Updated Initial Environmental Examination

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NEP: Third Small Towns Water Supply and Sanitation Sector Project

—Kohalpur (Banke District)

Prepared by ITECO Nepal (P) Ltd., SILT Consultants (P) Ltd., and Unique Engineering Consultancy (P) Ltd. for the Government of Nepal and the Asian Development Bank.

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Ministry of Water Supply and Sanitation

Department of Water Supply and Sewerage

Small Towns Water Supply and Sanitation Sector Project (STWSSSP



Project Management Office (PMO)
Panipokhari, Maharajgunj, Kathmandu, Nepal

Enhance Functionality in Small Towns Water Supply and Sanitation Sector Project (STWSSSP)

UPDATED INITIAL ENVIRONMENTAL EXAMINATION REPORT (IEE)

For

Kohalpur Small Towns Water Supply and Sanitation Sector Project Banke District



Kathmandu, July 2015

Submitted by:

Joint Venture in Between



Min Bhawan, Kathmandu, Nepal **Tel:** ++977-1- 46 21 764 (Hunting Line),

Fax: ++ 977-1-46 22 298 E-mail: iteco@mos.com.np Website: www.iteconepal.com



SILT Consultants (P) Ltd.

P.O. Box 2724

Ratopul, Gaushala, Kathmandu, Nepal **Tel:** ++977-1-44 87 598, 44 75139

Fax: ++977-1-44 73 573

E-mail: silt@mos.com.np, info@silt.com.np

Website: www.silt.com.np



Unique Engineering Consultancy (P) Ltd.

P. O. Box 3522, Jwagal-10, Lalitpur, Nepal **Tel:** ++977-1-55 49 332, 55 29 896

Fax: ++977-1-55 49 332 E-mail: unecnepal@gmail.com Website:www.unecnepal.com.np

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Abbreviations

°C : Degree Centigrade

ADB : Asian Development Bank

CBD : Convention of Biological Diversity

CITES : Convention on International Trade in Endangered Species of wild Fauna and Flora

cum : Cubic Meter

DSC : Design and Supervision Consultant

WSSDO : Water Supply and Sanitation Division OfficeDWSS : Department of water Supply and Sewerage

EA : Environmental Assessment

EARF : Environmental Assessment Regional Office

EIA : Environmental Impact AssessmentEMP : Environmental Management Plan

EPA : Environmental Protection Act

EPR : Environment Protection Regulations

GoN : Government of Nepal

HHE : Health and Hygiene Education Programs

HRF : Horizontal Roughing Filter

IEE : Initial Environmental Examination

JICA : Japanese International Cooperation Agency

km : Kilometer

KWSSSP : Kohalpur Water Supply and Sanitation Sub-Project

LGs : Local Governments

lpd : Liter per day

lps : Liter per second

m : Meter

MDG : Millennium Development Goals

MOWR : Ministry of Water Resources

MPPH : Ministry of Physical Planning and HousingMoWSS : Ministry of Water Supply and Sanitation

MoSTE : Ministry of Science, Technology and Environment

NGO : Non-Government Organization

NDWQS ; National Drinking Water Quality Standard

NPC : National Planning Commission

NRs. : Nepalese Rupees

O&M : Operation and Maintenance
PAC : Public Awareness Campaign

PCO : Public Call Office

Updated IEE of Small Town Water Supply Rehabilitation Sub-Project Kohalpur, Banke

PF : Pressure Filter

Pop. : Population

PRA : Participatory Rural Appraisal
PMO : Project Management Office

RRA : Rapid Rural Appraisal

RPMO : Regional Project Management Office

SPSO : Sub-Project Site Office

SSF : Slow Sand Filter

SPS : Safeguard Policy Statement

STWSSSP : Small Town Water Supply and Sanitation Sector Project

TDF : Town Development Fund

VDC : Village Development Committee

WHO : World Health Organization

WSUC : Water Supply Users' Committee

WUSC : Water Users and Sanitation Committee

EXECUTIVE SUMMARY

General

The Enhance Functionality in Small Towns Water Supply and Sanitation Sector Project (STWSSSP) will support the government of Nepal (the Government) in improving water supply and sanitation facilities and services to 24 small towns in Nepal. Out of the 265 small towns in Nepal, Asian Development Bank (ADB) has already supported the Government, through successful implementation of earlier two projects in 50 towns. These include the 24 project for enhancement.

The outcome will be inclusive and sustainable water supply and sanitation service delivery in this Kohalpur small town of Nepal. The project will implement improvements/ rehabilitation works within the service area of already completed project. There will be minor civil works necessary for the enhancement of the components without changing the original technical and social concepts.

The Project will be implemented in 12 months period starting around first week of November, 2015. The project will be funded by a loan using a sector lending approach of ADB. The Executing Agency is the Ministry of Water Supply and Sanitation and the implementing agency is the Department of Water Supply and Sewerage (DWSS).

The sub project IEE report was approved by government of Nepal in 2005. Now the sub project is envisaged to undergo for rehabilitation of project components such as, intake treatment plant, transmission main and distribution line etc. The proposed updated IEE is prepared as an integral part of bid document. However consultant has updated the contents of IEE report already approved from government of Nepal.

This updated IEE Report summarizes anticipated impacts and corresponding mitigation measures, monitoring and also includes cost and time frame for implementation.

In this report, all the policy, legal and administrative framework requirements of ADB including ADB Safeguard Policy and the prevailing GoN Acts/rules & regulations have been considered.

Categorization

Kohalpur town subproject is classified as Environmental Category B as per the SPS as no significant impacts are envisioned. Accordingly this updated Initial Environmental Examination (IEE) has been prepared and assesses the environmental impacts and provides mitigation and monitoring measures to ensure no significant impacts as a result of the subproject.

Subproject Scope

The subproject is formulated under the 3STWSSSP to improve water supply and sanitation service delivery in the existing Kohalpur water supply and sanitation project constructed during STWSSP 1. Investments under this subproject includes; (i) rehabilitation of a piped water supply system including intake, water treatment plant, transmission main, and distribution main.

Implementation Arrangements

The Ministry of Water Supply and Sanitation is the executing agency. The Department of Water Supply and Sewerage (DWSS) is the implementing agency. Implementation activities will be overseen by a separate Project Management Office (PMO) which will be established in DWSS head office in Kathmandu and two Regional Project Management Offices (RPMOs) in the eastern and western region. A team of technical, administrative and financial officials, including safeguards specialists, will be provided at the PMO to implement, manage and monitor project implementation activities. The RPMOs will be staffed by qualified and experienced officers and will be responsible for the day-to-day activities of project implementation in the field, and will be under the direct administrative control of the PMO. Consultant teams are responsible for subproject planning and management and assuring technical quality of design and construction; and designing the infrastructure and supervising construction; and safeguards preparation.

Description of the Environment

Subproject components are located in Kohalpurtown area and in its immediate surroundings. There is no presence of natural habitat in this project area. The project components will be located in WUSC sites, public road rights-of-way (ROW) and outside the community managed forest and the

protected areas. There are no protected areas, wetlands, mangroves, or estuaries in or near the subproject locations.

Environmental Management

An environmental management plan (EMP) is included as part of this IEE, which includes (i) mitigation measures for environmental impacts during implementation; (ii) an environmental monitoring program, and the responsible entities for mitigating, monitoring, and reporting; (iii) public consultation and information disclosure; and (iv) a grievance redress mechanism. A number of impacts and their significance have already been reduced by amending the designs. The EMP will be included in civil work bidding and contract documents.

Locations and sitting of the infrastructures were considered in the existing sub-project to further reduce impacts. The concepts considered in design of the subproject are: (i) demand for new piped water supply; (ii) maximum population coverage with pipe layout mostly in residential areas and areas of high growth rate; (iii) avoidance of water-use conflicts; (iv) locating pipelines within ROWs to reduce acquisition of land; (v) locating pipelines at least 10 meters from latrines, septic tanks and any main drains to avoid contamination; (vi) locating Intake point 30 m upstream from sanitation facilities; (vii) locating household and public latrines and septic tanks at least 30 meters downstream from the nearest drinking water source; (viii) piloting controlled disposal of septage in accordance to WHO and US EPA standards to reduce the likelihood of uncontrolled disposal as currently practiced; and (ix) ensuring all planning and design interventions and decisions were made in consultation with local communities and reflecting inputs from public consultation and disclosure for site selection.

During the construction phase, impacts mainly arise from the need to dispose of moderate quantities of waste soil; and from the disturbance of residents, businesses, and traffic. These are common impacts of construction in urban areas, and there are well developed methods for their mitigation. Measures such as conducting work in lean season and minimizing inconvenience by best construction methods will be employed. Traffic management will be necessary during pipe-laying on busy roads. In the operational phase, all facilities and infrastructure will operate with routine maintenance, which should not affect the environment. Facilities will need to be repaired from time to time, but environmental impacts will be much less than those of the construction period as the work will be infrequent, affecting small areas only.

Mitigation Measures

Mitigation measures have been developed to reduce all negative impacts to acceptable levels. Mitigation will be assured by a program of environmental monitoring to be conducted during construction. The environmental monitoring program will ensure that all measures are implemented, and will determine whether the environment is protected as intended. It will include observations on-and off-site, document checks, and interviews with workers and beneficiaries. Any requirements for corrective action will be reported to the ADB.

The stakeholders were involved in developing the IEE through discussions on-site and public consultation, after which views expressed were incorporated into the IEE and in the planning and development of the subproject. The IEE will be made available at public locations in the town and will be disclosed to a wider audience via the ADB and DWSS websites. The consultation process will be continued and expanded during project implementation to ensure that stakeholders are fully engaged in the project and have the opportunity to participate in its development and implementation.

The project was initially launched to serve ward nos. 1, 2, 3 & 4 of former Kohalpur VDC and Ward nos. 4, 7 & 8 of former Rajena VDC of Banke district. However recently GoN has declared Kohalpur Municipality and now the service area falls on Ward nos. 1, 2, 3, 10, 11 & 12 of the Municipality.

The sub-project under construction is a rehabilitation project and the mitigation measures recommended in the approved IEE in 2006 have already been successfully implemented. During the updated IEE preparation process, all of the process mentioned above have been checked and followed. The design report has incorporated the recommended mitigation measures.

During construction phase, there are no major environmental impacts in the enhancement project. However there are minor impacts like decrease in ground Water table and water logging, chemical

contamination, air and noise pollution during construction, traffic disturbances and some disturbances in household water supply distribution. In order to minimize the impacts, specific arrangements have been made in the design and incorporated in the specification of work. The contractor is responsible to follow all the instruction given by the DSC and agreed specifications.

During operational phase also, there will be no significant impacts. However there may be minor impact on water right conflict (tap distribution) and occupational health and safety of workers. These issues will be addressed by and will be the responsibility of WUSC.

Consultation, Disclosure and Grievance Redress

Public consultations were done in the preparation of the project and IEE and throughout the project implementation period of the completed project.

During the preparation of this enhancement project and updated IEE, Public consultations were done at different phases. The first consultation was done during survey and design period. Further consultation was made with the stakeholders at project site after the project design report was approved.

The consultation was focused on environmental impacts, resettlement, social issues, relocation and compensation issues.

Monitoring and Reporting

The PMO, RPMO and DSMC will be responsible for environmental monitoring. The RPMO with support from the DSMC will submit monthly monitoring reports to the PMO. The PMO will consolidate the monthly reports and will send semi-annual monitoring reports to ADB. ADB will post the environmental monitoring reports on its website.

Conclusions and Recommendations

The proposed subproject is unlikely to cause significant adverse impacts. The potential impacts that are associated with design, construction and operation can be mitigated to standard levels without difficulty through proper engineering design and the incorporation or application of recommended mitigation measures and procedures. Based on the findings of the IEE, there are no significant impacts and the classification of the subproject as Category "B" is confirmed. No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS (2009).

1. INTRODUCTION

1.1 BACKGROUND

- 1. The Enhance Functionality in Small Towns Water Supply and Sanitation Sector Project (STWSSSP) will support the government of Nepal (the Government) in improving water supply and sanitation facilities and services to 24small towns in Nepal. Out of the 265 small towns in Nepal, Asian Development Bank (ADB) has already supported the Government, through successful implementation of earlier two projects in 50 towns. These include the 24 project for enhancement.
- 2. The Enhance Functionality in Small Towns Water Supply and Sanitation Sector Project (STWSSSP) will be implemented in 12 months period starting around first week of November, 2015 and will be funded by a loan using a sector lending approach of ADB. The Executing Agency is the Ministry of Water Supply and Sanitation and the implementing agency is the Department of Water Supply and Sanitation (DWSS).
- 3. The outcome will be inclusive and sustainable water supply and sanitation service delivery in selected small towns in Nepal. The project will implement improvements/rehabilitation works within the service area of already completed 24projects. There will be minor civil works necessary for the enhancement of the components without changing the original technical and social concepts.

1.2 OBJECTIVES OF IEE

4. The updated IEE summarizes anticipated impacts and corresponding mitigation measures, monitoring and also includes cost and time frame for implementation.

1.3 RATIONAL OF IEE REQUIREMENT

5. The sub project IEE report was approved by government of Nepal in 2005. Now the sub project is envisaged to undergo for rehabilitation of project components such as, treatment plant (specific area) of transmission and distribution line etc. The proposed IEE is prepared as an integral part of bid document. However consultant has updated the contents of IEE report already approved from government of Nepal.

Methodology Used in Preparing IEE

- In the process of preparation of EMP, an extensive review of approved IEE and feasibility reports reviewed with some field based information
- Public consultations were held in the entire process of IEE study and during the disclosure of the draft IEE report to the local people. These processes have taken place and the results were documented. The involvement of the local people in EMP implementation activities have been recommended in EMP, 2000. Accordingly, in the process of EMP implementation, the following mechanism has been adopted to involve the local people in EMP activity:
 - Public Consultation and Involvement have been given highest priority in the implementation of Mitigation measures carried out by EMP; initially prior to the implementation, public consultation usually takes place and on the basis of decision of the consultation meeting, implementation of mitigation measures are being prioritized and carried out with the involvement of local people.
 - Monitoring is another component of EMP. Monitoring of Physical, Biological and Socio-economic components of Environment of the project is being carried out. In the process of compliance monitoring of the project construction, local people and construction workers are being involved and consulted

2. POLICY, LEGAL & ADMINISTRATIVE FRAMEWORK

2.1 ADB POLICY

6. All projects funded by the ADB must comply with the Safeguard Policy Statement (SPS) 2009 to ensure that projects undertaken as part of programs funded under ADB loans are environmentally sound, are designed to operate in compliance with applicable regulatory requirements, and are not likely to cause significant environmental, health, or safety hazards. With respect to the environment, the SPS 2009 is underpinned by the ADB Operations Manual, Bank Policy (OM Section F1/OP, 2010). The policy promotes international good practice as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines.1

2.2 ADB SAFEGUARDS POLICY

7. ADB's environmental safeguards policy principles are defined in SPS, 2009, Safeguard Requirements¹ 1 and the IEE is intended to meet these requirements, Table 2-1.

Table 2-1: ADB SPS, 2009 Safeguard Requirements 1: Environment

SPS 2009 - Safeguard Requirements	Remarks
Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment (EA) so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks.	REA has been undertaken (Annex A), indicating that subproject is NOT: (i) environmentally critical; and (ii) adjacent to or within environmentally sensitive/critical area
SPS 2009 - Safeguard Requirements	Secondary influence areas. Significant adverse impacts during construction will be temporary and short-term, can be mitigated without difficulty. There is no adverse impact during operation. Hence, IEE is sufficient. The IEE including specific description of the environment and corridor of impact will be updated as necessary based on the final design and alignments.
Conduct EA to identify potential direct, indirect, cumulative, & induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential trans boundary global impacts, including climate change.	IEE has been undertaken to meet this requirement. (Section VI). No trans boundary & global impacts, including climate change.
Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.	Analysis of "with-subproject "or "without subproject" is presented in Section III.

¹New Version of the "World Bank Group Environmental, Health, and Safety Guidelines", April 30 2007, Washington, USA. http://www.ifc.org/ifcext/enviro.nsf/C ontent/EnvironmentalGuiidelines

SPS 2009 - Safeguard Requirements	Remarks
Avoid, and where avoidance is not possible, minimize, mitigate, &/or offset adverse impacts and enhance positive impacts by means of environmental planning & management. Prepare an EMP that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators.	An EMP has been prepared to address this requirement. Section IX
Carry out meaningful consultation with affected people & facilitate their informed participation. Ensure women's participation. Involve stakeholders, including affected people & concerned NGOs, early in the project preparation process & ensure that their views & concerns are made known to & understood by decision makers and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to EA. Establish a GRM to receive & facilitate resolution of affected people's concerns & grievances on project's environmental performance.	Key informant and random interviews have been conducted (Annex C). A grievance redress mechanism for the resolution of valid project-related social and environmental issues/concerns is presented in Section VIII.
Disclose a draft IEE (including the EMP) in a timely manner, before project appraisal, in an accessible place & in a form & language(s) understandable to affected people & other stakeholders. Disclose the final EA, & its updates if any, to affected people & other stakeholders.	The draft IEE will be disclosed on ADB's website prior to project appraisal. Copies of both SPS-compliant IEE and Government of Nepal-approved IEE will be made available at the offices of the PMO, Project Implementation Support Unit (PISU) and Water Users' and Sanitation Committee (WUSC)for public consultation. For the benefit of the community, the summary of the IEE will be translated in the local language and made available at (i) offices of executing and implementing agencies, (ii) area offices, (iii) consultant teams' offices; and (iv) contractor's campsites. It will be ensured that the hard copies of IEE are kept at places which are conveniently accessible to people, as a means to disclose the document and at the same time creating wider public awareness. An electronic version of the IEE will be placedin the official website of executing and implementing agencies and the ADB website after approval of the IEE by ADB
Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.	EMP implementation, reporting and disclosure of monitoring reports are in this IEE.

