Initial Environmental Examination

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NEP: Urban Water Supply and Sanitation (Sector) Project – Siddhanath Baijanath (Kanchanpur District) Water Supply and Sanitation Subproject

Package No: W-03

Prepared by Ministry of Water Supply, Government of Nepal for the Asian Development Bank.

Initial Environmental Examination

December 2019

NEP: Urban Water Supply and Sanitation (Sector) Project (UWSSP)

Siddhanath-Baijnath Urban Water Supply and Sanitation Project

Chakkifanta, Kanchanpur District

Prepared by the
Ministry of Water Supply (MoWS)
for the
Asian Development Bank (ADB)

ABBREVIATIONS

ADB	Asian Development Bank
AP	Affected Person
DCC	District Coordination Committee
DI	Ductile Iron
DSMC	Design, Supervision and Management Consultant
DTW	Design Tube Well
DRTAC	Design Review and Technical Audit Consultant
DWSSM	Department of Water Supply and Sewerage Management
EARF	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMR	Environmental Monitoring Report
EPA	Environment Protection Act
EPR	Environment Protection Rules
EO	Environmental Officer
ES	Environmental Specialist
ESA	Environmental Safeguard Assistant
ESE	Environmental Safeguard Expert
GI	Galvanized Iron
GoN	Government of Nepal
GRM	Grievance Redress Mechanism
HHs	Households
HDPE	High Density Polyethylene
IBAT	Integrated Biodiversity Assessment Tool
ICG	Implementation Core Group
IEE	Initial Environmental Examination
IUCN	International Union for Conservation of Nature
MoFE	Ministry of Forests and Environment
MoWS	Ministry of Water Supply
NDWQS	National Drinking Water Quality Standard
NPR	Nepalese Rupees
PMO	Project Management Office
RPMO	Regional Project Management Office
ROW	Right of way
REA	Rapid environmental assessment
SDG	Sustainable Development Goal
SEMP	Site-Specific Environmental Management Plan
SPS	Safeguard Policy Statement
ToR	Terms of Reference
USD	United States Dollar
UWSSP	Urban Water Supply and Sanitation (Sector) Project
WTP	Water Treatment Plant
WHO	World Health Organization
WUSC	Water Users' and Sanitation Committee

WEIGHTS AND MEASURES

C	Celsius/centigrade
dBA	decibel audible
Ha	hectare/s
Km	kilometer/s
Kph	kilometer/s per hour
m	meter/s
m^3	cubic meter/s
amsl	Above mean sea level
mg/l	milligram/s per liter
Mm	millimeter/s

NOTES

This Initial Environmental Examination is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff and may be preliminary in nature. The IEE and its environmental management plans will be updated during project implementation, if needed.

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ANNEXES

EXECUTIVE SUMMARY

The Urban Water Supply and Sanitation (Sector) Project (UWSSP) will support the government of Nepal (the Government) in providing improved water supply and sanitation services in urban centers (small towns) in accordance with the updated 15-year Development Plan for Small Towns[1] and the National Urban Development Strategy. It will help the country to meet Sustainable Development Goal (SDG) 6th Goal to ensure availability and sustainable management of water and sanitation for all by 2030.

The Siddhanath-Baijnath Urban Water Supply and Sanitation Project is located in Kanchanpur district of Sudurpashchim Province of Nepal. The project town is within the Bheemdatt Municipality, the headquarters of Kanchanpur district. It is bordered with Kailali district in east, Dadeldhura district in north and India in south and west. The project town is an emerging of the belt. The service area of the proposed project covers ward numbers 6, 8 & 10 of Bheemdatt Municipality. The major settlements/toles of the service area are Baijnath, Bhumi Raj Tole, Banagau, Purnima Tole of ward number 6, Sidhanath, Bhanu, Jyoti of ward number 8, Adarsha Tole, Amarjyoti Tole, Badimalika Tole, Basanta Tole, Baijnath Tole, Danu Baba tole, Divya Jyoti Tole, Gadda Chauki Tole, Gajar, Gyanu Baba Tole, Gauri Shankar, Gorakhnath , Jay Jagarnath, Jimuwa, Mahalaxmi Tole, Maheshori, Malikarjun Tole, Mankamana Tole, Nagarjune, Pashupati Tole, Pragati Tole, Purnagiri, Sangam Tole, Shanti Tole, Sarswati Tole, Shiva Tole, Sidhanath Tole, Sidheshori Tole, Sukasal, Tintara, Bijaya Tole of ward number 10.

There is no existing water supply scheme in the Tumdani Chakkifanta, Kanchanpur. People are using tube wells, kuwa and river for their daily water use. The household survey of the project area showed that about 80.2 percent of the people are using tube wells while 19.2 percent are using kuwa and river for their daily water need. Hence, the need of the project is very urgent.

97.8 percent of the household has possessed toilets. Most of the households in the market area have permanent type of private latrine and others have pit latrine. The current practice of human excreta management and disposal is on-site sanitation consisting of individual household or institutional septic tanks often without a proper effluent disposal system.

Although, the economy of the area is gradually shifting from rural agricultural economy to trade/ business and service based, majority of the households are still dependent on agriculture. 43.4% of the households have agriculture as main occupation. Service is another main occupation and

[1] Government of Nepal. Ministry of Urban Development, 2015. Updated 15-Year Development Plan for Small Towns Water Supply and Sanitation Sector. Kathmandu.

it is the primary for 24.5% households. Around 13.3% of the households have business as occupation and 11.4% are involved in wage-based works.

Subproject Selection. The selection of Siddhanath-Baijnath Urban Water Supply and Sanitation subproject complies with the subproject selection criteria discussed in the project administration manual (PAM) and environmental assessment and review framework (EARF) developed for the project. Consistent with the EARF, compliance of Siddhanath-Baijnath Urban Water Supply and Sanitation subproject with these criteria has been confirmed prior to the conduct of initial environmental examination.

Categorization: Siddhanath-Baijnath Urban Water Supply and Sanitation Project is classified as Category B for Environment as per ADB's SPS - 2009 as no significant impacts is envisioned. This initial environmental examination (IEE) report has been prepared based on final detailed design and following requirements of ADB SPS and Government of Nepal laws, rules and regulations. In particular, the subproject is included in Schedule 1 of the Government of Nepal Environmental Protection Rules (EPR), 1997, and an IEE is required. The IEE has been undertaken to assess the environmental impacts of the subproject, and provide mitigation and monitoring measures that will ensure no significant environmental impacts occur as a result of the subproject.

Subproject Scope: The subproject is formulated under UWSSP to improve water supply and sanitation service delivery in wards 6, 8 & 10 of Bheemdatt Municipality. Investments under this subproject include deep tubewells, reservoir, transmission mains with distribution lines, household connections, office building and other allied components.

Implementation Arrangements: Ministry of Water Supply is the executing agency. The Department of Water Supply and Sewerage Management (DWSSM) is the implementing agency. Implementing activities will be overseen by a separate Project Management Office (PMO) which is established in DWSSM head office in Kathmandu and Regional Project Management Offices (RPMO) in the western region. A team of technical, administrative, and financial officials including safeguard specialists will be provided at the PMO to implement, manage and monitor project implementation activities. The RPMO 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; designing the infrastructure and supervising construction; and safeguards preparation.

Description of the Environment: The location of the project is latitude 28°55'0" N and longitude 80°20'0" E lying in a part of alluvial deposit of Mahakali River and its tributaries. It is bordered by Kailali district in East, Dadeldhura district in North and India in South and West. The project area has sub-tropical climate with approximate annual precipitation of 1900mm. Geologically, the underline formation of the area is of cobbles, gravels and sand with pockets of clay, and the area is stable without any apparent occurrence of land instabilities The subproject components will be located in WUSC owned sites, public road right-of-way (RoW). There are no protected areas, wetlands, mangroves, or estuaries in or near the subproject locations.

Environment Management Plan: 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.

For the consturciton and works of Deep Boring, Pressure Filter, Softener, Disinfection Unit, 450 Cum R.C.C OHT, Generator Operator House, Guard House, Office Building and Laboratory Room, approximately 1790.06 sq.m land will be used at Sidhanath Tole, ward no: 8 of Bhimdatta Municipality. Locations and sitting of the proposed infrastructure were considered to further reduce impacts. The concepts considered in design of subproject are: i) demand for new piped water supply; ii) maximum population coverage 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 away from latrines, septic tanks and main drains to avoid contamination; vi) locating sources at least 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 standards to reduce the likelihood of uncontrolled disposal as currently practiced; ix) ensuring all planning and design interventions and decisions are 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 spoil; and from the disturbance to residents, businesses, and traffic. These are common impacts of construction in urban areas, and there are well developed methods for their

mitigation. These are common temporary impacts of construction and will be minimized by using best construction methods. Traffic management will be necessary during pipe laying on busy roads. During operation, the delivery of unsafe water is a crucial concern that can be mitigated with good operation and maintenance, prompt action on leaks and quality monitoring of supplied water. The operation and maintenance will be carried out timely during this phase.

To ensure that the recommended mitigation and monitoring actions are duly implemented, monitored, assessed, evaluated and disseminated to the stakeholders for feedback and improvement, the Project's Environmental Management Office will be established and manned by the qualified environmental experts, whose sole responsibility will be to monitor the implementation of the environmental mitigation measures and direct project supervising engineers through project management office for needed action and coordination. A cost of NRs 1,500,000.00 has been estimated for implementation of EMP and its monitoring.

Consultation, Disclosure, and Grievance Redress Mechanism: Public consultations were conducted in the preparation of the project and IEE. On-going consultations will be carried throughout the project implementation period. A grievance redress mechanism is described to ensure any public grievances are addressed quickly.

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

Conclusions and Recommendations: Siddhanath-Baijnath Urban Water Supply and Sanitation Project will bring a series of benefits to the local people. However, there are some risks in the commencement of the project on time and sustainability of the project which requires to be identified and measures taken to mitigate them. But the analysis shows that project benefits outweigh the risks and these potential risks can be overcome through proper planning, coordination and management. Therefore the proposed subproject is unlikely to cause significant adverse impacts. Based on the findings of IEE, there are no significant adverse impacts and the classification of the subproject as Category B for environment is confirmed. No further special study or detailed Environmental Impact Assessment (EIA) needs to be undertaken.

I Introduction

A. Background

1. The Urban Water Supply and Sanitation (Sector) Project (UWSSP) will support the Government of Nepal (the government) in providing better access to water supply and sanitation (WSS) in selected municipalities (project municipalities)[2] in Nepal. The Asian Development Bank (ADB) has supported the government in providing improved WSS services through three earlier projects.[3] Drawing on experience and lessons, this project will fund physical investments in WSS infrastructure in project municipalities and non-physical investments strengthening institutional and community capacity, service delivery, and advanced preparation of future investments.[4]

2. The Ministry of Water Supply (MoWS) is responsible for planning, implementation, regulation, and monitoring of WSS. The Department of Water Supply and Sewerage Management (DWSSM) under the MoWS supports the provision of WSS facilities in municipalities where large utilities do not exist, and these are operated by municipalities or water users' associations (WUAs). The DWSSM assists municipalities and WUAs in preparation of investment plans, project design, and establishing sustainable service delivery. The Local Governance Operation Act (2017), established municipalities as autonomous government institution with responsibility for WSS services.[5] However, shortage of investment funds, skilled personnel, and inadequate operation and maintenance (O&M) budgets, hinder municipalities from providing adequate, cost-effective services. While municipalities' capacity is being built, the government and residents have been receptive to an established decentralized, participatory, and cost-sharing service provision model through Water Users' Steering Committees (WUSCs).[6] Development support for municipal WSS is mainly being channeled through budget allocation as grants to DWSSM and loans through to the Town Development Fund (TDF)[7] with contributions from municipalities and beneficiaries. The TDF is also supporting WUSCs in institutional and financial management including the introduction of tariffs.

