. The programme proposes the MFF spread across two tranches over a period of ten years (2014-2024) with the total size of \$225 M. The shares of ADB propose to be \$150 million and counterpart funding from the state Government is estimated at \$75 million. In addition to the Loan funds of \$150M, the ADB has agreed to support the programme with an additional amount of \$1.8 M as a grtant fund out of its urban financing partnership facility.</p> <p>4. In Tranche 2 main outcome will be providing Water supply to Kundapura, Puttur, Mangaluru and Udupi; and Replacement of Old Sewerage Mains at Mangalore.</p>			
Approved Categorization		Category A		Category C
	✓	Category B		FI
Loan Effectivity Date:			Frequency of Reporting	Semi- Annually
Project Officer	Akira Matsunaga		Project Analyst	Edgardo G. Moises,
Reporting Year	2019	Coverage Period	July to December 2019	2 <sup>nd</sup> SEMR of the year
Date of PMU submission to ADB		First submission – 03 March 2020	Date of ADB’s feedback/comment to PMU	

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
<b>A. Project Safeguards Team (check loan agreement and PAM requirements)</b>				
PMU <sup>1</sup>	Mr Shashisekhar SP, Environmental Expert	Complied - Details of KIUWMIP Environmental Safeguard Team is provided in table 2	Arrange regular training on EHS and good	

<sup>1</sup> PMU – project management unit

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
			construction practices and follow up of required NOCs.	
PIU <sup>2</sup>	<p>1. Mr. Shiva Kumar, Assistant Executive, PIU, Mangalore, Package 02MNG02</p> <p>2. Mr. Harish Valmike, Assistant Engineer, AEE, PIU, Kundapura, Package 02KDP01, In-charge Environment safeguard compliance</p> <p>3. Mr. Shamant, Assistant Engineer, AE, PIU, Puttur, Package 02PTR01 In-charge Environment safeguard compliance</p> <p>4. Mr Vijayanand, Assistant Engineer, AE, PIU, Puttur</p> <p>5. Sudarshan SR, Assistant Executive Engineer, AE, PIU, Udupi, Package 02UDP01</p>	Complied - Details of KIUWMIP Environmental Safeguard Team is provided in table 2	<p>Conduct regular trainings EHS and good construction practices for labours, Consultants, PIU and PMU staff.</p> <p>Follow up for closure of all pending issues</p>	
Consultants	M.R.S.Malik, PMCSC, Environment Specialist	<p>New Joining from last SEMR</p> <p>Complied - Details of KIUWMIP Environmental Safeguard team is provided in table 2</p>	Conduct regular trainings EHS and good construction practices for labours, Consultants, PIU and PMU staff	
Others (e.g. auditor, external monitoring team, etc)	<p>1. Mr. Madhukar, DRS Infra Tech Pvt, Ltd., Package 02MNG02</p> <p>2. Mr. Vijay Monaveera, Laxmi Civil Engineering services, Package 02KDP01</p>	Complied - Table 4 provide information on Environment Safety Officer of contractors	Provide regular trainings to EHS officers of contractor for ADB's requirements	

<sup>2</sup> PIU – project implementation unit (For DWSNIP – project coordination units are PIUs)

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
	3. Mr. Y Amruth, Suez Projects– DRS Infra Tech, Package 02PTR01 4. Mr. Pradeep Shetty, Suez Projects– DRS Infra Tech , Package 02UDP01			
<b>B. Overall Project and Subproject Description</b> <i>(summarize number and type of packages)</i> <sup>3</sup>				
Number of Packages with civil works <i>(check if consistent with latest procurement plan)</i>	Following five (5) packages are considered in tranche -2 <b>A. Water Supply</b> 1) 02KDP01 - Construction of Bulk & Distribution Network - Operator assisted in Kundapura - 54.33% Physical progress against total quantity as of 31 <sup>st</sup> December 2019  2) 02PTR01 - Construction of Bulk & Distribution Network - Operator assisted in Puttur - 10.65% Physical progress against total quantity as of 31 <sup>st</sup> December 2019  3) 02UDP01 - Construction of distribution Network - Operator assisted in Udupi – 08.87% Physical progress against total quantity as of 31 <sup>st</sup> December 2019  4) 02MNG01 - Construction of Bulk & Distribution Network - Operator assisted in Mangalore – under Design Validation stage  <b>B. Sewerage</b> 5) 02MNG02 - Replacement of pumping mains - 56.6% Physical progress against total quantity as of 31 <sup>st</sup> December 2019	Final IEE of 02PTR01 and 02UDP01 still pending	Based on design validation survey IEEs of 02PTR01 and 02UDP01 need to be finalized and submitted to ADB for approval.	