SPS 2009 - Safeguard Requirements

Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available. (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.

Remarks

The subproject does not encroach into areas of critical habitats.

pollution Apply prevention control and 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. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phase-outs. Purchase, use, and manage pesticides based on integrated pest management approaches and reduce reliance on synthetic chemical pesticides.

This requirement is only minimally applicable to the subproject in the aspect of waste generation, e.g., effluent from septic tanks and generated sludge and sludge disposal from water supply and sanitation structures. The subproject will not involve hazardous materials subject to international bans/phase outs.

Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities

EMP provides measures to mitigate health and safety hazards during construction and operation.

Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.

The subproject will not affect any physical cultural resource. The EMP recommends the measure/s to mitigate adverse impact on physical cultural resources (PCRs) in case of chance find.

2.3 NEPAL'S ENVIRONMENTAL POLICY AND LEGAL FRAMEWORK

- 8. The Interim Constitution of Nepal, 2007 defines the right to live in clean environment as one of the fundamental rights of its citizens (Article 16). It prescribes for the State to give priority to the protection of the environment and prevention of its further damage due to physical development activities (Clause 5 of Article 35). Proceeding from, and conformable to, the Constitution, the Government of Nepal has passed a series of environmental laws, policies and implementing regulations and standards. Among these, the basic legislation that provides the framework within which environmental assessment is carried out in Nepal is the:
 - Environmental Protection Act (EPA), 1997. Requires a proponent to undertake IEE or EIA of the proposed project and have the IEE or EIA report approved by the concerned sector agency or Ministry of Science, Technology and Environment (MoSTE), respectively, prior to implementation. The EPA: (i) sets out the review and approval process of IEE and EIA reports, that involve informing and consulting stakeholders; (ii) stipulates that no one is to create pollution that would cause significant adverse impacts on the environment or harm to public life and health, or to generate pollution beyond the prescribed standards; (iii) specifies for the Ministry in charge of environment (currently the MoSTE) to conduct inspection of approved projects to ensure that pollution prevention, control or mitigation is carried out according to the approved IEE or EIA report; (iv) provides for the protection of objects and places of national heritage and places with rare plants, wildlife and biological diversity; and (v) states that any person/party affected by pollution or adverse environmental impact caused by anybody may apply to the prescribed authority for compensation to be recovered from the polluter/pollution generator.
 - Environmental Protection Rules (EPR), 1997, and its amendments in 1999 and 2007. Defines the implementing rule and regulations of the IEE/EIA process, elaborating the provisions in the EPA. The preparation, review and approval of IEE and EIA reports are dealt with in Rules 3 to 7 and 10 to 14. Schedules 1 and 2 list down the projects of activities that are required IEE and EIA, respectively, as amended in 2007.
 - Other environmental and core labor policies, laws and rules that are relevant to the subproject are presented in Table 2-2.

Table 2-2: Other Relevant Environmental and Core Labor Policies, Laws and Guidelines of Nepal Applicable to the Subproject,

Policy/Law/Guideline	Year	Relevant Provisions	Remarks
Resources Act 19		Comprehensive law on the development, use and conservation of water resources in Nepal, it aims to minimize damage to water bodies by requiring the conduct of IEE & preparation of IEE Report before granting license to use water resources for any purpose.	Government of Nepal environmental assessment report will be prepared based on this IEE.
		Proponents shall make sure that the beneficial use of water resources does not cause damage to other water uses/users (Article 4).	The source is groundwater to be drawn from the deep aquifer. Prevailing water source is the shallow aquifer and water drawn has Mn, Fe, Al and coliform levels exceeding National Drinking Water Quality Standard (NDWQS). Hence, people are eager to be connected to piped water supply system.
		Article 17 requires proponents to apply for any necessary land acquisition accordingly;	Site for the intake well, treatment unit, overhead tank is government land (Dept. of Forest).
		Article 18 requires the compliance to quality standards in making use of water resources. Article 19 prohibits the pollution of water resources. Under the Act are two regulations for drinking water purposes: (i) Water Resources Regulation, 1993, setting out the implementation procedures for the Act; and (ii) the Drinking Water Regulation, 1998, which specifies compliance with the drinking water quality standards and control of water pollution (or sanitation) as it affects drinking water.	Environmental Management Plan prescribes the compliance with NDWQS and its Directives during operation.
Labor Act	1992	Chapter 5 stipulates health and safety provisions at work places, keeping work premises clean and safe, e.g., (i) with provisions for solid waste, sewage and hazardous substance management; (ii) instituting measures to prevent dust, fumes and other impure materials that would adversely affect health; (iii) with supply of potable water and water for emergency situations; (iv) with arrangements for the use of protective devices and wears; (v) with fire safety arrangements; and (vi) measures for protection from hazardous machines/equipment and from physical injury or harm from lifting of heavy weights.	EMP provides measures to mitigate workers' health and safety hazards.

Policy/Law/Guideline	Year	Relevant Provisions	Remarks
Forest Act	1993	The Act prohibits the extraction of boulders, rocks, pebbles, sand or coilfrom national forests, defined as all forests, excluding private forests, whether marked or unmarked with forest boundary, to include waste or uncultivated lands, or unregistered lands surrounded by the forest or situated near adjacent forests as well as paths, streams rivers, lakes, riverine lands within the forest.	Subproject will not impact on any forest. EMP stipulates no illegal quarrying of natural aggregate materials.
National Environmental Policy and Action Plan (NEPAP)	1993	Of its five objectives, most relevant to the Project are to: (i) mitigate adverse environmental impacts; and (ii) safeguard national & cultural heritage & preserve biodiversity, within & outside protected areas.	Subproject will not impact on physical cultural heritage & biodiversity. EMP provides measures to mitigate impacts.
National Water Supply and Sanitation Policy	1998	The Policy requires the: (i) monitoring of water quality supplied by completed WSS projects; and (ii) evaluation of their benefits in improving health (e.g., reducing water-borne diseases) and in relieving the sufferings of women and other disadvantaged groups in carrying out their responsibilities over water collection and maintenance of sanitation and hygiene.	Monitoring of the quality of supplied water is prescribed in the EMP following the NDWQS Directives.
Drinking Water Rules	1998	The Rules: (i) gives the procedure for the settlement of dispute on use of water sources; (ii) requires water supplier to maintain the quality of water as prescribed in the Water Resources Act; (iii) prohibits water supplier to construct structures and conduct activities that would pollute the water source and cause significant adverse effect on the environment.	Monitoring of the quality of supplied water is prescribed in the EMP following the NDWQS Directives.
Local Self- Governance Act	1999	The Act gives Local Government the functions, duties & powers to: (i) conserve & protect their local environment & natural resources; (ii) plan, implement &/or operate & maintain local WS projects; (iii) implement or arrange for implementation local sanitation/sewerage & drainage projects; (iv) protect cultural heritage & religious sites; &/or (v) monitor project activities within their respective jurisdictions.	Provides basis for Local Government to monitor the environmental performance of the subprojects. EMP provides the responsibilities of Local Governments (LGs) in EMP implementation.

Policy/Law/Guideline	Year	Relevant Provisions	Remarks
National Urban Policy	2007	Policy gives importance to environment conservation while carrying out urban development works and natural resource use; thus, supporting the required environmental conservation and protection in donor-assisted development projects.	Government of Nepal Government of Nepal environmental assessment report, based on this IEE, will be prepared to ensure environmental conservation and protection.
National Urban Water Supply and Sanitation Sector Policy	2008	The Policy requires the IEE or EIA of proposed WSS projects in accordance with the EPA/EPR to: (i) incorporate consultations with key stakeholders, including end-point users; & (ii) specify measures to mitigate environmental impacts prior to, during construction & operation, as well as corrective measures.	Government of Nepal environmental assessment report will be prepared based on this IEE. This ADB IEE will be submitted to ADB for review and approval.
Implementation Directives for the National Drinking Water Quality Standards	2005	It sets out the water sampling, testing, analysis, monitoring and surveillance procedures to certify that the quality of supplied drinking water conforms to the National drinking Water Quality Standards.	Monitoring of the quality of supplied water is prescribed in the EMP following the NDWQS Directives.
Updated 15-Yr Development Plan for Small Towns Water Supply and Sanitation Sector	2009	The Plan defines the population threshold of "small towns" to be in the range of 5,000 to 40,000. Reference to Schedules 1 and 2 of the EPR, as amended in 2007, places water supply projects in small towns under Schedule 1 or within the threshold of water supply projects requiring only an IEE. The Plan emphasizes monitoring and evaluation as an important component of a project to determine the overall impact of a project.	EMP prescribes environmental effects and performance monitoring.
Solid Waste Management Act	2011	Article 4 provides that the management of hazardous, medical, chemical or industrial waste rests upon the generators of such wastes. Management should be as prescribed in the Act. Article 5 provides that individuals and entities have the duty to reduce the amount of solid waste generated while carrying out work or business.	EMP prescribes eco- friendly management of solid and hazardous wastes.

- 9. The key Government of Nepal environmental quality standards are: (i) National Ambient Air Quality Standards for Nepal, 2003; (ii) National Noise Standard Guidelines, 2012; and (iii) National Drinking Water Quality Standards, 2006, which would also be applied to surface and ground water quality monitoring since these resources are used for drinking.
- 10. Nepal is party to the following international environmental agreements that have broad relevance to works and environmental assessment of works under the project: (i) World Heritage Convention, in 1978; (ii) Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), in 1987; (iii) Convention on Biodiversity, in 1992, (iv) Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol and subsequent London Amendment, in 1994, and (v) Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal, in1996.
- 11. The relevance of the aforementioned environmental agreements to the subproject are on their emphasis for human activities (such as development projects) to: (i) take on/institute measures to protect the local, as well as global, natural resources and/or environment; (ii) prevent and/or reduce the causes of climate change; and (ii) anticipate and mitigate the adverse impacts of climate change. The country is also committed to the Millennium Development Goals (MDG), the seventh goal of which is to "ensure environmental sustainability" targeting the reverse of loss of forest and environmental resources, reduction of biodiversity loss, and increase in the proportion of population with sustainable access to safe drinking water and basic sanitation.

3. ANALYSIS OF ALTERNATIVES

3.1 ALTERNATIVES CONSIDERED IN THE APPROVED IEE REPORT 2006

- 12. A number of alternatives are identified and analyzed for the proposed water supply and sanitation project. Alternatives regarding the sources, available technologies, sittings of different system components, service levels, period of construction etc. are taken into consideration. Analysis for no action scenario has also been dealt to signal out the importance of the proposed project. The alternative listed below provides a basis for taking decision on whether: The proposal should move forward for implementation to the project stakeholders.
- 13. To fulfill the present as well as the future projected water demand, new piped water supply schemes based on surface water source as well as underground water source were studied during the feasibility stage.
- 14. The findings on system alternatives are summarized in table below.

System	Type of Source	Cost Rs. Million	Remarks	
Gravity	Stream – JethiKhola / Duduwa	-	Levels of these stream are lower the the service area.	
	Tharubas	111.611	Elevatio permits a gravity flow	
Pumping	Ground Water	74.219	Artesian Well, HDP/GI pipes used, Treatment plant included	

- 15. Giving due consideration to the water consumers' long-term interest, in a normal situation, a gravity system would obviously be the first choice. Tharubas, located at approximately eight kilometers north- east from the Kohalpur Centre, is the only feasible stream source.
- 16. But the problems associated with this, is the extraordinary extent of the transmission main, such as involvement of an enormous capital investment towards the cost of pipe and fittings, cost of laying of pipes and on the top of the above the regularly incurring high cost of operation and maintenance, made the Users' Committee and Consultants to reject the idea of having a gravity fed water supply scheme for Kohalpur. Thus, the only choice of the system remained to be chosen was a ground water based pumping scheme. The unit cost of water increases as water sources are shifted further away from the demand centers. Stream source may also be of lower quality especially in rainy season, besides have danger of being washed away. The costs of transporting water from the source to the consumer and that of water treatment necessary to meet potable water standards do become significant components of the unit cost of water.
- 17. The surface water availability for the gravity system is ruled out, as there is no surface water sources within economical distances with respect to the available quality, quantity and available head for gravity flow to the service area. Ground water is the only alternative source for the water supply. Its technical viability in terms of adequate yield and water quality has been established.

3.1.1 Design Standards

Design Period

18. Considering higher growth rates associated with KVVSSSP, economic design period of 15 years has been adopted. Three years period has been adopted for preparation phase and construction phase.

Growth Rate

19. Population forecasting of Sub-Project Area has been analyzed by first estimating the size of the existing population, and assessing the different rate of growths by Census 2001, district data, Kohalpur and Rajhena VDC past historical data and the growth trend was considered for assessment of the realistic growth rate for the specific area under consideration. The adopted growth rate is 3,42% percent per annum.

Service Level

20. The service level should be in accordance to consumer's needs, desires and willingness to pay. Service level improvement means essentially providing reliable and efficient supply predominantly through house connections. The per capita demand of 65-80 lpcd is employed for community stand posts and private connections. Majority of the households will obtain water by the private house connection facilities.

Adopted Water Demand Figures

21. The following water demand figures have been adopted for the design of the system. These figures are within the Design Guidelines for STWSSSP. Details on the adopted design values are as follows:

Domestic : through community taps 45 lpcd

: through yard connection 65 lpcd

through house connectionAcademic InstitutesBo Ipcd15 Ipcd

: Government and non government offices 15 lpcd

: Hotels 100 lpcd : Restaurants 101pcd

Industrial : Actual water consumption figures have been taken for

the existing industries. The unidentified industry would

have their own system in the future.

Fire fighting 1 lpcd

Leakage and Wastage: 10% of domestic demand has been assumed for the

system losses as well as leakage, theft and wastage.

Technical Design Parameters

Institutional

22. The following design parameters have been observed for the design of the water supply system. System 24hours supply. Looped networks. It has been designed under Auto Water Program (a computer software package). The details on its program theory, parameters taken, its size / restrictions: Overhead R.C.C. Tank.

Water Quality : Treated Water Quality after filtration.

pH : 6.8-7.5

Iron : <0.3 ppm as Fe Ammonia : <1.5 ppm as ammonia

Turbidity : <5 NTV

E collies: Traces (nil) Mpn Index/100 ml

Arsenic: <0.05 mg/l

Consumption Pattern

23. The distribution system capacity to meet design water demand at the desired rate and time is determined by the service area consumption pattern. This consumption pattern is used to determine balancing storage tank capacity. Therefore, it is essential to establish the type of consumption pattern. The recommended consumption pattern is as follows

Water Consumption Pattern

Hours	% of daily demand
0500-0700	20
0700-1200	35
1200-1700	15
1700-1900	20
1900-0500	10

24. This consumption pattern provides a peak factor of 2.5 for the distribution system. Hence, peak factor of 2.5 has been used to design distribution pipe sizes.

Pipe Materials

25. GI and HDPE are used in the distribution of water in the service area. GI pipe has been used for external exposed lines whereas HDPE pipes are used for embedded lines. With economy point of view, HDPE pipes have been used in gravel road, dead end section and from pressure consideration. Smaller pipe sizes less than 32 mm are not used.

Pressure and Velocity

26. There must be some residual head or pressure at all the service nodes of water system to account for the unforeseen during operation. As per DVVSS guidelines, a minimum residual head of 5 meters has been maintained at all service nodes. However, in the most service nodes an attempt been made to have 8m residual head. Similarly, there must be some minimum cleansing velocity in the pipe sections. An attempt has been made to have at least 0.2m/sec velocity in all pipe sections

3.1.2 Project Site

27. The sub-project is located at Kohalpur and Rajhena VDC in Banke District of Bheri Zone in Mid 'Nestern Development Region. The proposed service area of the project covers ward no. 1, 2, 3 and 4 of Kohalpur and 4, 7 and 8 wards of Rajhena VDC. The location of the project area is 28° 4' north Latitude and 810 37' East Longitude. Kohalpur is one of the rapid growing towns of Banke district, It is situated at 16km north of Nepalgunj at intersection of Ratna Rajmarga (Surkhet Road) and MahendraRajmarga (East-West Highway). The elevation of town is about 173 meters from sea level. The sub-project area covers approx. 900 Ha of land out of which Kohalpur Town Development Board holds 108 Ha

3.1.3 Time Schedule

- 28. An illustrative overall implementation schedule for the sub-project is presented in table 21 below. The works/ tasks are enlisted and are for the construction phase till the handover of the sub-project to WUSC. A total of one year six months for the construction phase has been considered.
- 29. The tentative dates for the major tasks have been considered as follows:

Implementation Dates

S.No.	Tasks	Date
1	Draft feasibility study report	August 15, 2003
2	Workshop presentation (WUSC/PMO/TDF)	August 15, 2003
3	Final Feasibility Report Submission	August 20, 2003
4	Field Report Submission	September 1 2003
5	Draft Engineering Detail Report Submission	November 28 2003
6	Final Engineering detail design report submission	December 12 2003
7	2nd Workshop presentation (all stakeholders)	January 1 2004
8	Complete Sub-Project Agreement and Establish Sub-project Site Office	January 26, 2004
9	Tender invitation, selection and start Construction Activity	September 15,2005
10	Sub Project Completion	March 2007

3.1.4 Raw material to be used

30. Sand and Gravel shall be used as raw material from the project area.

3.2 ALTERNATIVES FOR THE UPDATED IEE

- 31. The water supply system for the town of Kohalpur was constructed several years before under STWSSP 1, funded by ADB. The project is in operation at present. The WUSC is the operating agency. The project had anticipated a 24 hour service and water quality standards within the NDWQS. After a few years of operation, it was observed that this anticipation was not fulfilled due to some problems. The problems were observed both in technical as well as social and institutional field. Therefore some enhancement measures were necessary. This project is designed to cater for such enhancement works.
- 32. IEE had been carried out in accordance with the prevailing rules and regulations of ADB and the GoN incorporating the alternatives like "without –sub project or do nothing" and "with sub-project" was carried out in 2006.
- 33. As such, alternatives for the water supply project have not been studied in the design report.