3. UWSSP is being implemented over a five-year period (2018 to 2023) and supported through ADB financing using a sector lending approach. In continuation of ongoing third small towns WSS sector project,[8] MoWS is the executing agency and Department of Water Supply and Sewerage Management (DWSSM) as the implementing agency. The project management office (PMO) established under ongoing ADB Loan 3157-NEP: Third Small Towns Water Supply and Sanitation Sector Project is also responsible for the overall management, implementation and

[2] Interventions will be in preselected urban areas of municipalities, previous to Nepal's federalization referred to as small towns, defined as (i) population of 5,000 to 40,000; (ii) located on a road linked to the strategic road network; (iii) has perennial road access, grid power, telecommunication, and potential for growth; (iv) has an average population density of 10 persons per hectare; and (v) has jurisdiction of one administrative boundary.

[3] ADB. 2000. *Report and Recommendation of the President to the Board of Directors: Small Towns Water Supply and Sanitation Sector Project*. Manila; ADB. 2009. *Report and Recommendation of the President to the Board of Directors: Second Small Towns Water Supply and Sanitation Sector Project*. Manila; and ADB. 2014. *Report and Recommendation of the President to the Board of Directors: Third Small Towns Water Supply and Sanitation Sector Project*. Manila.

[4] Project preparation was supported by loan consultants under the ongoing *Third Small Towns Water Supply and Sanitation Sector Project*.

[5] Government of Nepal, 2017. *Local Governance Operation Act*. Kathmandu.

[6] The WUSCs, formed under the Nepal Water Resource Act (1992), are the elected executive bodies of the WUAs. WUSCs are required to have women (at least 33%) and marginalized ethnic groups representatives, and for a woman to occupy at least one of the key posts (Chair, Vice Chair, Secretary, or Treasurer).

[7] The TDF is a government-owned entity established under the Town Development Fund Act, 1997. Loans from the government to municipalities or WUSCs are generally on lend through the TDF.

[8] ADB Loan 3157-NEP: Third Small Towns Water Supply and Sanitation Sector Project.

monitoring of UWSSP. There are Regional PMOs (RPMO) to manage day-to-day project implementation at the subproject/municipality levels. After construction including a one-year O&M period by the contractor, subprojects will be operated by the municipality itself or a user association such as the Water Users Associations (WUAs).[9]

4. Overall, UWSSP will have the following impact: quality of life for urban population, including the poor and marginalized, through provision of improved sustainable water supply and sanitation services.[10] UWSSP will have the following outcome: inclusive and sustainable access to water supply and sanitation services in project municipalities improved.[11] UWSSP will have two outputs:

(i) Water supply and sanitation infrastructure in project municipalities improved; and
(ii) Institutional and community capacities strengthened.

5. The municipality is served by existing sources. However, water supply does not sufficiently meet the needs of the people, regarding both quantity and quality. The water sample has been collected from the existing ground water sources close to proposed water source sites, and analyzed. The results of the test have shown that chemical and microbial quality of water meets National Drinking Water Quality Standards (NDWQS).

B. Subproject Selection Based on Environmental Assessment and Review Framework

6. An EARF has been developed to provide guidance on subproject selection, screening and categorization, information disclosure and consultation, assessment, planning, institutional arrangement, and processes to be followed in the formulation and implementation of subprojects during project implementation. The subproject has been screened to ensure that it complied with all the subproject selection criteria provided in the EARF. No subproject will be funded by ADB unless it complies with all these selection criteria. Table I-1 below shows the status of compliance with the selection criteria.

Table I-1: Status of Compliance with the Subproject Selection Criteria in the EARF

	Subproject Selection Criteria in EARF	Status of Compliance (Complied / Not Complied / Not Applicable	Remarks (Provide basis of compliance)
General Criteria			
1.	Not located in ecologically sensitive areas.[12]	Complied.	Section V para. 71 (Page 33); IBAT in Annex 4; REA Checklist in Annex 1; No Mitigation Measures Scenario Checklist in Annex 1
2.	Does not directly affect environmentally protected areas, core zones of biosphere reserves, highly valued cultural property.	Complied.	Section V para. 71 (Page 33); IBAT in Annex 4; REA Checklist in Annex 1; No Mitigation Measures Scenario Checklist in Annex 1
3.	Does not cause damage/destruction, removal, alteration	Complied	Table II-2 mentions no PCR will

[9] WUAs are registered entities with the district water resources committee as users' associations under the Water Resources Act (1992). Water Users and Sanitation Committees (WUSCs) are the elected executive bodies of the WUAs.

[10] Government of Nepal. 2009. *Urban Water Supply and Sanitation Policy*. Kathmandu

[11] The design and monitoring framework is in Appendix 1.

[12] Wildlife/bird sanctuaries, national parks, tiger reserves, elephant reserves, conservation reserves, core zone of biosphere reserves, centrally protected monuments or critical habitat (as defined in ADB Safeguard Policy Statement or SPS)

Subproject Selection Criteria in EARF		Status of Compliance (Complied / Not Complied / Not Applicable	Remarks (Provide basis of compliance)
	or defacement of adjacent or nearby structures/monuments and sites of international, national and local significance.[13]		be affected.
4.	Does not include and/or involve any activities listed in ADB's Prohibited Investment Activities List (Appendix 5 of ADB SPS).	Complied	Screening has been carried out
5.	Provides replacement ratio of 1:10 for any tree cutting. (Complying with GoN's EPA, 2019)	Complied	This has been mentioned in EMP
Specific Criteria for Sources			
6.	Necessary agreement and approval for raw water extraction have been obtained in accordance with relevant laws and regulations.	Complied	The WUSC has obtained permission from Municipality Office (Annex 10)
7.	Water source can sustain the quantity needed to meet demand during the planned service period even during climate change-induced drought events without adversely affecting other beneficial uses of the resource and downstream users.	Complied	This is deep-boring source and it has been assessed that the system will have sustainability for the design period; and this deep underground system will not have downstream water user issue
8.	Detailed investigations (e.g. hydrogeological surveys, bore tests, etc.) have been carried out to confirm adequate and sustainable yield is available from the proposed source for supply of minimum 100 lpcd.	Complied	The design is based on studies of similar projects in the region, and the design is based on 100 lpcd for household connections
9.	Tube well sites and/or surface water intake locations are designed to be fenced or have security provided to them.	Complied	Protection has been included in technical design
10.	Any intake source is located at least 30m upstream of any sanitation facilities.[14]	Complied	Source selection in sites is more than 30 m away from any sanitation facilities
11.	Water quality test of the proposed source/s has/have been carried out and confirmed to comply with National Drinking Water Quality Guidelines on Arsenic.[15]	Complied	Annex 8
Specific Criteria for Water Treatment Plant			
12.	No water treatment plant (WTP) will be established in floodplains.	Complied	The sites are not in the flood plains
13.	Proposed location of any WTP is at least 50 m away from any premises used by people (house, shops) to avoid noise impact.	Complied	Additionally, the WTP Units are compact units
14.	Proposed location of any WTP will be fenced or have security provided to them.	Complied	This has been considered in the design

[13] Subprojects with component activities near (within 50 m from) such sites shall have prior coordination with the Department of Archaeology

[14] Where this cannot be maintained, the design and implementation will ensure that (i) septic tanks will be sealed to make them water tight and emptied as per the design requirements; (ii) appropriate borehole case and screen are installed; and (iii) a test pit is established, and water quality monitoring is conducted regularly (at least once every quarter)

[15] Water source with arsenic levels above the national standards will not be selected. If small traces of arsenic (below the national standards) have been detected, testing for arsenic will be conducted once a month for the duration of 3 months. Arsenic test results will be submitted to ADB for review before the water source is developed for drinking purposes.

Subproject Selection Criteria in EARF		Status of Compliance (Complied / Not Complied / Not Applicable	Remarks (Provide basis of compliance)
15.	Operate and maintain any WTP in accordance with national requirements and internationally accepted standards to meet national water quality standards or, in their absence, World Health Organization (WHO) Guidelines for Drinking Water Quality.	Complied.	Section II of the IEE discusses compliance with national and internationally accepted standards (page 19)
16.	Operate and maintain any WTP in accordance with a sludge management plan.	Complied	This has been mentioned in EMP (page 47)
17.	Operate and maintain any WTP in accordance with an operation and maintenance manual, which includes proper storage and use of chemicals.	Complied	This has been mentioned in EMP (page 47)
Specific Criteria for Network Pipes and Other Structures			
18.	Will not involve use or installation of asbestos cement pipes	Complied	The design specifications has confirmed that there is no use of asbestos cement pipes
19.	All pipes are designed to be constructed underground.	Complied	The provision is include in Design document (page 44; paragraph 101)
20.	Infrastructure, such as OHT, GLSR, etc. is located considering high flood level in floodplains.	Complied	The sites are not in the flood plains
21.	Includes road access to WTP, pumping stations, and reservoirs/tanks for operations and maintenance activities.	Complied	There is already access to these sites
Specific Criteria for Public Toilets			
22.	Located in, or adjacent to, a frequently used public area on the WUA or municipality land with no or minimum involuntary resettlement/ social impacts	Complied	This has been proposed at place which is near the local market areas; and is proposed in municipality owned land
23.	If the municipality doesn't have adequate capacity, the WUA has agreed to manage the public toilet on behalf of the municipality until the municipality has adequate capacity.	Complied	Agreed between WUSC and the Municipality office
24.	Septic tanks will be designed as per national standards and codes to allow for maximum retention of septage (minimum 3 years) and water sealing.	Complied	This has been detailed in design report
25.	Toilets will be established at least 30m downstream of the drinking water source, and not in floodplains or flood prone areas. Where this cannot be maintained, the design and implementation will ensure that (i) septic tanks of the toilets will be sealed to make them water tight and emptied as per the design requirements; (ii) appropriate borehole case and screen are installed; and (iii) a test pit is established, and water quality monitoring is conducted regularly (at least once every quarter).	Complied	These aspects have been considered during site selection and in detailed design
26.	An O&M plan is developed providing details on the frequency and responsibility for collection and disposal of septage at approved site, and commitment to provide minimum operational staff and operate the facilities sustainably is given by WUAs or municipalities.	Complied	An O&M plan will be finalized after the construction works have been completed; Water Safety Plan will also be prepared at the same time
27.	Hygiene promotion campaign and educational program is developed to promote open defecation free (ODF) in	Complied	The project area is already ODF declared; and awareness

Subproject Selection Criteria in EARF		Status of Compliance (Complied / Not Complied / Not Applicable	Remarks (Provide basis of compliance)
	the towns, and WUA or municipality commits to implementing it.		activities for the total sanitation promotion has been inbuilt in this subproject

C. Basis and Extent of IEE Study

7. The Government of Nepal has prepared a 15-year development plan to implement the water supply and sanitation programs in emerging towns or small towns in order to improve the health and the quality of life of the people living in the project towns by constructing and extending water supply system, drainage and sanitation facilities and providing health and hygiene education programs in the towns. The project follows the community managed demand responsive approach where the community will be involved from the very planning phase to the implementation phase for the operation and maintenance of the subprojects soon after it is completed. The project, 'Urban Water Supply and Sanitation Sector Project, STWSSSP' is the outcome of that effort. The "Asian Development Bank" (ADB) has been providing financial assistance to implement the project in the previous phases of small towns project. The "Department of Water Supply and Sewerage Management" (DWSSM) is the implementing agency whereas the "Ministry of Water Supply" (MoWS) is the executing agency.