<sup>3</sup> DB/DBO – design-build or design, build, and operate or where contractor will finalize the detailed engineering design; civil works contract – enough details of the package is known and used as basis for bid/contract's Technical Specification

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
Number of DB/DBO packages and status (see footnote 3)	As per table 3, no package is of DB/DBO type	None	No action required	
Number of civil works packages and status (see footnote 3)	As per table 3, One sewerage package is civil works rest four water supply packages are of Civil Works and services type, details are provided in table 3.	None	No action required	
IEEs cleared for awarded packages?	As per table 4 and 5, all IEEs for awarded packages are cleared	None	Final IEEs for packages 02MNG01, 02UDP01 and 02PTR01 required submit to ADB for approval.	
Safeguard documents disclosed on project website?	As per table 5 all IEEs are disclosed on ADB and KUIDFC's website, it also provides weblink of disclosed IEEs on PMU website	Links provided in SEMR are not directly linked with the IEE document.	Provide searchable weblink of disclosed IEEs	
SEMR information on package-wise implementation phase (bidding, on-going, construction, completed, under operation, others)	Table -1 provides package wise components and physical progress	None	Update the progress report periodically	
<b>C. Status of compliance with statutory clearances</b> (check IEE for the complete list, summarize the findings for each package – obtained/under application and if obtained, specify validity period)				
Environmental Clearance (EC)	Not required	None	None	
Forest Clearance	Not required	None	None	
No Objection Certificate/Letter	Table 6 provides Status of Compliance with National and State Legal Requirements for following requirements  Water (Prevention and Control of Pollution) Act. 1974  The Air (Prevention and Control of Pollution) Act, 1981, as amended by Amendment Act, 1987 Also for setting up diesel generator	Table 6 provides status of NOCs  following NOCs are pending  For Mangalore UGD (02MNG02)  <ul style="list-style-type: none"> <li>Status of work near Mangaladevi Temple, in Mangalore and ASI clearance is not mention in SEMR</li> <li>Awaiting approval - 1100 WW-3, Kudroli To STP at Kavoor NH-66, at Kuntikan Junction NH Crossing.</li> </ul>	Apply for renew of NOCs before its expiry date	
Site location clearance			Update the status of work near Mangaladevi Temple, and ASI clearance	
Permit/Consent to Construct (or equivalent)			Follow up action is required for getting NOCs	
Permit/Consent to Operate (or equivalent)				
Road-cutting permit				

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
Utilities shifting permit	<p>Consent to Establish (CTE) and Consent to Operate (CTO)</p> <p>Statutory permission from National Highways Authority for road cutting</p> <p>Statutory permission from Railway authority</p> <p>Statutory permission from PWD</p> <p>Utility shifting</p> <p>Labour licence under The Contract Labour (Regulation &amp; Abolition) Act, 1970. (Central Act w.e.f. 07-09-70)</p> <p>Labour compensation insurance</p> <p>ASI clearance for working near Mangaladevi Temple, in Mangalore</p>	<ul style="list-style-type: none"> <li>Awaiting approval-NH4 crossing - NOC from National highway authority applied on 17-07-2017. Charges paid to National Highways Authority</li> <li>Obtained - 450 WW-7, Jeppu Bappal to RMH at Ekkur Near Sooterpete railway level Crossing</li> <li>Obtained - Electrical pole Ashok nagar -Mangalore UGD</li> <li>Obtained-Utility Sifting - MESCOM - Electrical pole.</li> </ul> <p><b>For Kundapura</b></p> <ul style="list-style-type: none"> <li>Awaiting-Approval-NH4 crossing -NOC from National highway authority was applied on 25-01-2019.</li> </ul>	<p>from other government departments.</p> <p>Follow all statutory conditions of NOCs</p>	
Tree-cutting permit	Not Obtained - 6 nos. Tree felling (at Kodi Beach OHT site) 2,28,000 Rs Compensation paid to the affected person for Cutting of coconut trees enclosed as <b>Appendix 12 and 12a.</b>	Coconut Trees are in the list of trees feeling exemption list. If exemption list of trees in Govt. Land, then permission should be taken from Tree officer	Get and provide copy of NOC from tree officer	
Others (specify)				
<b>D. Status of Compliance with loan covenants (verify items in SEMR with the project's loan agreement)</b>				
Procurement of goods, works and consulting services (Schedule 4, Item 9)	Complied	Details are provided in table -7	None	
Safeguards environment (Schedule 5, Item 10)	<b>Under compliance</b>	Details are provided in table -7	Conduct regular monitoring and update in next SEMR	
Human and financial resources to implement safeguards requirements (Schedule 5, Item 10)	Complied	Details are provided in table -7	None	