4. DESCRIPTION OF SUBPROJECT

4.1 THE STUDY AREA

- 34. The Kohalpur Small Town WaterSupply and Sanitation project is located in Banke district of Bheri Zone in the Western Development Region of Nepal. The service area of the project lies in Kohalpur Municipality. Geographically the project area lies at 28° 11'38" N latitude and 81°41'5" E longitude and the average altitude of the area is 150m from mean sea level (MSL).
- 35. The project area is at a distance of 16km from the district headquarter Nepalgunj. East-West Highway passes through Kohalpur, which connects with other major cities of Nepal. The nearest airport is at Nepalgunj, which is at a distance of 16 km from the project area.
- 36. The climate of the project area is sub-tropical type. The average minimum and maximum temperature during a year fluctuates between 5° C. to 46° C. The relative humidity is in the range of 70% to 90 %. The average annual rainfall is estimated at 2375 mm and the maximum rain fall recorded within 24 hours is 177mm.
- 37. The project was initially launched to serve ward nos. 1, 2, 3 & 4 of former Kohalpur VDC and Ward nos. 4, 7 & 8 of former Rajena VDC of Banke district. However recently GoN has declared Kohalpur Municipality and now the service area falls on Ward nos. 1, 2, 3, 10, 11 & 12 of the Municipality.
- 38. The core area of the project is market area situated along both sides of East-West Highway and branch roads. The settlement pattern in the core area is dense where majority of population lives and main economic activities carried out. Other adjoining areas are semi-urban type, where the settlement pattern is moderately dense.

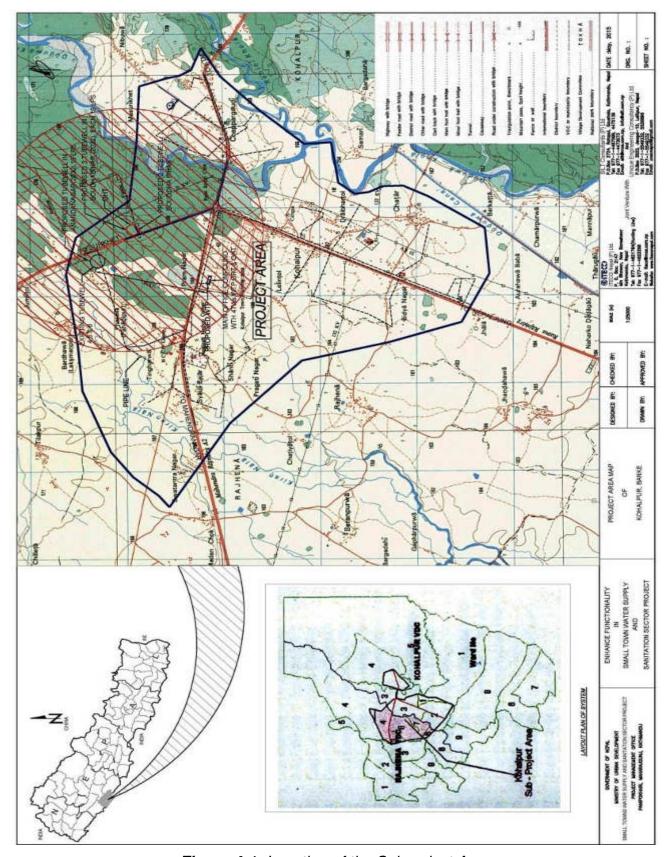


Figure 4-1: Location of the Subproject Area

4.2 EXISTING CONDITION AND NEED FOR THE SUBPROJECT

39. The sub-project includes the following works;

i. Construction of 400 m³ ground reservoir

ii. 1 treatment plant of capacity 30lps

iii. 10.6 km of pipe line laying

iv. Construction of Chlorination unit

40. The technical details are shown in Table 4-1.

4.2.1 General Information

1 Name of the Project : Enhance Functionality in Small Town Water Supply and Sanitation

Sector Project

2. Name of Sub-project : Kohalpur Small Town Water Supply & Sanitation Project,

Banke

3. Service Area of the Project: Part of Ward 3,4,6, and all areas of ward 7 & 8 of Rajhena VDC

AND part of Ward 1, 3 & 4 and all areas of ward no. 2 of Kohalpur VDC (Now Ward 2, 5,6, 10, 11 & 12 of the Kohalpur Municipality)

4.Total Project Cost : NRs 70,949,157

I. Water Supply Component : NRs70,949,157

B. TECHNICAL INFORMATION

41. Details of technical information are mentioned in Table.

Table 4-1: Technical Details

S. No	Name of structure	Existing	Additional	Total
1	No. and capacity of Reservoirs:	2(550 cum)	2(400 cum)	4(950 cum)
2	Treatment Facilities	1(Dynasand filter NF) Chlorination Unit	1(Ion Exchange Plant), Chlorination Unit (Rehabilitation)	1 (30 lps Chlorination Unit
3	Pipeline Length:			
3.1	Transmission	2.0 km	2.3 km	4.3 Km
3.2	Distribution	70 km	8.3 km	78.3 Km
3.3	Total	72 Km	10.6Km	82.6 Kms
4	Guard House	1	None	1
5	Generator /Operator House	3	None	3
6	Chlorination Unit with lab	None	2	2
7	Office Building:	One	None	One
8	Surface Intake/Borehole Drilling	TW 5 (2 working)	TW 3	TW 5
9	Fire hydrant	Three	None	Three

S. No.	Description	Existing(2014)	Design year (2022)	Design year (2030)
10	Household connection	4,537	5,938	7,771
10.1	Fully plumbed	2,631	4,394	6,994
10.2	Yard connection	1,906	1,544	777
10.3	Community		6	8
10.4	Institutional	55	69	84
10.5	Total	4,592	6,013	7,863
11	Total Water Demand			
11.1	MLD	3.06	4.13	5.59

11.2 LPS	35.43	47.77	64.74

C. SOCIO- ECONOMIC INFORMATION

1. Total Household Number and Population (Pop.)

a) Present year (2014): 4,537/25,500

b) Design year (2022): 5,938/33,372

c) Design year(2030): 7,771/43,673

D. FINANCIAL INFORMATION

1. The financial planning for the enhancement project is as follows;

i. Total investment 100%ii. Government: Grant 70%

iii. WUSC Contribution: 5 – 10% of total investment as cash (% to be decided later)

iv. TDF Loan: 20 – 25% of total investment to be provided to the WUSC (% to be decided later)

2. Weighted Average Tariff

NRs 40 per cum

3. Cost Per Capita and per household

Description	Base year 2014	Design Year 2022	Design Year 2030
Cost per Capita	2,782.32	2,126.01	1,624.55
Costper House hold connection	15,637.90	11,948.33	9,129.99

4.3 SUB PROJECT CONSTRUCTION SCHEDULE

42. It is expected that the contract will be awarded by the last week of November 2015 and the construction work will be completed by the last week of November 2016. The detail of work is shown in Figure 4-2.

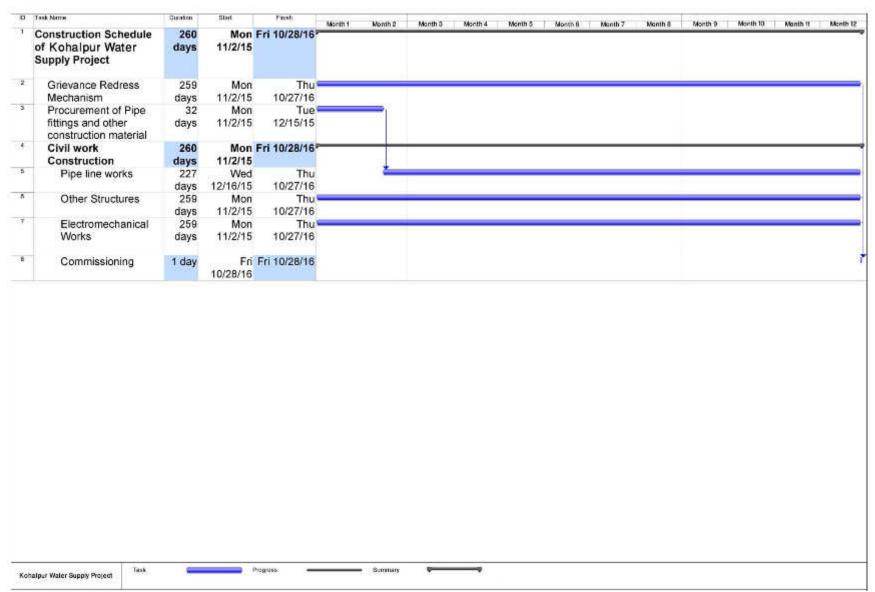


Figure 4-2: Construction Schedule

5. DESCRIPTION OF THE ENVIRONMENT

5.1 PHYSICAL PROFILE

5.1.1 Topography

43. Topographically, the Koholpur and the surrounding area lie on a generally flat land in the Terai with the Siwaliks on the north at elevations ranging from 135 to 115 m. above the mean sea level. T

5.1.2 Geology and Soils

44. The service area is situated on upper terai region of the indogangetic plains with the Siwalik Hills to the north. The area is composed mainly of gravel and boulder along with sand, close to the Aduwa khola that runs along the middle of the project area, whereas the rest of the area is composed of silty loamy soil, which is highly fertile.

5.1.3 Climate

45. The climate of the town is tropical with average yearly minimum and maximum temperatures being 2.5°C and 41.200, respectively. The mean monthly minimum and maximum temperatures are 8.5 $^{\circ}$ C and 37.4°C. It receives an average annual rainfall of 1667mm. The highest recorded is 3060 mm.

5.1.4 Surface and Groundwater

46. There is the 2 numbers of bored artesian at ward no. 3 of Kohalpur VDC, The source is inside the planned area of Kohalpur Town Development Board. At the present, the two artesians are being used by the local inhabitants of Kohalpur and Rajhena VDC. The source is at present free from any type of contaminations. As its log data and size details are not yet available, the artesian boreholes nearby are explored. The log detail of an artesian borehole, installed by the hospital nearby is available and has been considered for the design. However one additional tube well has been proposed if the two bore holes failed to discharge the required amount of water demand during pumping test.

5.1.5 Water Quality Analysis

- 47. In the enhancement project additional units of SSF and Chlorination are proposed. The detail analysis of the water quality report is presented in Annex 2 of this report.
- 48. Water quality analysis were done for all critical sub project components such as intake, water before and after treatment plant. Samplings were also done in the distribution networks as well as randomly selected HHs taps to assure the quality. Mainly Physical component testing was done as pH, Turbidity, Electrical conductivity temperature. Similarly the various chemical components were also tested mostly like Calcium, Iron, Magnesium, Arsenic, Ammonia, Chromium, Nitrate, Sulphate, Chloride, Fluoride and Total Hardness as well.
- 49. In biological mainly parameter like Total Coliform and Fecal Coliform were tested for. If any contamination is encountered simultaneously the chlorination unit, pressure filter unit, slow sand filter treatment units should be provided. In case of this Water supply sub project due to the presence of Coliform, SSF and Chlorination units are constructed and now functioning.

5.2 ECOLOGICAL PROFILE

5.2.1 Flora

- 50. It can be expected that three types of forests would be the natural habitat of the area, namely Shorearobusta (sal); Acacia catechu (khayar)-Dalbergiasissoo (sisau), other riverine forests and grasslands.
- 51. The Shorearobusta forest is dominated by the Shorearobusta species with common associates of Terminaliatomentosa (Asna), Adina cordifofia (karma), Anogeissuslatifolia (bud dhayera), Lagerstroemia parvifolia (botdhaiyero), Dilleniapentagyna (Tantari), Syzygiumcumini (jamun) and Semecarpusanacardium (bhalayo), etc.
- 52. The acacia catechu-dalbergiasissoo forest is found on newly deposited alluvium, often gravelly along streams and rivers. The other riverine forest consists of tropical evergreen forest

dominated by syzygiumcumini (black plum) tropical deciduous forest usually dominated by Bombaxceiba (simal), Holopteliaintegrifolia (cheptepagro) and Trewianudiflora (pindar) species.

53. Medicinal plants of significance that would be expected here are Sikakai (Acacia concinna), Assuro (Adhetodavasica), Tulasi (Ocimum sanctum), Kureelo (Asparagus racemosus), Harro (Terminaliacheberia), Barro (Terminaliabelerica) and Amala (Emblicaofficinalis), etc.

5.2.2 Fauna

- 54. No natural forest to be habitat for wild animals exists in the service area. However, the Charali forest was known to have deer and many other wild animals. It does not have any of the wild animals at present.
- 55. It is possible that snakes like King Cobra (Ophiophagushannah), Green Pit Viper (Trimeresurusalbolabris), Common Krait (Bungaruscaeruleus) and the Indian Python (Python molurus) would be present in the fields.

5.2.3 Protected Areas

56. Protected areas are almost nonexistent.

5.3 SOCIO ECONOMIC CONDITION

5.3.1 Population, Communities and Occupation

- 57. The average household size in KWSSSP is 5.6. Of the total population in KWSSSP, the share of male population is slightly more (52%) than the female population (48%). Population growth in KWSSSP is 3.4 percent. The share of economically active population in the VDCs between the age group of 16-60 years is 60 per cent, which is encouraging. At the national level, it is 54 percent only.
- 58. The major sources of income in the service area are agriculture and livestock and remittance. The dependency on nonagricultural activity in the Municipality is around 75 %.
- 59. The Medical College is one of the most important education centres of Kohalpur; it receives students from India, Sri Lanka and from all around the country.
- 60. The major ethnic castes in the proposed project area are Brahman, Chhetri, Tharu, Musalman, Kami, Damai, Magar, etc. Similarly, there are also minority ethnic groups such as Chamar, Harijan Ram etc. residing in the proposed service area.

5.3.2 Health and Sanitation

Health and Sanitation

- 61. There is a good water supply system in the main bazaar area. Of the 3260 households 1181 have connection from the town supply. 1939 HH have only tubewell for drinking water. 140 have dug wells. Even those HH, which have connection to the town supply, have tube well.
- 62. The prevalent infectious disease is diarrhea. The numbers of children affected in the year 2057/58, 058/059, and 059/060 are 705, 693 and 1392, indicating poor sanitary status. The population without toilets is 771 of the total 3260 HHs. The spread of the infectious disease stem from the defecation at unsafe locations by those without toilets.
- 63. There is no public latrine in the VDC. Those without toilets go the riverside for defecation, which increases the chance of the river being polluted.

5.3.3 Economic Characteristics

Industries

64. Although not adequate to give full employment to the total population, the project area is economically the most active location in the region. There are a number of industries in the area. Most of them are agro based. Tea appears to be thriving industry.

Agricultural Development

65. The land is fertile for agriculture and the rate of production is good. The main crops are paddy and maize. Two crops of paddy or one each of paddy and maize are planted in a year. Besides wheat, oilseeds, pulses are grown here. Cultivation of vegetables including off seasonal is conducted commercially.

Mineral Development

66. Mineral exploitation activities are nonexistent.

5.3.4 Infrastructure Facilities

67. All major infrastructural facilities like water supply, roads, electricity and telephones/communication are available to the consumers in the service area. Such facilities are of course better within the Kohalpur Bazar area within, which lies on the East-West Highway.

Institutions

68. There are 4 banks, 4 cooperative banks a primary health post, a police office, a post-office, a forestry office, a veterinary centre, irrigation office, VDC office and an agriculture services centre. The educational institutes consist of 5 primary schools (2 government, 3 private), 4 high schools (1 government, 3 private, and a private higher secondary school of commerce.

5.3.5 Quality of Life Values

69. The Project is not expected to adversely affect any cultural or recreational resources but will increase the existing quality of life values due to the improvement in personal, household and community hygiene practices and community health.

5.3.6 Cultural and religious sites

70. The town is relatively new development. It was started only during the Rana period. Historically important sites are not existent.

5.4 RESETTLEMENT, RELOCATION AND COMPENSATION ISSUE

- 71. The various project components do not require resettlement of households or relocation. The system network has followed public property line and hence the issue of resettlement or relocation is not evident. The minutes of stakeholder consultation meeting also suggests that there is no need of resettlement or relocation.
- 72. The land required for construction of treatment plant and reservoir has been purchased by the WUSC and there is no need to provide compensation from the project side.

6. DESCRIPTION OF IMPACT ASSESSMENT

73. No significant impacts of project construction and operation were anticipated (IEE, 2005), but the following impacts were likely to occur. The project is now in operational phase and that all the physical and biological and socio-economic cultural impacts have been mitigated. In the enhancement project as well the same type of impacts are likely to occur.

6.1 PHYSICAL ENVIRONMENT

74. Physical Impact covers impacts on physical resources such as air, water, soil, rocks etc. The positions of a water table keep on fluctuating up and down in relation to wet and dry weather. Porous sand and gravel aquifers yield more water than silt or clay deposits. Hence physical testing of soil structure will help understanding the water availability.

6.1.1 Impact on land use pattern

75. Intake structure, reservoir and treatment plant would require some land area in addition to permanent site to facilitate construction activities, which is envisaged to alter the land use during construction period. The implications of such land use may effect on soil, productivity and land use pattern.

6.1.2 Flooding and Stagnant Water Problem

76. During monsoon season the project area will be affected from flooding and may create the condition of stagnant water. Absence of drainage system in the project area will create flooding problems. This might create public health problem due to increase in number of vector species like mosquito, snails and others.

6.1.3 Impact on water/land quality

77. Excavation and construction spoils are the major outcomes of construction activity. Besides, the workforce camps and their sanitary behavior might produce unwanted waste materials. The spoils and waste materials may have adverse implications on adjoining water sources.