8. Both the Nepali law and ADB policy require that the environmental implications of individual developments are taken into account in the planning and decision making process and that action is taken to reduce the impacts to acceptable levels. This is done through the environmental assessment process, which has become an integral part of lending operations and project development and implementation worldwide. This IEE report is prepared meeting GoN and ADB requirements, the IEE template of EPA/EPR 1997 of GoN is followed to prepare the document. The IEE report primarily: (i) provides information on the subproject and its environmental requirements; (ii) provides the necessary baseline conditions of the physical, ecological, physical cultural and socio-economic environments and/or resources in and surrounding the Subproject's area of influence; (ii) identifies and assesses potential impacts 5 arising from the implementation of the Subproject on these environments and/or resources; (iii) recommends measures to avoid, mitigate, and compensate for the adverse impacts; (iv) presents information on stakeholder consultations and participation during Subproject preparation (v) recommends a mechanism to address grievances on the environmental performance of the subproject; and (vi) provides an environmental management plan.

D. Objectives and Scope of the Environmental Study

9. The main objective of the IEE is to fulfill the requirements of both ADB Safeguard Policy Statement (SPS), 2009 and Government of Nepal Environmental Protection Rules, 1997 (and its amendments), particularly pertaining to Rule 3, Annex H of Schedule 1. It aims to help decision makers to make informed decision about project. The specific objectives of the IEE study are as follows:

(i) To identify, predict and evaluate the potential beneficial and adverse impacts of the subproject on the physical, biological and socio-economical resources in the subproject area;

(ii) To suggest enhancement measures to augment the benefits of the subproject, & to propose mitigation measures to avoid, minimize/compensate adverse impacts of the project;

(iii) To prepare appropriate Environmental Management Plan (EMP); and
(iv) To inform public about the proposed subproject and its impact on their livelihood.

10. Scope of the IEE focuses on the adverse environmental impacts and its mitigation measures relating to the location, design, construction and operation of all the subproject activities. This IEE report is based on the final detailed engineering design report of the subproject.

E. Relevancy of the Study

11. The proposed water supply and sanitation subproject is needs to be studied from the environmental point of view as per Section 3 of Environment Protection Act 1997, and Rule 3 - Annex H of Schedule 1 of the Environment Protection Rules, 1997 (including amendments). The proposed water supply and sanitation subproject is intended to serve drinking water to complete area of ward numbers 6, 8 abd 10 of Bheemdatt Municipality of Kanchanpur district. The source of proposed subproject shall be ground water sources to benefit a design population of about 21,809 (Design Year 2039).\

12. As the proposed subproject falls within the definitions provided in the EPR 1997 (and amendments) Schedule 1 (H) for drinking water projects; an IEE is sufficient. Table I-2 compares the status of the subproject point by point against the conditions defined by Environment Protection Rules 1997 (and its amendments) for which a drinking water will require IEE;

Table I-1: Criteria for Requirement of IEE for Drinking Water Supply Projects as per EPR (1997) - Schedule 1, Clause H, and its comparison with situation of the Project

Sub-clause	Condition described in the Regulations	IEE Required as per the Regulation Schedule 1; Clause H	Status for proposed Chakkifanta Town Project
10	Supply of drinking water to population ranging between	5,000 and 50,000	Within Limits (21,464 permanent and 345 rented; in total 21,809 population for design year)

II Policy, Legal and Administrative Framework

A. Nepal's Environmental Policy Framework

13. Most of the national policies and laws of the Government of Nepal (GoN) are in favor of environmentally sound economic development and growth. Following table summarizes the relevant policies, acts and regulations and guidelines that have been an integral part of the project and have been reviewed during the preparation of the IEE report.

1. The Constitution of Nepal (2072)

14. The Constitution defines that each person shall have the right to live in a healthy and clean environment (Clause 1 of Article 30). The victim of environmental pollution and degradation shall have the right to be compensated by the pollutant as provided for by law (Clause 2 of Article 30). 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. 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.

2. Third Three Year Interim Plan/14th Periodi Plan of Nepal (2073/74 – 2075/76)

15. The interim plan provides the most recent guidance for development sector priorities highlighting, in particular, the need of environment friendly planning and technology. It proposes the strategies also for internalization of environmental management in development projects. It calls also for a stronger partnership among developmental agencies, including the local stakeholders, for implementation of environmental activities.

3. National Policy on Rural Drinking Water Supply and Sanitation, 2004

16. The policy provides guidance on water and sanitation service provision in rural areas using community led participatory approaches. While partially relevant t the urban context, particularly around the integration of inputs and local capacity building, it generally fails to address the complex operational challenges to be faced by Municipal authorities in implementing and managing urban services.

4. National Urban Policy (2007) Policy

17. The 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.

5. National Urban Water Supply and Sanitation Sector Policy, 2009

18. The policy is formulated to provide the overall policy support and guidance towards achieving equity in service delivery by ensuring that the financially marginalized households within the system areas are mainstreamed as valid customers of service through design and implementation of financial incentives where so required. It aims to ensure that the roles and responsibilities of central and local government bodies, external development partners, private sector including NGOs and user groups are clearly defined in scheme implementation and regulation and performance management in accordance with national decentralization policy.

B. Government of Nepal's Environmental Legal Framework

19. Environment Protection Act (EPA), 2054 B.S. (1997 A.D), which requires a proponent to undertake IEE or environmental impact assessment (EIA) of the proposed project and have the IEE or EIA report approved by the concerned sector agency or Ministry of Forests and Environment (MoFE), 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 MoFE) 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.

20. Environment Protection Rules (EPR) 1997 (and its amendments), define the implementing rules 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.

21. **Status of securing MoWS-approved IEE.** MoWS has approved the IEE (Annex 12) in compliance with the EPR. All other statutory clearances such as no objection certificates, forest clearances, site location clearances, permits to construct, permits to operate, and/or road cutting permits as required will be obtained by the PMO and/or RPMO. No civil works will commence until and unless required statutory clearances are obtained.

22. Other environmental acts, rules, plan, policies, guidelines that are relevant to the subproject are presented in Table II-1:

Table II-1: Other Relevant Environmental Act, Rules, Plan, Policies & Guidelines of Nepal

Act/ Rule Policy/Law/Guideline	Year	Relevant Provisions	Remarks
Labor Act	2017 A.D.	The Act emphasizes on occupational health and safety of workers and stipulates provision of necessary safety gears and adopting necessary precautionary measures against potentially hazardous machine/equipment in the workplace. It also stipulates to make arrangements such as removal of waste accumulated during production process and prevention of dust, fume, vapor and other waste materials, which adversely affect the health of workers.	The bidding document (Section 6, para 4.1.2) includes condition that the contractor shall adopt all safety measures for the safety of its workers and other personnel and shall also adhere to environmental and aesthetic issues identified during construction works.
Water Resources Act	2049 B.S. (1992 A.D.)	A 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 EIA & preparation of EIA Report before granting license to use water resources for any purpose.	Per amendment to the EPR, the subproject requires an IEE (instead of EIA) as its nature and extent fall within Schedule 1 of the EPR. Schedule 1 enumerates all types of subprojects that would require IEE only. The license to use water resource has been obtained from Municipality Office (Annex 10)
		Proponents shall make sure that the beneficial use of water resources does not cause damage to other water uses/users (Article 4).	
		Article 17 requires proponents to apply for any necessary land acquisition accordingly;	Sites for main structures have been acquired accordingly.
		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.	The EMP provides measures to comply with the relevant environmental quality standards and national drinking water quality standards.
Forest Act	2049 B.S. (1993 A.D.)	The Act prohibits the extraction of boulders, rocks, pebbles, sand or soil from 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.	Few trees will be cut. EMP stipulates no illegal quarrying of natural aggregate materials.
National Environmental Policy and Action Plan (NEPAP)	2049 B.S. (1993 A.D.)	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 have significant impacts on physical cultural heritage & biodiversity. EMP provides measures for the possible impacts.

Act/ Rule Policy/Law/Guideline	Year	Relevant Provisions	Remarks
National EIA Guidelines	2050 B.S. (1993 A.D.)	Chapter 3 of this guideline described an Initial Environmental Examination report must be prepared for those projects which may cause significant impact on environment, whose impact may be known easily and for which mitigation measures may be revealed easily, as mentioned in Schedule-1.	EMP prescribes environmental impact and mitigation measures and their performance monitoring.
Local Self-Governance Act	2055 B.S. (1999 A.D.)	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 LGs in EMP implementation.
Child Labor Prohibition and Regulation Act	2056 B.S. (2001 A.D.)	The section 3 of the act prohibits a child from engaging in work, sub clause 1 of the clause 3 states “Nobody shall engage in work a child who has not completed fourteen years of age as a labor and sub clause 2 states “Nobody shall engage a child in a risk full occupation orwork set forth in the Schedule”. The section 4 states “Child not to be engaged in work against his will by temptation or fear or pressure or by any other means”	The bidding document (Section 6, para. 4.1.2) provides condition that contractors shall comply with applicable labor laws and core labor standards of Nepal on prohibition of child labor, equal pay for equal work of equal value regardless of gender, ethnicity or caste, elimination of forced labor and disseminate information on sexually transmitted diseases including HIV/AIDS to employees and local communities.
Implementation Directives for the National Drinking Water Quality Standards	2063 B.S. (2005 A.D.)	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 eth EMP following the NDWQS Directives.
Updated 15-Yr Development Plan for Small Towns Water Supply and Sanitation Sector	2067 B.S. (2009 A.D.)	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	2068 B.S. (2011 A.D.)	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.

C. International Environmental Agreements

23. Table II-2 below lists the relevant international environmental agreements that Nepal is party to, and their relevance to various subprojects under UWSSP.