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
Safeguards-related provisions in bidding documents and works contracts (Schedule 5, Item 11)	<b>Under compliance</b>	Details are provided in table -7	Conduct regular monitoring and update in next SEMR	
Safeguards monitoring and reporting (Schedule 5, Item 12)	Complied and ongoing 1 <sup>st</sup> SEMR was submitted on 25 July 2019 and 2 <sup>nd</sup> on 05 March 2020	Details are provided in table -7	Conduct regular monitoring and update in next SEMR	
Prohibited list of investments (Schedule 5, Item 13)	Complied	Details are provided in table -7	None	
Labor standards, health and safety (Schedule 5, Item 16)	Complied in document and during implementation	Details are provided in table -7	Conduct regular monitoring and update in next SEMR	
<b>E. Contractors Compliance with Environmental Safeguards Requirements</b>				
Appointment of Environment, Health and Safety (HSE) and/or nodal person	Table 4 provides details of package-wise Contractor/s' Nodal Persons for Environmental Safeguards	None	None	
Submission of site-specific EMPs	No details for submission of site-specific EMPs are provided in SEMR	Site-specific EMPs for 2 packages (Kundapura and Mangalore UGD) is already approved, for 2 packages (Puttur & Udupi) site-specific EMPs still pending for submission.	Provide details with dates for submission of SEMP.  Add details of change in scope from approved IEE (if any)	
Submission of SEMP implementation report ( <i>specify in comments frequency – daily, weekly, monthly or quarterly basis</i> )	SEMP implementation report are provided in in following tables Table 10: Compliance to SEMP of the Package- UGD in Mangalore City, Package No. 02MNG02  Table 11: Compliance to EMP of the Package- Water Supply System in Kundapura City, Package No. 02KDP01  Table 12 and 13: Compliance to EMP of the Package- water supply	None	None	



Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
	system in Udupi city – Package No. 02UDP01  Table 14 and 15: Compliance to EMP of the Package- water supply system in Puttur city – Package No. 02PTR01			
Site verification by PMU, PIU, or consultants ( <i>verification report should be attached to the SEMR</i> )	Package wise details of site verification done by PIU or PMU staff is detailed in SEMR compliance tables	None	Prepare inspection checklists for regular monitoring and update in next SEMR	
SEMR compliance matrix on mitigation measures implementation (matrixes are based on approved SEMP)	SEMR compliance matrix, is based on approved SEMP	None	None	
Other information			-	-
<b>F. Environmental Monitoring based on EMP</b>				
Rationale	None	Rational for selected sampling location, is not provided in report	Provide rational for sampling site selection	
Parameters to be monitored are commensurate to the impacts, mitigation measures, and project/ subproject/ package	Table 17 provides air quality and table 18 provides noise quality monitoring results for construction phase of Mangalore UGD (02MNG02) and pre -construction phase of Puttur (02PTR01) and Udupi (02UDP01)	Air quality and Noise monitoring results are missing for Kundapura package	Provide details of environmental monitoring reports of Kundapura package.	
Sampling locations identified and appropriate	Sampling location are identified as mentioned in IEEs	Monitoring results for Kundapura are missing	Categorize each sample into Industrial Residential, Rural and Other areas	
Sampling frequency identified and appropriate	Sampling results of air and noise quality for month of October 2019 for Udupi and Puttur and Sampling results for Mangalore for month of December 2019 are provide	As per IEE one sample per quarter is required, for semiannual report at least 2 sampling for Kundapura and Mangalore UGD to be conducted.	Provide details of last and next planned sample	