6.1.4 Impacts of sediments and Disinfecting Chemicals

78. Issues like release of sediments from treatment plants, and the use of disinfecting chemicals might affect the water quality. Such effects are minor in nature and can be easily mitigated during the operational phase.

6.1.5 Water Volume/Quality

79. Over extraction water may decrease the volume of water and improper treatment of water also decrease the quality of water which may arise issues affecting the ground water sources of water.

6.1.6 Impacts on Air Quality

80. Dust will be generated from inadequately managed or haphazard: (i) earthworks such as clearing, grubbing, excavations and drilling; (ii) demolition works; (iii) stockpiling of natural aggregates, excavated materials and spoils; (iii) transport, loading and unloading of natural aggregates; (iv) movement of construction-associated vehicles; and (v) on-site rock crushing, cement mixing/concrete batching, borrowing. The significance of dust impact will be high in the bazaar area where more population reside and work and where urban socio-economic activities concentrate. Increase in concentration of vehicle- and process related pollutants will arise from the movement and operation of construction vehicles, equipment and hot-mix plants.

6.1.7 Impacts on Acoustic Environment

81. Noise and vibration emitting construction activities include earthworks, rock crushing, concrete mixing, movement and operation of construction vehicles and equipment, and loading and unloading of coarse aggregates. The significance of noise and vibration impacts will be high in areas where noise-sensitive institutions such as health care and educational facilities are situated. These impacts will be temporary and short term.

6.1.8 Impacts on Traffic and Temporary disturbance

82. During construction phase, implementation of distribution network pipeline will create disturbance to local transport system. The significant impact will be seen in market and busy area only. These impacts will be temporary and short term.

6.2 BIOLOGICAL ENVIRONMENT

6.2.1 Impact on natural vegetation and ecology

83. The natural vegetation and ecology of the project area may be disturbed due to construction activities of the different project components. Besides, the activities of workforce on the adjoining forest may affect the habitat of wildlife.

6.2.2 Impact on aquatic life

84. The source being ground water no impact on aquatic life is envisaged due to implementation of the project

6.2.3 Loss of habitat

85. Clearance of vegetation along the bulk distribution pipeline, and trunk transmission pipeline, may result loss of some forested habitat of wild life and consequently affect the endangered species.

6.3 SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

86. Many of the adverse impacts on socio-economic and cultural aspects will be limited to construction stage. The following socio-economic issues have been considered in IEE.

6.3.1 Land acquisition

- 87. The land required for the construction of permanent facilities has been managed by WUSC and no disputes are observed. Similarly there is no necessity of relocation or resettlement Outside workforce conflict/health/pollution/culture
- 88. Involvement of outside workforce in the local area may initiate conflict between the locals and outsiders due to cultural reasons. Disease transmission, pollution and competition for the available resources with outsiders might arise.

6.3.2 Workers' Health and Safety Hazards

89. Like communities, workers will also be exposed to the cross-cutting threats of the aforementioned impacts during construction. Inadequate supply of safe/potable water and inadequate sanitation facilities; poor sanitation practices on site; poor housing conditions; the handling and operation of construction equipment; handling of hazardous substances; exposure to extreme weather and nonobservance of health and safety measures, pose additional threats to the health and safety of construction workers. Construction workers may also be potentially exposed to communicable and transmittable diseases in the community and in the workforce.

6.3.3 Water right Conflict

90. Involvement of outside workforce in the local area may initiate conflict between the locals and outsiders due to cultural reasons. Disease transmission, pollution and competition for the available resources with outsiders might arise.

6.4 BENEFICIAL IMPACTS

- 91. However there are some benefits of the project implementation; particularly on the following:
 - Increase in agricultural and livestock products
 - Employment generation
 - Maintaining the health and sanitation activities
 - Increase in quality of life values
 - Change in cropping pattern

7. DESCRIPTION OF MITIGATION MEASURES

7.1 PHYSICAL ENVIRONMENT

7.1.1 Impact on land use pattern

92. The STWSSSP is located in Kohalpur municipality in the private land of about 5Ropanis owned by WUSC and with boundary wall constructed. It was ensured in design, that the tube wells and other water retaining structures like OHT, WTP etc., are well protected with good drainage to be located on stable ground. Therefore, the project implementation would have less or no effect on soil, productivity and on the land use pattern.

7.1.2 Flooding and Stagnant Water Problem

93. Proper management of drainage system needs to be improved. Contractor should be instructed not to store construction materials along the water ways.

7.1.3 Water/land quality

94. The project uses sub surface water that will be taken from below the water bed of the river by using infiltration gulley technique. Therefore the quality of water is expected to be clean. However the pollution in the surface water may have negative effect. The intake point is upstream from the settlement area and hence external pollution is also not foreseen. Thereforethere is ground water pumping, there is less or minimum effect on water quality. Proper drainage system should be made to avoid water logging and the quality of water sources should be protected. Urination, defecation and dumping of solid and liquid waste in open areas, and water ways may be the potential cause of the pollution of surface and sub-surface water and such activities should be strictly prohibited.

7.1.4 Impacts of sediments and Disinfecting Chemicals

95. The water quality should be maintained within WHO standards. Filtration and chlorination should be provided to bring the water quality to acceptable levels. Similarly, a manual on water testing and chlorine dosing should be prepared and provided to WUSC.

7.1.5 Water volume

96. The water should be equally distributed to all the users in a controlled way. The amount of water that required should only be extracted.

7.1.6 Impacts on Air Quality

97. Some mitigation measures include: (i) confining earthworks according to a staking plan and excavation segmentation plan that should be part of the working documents and/or C-EMP; (ii) watering of dry exposed surfaces and stockpiles of aggregates at least twice daily, as necessary; (iii) if re-surfacing of disturbed roads cannot be done immediately, spreading of crushed gravel over backfilled surfaces; (iv) during demolition, watering of exterior surfaces, unpaved ground in the immediate vicinity and demolition debris; (v) hoarding active work sites in populated areas; (vi) requiring trucks delivering aggregates and cement to have tarpaulin cover and maintain a minimum of 2' freeboard; (vii) limiting speed of construction vehicles in access roads and work sites to maximum of 30 kph; and (viii) providing pollution controls in batching and hot-mix plants.

7.1.7 Impacts on Acoustic Environment

98. Some mitigation measures include: (i) using equipment that emit least noise, well maintained and with efficient mufflers/exhaust silencers; (ii) restricting noisy activities to daytime and overtime work to avoid using noisy equipment; (iii) limit engine idling to a maximum of 5 minutes; (iv) spread out schedule of material, spoil and waste transport (v) minimizing drop heights when loading and unloading coarse aggregates; and (vi)Identify any buildings at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity. Complete work in these areas quickly.

7.1.8 Traffic and Temporary disturbance

99. Some mitigation measures include: (i) distribution pipeline work will be done during night time, (ii) diversion need to be made if work is of long duration.

7.2 BIOLOGICAL ENVIRONMENT

7.2.1 Impact on natural vegetation and habitat

100. The loss of vegetation from construction activities of contractors and construction workforce is recommended to be minimized through the enforcement of the following provisions.

- Prohibition on illegal felling of trees and encroachment of the community forest should be made mandatory.
- Progressive rehabilitation and afforestation of the areas not acquired by the project structures after the completion of the construction activities should be carried out. Such afforestation program is recommended to plant saplings of trees, shrubs and herbs by establishing a nursery or pre-arrangements of such saplings from the local or district level nurseries.
- To enhance the conservation of endangered, protected and threatened species, it is recommended to plant the saplings 2 times the number of felled trees.

7.3 SOCIO-ECONOMIC AND CULTURAL ENVIRONMENT

7.3.1 Land acquisition

101. The land required for the construction of permanent facilities has been managed by WUSC and no disputes are observed. Similarly there is no necessity of relocation or resettlement. Vegetation and agricultural products should be compensated through the afforestation and agricultural enhancement programs in the SWSSSP area.

7.3.2 Outside workforce conflict/health/pollution/culture

102. Outside workers should be provided with the facilities of camps and should be instructed to not to; i) indulge with local people ii) involve themselves for hunting of wildlife iii) involve themselves in social disharmony activities.

7.3.3 Workers' Health and Safety Hazards

103. Some of the mitigation measures for community health and safety hazards: (i) strictly enforce on workers the use of protective wears; (ii) provide safe access to and from work sites; (iii) provide adequate housing at the workers' camp with adequate basic services and provide adequate water supply and sanitation facilities at work sites; (iv) arrange with nearest health center and hospital for health care and emergency care of workers. Overall, the contractor should comply with IFS EHS Guidelines on Occupational Health and Safety.

7.3.4 Water right Conflict

104. The temporary settlement for the workers should be provided with temporary water taps. Open defecation should be controlled. Temporary toilets need to be constructed.

7.4 ENHANCEMENT OF BENEFICIAL IMPACTS

105. Some of the beneficial impacts from the implementation of the project should be enhanced by;

- Community mobilization and people's participation in health and sanitation programs should be promoted,
- Training an awareness programs in health and uses of water and its importance (water cost, saving, reuse, recycle, water pollution etc.) should be given,
- Technical training to the local people on plumbing, chlorination, water testing, pump maintenance and repair should be conducted.

7.5 ACTIVITIES FOR REHABILITATION WORK AND ITS MITIGATION MEASURES

106. As this rehabilitation project is for previously implemented and operated in a satisfactory order with minimal rectification works. Physical, Biological and Social environment are described respectively in Section 7.1, 7.2 and 7.3. Slight changes are in social that is increased population, number of stakeholders for which additional distribution lines with ancillary works are to be done. Major focused were given for the technical rectification which need to be done during enhancement work are summarized in Table 7-1in details. Most of the recommended mitigation measures will be incorporated in the contractual obligations and constructions works to be completed by the contractors. Facilities like water treatment plant, water testing laboratory etc are also either existing or to be installed is also included in the contract. Mitigation measures and monitoring plan of each rehabilitation activities is mentioned inTable 10-2, in Chapter 10.

Table 7-1: Activities for Rehabilitation Work

S.No	Name of Structure	Туре	Existing Capacity(Q=lps, RVT=cum, WTP lps)	Design Capacity(lps)	Major problems	Required Intervention
I	Civil Structures		, ,			
1.a	TW 1, Off Compd	Artesian	0.1		TW-4 not functioning	Discard TW-4
1.b	TW 2, Off Compd	Artesian	0.1			3 TWs proposed
1.c	TW-3,OffCompd	Artesian	1		TW-1,2,3only artesian flow	
1.d	TW-4,Anandanagar	Pumping(Jammed)	-		due to unavailability of water.	
1.e	TW-5, Anandanagar	Pumping	8			
1.f	TW-6, Anandanagar	Pumping	10			
	Total	-				
2.	Reservoir					New RVT 100m3
2.a	Overhead Tank	RCC	450	450		New OHT 300m3
2.b	Ground Reserve tank	RCC	150	100		
	Total		600	550		
3.	Treatment Plant					
3.a	Dyna Sand				Dyna-sand malfunctioned	 The filter will be abandoned. New Treatment Plantproposed.
3.b	Chlorination				Chlorination unit is malfunctioned.	New chlorination lab and room proposed.
4	Accessories, Valve Chambers etc	Sluice Valve, Flow Meter, NRV			Bulk Meter malfunctioned. Air valves damaged. Non-return valves damaged.	New 8 Bulk meters proposed(8"-2 nos.,6"-2 nos.,5"-1 nos, 4"-3 nos) New 5 air valves of 15mm proposed. New Non return valves of 100mm-2nos)
5	Pipes and Pipe Fittings	HDPE, GI			TL & DN of 60m each is located in the swampy areas Lime incrustation in Distribution network. Some areas not getting water Lack of distribution network in newly developed area. Upgrade of gravel road to metallic road leading disturbance in Distribution network.	 Relocation of TL and DN Replace the damaged pipeline. Lay pipes as per new design(5.116km)

8. INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

8.1 CONSULTATION

107. Stakeholder consultation and participation was an essential process in project preparation and this updated IEE. The process in engaging stakeholders and affected people during the conduct of the IEE involved key informant interviews, joint sites reconnaissance and on- site discussions with WUSC, and field random interview of stakeholders.

8.2 INITIAL CONSULTATION: THE EXISTING PROJECT

- 108. During the Feasibility Study, consultations were undertaken by the Design and Supervision Consultants. Stakeholder consultations have been continued through subprojects implementation and operation. All stakeholders were invited and encouraged to participate in community consultations. To facilitate the engagement of stakeholders, the PMO and RPMOs maintained good communication and collaboration with the WUSC and VDC. The PMO, RPMOS, Contractors and/or WUSC were opened to contact by the public on matters concerning the progress of the subprojects, adverse impacts, mitigation measures and environmental monitoring and grievances.
 - Prior to construction, the PMO and TPO have conducted information, education and communication (IEC) campaign to ensure sufficient level of awareness/information among the affected communities regarding the upcoming construction, its anticipated impacts, the grievance redress mechanism, contact details and location of the PMO and TPO, and status of compliance with Government's environmental safeguard requirements, among others, are attained/provided. Billboards about the subproject, implementation schedule and contact details of the executing agency, PMO, TPO and Contractors have been set up at strategic locations within the subprojects' main areas of influence. The grievance redress procedure and details will have been posted at the offices of the PMO, TPO, WUSC and VDC.
 - During construction, regular random interviews were conducted by the TPO every month to monitor environmental concerns of subproject communities.
 - During operation, periodic random interviews were conducted by the PMO and
 - TPO and WUSC to monitor the environmental concerns of sub project communities.

8.3 THE CONSULTATION DURING IEE UPDATE

109. The consultation was done in two phases

8.3.1 Phase I

110. During the engineering survey and design phase, the consultations met with the top level management of DWSS, WUSC officials, WS division officials in Kathmandu and concerned municipality offices, WS customers and general public in field. The main persons consulted during this phase are listed below;

Table 8-1: Lists of People and Institutions Consulted

S No.	Name	Designation
1	Mr. Ram Deep Sah	Director General
2	Mr. Tiresh Prasad Khatrai	Acting Project Director
3	Mr. Dr. Mahesh Bhattrai	PMC, Project Coordinator
4	Mr. Keshav Raj Bista	Deputy Project Director
5	Mr. ChudamaniPokhrel	WUSC Chairman at Site
6	Mr. Nar BahadurMalla	Chairman

8.3.2 Phase II

111. After approval of Detail Design report, second level of public consultation was made to discussion issues regarding the environmental impact, resettlement, relocation and compensation with immediate stakeholders. Meeting was held on 2072/06/08 at site. In this phase overall project outcomes were discussed with all concerned stakeholders. Details of participants are presented in Annex 4.

8.4 COSTS

112. All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) at local (field/ward/town) level will be borne by the concerned focal organizations at each level: WUSC at town level; PIU at regional level and PMO at central level.

9. GRIEVANCE REDRESS MECHANISM

9.1 PURPOSE OF THE GRIEVANCE REDRESS MECHANISM

- 113. A project-specific grievance redress mechanism (GRM) will be established to receive, evaluate, and facilitate the resolution of APs' concerns, complaints, and grievances related to social and environmental issues of the project. The GRM will aim to provide a time-bound and transparent mechanism to voice and resolve social and environmental concerns linked to the project.
- 114. A common GRM will be in place for social, environmental, or any other grievances related to the project. The GRM will provide an accessible forum for receiving and facilitating resolution of affected persons' grievances related to the project. Every grievance shall be registered and careful documentation of process with regard to each grievance undertaken, as explained below. The environmental and social safeguards officer (ESO/SSO) at project management office (PMO) will have the overall responsibility for timely grievance redress on environmental and social safeguards issues. The Social Development Officer at the Regional Project Management Office (RPMO) will be the focal person for facilitating the grievance redress at VDC/Municipality level.
- 115. A town-level public awareness campaign will be conducted to ensure that awareness on the project and its grievance redress procedures is generated. The social safeguards expert of the project management consultant (PMC) and DSMC's safeguards specialists will support the WUSC and DSMC community mobilisers with information/collateral/awareness material etc. to conduct the town-wide awareness campaign. The campaign will ensure that the poor, vulnerable and others are made aware of grievance redress procedures and project's entitlements.
- 116. A Grievance Redress Committee (GRC) will be formed at VDC/Municipality level, comprising District Chief WSS as Chairperson and Member of Secretary of concerned WUSC as the GRC secretary. The GRC members will be comprise of (1) RPMO social development officer, (2) representatives of affected persons, (3) DSMC's safeguards specialist (social/environment as relevant), (4) a representative of reputable CBO/SHG/organization working in the project area, and (5) contractor's representative. The secretary of the GRC, who will be responsible for convening timely meetings and maintaining minutes of meetings. The concerned social safeguards expert of DSMC will support the RPMO SDO and Regional Director DWSS to ensure that grievances, including those of the poor and vulnerable are addressed. All GRCs shall have at least two women committee members. Representatives of APs, civil society and eminent citizens are to be invited as observers in GRC meetings.
- 117. The functions of the local GRC are as follows: (i) provide support to affected persons on problems arising from environmental or social disruption; asset acquisition (if necessary); and eligibility for entitlements, compensation and assistance; (ii) record grievances of affected persons, categorize and prioritize them and provide solutions within 15 days of receipt of complaint by WUSC; and (iii) ensure feedback to the aggrieved parties about developments regarding their grievances and decisions of the GRC. The grievance redress mechanism and procedure is depicted in Figure 9-1.
- 118. The GRM for the project is outlined below, with each step having time-bound schedules and responsible persons to address grievances and indicating appropriate persons whose advice is to be sought at each stage, as required:

9.1.1 First Level of GRM (WUSC-level)

119. The first level and most accessible and immediate venue for quick resolution of grievances will be the contractors, DSMC field engineers and PIU supervision personnel, who will immediately inform the W USC. Any person with a grievance related to the project works can contact the Project to file a complaint. The WUSC will document the complaint within 24 hours of receipt of complaint in the field, and WUSC will immediately address and resolve the issue at field-level with the contractor, supervision personnel of PIU and DSMC field engineers within 5 days of receipt of a complaint/grievance. The assigned DSMC social mobilizer will be responsible to fully document: (i) name of the person, (ii) date of complaint received, (iii) nature of complaint, (iv) location and (v) how the complaint was resolved. If the complaint remains unresolved at the local level within 5 days, the WUSC will forward the complaint issue to the VDC/Municipality level GRM.