Table II-2: International Environmental Agreements Relevant to the Subproject

International Environmental Agreement	Year*	Relevant Provisions	Remarks
World Heritage Convention	1978	Parties to ensure the protection and conservation of the cultural and natural heritage situated on territory of, and primarily belonging to, the State	The subproject will help the Government of Nepal comply with this agreement. The subproject has been selected ensuring that it will not negatively impact cultural and natural heritage at the subproject sites.
Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention)	1987	Parties to conserve and wisely use wetlands (i.e., maintaining their ecological character) as a contribution towards achieving sustainable development locally and throughout the world	The subproject will help the Government of Nepal comply with this agreement. The subproject components are not located in wetlands and other protected areas of the country.
Convention on Biodiversity	1992	Parties to require the environmental assessment of projects that are likely to have significant adverse effects on biological diversity with a view of avoiding or minimizing such effects	The subproject will help the Government of Nepal comply with this agreement. The subproject will not impact biodiversity in the country.
UN Framework Convention on Climate Change	1992	Parties to take precautionary measures to anticipate, prevent or minimize the causes of climate change and mitigate its adverse effects.	The subproject will help the Government of Nepal comply with this agreement. The subproject will ensure implementation of its EMP as measure to minimize the causes of climate change.
Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal	1996	Parties to, among others, minimize the amount and toxicity of hazardous waste generated, manage the hazardous and other wastes they generate in an environmentally sound manner and as close as possible to the source of generation.	The subproject will help the Government of Nepal comply with this agreement. The subproject will ensure implementation of its EMP as measure to avoid or minimize the generation and disposal of hazardous wastes.

* (Year) - Year last amended.

24. The subproject will continuously support Nepal's commitment to these international agreements. Eventually, the subproject will help the country fulfill its commitment to the 6th goal of United Nation's Sustainable Development Goals, which is to ensure access of all to clean water and sanitation.

D. Environmental Assessment Requirements

25. The Project is subject to the environmental safeguard requirements of both the ADB and Government of Nepal.

E. Environmental Assessment Requirements of the ADB

26. All projects funded by the ADB must comply with the Safeguard Policy Statement (SPS) 2009 to ensure that projects funded under ADB loan 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.[16]

27. Table II-3 summarizes the environmental safeguard requirements applicable to the subproject per ADB SPS;

Table II-3: SPS 2009 Safeguard Requirements

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, indicating that the Subproject is **NOT**: (i) environmentally critical; and (ii) adjacent to or within environmentally sensitive/critical area. The extent of adverse impacts is expected to be local, site-specific, confined within main and secondary influence areas. Significant adverse impacts during construction will be temporary & local. Hence can be mitigated without difficulty. Hence, IEE is sufficient.
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 transboundary global impacts, including climate change.	IEE has been undertaken to meet this requirement. (Impacts are discussed in Section VI). No transboundary & 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 alternatives is presented in Section VII.
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 VIII
Carry out meaningful consultation with affected people & facilitate their informed participation. Ensure women's	Key informant and random interviews have been conducted. A grievance redress mechanism for

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

SPS 2009 - Safeguard Requirements	Remarks
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.	the resolution of valid subproject-related social and environmental issues/concerns is presented in Section IX.
Disclose a draft EA (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 IEE will be disclosed on ADB's website. GoN approved IEE Report will be made available at the offices of the PMO, ICG and WUSC.
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 included in this IEE report.
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.	The sub-project does not encroach into areas of critical habitats. The major project structures and transmission main and distribution networks are proposed on public land and existing public road RoWs as far as possible. Therefore, no settlements are expected to be adversely affected due to acquisition of small size of public vacant lands at different sites. The public land can be used after getting consent from Municipality.
Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. 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 also applicable to the sub-project in the aspect of pollution management, and waste management, e.g., effluent from septic tanks and generated sludge and slurry disposal from water supply and sanitation structures. The sub-project will ensure that the contractor's measures and practices are in line with internationally accepted standards
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 phases.
Conserve physical cultural resources and avoid destroying or damaging them by using field-based	The Subproject will not affect any physical cultural resource. The EMP recommends the

SPS 2009 - Safeguard Requirements	Remarks
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.	measures to mitigate any such adverse impacts, and also in case of chance find.

28. During the design, construction, and operation of the subproject the PMO and concerned RPMO shall apply pollution prevention and control technologies and practices consistent with international good practices, as reflected in internationally recognized standards. When the Government of Nepal regulations differ from these levels and measures, PMO shall achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific subproject circumstances, PMO will provide full and detailed justification for any proposed alternatives that are consistent with the requirements presented in ADB SPS.

F. IEE Approval Process of Nepal

29. The Environment Protection Rules (EPR) defines for the preparation, review, and approval of the IEE report. The process applicable to the subproject is summarized in Table II-4 below. The key environmental quality standards applied in the GoN IEE (as well as in the ADB IEE) are listed in Table II-4 and their details featured as Annex 2-A.

Table II-4: The GoN IEE Report Preparation, Review, Approval and Implementation Process

Steps in the Process	Remarks
Proponent refers to EPR Schedules 1 & 2 for the required environmental assessment (IEE or EIA) to carry out.	Subproject requires an IEE.
If proposed project requires an IEE, Proponent prepares an IEE schedule of work/ToR using the format prescribed in Schedule 3 of the EPR and submit this to the CSA for approval.	Subproject has secured an approved ToR.
Proponent carries out IEE according to the approved work schedule/ToR and prepares an IEE Report following the format prescribed in EPR Schedule 5 and incorporating stakeholders' feedback applying the consultation procedure specified in the EPR.	Subproject carried out the IEE and prepared the IEE Report accordingly.
Proponent submits 15 copies of the IEE Report along with the project proposal and recommendation of the concerned Rural Municipality or Municipality to the CSA.	Subproject submitted documents accordingly for review and approval.
CSA conducts review and grants approval of IEE Report.	Subproject's IEE Report has been approved, without having
➢ If review reveals project implementation to have no substantial adverse impact on the environment, CSA grants approval within 21 days from receipt of report.	To undertake EIA.
➢ If review reveals the necessity to carry out an EIA, Proponent conducts an EIA following the prescribed EIA process.	
Proponent implements approved IEE Report and any terms and conditions given with the approval.	Subproject has not started implementation.
CSA monitors and evaluates impact of project implementation. When necessary, issue directives to the Proponent to institute environmental protection measures.	Subproject has not started implementation.
MoWS conducts environmental audit after two years of project commissioning/operation.	Subproject has not started implementation.

CSA Concerned Sector Agency
EPR Environment Protection Rules, 2054 (1997) (and amendments)
MoWS Ministry of Water Supply

G. Relevant Environmental Quality Standards

Table II-4: Relevant Environmental Quality Standards

Particular	National Standard	International Standard
Ambient air quality	National Ambient Air Quality Standards, for Nepal, 2003	WHO Air Quality Guidelines, Global Update, 2005
Emission standard for diesel generator discharge to ambient Air	Emission standard for diesel generator	EPR-15, 1997
Noise	National Noise Standard Guidelines, 2012	WHO Guideline Values on Noise Level
Drinking water quality	National Drinking Water Quality Standards, 2006	WHO Guidelines for Drinking-water Quality, Fourth Edition, 2011

* For surface and ground water quality monitoring, the National Drinking Water Quality Standard (2062) of Nepal shall be applied since these resources are used for drinking.

30. The project will operate and maintain the WTPs in accordance with national requirements and internationally accepted standards to meet National Drinking Water Quality Standards or, in their absence for any parameter of concern, will comply with World Health Organization (WHO) Guidelines for Drinking Water Quality.

III APPROACH AND METHODOLOGIES

31. In order to meet the objectives of the IEE study a systematic and integrated methodology was followed in accordance with the legal requirements of GoN. The IEE study was conducted as per provisions of the Environment Protection Rules (1997) following the provision of Rules 5, 7, 10 & 11 in compliance with the schedule 1, 3 & 5.

32. The basic methodology as per EPR includes review of literature for preparation of IEE, ToR and approval from the concerned ministry, followed by a 15-days public notification & collection of suggestions from the project baseline information related to physical, biological socio-economic & cultural environment (Rule 5 of EPR) was conducted using various applicable survey tools. The study has followed the procedures outlined in the approved ToR and has covered the issues delineated therein. Key elements of the methodology include collection of primary data based on field studies, consultation with local people and officials. The principal steps undertaken in the IEE methodology to accomplish the assignment are briefly discussed below:

1. Literature review:

33. Available primary and secondary literature in the form of reports and maps; topographic maps, land use maps, aerial photographs, cadastral survey maps etc were collected and reviewed. Feasibility studies of the subproject conducted at various times were the key documents collected and reviewed to determine the nature and scope of activities of the subproject that influences the environmental conditions of the proposal area. Similarly published and unpublished reports pertaining to environmental standards, Acts, Regulations etc were collected and reviewed. Published and unpublished literatures of the subproject area pertaining to biological, social, chemical, physical, and cultural environments in the form of maps, and reports etc. were collected from various sources and reviewed to get information on the coverage of the studies and fulfill the data gaps.

34. *Impact Area Delineation:* The desk study also involved the preparation of questionnaire/checklists/matrices for detailed field study to collect the primary data within the Zone of Influence (ZOI). In order to specify the area that would be covered by the assessment, the geographical boundary of the influence area was delineated on the topographical map. Depending upon the nature and extent of the expected impact area, the Zone of Influence (ZOI) was categorized into Direct Impact Zone (DIZ) and Indirect Impact Zone (IIZ).

35. *Direct Impact Zone (DIZ):* The project areas directly affected by the project activities are demarcated as Direct Impact Zone. Subproject component sites of wards no 6, 8 and 10 of Chakkifanta municipality come under the Direct Impact Zone (DIZ).
Indirect Impact Zone (IIZ): The area 200 m around the DIZ that could be indirectly affected due to project construction and implementation activities such as mobility of people, equipment, vehicles, noise, dust are demarcated as the Indirect Impact Zone.

2. Field Study:

36. Field studies were conducted in subproject site areas in an extensive manner by a multidisciplinary team, which comprised of an environmentalist, biologist, socio-economist, and civil engineer. During the visits, baseline information on physical and cultural, chemical, biological, and social conditions of the subproject direct and indirect impact areas were collected by using checklists (Annex 9). The sub-sections below present briefly the various approaches and methodological tools used during the field exploration.

37. *Physical Environment:* An extensive Physical Environment survey was carried out by delineating the subproject impact area to collect the baseline information on physical environment. Topographic and geomorphic features were observed and documented. Physical features such as topography, clinmate & meteorology, air quality, erosion and land stability & Land use pattern were observed and recorded. Similarly, data on rainfall and other meteorological conditions were collected. Consultations with the local communities were done at Users Group Office.

38. *Biological Environment:* The vegetation survey was carried out by walkover survey throughout the subproject direct impact areas. Type of vegetation and forest were identified based on the species composition. Biodiversity values of the indirect impact area were estimated as low, moderate, and high applying standard tools. Ethno-botanical information was obtained. The protected vegetation (rare, endangered, indigenous etc.) of the influence area as per IUCN Red Book, CITES Appendices, and GoN list species were enumerated based on consultation with the local people in the indirect impact areas of the subproject. Wildlife biodiversity in the indirect impact areas was studied in the field interacting with local people (for habitat continuity) methods to identify linkages between wildlife habitats and proposal activities. The indicator wildlife and threatened or endangered species (as per IUCN Red Book, CITES Appendices, and GoN list) in the area via consultation with the local communities.

39. *Socio-economic and Cultural Environment*: Household survey with questionnaires was conducted by interviewing to obtain information on socio-economic and cultural environment like demography, ethnicity, education, health, and sanitation, drinking water condition of the subproject area, irrigation facility, local traditions, religion, land holding pattern, income and expenditure and to acquire their perception towards proposed subproject, etc. The survey covered 100% of the total HHs whereas only 10% of the total HHs was survived in detail for this study.