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
Sampling collection and analysis are in accordance with internationally accepted practices	None	Methodology for collection and analysis of sample is not provided in report.	Provide Sampling collection and analysis methodology	
Standards and performance indicators are compliant with ADB SPS requirements <sup>4</sup> (provide justification if less stringent standards are used)	None	Only CPCB's standard are provided for comparison	Compare the results with Applicable ADB SPS standards and categorize each sample location in Industrial Residential, Rural and Other areas	
<b>G. Environmental monitoring results (narrative based on presented results)</b>				
Visual inspection ( <i>refer to EMP tables in the IEE where visual inspections are required to determine if there are environmental impacts</i> )	Table 10 to Table 15 provides details of visual inspection conducted by PMDCSC and PIU staff	none	Use checklists for visual inspection and report summary in next SEMR	
Air quality results	Table 17 provides Air Quality Monitoring Results	Air quality monitoring results of Kundapura Package are missing	Add comparative tables for pre-construction, construction phase and acceptable standards as per ADB's SPS  Conduct Air quality monitoring for all required locations as per IEE	

<sup>4</sup> ADB SPS (Appendix 1 para 33) requires projects to apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines (<https://www.ifc.org/ehsguidelines>). These standards contain performance levels and measures that are normally acceptable and applicable to projects. When host country regulations differ from these levels and measures, the borrower/client will achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented ADB SPS.

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
Water quality results	Table 19 provides Water Quality Monitoring Results	Water quality monitoring results of Kundapura Package are missing	Add summary of water quality test report in main text of report	
Noise level results	Table 18 provides Noise Monitoring Results	Noise quality monitoring results of Kundapura Package are missing	<p>Add comparative tables for pre-construction, construction phase and acceptable standards as per ADB's SPS</p> <p>Implementation of EMP to be followed strictly</p> <p>Explain the category of sampling location (Industrial area, Commercial area, Residential Area, and Silent Zone)</p>	
Others	Pre – construction phase EMP implementation report is missing in report	Pre-construction phase EMP monitoring are missing from report	<p>Provide pre-construction phase environment monitoring for all 4 packages</p> <p>Ensure conducting all environmental samplings as scheduled in IEE</p>	
<b>H. Consultations and/or FGDs during the reporting period</b>				
Number	Date, location and number participant list is provided in Appendix 34	<ul style="list-style-type: none"> <li>25 consultations meeting are conducted in Mangalore till 31 December 2019</li> <li>20 consultations meeting are conducted in Puttur till 31 December 2019</li> </ul>	Conduct package wise meetings/ consultations regularly and include details of topic discussed in SEMR	

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
		<ul style="list-style-type: none"> <li>06 consultations meeting are conducted in Kundapura till 31 December 2019</li> <li>14 consultations meeting are conducted in Udupi till 31 December 2019</li> </ul>		
Reason/s for consultations/FGDs	No details in SEMR	No details of topic discussed in provided in SEMR	Provide summary and details of topic discussed in consultations	
Number of participants	Details are provide in Appendix 34	Number of participants in consultation meeting till 31 Dec 2019 <ul style="list-style-type: none"> <li>Mangalore – 1131</li> <li>Puttur – 926</li> <li>Kundapura – 311</li> <li>Udupi - 1347</li> </ul>	Conduct package wise consultation in low, middle and high-income group area and present the findings.	
Number of <b>female</b> participants	Details are provide in Appendix 34	Number female participants in consultation meetings till 31 Dec 2019 <ul style="list-style-type: none"> <li>Mangalore – 255</li> <li>Puttur – 286</li> <li>Kundapura – 47</li> <li>Udupi - 308</li> </ul>	Provide package-wise breakup of male and female participants	
<b>I. Trainings, Workshops, Seminars during the reporting period</b>				
Number	No details in SEMR for reporting period (July to Dec 2019)		Conduct more trainings	
Topics	No details in SEMR for reporting period	Trainings on EHS, ADB SPS2009, Local laws, HIV, gender, GRM, labour laws, traffic management and spoil management etc require to be conducted on regular basis	Conduct training and provide details in SEMR	
Number of participants	No details in SEMR for reporting period	None	None	
Number of <b>female</b> participants	No details in SEMR for reporting period	None	None	
<b>J. Grievance Redress Mechanism</b>				
GRM per PAM or IEE/EARF established	Details of established GRM is provided in Section IX	None	None	
GRM notified via publication or notice boards	GRM notification is annexed in Appendix 35 and 35A	None	None	
GRM members identified	GRM Members are identified and details are provided in Appendix 35 and 35A	None	None	