9.1.2 Second Level of GRM (VDC/Municipality level)

120. The complainant will be notified by the WUSC that the grievance is forwarded to the VDC/Municipality –level GRM. The Grievance Redress Committee (GRC) will be called for a meeting. The GRC meeting will be called and chaired by the District chief of WSS. The GRC will recommend corrective measures at the field level and assign clear responsibilities for implementing its decision within 10 days of receipt of complaint by WUSC. If the grievance remains unresolved within 10 days of receipt of complaint by WUSC, the matter will be referred to the third level. The RPMO SDO will be responsible for processing and placing all papers before the GRC, recording decisions, issuing minutes of the meetings and taking follow up action to see that formal orders are issued and the decisions carried out. If the complaints are related with IP/dalits/other vulnerable groups, specific NGO/CBO that actively involved in development of these communities should be involved.

9.1.3 Third Level of GRM (PMO Level)

- 121. Any unresolved or major issues at Municipality/VDC level will be referred to the PMO for final solution. The PMO's Project Director and WUSC Union representative will have special meeting to find solution. Decision has to be made within 15 days of receipt of complaint by WUSC. The Project Director will sign off on all grievances received by the PMO. The environmental and social safeguards officers (ESO & SSO) will be involved with support from the PMC Social/Environment Safeguards Experts. The Project Director will sign off on all grievances received by the PMO. The PMO Safeguard Officer will be responsible to convey the final decision to the complainant.
- 122. All paperwork (details of grievances) needs to be completed by the WUSC member secretary and circulated to the WUSC Chairperson and members. At VDC/Municipality level, the VDC/Municipality SDO will be responsible for circulation of grievances to the Regional Director, DWSS and other GRC members, prior to the scheduled meetings. The PIU SDSO will be responsible for follow-through of all escalated grievances. All decisions taken by the GRC and PSC will be communicated to the APs by the PIU social development and safeguards officer.
- 123. Despite the project GRM, an aggrieved person shall have access to the country's legal system at any stage, and accessing the country's legal system can run parallel to accessing the GRM and is not dependent on the negative outcome of the GRM.
- 124. In the event that the established GRM is not in a position to resolve the issue, the affected person also can use the ADB Accountability Mechanism (AM) through directly contacting (in writing) the Complaint Receiving Officer (CRO) at ADB headquarters or the ADB Nepal Resident Mission. 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.

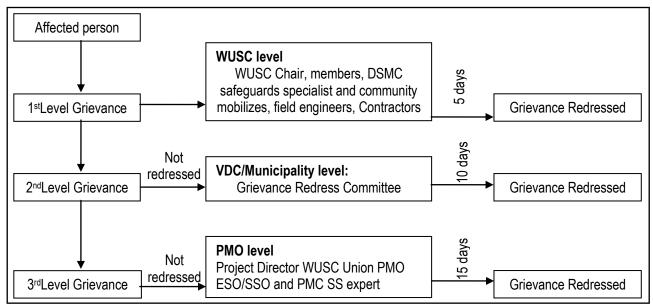


Figure 9-1: Grievance Redress Process

DSMC: Design, supervision and management consultant; ESO:Environmental and social safeguardsofficer;

GRC: Grievance redress committee; PD: Project director; PMC: Project management consultant;

PMO: Project management office; WUSC: Water user and sanitation committee.

Record keeping and disclosure

- 125. Records at the town-level will be kept by the concerned WUSC Member Secretary, of all grievances received, including contact details of complainant, date the complaint was received, nature of grievance, agreed corrective actions and the date of the incident and final outcome. The number of grievances recorded and resolved and the outcomes will be displayed/disclosed in the RPMO office, WUSC/municipal/VDC office, and on the web, as well as reported in the safeguards monitoring reports submitted to ADB on a semi-annual basis. For any grievance escalated to RPMO/VDC/Municipality level, the RPMO SDO will be responsible for record-keeping, calling of GRC meetings and timely sharing of information with WUSC. For grievances escalated to PMO and above, the PMO safeguard officers will be responsible for maintenance of records, sending copies to RPMO and WUSC for timely sharing of information with the person filing complaint.
- 126. Periodic review and documentation of lessons learned. The PMO social safeguard officer will periodically review the functioning of the GRM at town/WUSC level and PIU level and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances. Indicators pertaining to grievance redress (no. of grievances received, no. redressed/resolved to be reported by Member Secretary, WUSC to PIU SDSO, and by PIU SDSO to PMO ESO in monthly progress reports.

Periodic review and documentation of lessons learned

127. The PMO social safeguard officer will periodically review the functioning of the GRM at town/WUSC level and PIU level and record information on the effectiveness of the mechanism, especially on the project's ability to prevent and address grievances. Indicators pertaining to grievance redress (no. of grievances received, no. redressed/resolved to be reported by Member Secretary, WUSC to PIU SDSO, and by PIU SDSO to PMO ESO in monthly progress reports.

Costs

128. All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) at local (field/ward/town) level will be borne by the concerned focal organizations at each level: WUSC at town level; PIU at regional level and PMO at central level. Cost estimates for grievance redress are included in EMP cost estimates.

10. ENVIRONMENT MANAGEMENT PLAN

- 129. The purpose of the environmental management plan (EMP) is to ensure that the activities are undertaken in a responsible, non-detrimental manner with the objectives of: (i) providing a proactive, feasible, and practical working tool to enable the measurement and monitoring of environmental performance on-site; (ii) guiding and controlling the implementation of findings and recommendations of the environmental assessment conducted for the project; (iii) detailing specific actions deemed necessary to assist in mitigating the environmental impact of the project; and (iv) ensuring that safety recommendations are complied with.
- 130. A copy of the EMP must be kept on work sites at all times. This EMP will be included in the bid documents and will be further reviewed and updated during implementation. The EMP will be made binding on all contractors operating on the site and will be included in the contractual clauses. Non-compliance with, or any deviation from, the conditions set out in this document constitutes a failure in compliance.

10.1 INSTITUTIONAL ARRANGEMENT

10.1.1 Executing and implementing agencies.

- 131. The Ministry of Water Supply and Sanitation (MoWSS) will be the executing agency with responsibility of subproject execution delegated to the Department of Water Supply and Sewerage (DWSS). The Water Supply and Sanitation Division/Sub-division Office (WSSDOs) are the subproject implementing agencies. Water Users' and Sanitation Committees of participating towns are the implementing agencies.
- 132. The key responsibilities of the executing and implementing agencies are as follows:

Prior to construction

- The MWSS will deputize a qualified staff to act as the Environmental Safeguard Officer of the Project management office (PMO).
- The MWSS will establish the grievance redress mechanism, including setting up the Grievance Redress Committee.
- The Water Supply and Environment Division of the MoWSS will be responsible for reviewing the IEE Report prior to submission to the Ministry of Science, Technology and Environment (MoSTE) for review and approval.
- The DWSS will review the IEE Report prepared by the Design and Supervision Consultants' Team's Environmental Safeguard Expert (DSMC-ESE) prior to forwarding this to MoWSS.
- The DWSS will prepare the ToRs for the Environmental Safeguard Specialist that will be engaged to support the PMO and for the Environmental Safeguard Specialists of the two Design and Supervision Consultants that will be appointed to prepare the subprojects.

During construction and operation

- The DWSS, through the PMO, will oversee the EARF and EMP implementation of all subprojects.
- The WSSDO, through the RPMOS, will oversee the EARF and EMP implementation at subproject/town level.

10.1.2 Safeguard Implementation Arrangement

Project Management Office (PMO)

- 133. The safeguard officers (environmental safeguard officer and social safeguard officer) of the PMO will receive support from the safeguards experts (environmental and social) of the Project Management Consultants (PMC) as specified below:
 - confirm existing IEEs/EMPs are updated based on detailed designs and that new IEEs/EMPs are prepared in accordance with the EARF and government rules;
 - confirm whether EMPs are included in bidding documents and civil works contracts;
 - provide oversight on environmental management aspects of subprojects and ensure EMPs are implemented by regional project management offices (Eastern RPMO and Western RPMO) and contractors;

- establish a system to monitor environmental safeguards of the project including monitoring the indicators set out in the monitoring plan of the EMP;
- facilitate and confirm overall compliance with all Government rules and regulations regarding site and environmental clearances as well as any other environmental requirements as relevant;
- supervise and provide guidance to the RPMOs to properly carry out the environmental monitoring and assessments as per the EARF;
- review, monitor and evaluate the effectiveness with which the EMPs are implemented, and recommend necessary corrective actions to be taken as necessary;
- consolidate monthly environmental monitoring reports from RPMOs and submit semi-annual monitoring reports to ADB;
- ensure timely disclosure of final IEEs/EMPs in project locations and in a form accessible to the public; and
- address any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs.

Regional Project Management Offices (Eastern and Western RPMOs)

134. The regional DWSS engineers and social development officers of the RPMOs will receive support from; (i) the PMO safeguards officers (environmental and social); and (ii) the safeguards specialists (environmental and social), the social mobilizes and environmental management plan (EMP) monitors of the design, supervision and management consultant (DSMC) teams as specified below:

- prepare new IEEs/EMPs in accordance with the EARF and government rules;
- include EMPs in bidding documents and civil works contracts;
- · comply with all government rules and regulations;
- take necessary action for obtaining rights of way;
- oversee implementation of EMPs including environmental monitoring by contractors;
- take corrective actions when necessary to ensure no environmental impacts;
- submit monthly environmental monitoring reports to PMO, and;
- address any grievances brought about through the Grievance Redress Mechanism ina timely manner as per the IEEs.

Civil Works Contracts and Contractors

135. EMP is to be included in bidding and contract documents and verified by the PMO and RPMOSs. The contractor will be required to designate an environment supervisor to ensure implementation of EMP during civil works. Contractors are to carry out all environmental mitigation and monitoring measures outlined in their contract. The government will ensure that bidding and contract documents include specific provisions requiring contractors to comply with all: (i) applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation for construction and maintenance activities, on (b) equal pay for equal work of equal value regardless of gender, ethnicity or caste, and on (c) elimination of forced labor; and (ii) the requirement to disseminate information on sexually transmitted diseases including HIV/AIDS to employees and local communities surrounding the project sites. Contractors will only starts the civil works activities in the section/subproject sites that has IR/IPP impacts upon the completion of RP/IPP implementation and after receiving clearance from the WUSC and endorsed by RPMO's SDO.

Capacity Building

136. The PMC safeguards experts (environmental and social) will be responsible for training the; (i) PMO's safeguards officers (environmental and social); (ii) RPMOs' engineers and social development officers. Training modules will need to cover safeguards awareness and management in accordance with both ADB and government requirements as specified below:

- sensitization:
- introduction to environment and environmental considerations in water supply and wastewater projects;
- review of IEEs and integration into the project detailed design;

- improved coordination within nodal departments; and
- Monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to worksites.

Water Users and Sanitation Committees (WUSCs)

137. WUSCs are the eventual operators of the completed subprojects. The key tasks and responsibilities of the WUSCs are, but not limited to:

Prior to construction

- Facilitate public consultation and participation, information dissemination and social preparation.
- Provide available data to the DSMC-ESS during the conduct of the IEE.
- Assist in securing the tree-cutting permit and/or registration of water source.
- Participate in the capacity development program.

During construction

- Assist in the observance of the grievance redress mechanism.
- Actively participate in the monitoring of Contractor's compliance with the IEE and its EMP and the conditions set out with Government's approval of the IEE Reports.
- Facilitate public consultations, as necessary.

During operation

- Implement the EMP and the Water Safety Plan.
- Regularly monitor the water quality
- Prepare the environmental monitoring report as per IEE.
- Ensure observance of the grievance redress mechanism

Licensed and accredited laboratory

138. It is recommended that a licensed and accredited laboratory be engaged to conduct water quality monitoring in the first few years of operation and to train the WUSC on the same. The laboratory will ensure that while carrying out the water quality monitoring as prescribed in the National Drinking Water Quality Standard and its Directives, 'hands-on' training is provided to the WUSC.

10.1.3 Institutional Capacity Development Program

- 139. Considering the limited capability of the Project's key players in environmental management, technical assistance from environmental specialists and capacity development during loan implementation will be needed. Capacity development will consist of hands-on training in implementing the responsibilities in EMP (as well as in EARF) implementation, complemented with a short-term series of lectures/seminars on relevant topics.
- 140. WUSC does not have the capacity to monitor the quality of supplied water as prescribed in the NDWQS and its Directives. Albeit monitoring kits and laboratory rooms will be provided, this would not guarantee WUSC can handle monitoring appropriately. DWSS has five regional laboratories; however some are not functioning fully due to lack of manpower. Considering that public health is a critical concern associated with water supply, it is recommended that a licensed and accredited laboratory be engaged to conduct water quality monitoring for at least the first 2-3 years of operation with the WUSC actively participating to develop WUSC capacity. The conduct of water quality monitoring should be carried out in such a way that WUSC will be "learning by doing". After the engagement period, there should be continuing periodic training of new persons to ensure capacity of the WUSC is sustained. The cost for monitoring during operation is based on the assumption that a licensed laboratory will be engaged for both the monitoring requirements and to train the WUSC. A Water Safety Plan is included in subproject design and will oblige the operator to carry out water quality monitoring accordingly. The amount of NPR 500,000 will be provided annually to implement the Plan. There will be sufficient fund to include training by the licensed and accredited lab, while monitoring water quality.

141. The PMO will be responsible for trainings on environmental awareness and management in accordance with both ADB and government requirements. Specific modules customized for the available skill set will be devised after assessing the capabilities of the target participants and the requirements of the project. Typical modules would be as follows: (i) sensitization; (ii) introduction to environment and environmental considerations in water supply and wastewater projects; (iii) review of IEEs and integration into the project detailed design; (iv)improved coordination within nodal departments; and (v) monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites.

10.1.4 Staffing Requirement and Budget

- 142. Costs required for implementing the EMP will cover the following activities:
 - Updating IEE, preparing and submitting reports and public consultation and disclosure;
 - Application for environmental clearances; and
 - Implementation of EMP, environmental monitoring program and long-term surveys.
- 143. The infrastructure involved in each scheme is generally straightforward to build. Environmental monitoring during construction will also be straightforward and will involve periodic site observations and interviews with workers and others, plus checks of reports and other documents. This will be conducted by PMO assisted by the PMO environmental safeguard officer. Therefore, no separate budget is required for the PMO.
- 144. The cost of mitigation measures and surveys during construction stage will be incorporated into the contractor's costs, which will be binding on him for implementation. The surveys will be conducted by the contractors.
- 145. The operation phase mitigation measures are again of good operating practices, which will be the responsibility of the WUSC. All monitoring during the operation and maintenance phase will be conducted by WUSC. The Water Safety Plan, included in each subproject design, will allocate NPR 500,000 annually for operation and maintenance particularly water quality monitoring. If a licensed laboratory will be engaged for the first 2-3 years of operation for training purposes, the cost can be accommodated under the Water Safety Plan.

10.2 MONITORING AND REPORTING

146. RPMOs will monitor and measure the progress of EMP implementation with assistance from DMSC. The monitoring activities will correspond with the project's risks and impacts, and will be identified in the IEE for the projects.

10.3 ENVIRONMENTAL MONITORING MECHANISM

- 147. Under the chairmanship of Kohalpur municipality, a Monitoring Committee should be formed. The committee should be represented by the chairman of concerned service wards of the VDC, representative from environment related NGOs, local community, Water Users' Committee and local entrepreneur. Secretary of the Kohalpur municipality should act as member secretary of the Monitoring Committee. This committee should be assigned following duties and responsibilities:
 - The committee should meet at least twice a month;
 - The committee should collect all complaints from the local people concerning distribution, pipeline etc and should discuss in the meeting for the final decisions;
 - The monitoring committee should identify the mistakes and deficiency regarding the project and should discuss in the meeting for the purpose of correction;
 - Any negligence regarding the water quality should be considered and take necessary action;
 - The committee should also supervise and provide instructions for activities such as:
 - Distribution of qualitative water,
 - Storage of water in the reservoir tanks,
 - Treatment plant,
 - Handling of toxic/chemical matters.
 - Training for the locals, and
 - Examine monitoring reports periodically and take necessary actions if required etc.

10.4 MONITORING REPORTING MECHANISM

148. As proposed by approved EMP, the reporting system should include site supervision and reporting as well and primarily connected with Monitoring plan. The construction contractors are responsible for implementing approved EMP. The supervising consultants are responsible for monitoring to oversee whether or not the contractors have complied with the approved conditions as stated in EMP and also receive the monthly progress report from construction contractors. Based on this information the consulting engineers prepare the front line monitoring report and submit to DWSS for review

10.5 MONITORING COST, PARAMETERS, LOCATION AND SCHEDULE

149. During rehabilitation, the cost for monitoring will be minimum and it should be allocated as and when required from the project contingency.

10.6 CONTRACTORS COMPLIANCE ON EMP

150. The recommended mitigation measures are shown in the Table 10-1. The contractor should comply with the recommended mitigation activities.