40. Stakeholder consultations were held at at Siddhanath-Baijnath Water Users Group Office to interact with local people and stakeholders in order to collect information on migratory pattern of local people, history of the river, impact of river on settlement, agriculture, information on subproject affected families (if any), land transaction and to obtain suggestions and comments from all relevant stakeholders through. Direct observation (walk-through survey) was done to collect information on the cultural sites, and public institutions such as temples, cremation grounds, and festival sites, historical and archaeological sites, school, and health post within the direct project affected areas. Consultation with village elites and through focus group discussions was made to assess the current situation of these facilities and the general sanitation status of the subproject area community.

41. **Public/Stakeholder Consultations:** Stakeholder consultations were conducted regarding demarcation of project service area and the beneficiaries. The land availability of project components and location of these components were also discussed in the semi-formal, formal and informal meetings. The major concerns raised during the public consultations were greenery promotion, prioritization for local employment, waste/spoil disposal, and need of sanitation support through the project. (Annex 5). Section VI discusses the details of the impacts.

3. Data Processing and Impact Identification, Prediction & Evaluation Methods

42. The environmental impact both beneficial and adverse were elaborately identified, predicted and evaluated to the extent possible, for both construction and operational stages. Each impact identified, predicted and evaluated by using standard methods and techniques on physical, biological, socio-economic and cultural aspects. The impacts were studied in terms of their nature, magnitude, extent and duration. National EIA Guidelines 1993 was used for the reference for the impact identification, prediction and evaluation. Simple matrix method was used. Magnitude of the impact were classified into High (H), Medium (M) and Low (L), extent will

be classified in terms of Site Specific (SS), Local (L), and Regional (R). Similarly, the duration of impact is further classified into Short Term, Medium term and Long term.

Scoring of Impacts

43. The impacts are identified as Direct Impact (D) or Indirect Impact (IN) based upon the nature of the impacts. The socring is based on magnitude of the impact, extent of its occurance and duration of the impacts as follows;

Magnitude: H = High (60); M = Medium/Moderate (20) ; and L = Low (10);
Extent: R = Regional (60), L = Local (20); and S = Site-specific (10);
Duration: LT = Long-term (20), MT = Medium-term (10); and ST = Short-term (5).

44. The points/scoring are taken from the National EIA Guidelines, 1993. Significance of Impact rated if total score: More than 75: Very Significant, 45-75: Significant, Less than 45: Insignificant.

4. Preparation of IEE report

45. Upon meeting the GoN and ADB requirements for conducting IEE, an IEE report is prepared in a format prescribed in Environment Protection Rules 1997. The format for EPR 1997 is followed but the requirements of ADB are compiled while preparing the report in GoN format.

5. Team Members for IEE Study

46. The following experts were mobilized to complete the IEE study of Siddhanath-Baijnath Urban Water Supply and Sanitation Project (Table III-1).

Table III-1: Study Team for IEE Study of the Subproject

SN	Name of Expert	Designation	Expertise field
1	Mohan Karki	Team Leader, Project	Engineering/Design-Supervision
2	Yogesh Shakya	Environmental Specialist Team Leader, IEE	Environmental Management (IEE Focal Person)
3	Deependra Pokharel	Social Safeguards Specialist	Socio-economist
4	Manoj Kumar Sharma	Engineer	Contract Management
5	Sheela Sharma	Asst. Environmental Specialist	Environmental Science
6	Elena Pudasainee	Support Staff	

IV DESCRIPTION OF THE PROJECT

A. Type, Category and Need of the Subproject

47. The proposed "Siddhanath-Baijnath Urban Water Supply and Sanitation Project" is a ground water based water supply system project covering wards 6, 8 and 10 of Bheemdatt Municipality. The project comprises of two major components; *water supply* and *sanitation*. The water supply part comprises of pumping from deep tubewell and its gravity based distribution system from an OHT. Small scale sanitation intervention with focus on household toilets is also a component of this subproject.

48. The present situation of drinking water is not safe and it doesn't meet the need of a growing urban center as well. The demand for institutions and local commercial activities will also increase in coming years. New residential settlements, educational institutions, commercial set-ups and other business interventions will increase in the project area in coming years as it is a part of already vibrant city of Bheemdatt. The Siddhanath-Baijnath Urban Water Supply and Sanitation Project is a good opportunity for the community to fulfill their water supply and sanitation need.

B. The Subproject

49. The water supply system has been designed for a base year population of 10,047 for the year 2019. The system has been designed to extract ground water source from deep tubewell for a total design year population of 21,809 for the year 2039. One new overhead reservoir has been proposed considering the locality and topography of the project area. A total of 4.865 km of transmission mains and 52.904 km of distribution lines will serve household connection to 1730 households in the base year.

Table IV-1: Subproject Components Based on Bidding Documents

Components		Nos.	Description (Volume / Capacity / Footprint Area / Length)
1.	New Tube wells	2 (+1 standby)	100 m depth (projected)
2.	Service Reservoirs	1 no.	450 cu. m.
3.	Treatment facility subcomponents:		
	Pressure Filters	2 nos.	2.5 m diameter each
	Softner	2 nos.	1.6 m diameter each
	Disinfection Units	1 no.	Mixing tank - 1000L Dosing tank - 250 L
	Water Quality Testing Laboratory	1 no.	24 sq. m.
4.	Distribution Network.	1 network	52.904 km.
5.	Transmission Mains.	1 network	1.098 km.
6.	Pumps (including related accessories, electrical panels, generators, etc.)	2 nos. (2 standby)	30 kw & 35 kw
7.	Fire Hydrants	21 nos.	
8.	House Connections.	1,730	For base year
9.	11 KV transmission lines	1 network	120 m
10.	Electrical Transformers	1 no.	1 of 160 KVA
11.	Office Building	1 no.	255 sq. m.
12.	Guard House	1 no.	35 sq. m.
13.	Generator House	1 no.	30 sq. m.
14.	Standby Electrical Generator	1 no.	1 of 200 KVA
15.	Public Toilets	1 no.	35 sq. m.

50. The sanitation component of the project consists of a construction of 1 Public Toilet with the capacity of 100 users. It contains 5 urinals and 2 pans for male users while & 4 female units in separate male and female compartments.

1. Salient Features

51. The salient features of the project are given in table below;

Table IV-2: Salient Features of the Project

SN	Items	Description
1	**Name of the Project**	Urban Water Supply and Sanitation Sector Project, Tumdani Chakkifanta, Kanchanpur
2	**Type**	Ground water (Pumping) scheme
3	**Study Level**	Detailed Engineering Design Report
4	**Location Area**	
	Province	Sudurphashchim Number
	Zone	Mahakali
	District	Kanchanpur
	Municipality	Bheemdatt Municipality
	Wards	Parts of Ward No 6, 8 and 10
5	**Available Facilities**	
	Road	East West Highway
	Nearest Airport	Bheemdatt
	Existing Water Supply System	None
	Electricity	Available
	Communication	Available
	Health Services	Available
	Banking Facilities	Available
	Attariya- Bheemdatt distance	42 km
6	**Source Characteristics**	
	Source Name	Deep Tube Well
	Source Type	Groundwater
	Source Location	Thapachauraha in Ward # 8, Bheemdatt Municipality
	Proposed Tapping yield (lps)	DTW:2 x 20,12 = 40.24 lps (Pumping)
7	**Project Components**	
	New Tube wells	2 (+1 standby)
	Storage Tank	RCC Overhead Tank 450 Cum : 1 # (Proposed)
	Valve Chamber (Nos.)	Type I (1500x900x1000) : 3 #
		Type 2 (900 x900x1000) : 86 #
		Pipe Valves (125mm dia) : 10 #
	Treatment facility sub-components	Pressure filter, Softener and Disinfection
	Pressure Filters	2 (2.5 m diameter each)
	Softner	2 (1.6 m diameter each)
	Disinfection Units	1 (Mixing tank - 1000L, Dosing tank - 250 L)
	Water Quality Lab	1 no. (24 sq m)
	Distribution Network.	52.904 km
	Transmission Mains.	1.908 km
	Pumps	2 Nos. (+ 2 standby); Capacity of 30 kw & 35 kw
	Household Connection (Nos.)	1730 for base year
	11 KV transmission lines	120 m.
	Electrical Transformers	1 no. (160 kva)
	Office Building	1 no. with footprint of 200 sq. m.
	Guard House	2 nos. with footprint of 35 sq. m. each
	Generator House	2 nos. with footprint of 30 sq. m. each
	Standby Electrical Generator	1 of 200 kva
	Public Toilets	1 no. (35 sq. m.)

SN	Items	Description
	Fire Hydrants	21 numbers
8	**Social Status**	
	Survey Year Population (2017)	9,178 (permanent) 132 (floating) [Total 9,310]
	Base Year Population (2019)	9,903 (permanent) 144 (floating) [Total 10,047]
	Design Year Population (2039)	21,464 (permanent) 345 (floating) [Total 21,809]
	Adopted Annual Growth Rate %	3.95 (Average)
	Household Numbers (2017, 2039)	1,603 HHs in 2017 and 3,745 HHs in 2039
	Average Family Sizes	5.73
9	**Total Water Demand**	
	Base year 2019 (m^3/day)	**Total 1,069.51**
	Design year 2039 (m^3/day)	**Total 2,606.66**
10	**Total Cost of the Project (NRs.)**	**280.8834 million** with 15% contingencies & 13%VAT
	Water Supply Sector	NRs. 274.5817 million
	Sanitation Sector	NRs. 6.3017 million
11	**Cost Sharing Arrangement for water supply component (NRs)**	**274.5817 million**
	1) GoN Grant @ 70%	NRs. 192.2072 million
	2) WUSC Contribution	
	a) Upfront cash contribution @ 5%	NRs.13.7291 million
	b) Loan through TDF @ 25%	NRs.68.6454 million
12	**Cost Sharing Arrangement for Sanitation Component (NRs)**	**6.3017 million**
	1) GoN Grant @ 85%	NRs.5.3564 million
	2) Local Body (WUSC, Municipality & others) 15%	NRs. 0.9453 million
13	**Per capita Investment (for water supply sector)**	**Base Year** : NRs. 27,329.71 (considering permanent and floating population both) **Design Year** : NRs. 12,590.29 (considering permanent and floating population both)
14	**Project Status**	Detailed Engineering Design, 2018

2. Subproject Sub-Systems and its Sub-Components

52. Siddhanath-Baijnath Urban Water Supply and Sanitation Project has been conceptualized as a piped water supply system using ground water as sources. One existing reservoir of 450 cum has been proposed to be used. This will have total reservoir capacity of 450 cum. Service area has elevation difference in order of 22 m.