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
GRM members have capacity to address project-related complaints ( <i>detailed information on capacity development of GRM members such as trainings, workshops, briefings, etc should be attached in the SEMR</i> )	GRC members are senior government officers, generally dealing with public grievances	No details of training/ workshop conducted for GRC members is provided in SEMR	Provide details of training/ workshop conducted for GRC members	
Number of meetings conducted ( <i>attach minutes of the meeting</i> )	None	Details of GRC meetings are not provided in report	Provide details of GRC meeting in main text of SEMR	
<b>K. Complaints Received</b> ( <i>detailed information on nature of complaints, summary and status of resolution</i> )				
Number of complaints	Scan copy of complaints received for Mangalore, Kundapura and Udupi are attached in Appendix 36, 37 and 38	Summary of complains and resolution is missing from the report.	Provide summary of complain received, type and complain resolved in main text of report	
Nature ( <i>provide summary of issues/concerns</i> )	Scan copy of complaints received for Mangalore, Kundapura and Udupi are attached in Appendix 36, 37 and 38	Major town-wise grievances are  For Kundapura – water leakage in new water supply system and problem of new meter.  Mangalore UGD – damage of existing water pipes due to construction works  Udupi – request for new connection and damage of existing utilities	Provide GRM Summary in main text of SEMR	
Status of resolution	Scan copy of complaint received for Mangalore, Kundapura and Udupi are attached in Appendix 36, 37 and 38	As per attached appendix mostly complains are resolved		
<b>L. Summary of Issues and Corrective Actions</b>				
Major issues/concerns (specify)	Details are provided in section IX of SEMR	Photo evidence of closure of issue is not attached with report	Provide compliance report along with photos of resolved issue in SEMP	
Corrective Action to be implemented, timeline, responsible person/s,	Details are provided in section IX of SEMR	Budgetary requirements for implementing corrective action plan is missing	Provide details of time spent and budget used in	

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
and budget are clearly specified			implementing corrective action plan in next SEMR	
<b>M. Status of Corrective Action Plan from Previous Reporting Period (list all and provide status)</b>				
	Details of corrective action plans are provided in section IX of SEMR	Firm timeline of closing the issues pointed out in previous site visit and SEMR are not provided in table 20.	Provide firm timeline for closing the issues pointed out in previous site visit and SEMR along with photo evidence.	
<b>N. Appendixes</b>				
Photos included?	Included in appendix -1	Provide package wise photos  Also include the photos for closing of issues raised in previous SEMR and Site visits.  Photo is highlighting the non-compliance issues	Prepare and present package wise photolog.  Re-check the captions of photos	
Summary of consultations included?	None	Details of number of participant and date of consultation meetings are provided in Appendix	Provide details of issues discussed in Appendix and summary of discussion in main text of SEMR	
Site EMPs (attach sample?)	Site specific EMPs of construction stage for Mangalore UGD, Kundapura, Puttur and Udupi are attached as Appendix 23 to 26	Submission and approval of final IEEs as per design validation survey for Puttur and Udupi are still pending.	Update SEMP based on latest design validation survey	
Checklists?	Not provided	Checklist for site inspection is not provided in SEMR	Develop and provide site inspection checklist for PMU, PIU and consultant team.	
Others	Updating draft IEEs to final IEEs is still pending for Puttur and Udupi	Work	Update draft IEEs to final IEEs and submit to ADB for approval, based on design validation survey.	

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
	Table 8	For Mangalore 24X 7, Puttur and Udupi are in design and pre-construction phase but only recommendations for construction phase are given	For Mangalore 24X 7, Puttur and Udupi provide action proposed and additional measures required in design and pre-construction phase	
	Table 9	54.33% of physical works for Kundapura are over but waste dumping site and permission for disposal are still pending	Prepare Spoil management plan for Kundapura and permission for waste disposal	
	Table 10 to 15	The compliance status against each parameter are not provided for the reporting period	The compliance status against each parameter to be monitored to be provided in tables	
		Some of table numbers referred in main text are not matching with refereed table numbers in SEMR	Please check cross reference of table numbers in in main text of SEMR	
	Para number 39 to 45	The noncompliance issues are highlighted in para 34 to 45, EMP tables (10 to 15) are silent on compliance of these issues	Please provide corrective action plan and compliance of noncompliance issues mentioned in Para 34 to 45.	
	Reporting period	The 1 <sup>st</sup> SEMR report is already covered the month of July,	Change the reporting period on SEMR as August to December 2019	

#### O. Review and clearance for disclosure

Reference	2 <sup>nd</sup> SEMR report		
	Name		Date
Reviewed by	Govind Singh Rathore		15 March 2019
Noted by			
Response to ADB comments by:			
Status/Remarks			

Item	Findings in the SEMR	Comments	Action/s Required	Response by PMU
		2. Send comments to PMU for response to comments		