10.7 INSTITUTIONAL CAPACITY DEVELOPMENT PROGRAM

- 151. Considering the limited capability of the Project's key players in environmental management, technical assistance from environmental specialists and capacity development during loan implementation will be needed. Capacity development will consist of hands-on training in implementing the responsibilities in EMP (as well as in EARF) implementation, complemented with a short-term series of lectures/seminars on relevant topics.
- 152. In the Table 10-1 given below, the types of impact as predicted, corresponding mitigation measures, monitoring parameters, monitoring indicators, location and sources, responsibility and frequencies of monitoring have been included. The monitoring protocols given below are based on the Environmental Management Plan (IEE Kohalpur, 2005) approved by Government of Nepal 2005.

10.8 ENVIRONMENT MITIGATION COST

153. Most of the recommended mitigation measures are incorporated in the contractual obligations and constructions works to be completed by the contractors. Facilities like water treatment plant, water testing laboratory etc are also either existing or to be installed is also included in the contract. Therefore mitigation cost of the enhancement project will be negligible. However in order to strengthen the existing facilities 2% of total project cost is proposed should be allocated.

Table 10-1: Mitigation Measures and Corresponding Monitoring Plan

-	d Mitigation cription		Mon	itoring pl	an for imple	ementation		S	status
Environmental Impact	Mitigation action	Parameter to be Monitored	Indicators	Location	Sources	Responsibility	Frequency	Previous	Present ²
Physical Environ									
Land use pattern	Acquire only required land	Change in cropping pattern	Quality and quantity of yield	Project area	Local people	WUSC	Half yearly	Completed	Not applicable
Flooding and water stagnant	Drainage management	Observation of the project area	Increase in mosquito Increase in vector born diseases	Project area	Field inspection	DSC/Contractor	During and after monsoon	Completed	Recommended
	The excavated material must be safely disposed.	Ensure proper management of excessive spoil materials in place	Evidence of landscape erosion and river turbidity undisturbed	Project area	Field inspection	DSC/Contractor	After monsoon	Completed	Recommended
Impacts of sediments and Disinfecting Chemicals	Safe disposal	Water quality	Chemicals and pathogen exceeding national standards	Project area	Water quality test	DSC/Contractor	Quarterly	Completed	Recommended
Water Volume/ Quality	Limited extraction/ regular testing	Measurement of River flow and underground water table level	Change in quantity	Project area	River and ground water	DSC/Contractor	Quarterly	Completed	Recommended

²Recommended for EMP compliance

Impact and Mitigation Prescription			Mon	itoring pl	an for imple	mentation		9	Status
Environmental Impact	Mitigation action	Parameter to be Monitored	Indicators	Location	Sources	Responsibility	Frequency	Previous	Present ²
Air Quality	Confine earthworks according to a staking plan and excavation segmentation plan and a part of the document	Visibility due to presence of dust	Location of stock pile	Project area	Local people and surrounding environment	DSC/Contractor	Twice in a week	Completed	Recommended
		Amount of dust present in surrounding environment	Number of complaint from sensitive receptors	Project area	Local people and surrounding environment	Contractor	Twice in a week	Completed	Recommended
Acoustic environment	Restrict noisy activities to daytime. Overtime work should avoid using noisy/high noise generating equipment.	Sound intensity during day and night time	Number of complaints from sensitive receptors;	Project area	Local people and surrounding environment	Contractor	Twice in a week	Completed	Recommended
		Sound intensity at and nearby of source	Use of silencers in noise-producing equipment and sound barriers;	Project area	Local people and surrounding environment	Contractor	Twice in a week	Completed	Recommended
Traffic movement	Pipe line work need to be done during night and during less traffic time	Number of vehicles diverted	Number of vehicles movement	Project area	Local people and surrounding environment	WUSC/Contractor	During pipeline work	Completed	Recommended
Biological Enviro									
Impact on natural	Construction area should be	Vegetation density,	Change in vegetation	Project area	Project area	WUSC/DSC/Contractor	Quarterly	Completed	Recommended

	d Mitigation		Mon	itoring pl	an for imple	ementation		S	Status
Environmental Impact	Mitigation action	Parameter to be Monitored	Indicators	Location	Sources	Responsibility	Frequency	Previous	Present ²
vegetation and habitat	well demarked and proper instruction to be given for the workers.	number and types of wild animals	density and number of wild life						
Socio-economic	and cultural environr	ment							
Impairment to Infrastructure	Not applicable								
Land acquisition	Project has to make sure that adequate compensation for the land acquired from private citizens (if required) is made	Compensation measures	All affected	Project area	Records and Interview	WUSC/Contractor	Yearly	Completed	Completed
Outside workforce conflict/ health/ pollution/ culture	Disease transmission, pollution and competition for the available resources to outsiders should be thoroughly checked.	Situation of social disharmony Awareness program	Decreased social disharmony Effective awareness program	Project area	Records and Interview	WUSC/Contractor	Yearly	Completed	Recommended
Operation Phase									
Water right Conflict	Public taps should be established in appropriate places.	Number of public taps installed	Adequate water supply to the public	Project area	Field inspection and Interview	WUSC	Quarterly	Completed	Recommended
Workers health and safety	Comply with requirements of Labor Act of GoN and standards on workers' health and safety	Health of workers Dress and first- aid facilities stations	Site- specific H&S Plan	Project area	Workers health statusand Interview	WUSC	Quarterly	Completed	Recommended

-	Impact and Mitigation Prescription		Monitoring plan for implementation							
Environmental Mitigation Impact action		Parameter to be Monitored	Indicators	Location	Sources	Responsibility	Frequency	Previous	Present ²	
	(H&S).									
	Arrange for readily available first aid unit including an adequate supply of sterilized dressing materials and appliances	Health of workers Dress and first- aid facilities stations	Condition of sanitation facilities for workers	Project area	Workers health statusand Interview	WUSC	Quarterly	Completed	Recommended	

Source: IEE Kohalpur 2005
2. Recommended for EMP compliance

Table 10-2: Mitigation Measures and Monitoring Plan for Rehabilitation Activities

Overview of Impa	Overview of Impacts			neasures		Monitoring	plan for imp	plementation	
Project activities	Possible impacts (on all baseline parameters)	Mitigation associated with project location	Mitigation in project design features	Residual mitigation measures (not addressed by location and design)	Parameter to be Monitored	Indicators	Location	Responsibility	Frequency
Water source									
No enhancement of reservoir	No significant impact								
Maintenance of existing tube well	No significant impact								
Construction of new tube well	Ground water reduction	Construction of ground water recharge pond			Water table level	Reduction in ground water level	site specific	Contractor and WUSC	During operation
Transmission line									
Enhancementnot required	No any significant impact								
Treatment plant									
Installation of chlorination unit	Excessive use may be detrimental	Avoid excessive use							
	Leakage through storage	Maintain proper storage to avoid leakage			Chlorine contamination	Health problem in local people	Site specific	WUSC	Operation
New water treatment plant	Excessive use may be detrimental	Avoid excessive use							
	Leakage through	Maintain proper			Chlorine contamination	Health problem in	Site specific	WUSC	Operation

Overview of Im	pacts	Required	mitigation n	neasures		Monitoring	plan for im	plementation	
Project activities	Possible impacts (on all baseline parameters)	Mitigation associated with project location	Mitigation in project design features	Residual mitigation measures (not addressed by location and design)	Parameter to be Monitored	Indicators	Location	Responsibility	Frequency
	storage	storage to avoid leakage				local people			
Reservoir									
Construction of new reservoir	Impact of excavation of earth	Proper disposal of excavated materials and use of protection measures	Location of disposal site		Inspection of disposal site	Number of Land slides and erosion created by disposal	Site specific	Contractor	During construction
	Impact on land scaping and slope	Adequate excavation in proper way/ ownership			Landslide and slope stability	Increase in landslide and erosion	Site specific	Contractor	During construction
Distribution line		'							
Network rehabilitation activities/ Additional distribution network	Traffic disturbance	Arrangement for traffic diversion with traffic	Traffic diversion		Arrangement of vehicular movement during construction	Smooth running of vehicles through diversion	Site specific	Contractor	During construction
	Air pollution	Dust reduction and emission should be controlled	Not applicable		Air quality	Particulate matter in air	Site specific	Contractor, WUSC and Locals	During construction
	HHs water distribution	Intermittent supply	Supply water through other sources		Water supply continued	Adequate amount of water supply in each households	Site specific	Contractor and WUSC	During construction

Overview of Impa	cts	Required mitigation measures			Monitoring plan for implementation					
Project activities	Possible impacts (on all baseline parameters)	Mitigation associated with project location	Mitigation in project design features	Residual mitigation measures (not addressed by location and design)	Parameter to be Monitored	Indicators	Location	Responsibility	Frequency	
Electrical and mechanical repairement	Noise pollution and oil spillage	Sound muffler installed and proper management of waste oil	Not applicable		Sound level and amount of oil	Noise level emission standard	Site specific	Contractor	During construction	

Note: Table 10-2is prepared according to Table 7-1 of Chapter 7.

11. CONCLUSIONS AND RECOMMENDATIONS

154. The proposed subproject is not an environmentally critical undertaking. The IEE indicates that:

- The proposed subproject, its components, are not within or adjacent to environmentally sensitive areas.
- The extent of adverse impacts is expected to be local, confined within the subprojects' main areas of influence, quarry or borrowing sites, waste disposal sites, and the routes to and from these sites. Fine aggregates, sediments and/or wastes would not be the transported beyond the aforementioned sites. With mitigation measures in place and ensuring that the bulk of earthworks are completed prior to the onset of the rainy season, the potential adverse impacts during construction would be highly/more site-specific.
- The few adverse impacts of high magnitude during construction will be temporary and short-term (i.e., most likely to occur only during peak construction period). These will not be sufficient to threaten or weaken the surrounding resources. The preparation and implementation of a Contractor's EMP that would address as minimum the requirements of the SPS-compliant subproject EMP will mitigate the impacts and lower their residual significance to acceptable levels. Simple/uncomplicated mitigation measures, basically integral to socially and environmentally responsible construction practices, are commonly used at construction sites and are known to Contractors. Hence, mitigation measures would not be difficult to design and institute.
- During operation, the potential delivery of unsafe water can be mitigated with good operation and maintenance, prompt action on leaks, and complying with the required quality monitoring of supplied water as prescribed in the National Drinking Water Quality Standards Directives.
- The proposed subproject will bring about: (i) the benefits of access to reliable supply of safe and potable water; (ii) promotion of good hygiene and sanitation practices and reduced health and safety risks as positive impacts; and (iii) enhanced public health, improved quality of life and safe communities as outcomes.

155. Based on the above findings, the classification of the 3rdSTWSSSP as Category B is confirmed, and no further special study or detailed EIA needs to be undertaken to comply with the Safeguard Policy Statement of the ADB. The Government of Nepal will incorporate the findings and recommendations of this IEE and prescribed environmental management in the EMP.

12. COMMENTS INCORPORATION MATRIX

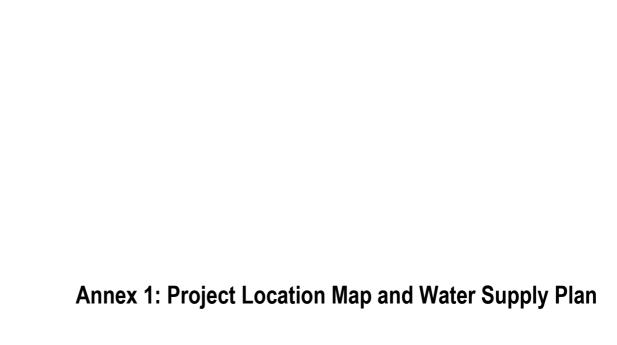
Annexes

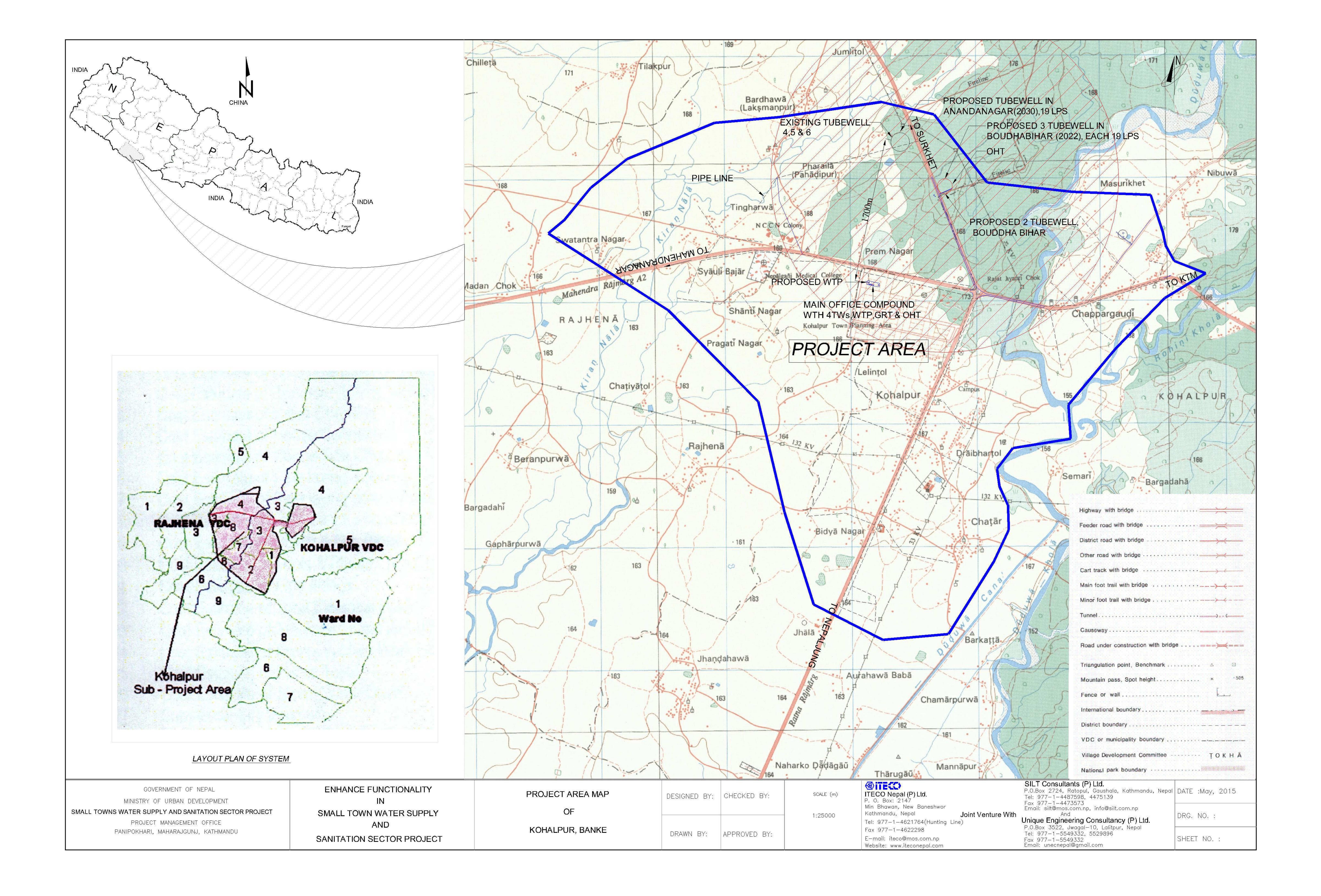
Annex 1: Project Location Map and Water Supply Plan

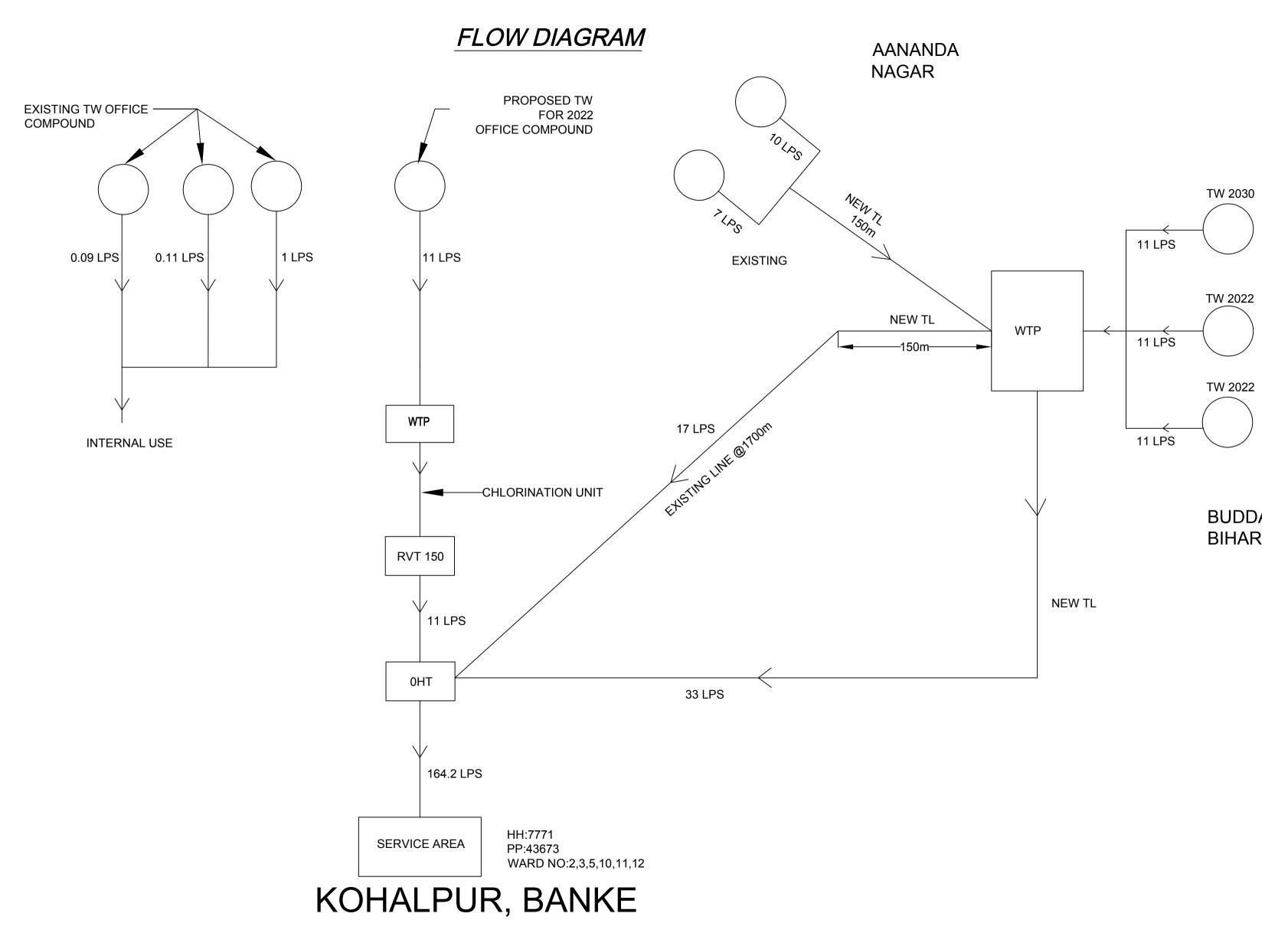
Annex 2: Water Tested Laboratory Analysis Report