53. This is a pumping system. The source of this system is tube well. The water is pumped from the tube well to the water treatment plant, from which water is pumped to the reservoirs. This system is proposed to serve service areas in wards 6, 8 and 10 of Bheemdatt Municipality

Table IV-3: Designated Service Area and Population Projection

Distribution System	Survey Year (2017)		Base Year (2019)		Design Year (2039)	
	Population		Population		Population	
	Own House	Floating	Own House	Floating	Own House	Floating
Chakkifanta	9178	132	9903	144	21464	345
Total	**9178**	**132**	**9903**	**144**	**21464**	**345**

3. Water Source:

54. The proposed source is a deep tubewell. The proposed tubewell site for Tumdani Chakkifanta is located at Thapachauraha in ward 8 of the Bheemdatt Municipality. The water from tube wells will be pumped to overhead reservoir tank after proper treatment. Table IV-4 provides the yield of sources;

Table IV-4: Yield of Proposed Water Source

SN	Required Safe Yield (lps)	Pumping Hours a day in Design Period	Tube Well Size	Well Numbers	Location
1	2 x 20.12	18	250 x 250mm	2 operating + 1 standby	Siddhanath Tole, Thapachauraha, Ward 8 & Gajjar Tole ward 10

4. Water Quality Assessment:

55. The water sample was thus collected from the existing tube well of about 30 m depth installed for irrigation purpose located inside Siddanath temple at Thapachauraha, ward 8 of Bheemdatt municipality on November 28, 2017 and February 12, 2018 to assess the raw water quality of the groundwater in the project area. The physical and chemical parameters of the water sample were analyzed at the Nepal Environmental and Scientific Services (NESS) Laboratory, Thapathali, Kathmandu. The following table exhibits the findings with respect to the NDWQS;

Table IV-5: Water Quality Assessment

SN	Parameters	Units	Test methods	Observed Values		NDWQS, Nepal
				Dec 2017	Feb 2018	
1	pH at 27°C		Electromeric, 4500 – H^+ B, : APHA	6.8	7.3	6.5 – 8.5
2	Electrical Conductivity	µS/cm	Conductivity Meter, 2510 B, APHA	547	579	1500
3	Turbidity	NTU	Nephelometric, 2130 B, APHA	4	10	5
4	Total Hardness as $CaCO_3$	mg/l	EDTA Titrimetric, 2340 C, APHA	342	378	500
5	Total Alkalinity as $CaCO_3$	mg/l	Titrimetric, 2320 B,APHA	335	388	-
6	Chloride	mg/l	Argentometric Titration, 4500 – Cl^- B, APHA	13.90	12.82	250
7	Ammonia	mg/l	Direct Nesslerization, 4500 – NH_3C APHA	0.30	Not Detected (<0.05)	1.5
8	Nitrate	mg/l	UV Spectrophotometric Screening, 4500 –No_3 B, APHA	6.79	14.76	50
9	Nitrate	mg/l	NEDA, Colorimetric, 4500 – NO_2^- B, APHA	Not Detected <0.02	Not Detected (<0.02)	-
10	Calcium	mg/l	EDTA Titrimetric, 3500 –Ca B &3500 –Mg B APHA	76.95	101.80	200
11	Magnesium	mg/l		36.46	30.14	-
12	Arsenic	mg/l	SDDC, 3500 - As, C: APHA	Not Detected (<0.01)	Not Detected (<0.01)	0.05
13	Iron	mg/l	Direct Air – Acetylene AAS, 3111 B, APHA	0.27	0.45	0.3
14	Manganese	mg/l		Not Detected (<0.01)	Not Detected (<0.01)	0.2

56. Although all the water quality the parameters were found comply with the NDWQS for drinking water, the water quality report showed the total hardness of water to be considerably

high. The total alkalinity is also present in significant amount. Although the water quality is found to be suitable as per NDWQS, the deposition of calcium in the pipe may be likely to occur due to high concentration of hardness and alkalinity. However, the deposition of calcium in the pipe was not found visible during the field survey. A big threat to Terai groundwater "Arsenic" has not been detected.

5. Treatment Process:

57. Since the water quality has been analyzed only once, it cannot be accurately reliable. The proposed tube wells are about 100 m depth which is much greater than existing tube well of about 30 m depth from which sample was taken for water quality analysis. The quality of water in the proposed tube well may not show exactly the same results as the existing tube well. From the consideration of the water quality of the existing tube well, the water treatment system consisting of pressure filter, softening and disinfection is recommended. It is recommended to analyze the water quality from the proposed tube well once it is drilled and modify the treatment system accordingly. The treatment process consists of various steps of treatments which are described below;

Pressure Filter

58. Pressure filters made of mild steel with food grade epoxy coating inside is proposed to remove turbidity and precipitated minerals. The pressure filters is to be packed with sand and gravel as per the design specifications. The under drainage system and back wash system should also be installed in the pressure filters. The pressure filter is expected to bring down the turbidity of water as per the NDWQS. Large number of coliforms is also expected to be removed in the pressure filter due to biological action. Two numbers of pressure filters of 2.5 m diameter has been proposed.

Softener

59. Softeners made of mild steel with epoxy painted (MSEP) is proposed to remove hardness of water so that there is no calcium deposition in the pipelines. The softener is to be packed with Na cation exchange resin (zeolite). The expected hardness in the effluent of softener is 5 mg/l. Treating 40% water from softener and blending remaining 60% with filtered water is expected to produce 342*0.6+5*0.4 = 207 mg/l of hardness, which is quite acceptable and economical. The consumption os salt is about 0.80 kg per 1000 liter of water softened. Two numbers of softeners of 1.6 m diameter has been proposed.

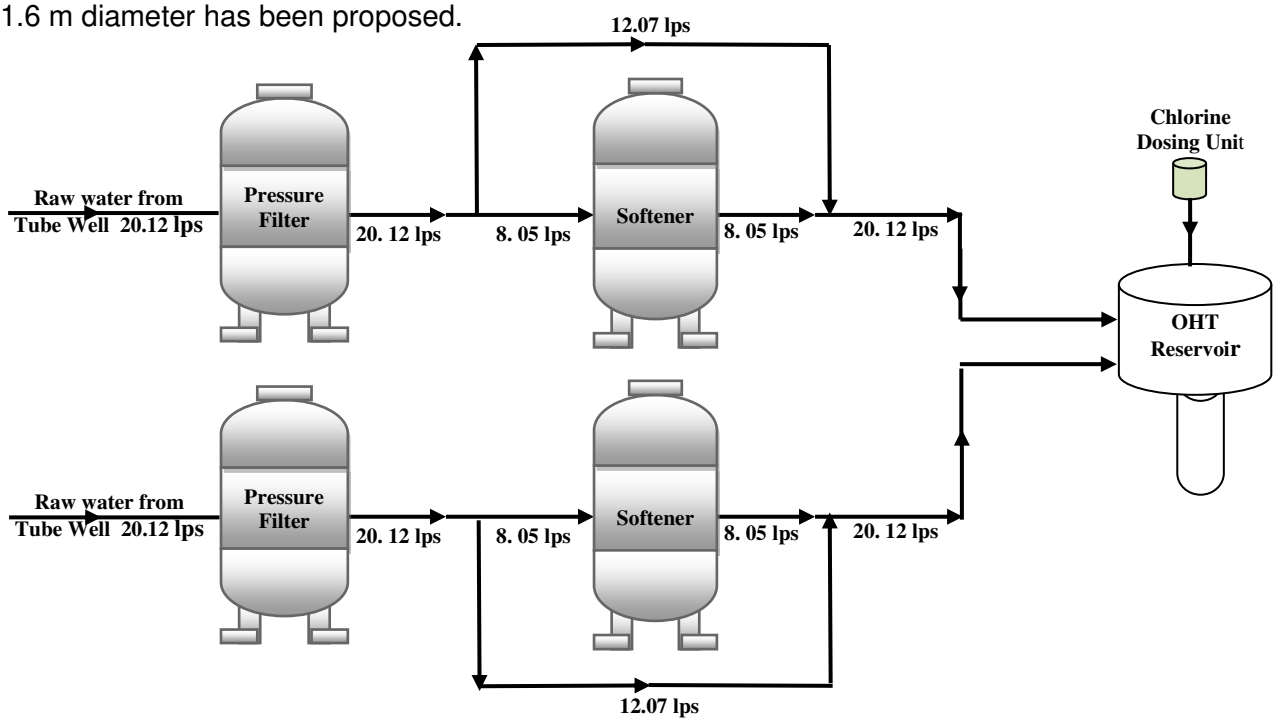


Figure IV-2: Schematic Diagram of Treatment Process

Disinfection

60. Although pressure filter removes coliforms to certain extent, the effluent of the pressure filter might still contain coliforms which might be harmful to human health. These coliforms are killed by disinfection process and make the water safe. The disinfection is proposed by the addition of bleaching powder in the reservoir. Bleaching powder is to be dosed from chlorine dosing tank through a doser. The chlorine dose of 1 mg/l is proposed.

6. Transmission Mains:

61. The transmission main conveys the water from the tube well to overhead service reservoirs. Since the water is conveyed by pumping it is also known as pumping main. Pipe sizes are so selected that velocity of water within the pipes remain within the range of 0.5 m/s to 1.5 m/s. DI pipes are proposed to use in both the systems. The water is pumped from the tube well with sufficient head so that the water passes through the water treatment plant and delivers it into the ground reservoir/sump well. The water is then pumped again from ground reservoir/sump well to overhead reservoir. The total transmission main pipe length of the proposed systems is 4.865 km.

Table IV-6: Transmission main

SN	Systems	Length of Pipes (m)
1	Chakkifanta	4865
Total		4865

7. Distribution Reservoir:

62. The service reservoir is required to store the water to meet the hourly fluctuation of consumers' water demand. This allows the peak flow in the distribution network. The total storage requirement for the system at the end of design period i.e. 2039 is calculated as 450 Cum. The following table summarizes the requirement of reservoir tanks for the various systems;

Table IV-7: Requirement of Reservoir

SN	Systems	Reservoir Size (Cum)	Type	Remarks
1	Chakkifanta	450	RCC – OHT	Proposed
Total		450		

8. Distribution Network:

63. The distribution system comprises of pipe network, which consists of mainly loops and branch. The water is supplied from the service reservoir to the consumers by the distribution pipe network. This network is analyzed using EPANET 2, a design analytical software tool. Distribution pipes are laid both sides of the all metalled and major roads. Single line pipes are proposed in earthen and other roads. HDPE pipes are predominantly used. Pipe of class and size lesser than 6 kgf and 50 mm is not proposed. Existing pipes will not be used as these are leaking and found substandard (class of 4 kgf). The length of the distribution network pipes proposed for various systems is shown in the table below. The total distribution pipe length of the proposed systems is 52.904 km.

Table IV-8: Distribution pipe network

SN	Systems	Length of Pipes (m)
1	Chakkifanta	52904
Total		52904

9. House Connections:

64. The system has been designed, predominantly as house to house connections. The system has been analyzed for a design capacity of providing a total of 3749 house connections at the end of design period. However, initially during construction phase, only 1730 house connections are provided to satisfy the need for the base year population.

10. Appurtenances:

65. These will primarily comprise of valve chambers in flow control valves for controlling flow in the pipeline. Altogether 89 valve chambers and 10 pipe valve boxes are expected in the system. Other appurtenances as air valves, scour valves, fire hydrants will be provided at suitable locations. Some road crossing has been initially provided. This will also facilitate for less road cuttings during the operational phase.