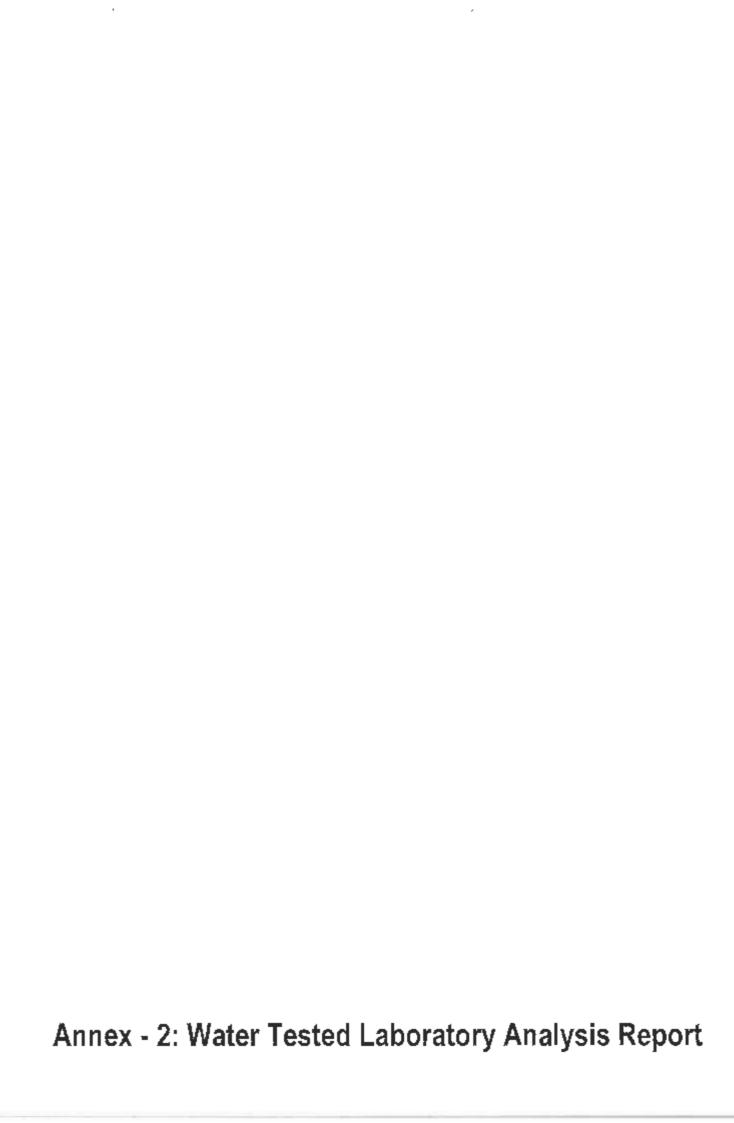
Annex 3: Rapid Environmental Assessment (REA) Checklist

Annex 4: Minute of Meeting









Authorizéd Signature



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LABORATORY ANALYSIS REPORT

Name of Sender: SILT II Sample No: SIU-1386:07 Date of Receipt: 02/12/20 Analyzed date: 02/08/20 Sampled by: WETC	Type of 5 Name of No. of Sa	Project: Kukstpur Source: Groundwa Source: Bore Well mples: 01 : Kohalpur		Date of Collection: 02/12/2014 Sampling Polot: Bore Well (East) Field Temperature (*C): 24.2 Field pH:7.4 Field Electrical Conductivity (pS/cm): 562.0		
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			Physi	CAL		
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		- 124	CHEM			
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Şədiym	ting/Las Na* //	4/	-114	3.8	BOLLS APRA, 21 FEBLION	
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Lotal Chromous	ingras Cr	0.05	0.05	₹0.01	SILL B APRIA 26 ⁸¹ EDITION	
Bicarbonale	regyr as HICO;	Later		376.0	2320 B, APITA, 21 ST FULCION	
Total Atkability	igg1 ≥3 EμCOs	580		376.0	LY20 B, APHA, 21 ST EDITION	
Carbonate Alkalandy	mg/Las CaCO ₂				TYNER, APRIA 21 ⁵¹ ED. CON	
Onthopoosphaic	ang/Las ₽			0.10	4500-9 E. API FA, 21 th 1-07 (100k)	
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APITA: American Public Health Association, Standarf Mathods for the Examination of Water & Waste Woter, WHO CV, World Pleafth Organization Gradeline Value. 2006 Update, NDWQS: National Drinking Water Quality Standard, 2062 (Negat), * These values show lower and upper littles, 1) Values in the parentles is refers the acceptable values only when alternative is not available. **Not accredited Test Method

Comment: The tested parameters are within the permissible range as per NDWQS.

The result refer only to the parameters tested of the samples gravited styles laboratory or objected by the for analysis as specified. Encorsoment of the profitor is neither inferred nor implied.

given improved.

2.) Any displication of this report can not be used as exidence in the corn of tax and should limited the used in any advertising matrix without prior written parallelian to us.

3. The total liability of our company for the product is limited to the invalued actuality

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Laboratory, R & D on Total Water Management, Treatment & Consultancy

LABORATORY ANALYSIS REPORT

Name of Sender: SILT I's Sample No: SIU-1387/07: Date of Receipt: 92/12/20 Analyzed date: 92/08/20! Sampled by: WETC	Type of S Name of No. of Sa	Project: Kohalpu Jource: Groundwi Source: Bore Wel mples: 01 : Kohalpur		Date of Collection: 02/12/2014 Sampling Point: Bore Well (Northern) Field Temperature (°C): 24.2 Field pll:7.5 Field Electrical Conductivity (µS/em): 572.0		
Parameters	Units	WHO GV	NDWQS	Result	Methods used	
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Cochonate Alkalimity	mg/Las CaCO ₀			NilNil	2320 R. APSIA, 21 ⁸⁷ EDITION	
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Yotal Dissolved Solids	log".	90007		3-14.0	7540 CLAPRIA, 21 ST EDITION	
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		A Francisco	BIOLO	GICAL		
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Fagoal Coliforn	CFU/700m1	Nil	Nil	Nil	#222 ID , AFREA, 2111 DOTTION	

APHA: American Public Health Association, Standard Methods for the Examination of Weter & Wester Water, WEED GV: World Health Organization Guideline Value, 2006 Update, NDWQS. National Drinking Water Quality Standard, 2002 (Negodia, * These values above lesson and appear limits. C. Values in the percothesis refers the acceptable values only when alternative is not available, ** Not sponefited Test Method

Comment: The tested parameters are within the permissible range as per NDWQS.

The result refer only to the parameters tested of the samples provided to our laboratory or collected by us for analysis as specified. Endorsement of the product is neither inferred

Any displication of this report can not be used associationable court of law and should not be tracid in any advertising madia without prior written permission to us. The total liability of ow company for the product is imitiates the invoiced serving only

Laboratory, R & D on Total Water Management, Treatment & Consultancy

LABORATORY ANALYSIS REPORT

Name of Sender: SILT ITEKO UNICORN JV Name of Project: Kohalpar Water Supply Scheme Date of Collection: 02/12/2014 Sample No: SHU-1388/071/072 Type of Source: Groundwater Sampling Point: Compand Tap (After RVT) Date of Receipt: 02/12/2014 Name of Source: In compound Tap (After RVT) Field Temperature (°C): 24.2 Analyzed date: 02/08/2014-05/09/2014 No. of Samples: 01 Field plI:7.4 Sampled by : WETC Locadon : Kohalper Field Electrical Conductivity (uS/em): 568.0 WHOGY Parameters Units NOWOS Result Methods used PHYSICAL 4500-Н1В, АРНА, 21⁵1 ЕД<u>ГГСМ</u> вH 65.85 6.5-8.5* 7.4 Darbides NUD 2130 B, APHA, 21st EDITION 5(10)- 5 -1.02519 BLAPITA (21⁸) FORTIC N Electrical Conductivity 1500 µS/em 566.0 40 2550 H, APRA, 21⁸⁴ EDITION Lab Temperature 18.4 CHEMICAL 3500 - Ca B. APHA, 21 11 UDF RON Cal<u>ciom</u> may/cas C.E. 200 94.6 Magnesum mg/Las Mg 31.4 3500-Mg B APHA, 2.1 PEDITION 311) B. APHA 211 IDEESIN mg/Las Fa 0.3(3) 0.06 0.3 3111 8, A991A, 212 FORTION Manganesi mg/Lay Mr. 0.4 0.2 < 0.01 <0.005 3114 C,APHA, 21** LD, HON-Airventa sing/Las As 0.01 0.05 4500-MH, C , APILA, 1710 (60) TICK mg/Las NH Ammonia 1.5 15 < 0.92 Scalinani rugClas Na* 3.9 BUILD APPLA, 21" EDITION Potession: rogel as Ki MH B, APHA, 215 CM HON 0.5 Fotal Claurinium 0.05 BUILD, APHA, 215 EDITION mg/lasCr 0.65 < 0,01 **Arenthorate** 2320 B. APRIA, 215 EDETION right as HCO_V 378.0 2320 B, AP.3A, 31⁸⁷ EDUCTION Total Alkalinity might as Call Call 500 378.0 Carbonate Aikaliably 2320 B, APRIA, 21 ST EDITION Nil aughlas disCOs 4500-P E. APSRA, 2151 HUITLON. Orthophosphato 0.10 ingt as fr 4500-NOS- BILAPEA, 7 STEDITION Nitrate mg/Las <u>NO</u>, 50 4.0 4500-NO, IR INPUAL 21th EDITION Nitrite mgd as NO 3 < 30,02 4590-SOL, APHA, 21³¹ FOLDION Sulphate mg/Las SOL 250 250 <5.0 4500-CT at, AP., A, 2151 SOSTION Chlanide anglas C 250 250 8.8 mg/Los II 1.5 0.5-1.5* 4300E-D. APHA, 21" EDILLOS 0.10 Total Handneys нід/Газ СО 500 500 365.0 2349 C, APHA, 21ST EDUTION Jotal Dissolved Solids mgd 1000 340.0 2541 C. APHA, 21ST EDIT ON 2330 B, APHA, 2157 EDITION Langtier Saturation Index 0.1 BIOLOGICAL Tistal Colifornis CITE / 2Gm 9237 B, APHA, 2187 EDITION Nil Ni Result Cottform CFC/100#3 9212 D. APHA, 21st EDITION Nit Nil Nil

APITA: Amurican Public Health Association, Standard Methods for the Examination of Water & Weste Water, WFPD GV: World Health Organization Guideline Value, 2006 Opdate, NDWQS National Drinking Water Quality Standard, 2062 (Wepal), * These values show lower and upper limits. () Values in the parenthesis refers the acceptable values only when alternative is not available. **Not accredited Test Method

Comment: The tested parameters are within the permissible range as per NDWQS.

Checked by

Authorizad Signature

The result refer only to the parameters leased of the samples provided to our laboratory or collected by us for analysis as especified. Endorsoment of the product is neither inferred

at, of notations and the properties of the report of the second of the s

The total Hamility of our company for the product is limited to the involved annual only



Laboratory, R & D on Total Water Management, Treatment & Consultancy

LABORATORY ANALYSIS REPORT

Name of Sender: SILT ITEKO UNICORN JV Sample No: SIII-1389/071/072

Date of Receipt: 02/12/2014 Analyzed date : 02/08/2014-05/09 Name of Project: Kobalpur Water Supply Scheme

Type of Source: Groundwater Name of Source: Last Tap

Date of Collection: 02/12/2014

Sampling Point: Last Tap (Nepalgun)

Highway West)

Field Temperature CC - 240

Analyzed date: 02/08/20 Sampled by: WETC	014-05/09/2014		: Kohalpur		Field Temperature (°C): 24.0 Field pH:7.4 Field Electrical Conductivity (µS/cm) : 560.0
Parameters	Units	WHOGY	NDWQS	Result	Methods used
		- 125	PHYS	CAL	
μH		6.5-8.5	65-852	. 7.3	4500 01 B. ADBA, 21T BUITTON
Turbičity	NTU	. 5	5(10)	<1.0	2036 B. APFA, 30 ⁸³ EDITLON
Electrical Constitutionly	μS/em		1500	560.0	(25% B, <u>A2BA</u> , 27 ⁴⁷ EDITION
Lah Temperatura	1 'C		i	18.4	2550 B. APHA, 21 ⁸¹ ED: FIGN
			CHEM	BCAL	
Cale nat	ring/Las Ca*2	-	206	9.10	3500 - Call APPIA, 2PF COLLON
Маркевски	mg9 as Mg ²			31.4	3500-Mg B, APHA, 21 ST EDITION
Isan	mgd aa Fe	0.3	.0.3(3)	0.06	FILL B APHA, 21 ST EDITION
Manganese	mg/ass Ma	0.4	0.2	< 9,01	3101 6, APHA, 21 ⁸⁷ EDLITION
Arsenic	mg/Las As	0.01	0.05	<0.005	3H4 C, AvHA, 21 ST EDITION
Armunia	mg/Las NH ³⁷	1.5	1.5	<0.02	4500-NH ₂ C , APMA, 17 ^H EDITION
<u>Scái.im</u>	gog/Las Na1	S	10.	4,0	3111 H. APHA, 31 ⁸⁷ EDITION
Potassium	mg/Les K			0.6	311 <u>1 N. 8.26A. 23⁸⁵ EDITION</u>
Total Cleumium	mph.com	0.05	0.05	< 0.01	BILLS AND THE TRANSPORT
Biographic Biographics	mg/Las <u>1100</u> 5			372.0	2320 D, APRA, FI ST EDITION
Treat Alkalinity	mg/Las CaCOs	500		372.0	22.20 B, APHA, 21 ^{NO} STRIFTON
Carbarate Alkalinity	mg/ as CaCOs			Nil	2320 B, APHA, 21" EDI. (ON
Omhophasphate	mg/Las P			0.08	4500-P S. APRA 21 ST LIDITION
Sitrate	nig/Las NO:	50	50	4.2	4500-NOT BUAPHA, 21 ST EDITION
Nnrie	mg/Las NO,	3	-	<0.02	#500-NC4-BI, APHA, 015 INDITION
Sylphate	4. mg//ns 505	250	250	<5.0	45CC-SC: APITA, 21 th EDITION
Clifbride	ingil as Cli	250	250	11.6	4909-01-8, APHA, 21 ³¹ EDITION
Fhande	mg/lax1"	1.5	0.5-1.5*	80.0	4500F-D APHA, 21 ⁸⁷ EDITION
Yatal Hardness	mg/las CO.	500	500	364.0	1940 C. APE A. 21 ⁸⁷ EDITON
Tistal Dissalved Solids	ring/I	1000		337,0	\$540.C_##HA_21" EDITION
I progher Saturation Lode s				0.0	2330 B. APRIA, 21 ⁵⁰ ROLLION
		TOP BY	BIOLO	GICAL	
oral Celifornis	CM9/196ml	3/6	381	. 7	9732 B. APHA, 21 ST EDITION
Faccal Collifornia	<u>ÇPU/100en</u>	NE	N13	Nii	9322 D., APHA, 21th EDITION

APIJA: American Public Health Association, Standard Methods for the Everantation of Wiver & Waster Witter WHO GV: World Fealth Organization Guideline Value, 2006 Update, NDWQS: National Drinking Water Quality Standard, 2003 (Nepath, * Bloss values who waves and upper limits. () Values in the parenthesis refers the acceptable values only when alternative is not available. ""Not accredited Test Method

Comment: The tested parameters are within the permissible range as per NDWQS. Egergefologically, ansatisfactory.

Authorized Signature

The result rate only to the parameters tested of this earnples provided to car laboratory or collected by us for analysis as specified. Endorsement of the product a neither inferred nor implied.

Any displication of this report can not the used as evidence in the court of law and allevid not be used in any advertising media without prior written parallssion to us. The total liability of our company for the product is inside to the invoiced amount only.