11. Generator/Operator Room:

66. One permanent generator operator houses to accommodate the generators shall be constructed. In case of failure of power supply the generator shall be used to supply power to the pumps to deliver water. A permanent area to accommodate the pump / plant operator will be provided in this generator house.

12. Office Building/ Laboratory Room:

67. There is no office building in the project area. Thus new one is proposed to accommodate the required facilities Laboratory room, counters, managers room cannot be accommodated in the present office building. The new will consists of manager's room, cash counters, meeting hall etc. Lab room, store will be placed in the office building.

13. Guard House:

68. There is no guard house in the project area. One guard house is proposed in the Tumdani Chakkifanta Small Town Project. The guard house is to be located at the reservoir site. The guard house is one storey building with a guard room, toilet and bathroom.

14. O&M Equipment and Tools:

69. An assessment was done for the needed items. The UWSSSP has also some guidelines on it. The list of tools required for the operation and maintenance has been listed in Quantity/ Cost Estimate Volume. Besides the following equipment have been also considered in the project so that project works during construction period and for operational activities are effectively carried out.

a) Leakage detecting equipment- 1 set
b) Submersible sludge pump- 1 no
c) Electro-fusion machine for joining the HDPE pipes including portable Generator - 1 set
d) Water quality testing laboratory equipment – 1 set
e) Other Tools and Plants like: electric pipe cutters, pipe wrenches etc.

C. Proposed Schedule for Implementation

70. The exact schedule for implementation of the project will be known after the work has been assigned to the contractor. For the feasibility study, detailed engineering design study and construction, three years period has been assigned. Therefore the base year for the project has been assumed as the year 2019 and considering design period as 20 year the design year has been taken as the year 2039.

71. The main task associated with the project will be as follows:

- Preparation of Detailed Engineering Design
- Preparation of Working Drawings

- Preparation of Quantity and Cost Estimates
- Carrying out of Economic and Financial Analysis and level of Water Tariff
- Preparation of Socio Technical Profile
- Environmental Study of the Sub Project Area
- Preparation of Tender Documents
- Awarding of Contract
- Construction
- Operation and Maintenance

72. The project has been designed with the principle of active community participation from the design stage itself. The implementation strategy of the project is based on the community management approach, which includes encouraging the financial responsibility towards the improved facility. Therefore, user participation at the outset of the planning and design exercise is an essential requirement. The community has to contribute 50% of the total construction cost. Out of which 5% has to be deposited before implementation of the project as upfront cash. Another 35% - 45% to be contributed taking the loan from TDF. The loan should be recovered within the time frame of 15 years with 5 years of grace period, along with the interest of 5% per annum through their affordable water tariffs plus. Tariff raised by the service has to support towards maintenance of the supply system of the water supply system. DWSSM is acting as the initiator/coordinator for the purpose.

D. Project Requirements

1. Materials required for the project

73. The required materials have been divided into two categories. 1) Local materials and locally manufactured products 2) Imported manufacture products. The materials as aggregates, sand, stone, timber, bricks are considered to be local materials and locally manufactured products are considered as GI pipes and fittings, HDPE (PE) Pipes and fittings, Cement and Reinforcement bars. The materials as DI pipes and fittings, Water meters, Electrical equipment including Generators, mechanical equipment, all kinds of valves are considered as imported manufactured products.

2. Human Resources

74. The proposed Siddhanath-Baijnath Urban Water Supply and Sanitation Project, entails both skilled and unskilled laborers for its construction and operation in the proposed site. As such for this work a total of 4500 man-days of skilled labors and 30,000 man-days of unskilled labors person days are required. The laborers estimation were made on the basis of rate analysis and as far as possible they will be hired from the local market and its adjoining area.

V DESCRIPTION OF THE ENVIRONMENT

A: Physical Environment

1. Location:

75. Chakkifanta is a growing town in Kanchanpur district. The location of the project area is latitude 28°55'0" N and longitude 80°20'0" E. It is bordered by Kailali district in East, Dadeldhura district in North and India in South and West. It lies within the Bheemdatt municipality which is a hub of activity for industries running between India and Nepal. It is also a gateway to Shuklaphanta Wildlife Reserve. East-West highway passes through the project area. Chakkifanta is located about 42 km away from Attariya.

2. Climate, Topography and Geology:

76. It has humid type of climate. The maximum temperature varies from 37°C-40°C in summer and 4°C to 18°C in the winter. The relative humidity is in the range of 84-87 %. The average rainfall is 1900 mm. Almost 80% of rainfall occurs during monsoon (June to September).
77. The project area lies in a part of alluvial deposit of Mahakali River and its tributaries. The altitude of the project area is varying from 203 m- 225 m above mean sea level. The project area is a flat-land with frequent waterways flowing across mostly from North-East to South wards.
78. Geologically it is situated in the foothills of Mid- Hills of far western Nepal. The underline formation of the area is of cobbles, gravels and sand with pockets of clay. Acidic soil is usually found in the forest area. The main four orders of soil are entisols, inceptisols, mollisols, and alfisols. The areas around the borehole compounds are stable without any apparent occurrence of land instabilities. The area is rich in ground water potential, shallow as well as deep aquifers are being extracted for drinking, irrigation and industrial purposes.

B: Biological Environment

1. Flora in the Project Area:

79. The project area is a mix of agricultural land, settlements and forest areas with rich surface flow of water bodies. There is only scattered tree cover and grassland within the project area. Natural Sal (*Shorea robusta*) forest is predominant in the project aera. Khayar (*Senegalia catechu*), Sisso (*Dalbergia sisso*), Betelnut (*Arecacatechu*), Kadam (*Anthrocephalus chinensis*), Bar (*Ficus microcarpa*), Peepal (*Ficus religiosa*), Liptis (*Eucalyptus*), Bamboo (*Bambusa vulgaris*) and Amriso (*Thysanolaena*) are the common species found in the project area. Amp/Mango (*Magnifera Indica*), Banana trees (*Musa Velutina*), Guava (*Psidium guajava*) are among the common fruit species found in the project area.

2. Fauna of in the Project Areas:

80. Many species of mammals and birds are observed in the project area. Both large and small mammals are present. Spotted dear (*Axis axis*), Muntjac deer (*Muntiacus*), Fox (*Canisaurens*), Wild Boar (*Sus scrofa*), Langoor Monkeys (*Trachypithecus francoisi*), Squirrel (*Sciuridae*), Hispid hare (*Caprolagus hispidus*), Rabbit (*Lepus nigricollis*), etc are found in and around the project area. Birds such as Crow (*Corvus splendens*), Peacock (*Hubaropsis bengalensis*), Hutityau (*Tringa hypoleucos*), Sparrow (*Passer domesticcus*), Pigeon (*Columba livia*), Parrot (*Cacatuasp.*), Eagle (*Haliaeetus leucocephalus*) are among the bird species found in the area.
81. IBAT information has been assessed. Since the project is of small scale and its Indirect Impact Zone (IIZ) is only 200m, only the species suggested under 1 km periphery of the core project coordinate have been considered (Annex 4). The potentiality of occurrence of Banded Krait (*Bangarus fasciatus*), Common Indian Monitor (*Varanus bengalensis*), Wood Sandpiper (*Trunga glareola*), Brown Wood Owl (*Strix leptogrammica*), Jungle Cat (*Felsih chaus*) and Hog Deer (*Axis porcinus*) is there in proximity of project area and these are identified by IBAT as IUCN Red Listed species. However, the occurrence is very rare in the project sites and IIZ.

82. There are no protected areas within the project area. The project area is situated around 2 km North from the closest boundary of Buffer Zone of Shuklaphanta National Park.

C: Socioeconomic and Cultural Environment

1. Demography:

83. Service area of the project has been established to cover wards 6, 8 and 10 of Bheemdatt Municipality. While carrying out the household survey, the local community people, leaders and key informants provided great assistance to identify the exact service area to be considered in the proposed project. Household survey within service area accounted the total households as 1,603 and permanent population as 9,178. The ward numbers and the cluster settlements including the survey year households and the population are presented below;

Table V-1: Service Area, HH and population

Municipality	Ward No.	Cluster / Settlements	HHs	Population		
				Permanent	Rental (Floating)	Total
Bheemdatt Municipality	6	Baijnath, Bhumi Raj Tole, Banagau, Purnima Tole	111	710	32	742
	8	Sidhanath, Bhanu, Jyoti	142	880	5	885
	10	Adarsha Tole, Amarjyoti Tole, Badimalika Tole, Basanta Tole, Baijnath Tole, Danu Baba tole, Divya Jyoti Tole, Gadda Chauki Tole, Gajar, Gyanu Baba Tole, Gauri Shankar, Gorakhnath , Jay Jagarnath, Jimuwa, Mahalaxmi Tole, Maheshori, Malikarjun Tole, Mankamana Tole, Nagarjune, Pashupati Tole, Pragati Tole, Purnagiri, Sangam Tole, Shanti Tole, Sarswati Tole, Shiva Tole, Sidhanath Tole, Sidheshori Tole, Sukasal, Tintara, Bijaya Tole	1350	7588	95	7683
Total			**1603**	**9178**	**132**	**9310**

Source: Socio-economic Survey, 2017

84. The project area has average household size of 5.7 and male to female ratio is 1.02 in average.

2. Caste / Ethnicity:

85. The proposed project service area comprises different caste / ethnic groups. Each caste and ethnicity is characterized by its own customs, traditions, culture and nature of occupation with which they are associated. Dalit comprising 23.8 percent of total families are prevailing caste group in service area. Brahmin/Chhetri is the major group (75.7%) as shown below;

Table V-2: Caste / Ethnicity

Ethnicity	Bheemdatt Municipality (Ward No.)			Total	Percentage
	6	8	10		
Brahmin/Chhettri	72	130	1011	1213	75.7
Janjati		1	6	7	0.4
Dalit	39	11	332	382	23.8
Other			1	1	0.1
Total	**111**	**142**	**1350**	**1603**	**100.0**

Source: Socio-economic Survey, December 2017

3. Occupation:

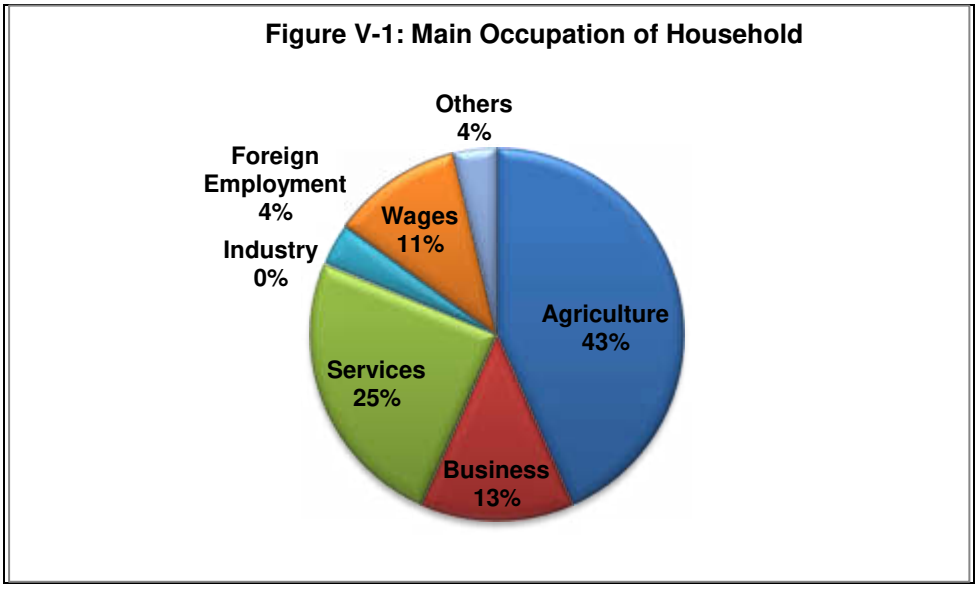
86. Although, the economy of the area is gradually shifting from rural agricultural economy to trade/ business and service based, majority of the households are still dependent on agriculture. As the socio-economic data shows, nearly 43 percent of the households have agriculture as main occupation. Service is another main occupation (25%) followed by business (13%). The ward-wise households by occupation are presented in table below;