ADB'S REA Checklist

Rapid Environmental Assessment (REA)	Checklist	WATER SUPPLY
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<u> </u>	D	W (A)				
Cour	ntry/Project Title:	Kohalpur Small Town Water Supply Rehabilitation Sub-Project, Banke				
☐ Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.						
	☐ This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) Involuntary resettlement, (ii) Indigenous peoples planning, (iii) Poverty reduction, (iv) Participation and (v) Gender and development.					
Ц	Department.	completed with the assistance of an Environment Specialist in a Regional				
	This checklist is to be prepared to support the environmental classification of a project. It is to be attached to the environmental categorization form that is to be prepared and submitted to the Chief Compliance Officer of the Regional and Sustainable Development Department.					
Instructions:						

Sector Division: Water Supply

SCREENING QUESTIONS	Yes	No	REMARKS
A. Project Siting			
Is the project area			
Densely populated?		V	
Heavy with development activities?		V	Presence of commercial hubs
 Adjacent to or within any environmentally sensitive areas? 			
 Cultural heritage site 		$\overline{\mathbf{A}}$	
 Protected area 		$\overline{\Delta}$	
 Wetland 		\square	The subproject components are
 Mangrove 		$\overline{\mathbf{A}}$	not within locations in or near
 Estuarine 		$\overline{\mathbf{A}}$	sensitive and vulnerable
 Buffer zone of protected area 		$\overline{\mathbf{A}}$	ecosystems and protected areas.
Special area for protecting biodiversity		V	
Bay		$\overline{\mathbf{A}}$	
B. Potential Environmental Impacts			
Will the Project cause			
 Pollution of raw water supply from upstream 		\square	Deep ground water used
wastewater discharge from communities, industries, agriculture, and soil erosion runoff?			
 Impairment of historical/cultural monuments/areas and loss/damage to these sites? 		V	Absence of historical monuments
 Hazard of land subsidence caused by excessive ground water pumping? 	Ø		Excessive pumping should be controlled
Social conflicts arising from displacement of communities?		Ø	Not anticipated. The proposed sites of the deep tube well and new overhead tank will not require acquisition of private land. There are no encroachers/squatters or

SC	REENING QUESTIONS	Yes	No	REMARKS
				residential/commercial structures at the proposed sites where infrastructure is to be established.
•	Conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters?			Not anticipated. Water quantity is sufficient.
•	Unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)?	Ø		Arsenic problem occurs in the area, a health hazard
•	Delivery of unsafe water to distribution system?	\square		Can be mitigated
•	Inadequate protection of intake works or wells, leading to pollution of water supply?	Ø		Can be mitigated
•	Over pumping of ground water, leading to salinization and ground subsidence?		Ø	High cost involved in pumping will constrain over pumping. EMP recommends monitoring pumping & maintaining record to control pumping to design limit.
•	Excessive algal growth in storage reservoir?	V		Treatment will come in existence
•	Increase in production of sewage beyond capabilities of community facilities?	Ø		Can be mitigated
•	Inadequate disposal of sludge from water treatment plants?	Ø		Can be mitigated
•	Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?		Image: Control of the	Groundwater pumps are submersible and all other pump equipment in the water treatment plan will be housed in a pump shed.
•	Impairments associated with transmission lines and access roads?			Minor and temporary impact
•	Health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals.	Ø		To be consider in design stage
•	Health and safety hazards to workers from the management of chlorine used for disinfection and other contaminants?	1		Training for operator to be provided
•	Dislocation or involuntary resettlement of people		☑	Not anticipated
•	Social conflicts between construction workers from other areas and community workers?	V		Minor and temporary impact
•	Noise and dust from construction activities?	V		Minor and temporary impact
•	Increased road traffic due to interference of construction activities?	Ø		Minor and temporary impact
•	Continuing soil erosion/silt runoff from construction operations?	Ø		Minor and temporary impact
•	Delivery of unsafe water due to poor O&M treatment processes (especially mud accumulations in filters) and inadequate chlorination due to lack of adequate monitoring of chlorine residuals in distribution systems?	\square		Training for operator to be provided
•	Delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals?		Ø	Concern for corrosion of G.I. pipes caused by the chlorine content in treated water is low. EMP provides mitigation measures.
•	Accidental leakage of chlorine gas?		Ø	Bleaching power is used in Nepal
•	Excessive abstraction of water affecting downstream water users?		V	Not applicable

SCI	REENING QUESTIONS	Yes	No	REMARKS
•	Competing uses of water?		$\overline{\mathbf{Q}}$	Not applicable
•	Increased sewage flow due to increased water supply	Ø		Frequency of septage pumping to be increased; regular testing of ground water for microbiological pollution
•	Increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant			Can be mitigated and improved
•	Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		V	Its small project, so limited number of worker will increase, and can be managed
•	Social conflicts if workers from other regions or countries are hired?		Ø	Priority in employment will be given to local residents.
•	Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during operation and construction?		I	Minor and temporary impact
San	Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		Y	Minor and temporary impact
	Potential environmental impacts the project cause			
•	Impairment of historical/cultural monuments/areas and loss/damage to these sites?		V	No such areas near the subproject sites.
•	Interference with other utilities and blocking of access to buildings; nuisance to neighboring areas due to noise, smell, and influx of insects, rodents, etc.?		Ø	Minor and temporary impact
•	Dislocation or involuntary resettlement of people?		\square	Not applicable
•	Disproportionate impacts on the poor, women and children, indigenous peoples or other vulnerable groups?		V	Not applicable
•	Impairment of downstream water quality due to inadequate Sewage treatment or release of untreated sewage?		I	Toilets will be connected to septic tanks that will be designed to achieve maximum retention.
•	Overflows and flooding of neighboring properties with raw sewage?		\square	Not applicable
•	Environmental pollution due to inadequate sludge disposal or industrial waste discharges illegally disposed in sewers?			Minor and temporary impact
•	Noise and vibration due to blasting and other civil works?	Ø		Minor and temporary impact
•	Risks and vulnerabilities related to occupational health and safety due to physical, chemical, and biological hazards during project construction and operation?		V	Minor and temporary impact
•	Discharge of hazardous materials into sewers, resulting in damage to sewer system and danger to workers?		V	Minor and temporary impact
•	Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible		Ø	Minor and temporary impact

SC	REENING QUESTIONS	Yes	No	REMARKS
	nuisances, and protect facilities?			
•	Road blocking and temporary flooding due to land excavation during the rainy season?	V		Not applicable as construction work will be done during off rainy seasons
•	Noise and dust from construction activities?	\square		Minor and temporary impact
•	Traffic disturbances due to construction material transport and wastes?	Image: Control of the		Minor and temporary impact
•	Temporary silt runoff due to construction?			Not applicable
•	Hazards to public health due to overflow flooding, and groundwater pollution due to failure of sewerage system?		V	Minor and temporary impact
•	Deterioration of water quality due to inadequate sludge disposal or direct discharge of untreated sewage water?		V	Not applicable
•	Contamination of surface and ground waters due to sludge disposal on land?		V	Not applicable
•	Health and safety hazards to workers from toxic gases and hazardous materials which may be contained in confined areas, sewage flow and exposure to pathogens in untreated sewage and unsterilized sludge?			Not applicable
•	Large population increase during project construction and operation that causes increased burden on social infrastructure (such as sanitation system)?		V	Not applicable
•	Social conflicts between construction workers from other areas and community workers?		V	Priority in employment will be given to local residents.
•	Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		Ø	Not applicable.
•	Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			Minor and temporary impact

English Translation of Minute of Meeting - Phase II

Kohalpur Small Town Water Supply Sanitation and User's Committee organized a public hearing workshop on 2072/6/8. Participation were made from all concerned stakeholders. After discussion in the public hearing it was observed that there will be no negative impacts on the environment, no necessity of land acquisition and no need of resettlement while implementing the proposed "Enhance Functionality" in Small Town Water Supply and Sanitation Sector Project. As such it was decided to inform this conclusion to the concerned authorities.

Phase 1

प्राच्न किया प्रकार कर्ता कर्ता है इस पते इतिया का देश मह शोशलपुर वर्णनेवाली करा प्रजन्ती एवनेका स्टेक्ट्डा -मका में मह पराष्ट्र महल हैं को उच्चक्ता मह तथां हता में का शा प्रवासिकारी तथा इत्या है हु इसकी एक्क्टिंग कर स्टेक्टा की अवस्थी में में इस इसी तथारित का प्रकार इक्टा

इप्रश्लीती_:

ति निर्म अहार प्रतन अह्यहा । ११ विष्ण प्रति प्रति । प

०० हो १८० ज्यारिकोचा द्वारातण - होरेको हेपाल-विक्य-वृत्ति और अन्यर् भरावको साता अहारीको अपना

इ.स्टार्गहरू :

प्रतार के बान आयोकता की खें खेंक खान है।

निजेप हर्:-

निष्ण न प्रकार अन्या अन्या प्रकार गर्म इन्डो ने हैं ने कि प्राप्त कार्य के ने हैं के कि कि कार्य कार्य के निष्ठ के कि कि कार्य कार्

'असम 'किसी अक्षात्र का किस के अने का का किस यात्र अंगाजनपूर् यात्रानेनाती गावा स्वरूपमार्थ इवकेन्स संस्कार्डा -क्रक्रम् केर्यं तार् नहापुर् अवनः ह्या क्षी कल्लावता अस तक्षीव**लय**ः नोकत का पदाक्षिकरी तथा आवृद्धादमु पहुके उपस्थीती कर संस्था की ११८ भी केडड अर्था त्याहिल का प्रस्तावस्था। स्कल्पाता करिया विकास स्वेता क्र**ियो** ।

यामध्यक्षिको ः

्रिक्ष की कर वसहर जलन अस्यक्ष । ्रितः अमे क्रोप्याबदा भेची अविकरी - उरास्यका

a. अंते साम् कतात् वती -

को विष्ठम् प्रष्टाक विष्यो - क्रिका**ट**शह

ार्थाः कामस् स्थानाः । प्रायस्य

ा १९८ इ. अंभी छोड़ाम राला वहोता । स्थापमा

हर अभिकास देवी, केर्न - अवस्य

- अर्थ - च्याहा साम्याचना न्या प्रवर्षे - स्टाब्ह्य

क् अम जेल होकान .. ल्राह्म

के विकास करिया

ार है और अगिलीका अज्ञाता - इरेको है एस-खिल्य-सुविक्कोपत नेन्स परवाद्यी शता व्हाहतीही नेपाल

3 FOR (4 E.S.)

प्रात्ता १ वः - आयोजना वी कर्ने खेल्बब्ध्या ।

र्ग तेशीय हार 1-

िछित्र १ - १ प्रमाद १ - १ मा सम्बद्ध गर्पा इरेडी नेप्र - विला - इपिड मोडकर श्रेन्सर (क्ल्यमरेक्सी चयप्रक्रिका) की तार्क गरा एक हिर्दे आहड़ा रहेंद्र हाती की मिती २०७१ ७। व शहे -यस रोज्य र एटमझे सार को उपस्थीतामा महेको वैद्य की किलित बने भीत ही रही कही सम्परत उत्ते एवेडी हुन खते. एक तथा उस जिल्हा किन्य सनायत द्येकारकता खर्ने िंड हु तथा करणंत्रपू टफ्फा अस्वारी अरदोत निर्भय परित

Phase 2

आज मिति २०७२ साल असोज द गते कोहलपुर खानेपानी तथा सरसफाई उपभोक्ता संस्थाको आव्हानमा सरोकारवालाहरु सिम्मिलित एक भेलाको आयोजना मिरेयों । सो भेलामा छलफल हुदाँ हालै चालु हुन लागेको खानेपानी क्षमता अभिवृद्धि कार्यक्रम (Enhance Functionality in Small Town Water Supply and Sanitation Sector Project) कार्यान्वयन गर्दा वातावर मा कुनै प्रतिकृत असर नपाने, जग्गा अधिग्रहण गर्नु नपर्ने र पूनर्वासको व्यवस्था समेत गर्नुनपर्ने देखिएकास सोही अनुसार सम्बन्धित सबै सरोकारवालालाई जानकारी गराएका छौं।

उपस्थिती :

क.सं.	नाम, थर	पद	ठेगाना	हस्ताक्षर
9.	८म तर वहाहुर मन्त	মেক্ষর	कोहलाह्य रहा । वा राम क्षेत्र उस	· Culy
d.	अम अतिभारकर भेषी अध्यिपी	व्याल्यु	., ., ., ., .	
9.	८१ राप्त वटाद्य वली	यान्यिष	., ., ., .,	(A)
6.	8A विद्यापु असाह तिवारी	के आस्त्रा	1 1 1 1	Duller
٧	८० भारती यवगल	सदक्ता	, , , , , , , , , , , , , , , , , , ,	
ξ.	८४ केशव राजा कडेल	.,	11 11 11	
6.	अनी प्राया देखी क्षेत्री-	,,		भाषादेश
τ.	क्षेत्रे असम्बद्धार्मिक	',	10 10 11	CENTRAL .
5.	% वेल रोडाय	77.		(B)
70.	१६ हरी प्रमाह उकाला	थित लिस्ट्	इनेडो नेपाल (कलकेश	Shrine.
99.	४६ प्रदिप कुमार अस्बिर		., .,	2000
92.	8A राम वहाइ८-ख्डा		., .,	673
92.	श्री याज कुमार् नीद्रशी	ভিগানে সম্ভুফ্ত	रवानेपान डिअजिम कार्यालय	(free
94	श्री प्रारक कुमार वाराला	लोबा अधिक्र	कीहलपुर् गापालेखा छ	2
72.	श्री रामेल्ड प्रमादिशक्त	अतिकांत्रात अन्यतः	महत्वपुर उद्दर्भागवणपार्षेष्ठ	The sales
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आजा मिनि २०६२ साल असीज र जाते राजवारका विन यस केह्नपुर रवानेपानी तथा सरसपाई उपयोक्ता संस्थाना अहयुस भी तर कराहर मान्न उस की कर राष्ट्रातामा त प्रसित्नमा उन्लेखित यस संस्थान प्रहाछिकारी तथा सहस्य ज्यूहर, इसेकी नेपालका प्रतिनिष्ट खानेपानी तथा सत्त्वपूर्व विकाल कार्यालय नेपाला गांगका विकाल प्रमुख्या का कर्मनारी तथा सरीकार्याला समेलको उपस्मितिया संस्थानी १२४ औं वेडड तथा भीना वसी तपरिलाका मुस्तावहरू माधी इक्ट पत निर्म स्तित गरियो। उपार्चितः क्रियं नाम थर भिर्म १ मी नर कहादुर सल्ल - अहयख - को हलापुर स्वानेपानी तथा इ.स.उ. हं 2. भी स्रोकारम् जीसी अभिकारी-उपारपड्स- । . . . 🕅 ३.सी राभ कराहर पत्नी - साम्यून - 11 Juntaile 8. मी निक्क प्रसाद निकारी - क्रिकाटयहा-11 ४. श्री भारती रवनाल - सरस्य - " इ. भी के राष्ट्र राजा कंडेल - सर्ह्य - ।। Mula 6. भी आया देनी क्रेसी - सहस्य - " इ. स्वी एक नगरायग-नगपागाई- सम्हर्य- " टिन ९. जी केल रोगाय - सहस्य- " WIN 90. MI ER YEVE GOSTED - T.M LENGER - ITECO-SET UMEC. IV क्रियारी १९ भी मिद्र मुखार महिन्द्री- मिनिही- " " " 92. भी राजा कुकार की छारी - डिकिंगना अभूरन - रना पा तथा महा है का ने गं, १ १३. १री इ. जियम दावाल - क्यावस्थापव - ब्रोहलपुर रगमेशानीतापा ह १३६. १ १४. १री दाकुर किरी - त्येरमापाल - ।। ।। र्दी १४. श्री हरि सराद वार्थी - सम क्रीकारिया-" " " " १६. स्त्री दोर्ग प्रसाह कानार्थ- प्रम अपीसर - " " " · ., ,, ,, ,, श्री. , १ट. भी जाए छाटादुर काश्रिकारी- किटर रिडर- " 11 4 0 98. सी डेडल्डर असाह चीरारी- अयस - " KYLLE AT १०. भिराम जोपाल थाइ - सम्बद - ।। ., ., ., allowy. 29. भी राम कोपाल-मोद्यी-मिस रिस - " 41. अरी साम कटाहुर सकता — — कटीको को पतः 23. अरी साम देवी सकाल — प्रमिनिये – जनुष्टता यादिता सासदाविकात Lugh

क्रिकेस १४. भी कवरों वहादूर कार्जी- छारे प्रकार - के हतापुरन पा. यत बडार १४. भी राजेन्द्र जुना भेवह - रामाजरीवी- केल्लपुर म.पा.- १९ " 28. जी सरहे मुयार बरान - नेट्या अधिका ने हिलपुर नगरपालिका Anct 26. अर्गिला अल्ला - समामसेवी - छोडलपुर न.पा. 90 एडलालपूर कि १र भी न्यन्द्र कहादुर रवसी - सम्मासेनी -को हलपूर स.पा. 90 एखा गर्प 25. मिखिमा राय वकाल - समामरेवी - की हत्युर न पा-१० द्वारीयान्यू ्योद ३०. भी मल यहादूर गाही - उपमोत्डा - छोह्वापुर न्यः पा-पूर्वतामान अधिकारते देश. भी मीरी कान्त आनार्य - स्मामिनी - की हता प्रत्मा- ११, मामिद्र ३१. भी नरेश कुमार हे सी. - उपक्रीता - कोहलपुर नः पा - ११ रेगीनेखनगर २६. भी जिस्स प्राठा । - अप्रमान ने स्वाप्त पा. - ११ भागात । - ११ भागात । - विद्यापत पा. - ११ भागात । - ११ भागात । - विद्यापत पा. - ११ भागात । - ११ भागात । - विद्यापत पा. - ११ भागात । - विद्यापत पा. - ११ भागात । - विद्यापत । - व (तर्भ ४०. भी कोला मार्था - स्टामानस्मिन - - नव, ४१. भी हरि संबद कीहरी - उपक्रोत्का - कोहलपुर न. पा. - १ सान्तिना दूरी का ४१. भी यन अधिकारी - समाजसेवी - ।। ।। - ६, सानन्सात् त्रस्मान तथा निर्वायहरु:

Project Photographs

Photos on Public Gathering Meeting on Environmental and Social Issues KOHALPUR



Photo No. 1



Photo No. 2



Photo No. 3



Photo No. 4



Photo No. 5



Photo No. 6