Table V-3: Main Occupation of Household

SN	Occupation	Bheemdatt Municipality (Ward No.)			Total	Percent
		6	8	10		
1	Agriculture	63	108	524	695	43.4
2	Business	5	13	195	213	13.3
3	Services	1	15	377	393	24.5
4	Industry		2		2	0.1
5	Foreign Employment	3		55	58	3.6
6	Wages	4	3	175	182	11.4
7	Others	35	1	24	60	3.7
	Total	**111**	**142**	**1350**	**1603**	**100.0**

Source: Socio-economic Survey, December 2017

Figure V-1: Main Occupation of Household



4. Household's Monthly Income Level:

87. Economic condition of the families in service area is satisfactory in terms of their monthly income level. The distribution of households by income range is shown in Table V-4, which indicates that 59.5 percent of them have income range NRs. 20001-50000 per month. Likewise, 27.1 percent of households fall under the income range NRs. 8001-20000 categories. As the data shows 7.4 percent of households have highest income level (more than NRs.50,000 per month), whereas 2.0 percent of the households have lowest income level i.e. less than NRs. 5,000 per month

Table V-4: Monthly Average Income Range

SN	Income Range (NRs.)	Ward No.			Total	%
		6	8	10		
1	<5000	12	2	4	32	2.0
2	5000-8000	5	10	15	27	1.7
3	8001-20000	42	63	372	434	27.1
4	20001-50000	45	64	870	954	59.5
5	>50000	7	3	89	119	7.4
Total		**862**	**111**	**142**	**1350**	**1603**

Source: Socio-economic Survey, December 2017

88. Finding of socio-economic census survey depicts that the household average monthly income is NRs. 24,057.

5. Existing water supply condition:

89. The finding of socio-economic census survey December 2017 is given in table below, which signifies that more than 80.2 percent households in the service area have tubewells and 19.8 percent of them are getting water from other sources such as Kuwa, and River. There is no systematic water supply distribution facility in this area.

Table V-5: Existing Sources of Water

SN	Water Source	Ward No.			Total	Percent
		6	8	10		
1	Public Tap	0	0	0	0	0
2	Private Tap	0	0	0	0	0
3	Tube well	80	107	1100	1287	80.2
4	Others (Kuwa/Mul/River)	31	35	250	316	19.8
Total		**111**	**142**	**1350**	**1603**	**100.0**

Source: Socio-economic Survey, December 2017

6. Existing Sanitation Condition and access to household latrine:

90. Most of the households in the market area have permanent type of private latrine and others have temporary type of private latrine. In total 97.8 percent (1567 out of 1603) of the households have household toilet. Among the households with access to household latrine, 90.3 percent of them have water-sealed type latrine, 7.0 percent have ventilated pit latrine and 2.7 percent have pit latrine. The following table shows ward-wise the access to household latrines;

Table V-5: Access to Household Latrine and Latrine Types

SN	Toilet Type	Ward No.			Total	
		6 (Total 111 HHs)	8 (Total 142 HHs)	10 (Total 1350 HHs)	No.	%
1	Pit Latrine	30	2	11	43	2.7
2	Ventilated Pit	64	3	42	109	7.0
3	Water Seal	17	135	1263	1415	90.3
Total		**111**	**140**	**1316**	**1567**	**100.0**

Source: Socio-economic Survey, December 2017

7. Existing Health Situation:

91. The service area seems privileged in terms of availability of health service. There is Health Post in Ward 10 with 2 bed facilities and a Health Desk in Ward-10. The data of water borne disease from Jimuwa Health Post shows that there is significant number of cases of typhoid and dysentery in the project area.

Table V-6: Data of Water Borne Diseases from Jimuwa Health Post

SN	Types of diseases	FY 2073/74	FY 2074/75 (6 months)
1	Typhoid	302	179
2	Dysentery	240	78
3	Jaundice	11	9
4	Tape-worms	50	15
	Total	**603**	**281**

Source: Field Survey, February 2018

92. Total 4741 numbers of water born/related diseases infected persons were found and treated by Zonal Hospital last year. Out of the total incidents, 1000 incidents were diarrheas, 900 and 557 were suffered from typhoid and dysentery likewise, and 1646 water related skin diseases were also reported in the project area.

93. People are aware about hand washing before touching and eating food, and after defecation etc. Most of people are found aware in health and hygiene practices.

D. Major Environmental Concerns of Project Areas

94. Some of the major environmental problems prevalent to project area are as follows:

1. Air Quality:

95. There are no major industries in the project area. There are 2 brick factories and 10 cottage industries. Air pollution is caused by emissions from these along with the fugitive dust from vehicle movements particularly over unpaved roads, and by local small scale constructions activities. Emissions from these sources are scattered/spread apart both in terms of locations and timing. These emission may couple with the low scale emissions from any new construction activities.

2. Acoustic Environment:

96. The sources of noise in the project area are the local small scale construction activities and vehicle movements. The anthropogenic noise is confined in few clustered settlements and in market places and only in the daytime. From field observation, noise level in the project area is within the national and international permissible standards at daytime and nighttime.

3. Water Quality:

97. The surface water sources do not have significant source of threat. However, disposal of waste onto water bodies is seen as a concern at some places. No case of ground water contamination is noticed.

4. Solid Waste Management:

98. There is no proper system of solid waste collection and disposal. There is lack of proper education and knowledge regarding management of solid waste and waste water. Since the area is no industrial area in the project area, the waste water generated is mostly from residential areas which is being disposed into septic tanks and soak pits where natural treatment occurs so its effluent is not so much harmful.

5. Sanitation Services:

99. Most of the households have their own toilets in or outside the house. In the core, most of the buildings have been constructed with attached water sealed toilet or flush toilet with septic tanks. The newly constructed houses, offices and camps need to be monitored so as to ensure that there is no open defecation. Most of the households do not have access to proper drainage and sewerage facility.

VI ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

100. The potential impacts of the proposed Siddhanath-Baijnath Urban Water Supply and Sanitation Project are *Physical*, *Biological*, and *Socio-economic & Cultural* in nature. These impacts may occur at various phases of the project such as design, preconstruction, construction and operation and maintenance phases. The magnitude of these project related impacts can be small, moderate, or high depending upon its severity, and can be temporary or long term, reversible or irreversible, local or wide. The impacts need not necessary be limited to negative ones but can be positive as well. The objective of Environment Management is to attempt to augment positive impacts and to minimize negative impacts through sustainable mitigation measures.

A: Beneficial Impacts and Augmentation Measures

A-1: Construction Phase

i. Employment Generation and Increase in Income

101. An important direct beneficial impact of a construction project is the generation of employment opportunity to the local communities and its nearby places. The socio-economic study shows that around 11.4% of the household have daily wage-based works as main occupation of the household. The locals who are interested can get opportunities in semi-skilled, unskilled as well as skilled works. This opportunity remains open to all, but the priority will be given to the locals. The income amount will directly enhance various economic activities and enterprise development with multiplier effect in the project area. In order to augment the impact, the local people particularly poor, dalits, ethnic minority and women will be given priority for employment.

ii. Skill Enhancement

102. The local people will be given on-the-job trainings. The onset of project construction phase is likely to enhance their skills in plumbing, fittings and other construction works. Working skills acquired from this project will be useful for the locals to secure employment opportunities in similar projects in coming days. If required, the locals will be given trainings on plumbing, bathroom fittings, and other construction activities so that the interested and potential ones can adopt it as a profession. Since Chakkifanta is itself a growing town, and also the fact that it is a part of Mahendranagar and is close to Dhangadhi, the skilled ones will easily get better employment opportunities in the nearby places. In order to augment the impact, the locals will be given on-the-job trainings.

iii. Enterprise Development and Business Promotion

103. During the construction period, different types of commercial activities will come into operation in order to cater the demand and requirement of workers. As money flow begins, they will regularly demand different food items, beverages and other daily needs. To meet these demands, small shops and restaurants around the vicinity of the construction sites are likely to open. Various farm based enterprises including wide range of agricultural and livestock products will also gain momentum as a result of increased demand by labors. At present almost 13.3% of the households are involved in business. This shows that the locals will be more motivated and promoted to expanding their business and in opening new potential business as hardware shops, etc which will be in increasing demand once the town gets better water and sanitation facilities.

A-2: Operation and Maintenance Phase

i. Improvement in health and saving of time

104. After the water supply and sanitation project is complete, the people living within the project area will benefit from the supply of sufficient quantity of water, good quality water and improved sanitary conditions. There will be significant saving in health care expenses as water borne diseases are expected to reduce significantly after the service of the project begins. Women and girls will be directly benefited as they have to spend less time in fetching water and thus have more time for study, other household and income generating activities. The time savings of households are the time spent in obtaining water from other sources prior to the project. Time taken in collecting households' daily water requirements was assessed during the socioeconomic surveys. Table VI-1 shows economic value of time saved from water fetching in the project area;

Table VI-1: Economic value of times saved from water fetching

Assumptions		Economic Value: Benefit/year (Rs)
Time Savings per Household per year (Working Days)	Shadow price of labor per day (Rs)	
52	350	18275

Source: Socio-economic Survey, 2017

105. The study shows that there will be annual saving of time equivalent to NRs 18,275 per household after the beneficiaries of the project start receiving the servie from the project.

106. The impact will be augmented through regular maintenance of the water supply system by the user committee. Water Safety Plan (WSP) will be developed under an active WSP monitoring team. Development of a WSP can be an effective means to ensure functionality of the system and hence leading to its safe water supply and sustainability.

ii. Increased Markets and Higher Market Vlaues

107. The availability of adequate supply of drinking water in the project area will accelerate the rate of development of Chakkifanta as a growing market centre. Gaddachauki market and Aithpur market are expected to expand soon. At present, there are locals who are earning by selling agricultural products like food crops and fruits. Oilseeds, pulses, vegetables are sold to neighbouring major townships like Mahendranagar, Dhangadi, and Attariya. Commercial farming of off-seasonal vegetables is also seen in the project area. Lokta is one of the NTFPs produced in the project area. After attraction of settlements and investments in the town, these products will have increased market value, better market-chain and increased opportunities of sales.

iii. Appreciation of Land Value

108. One of the benefits of the project is that land price will increase due to the availability of reliable safe drinking water and sanitation system. Chakkifanta has a plain land, and it also has fertile land with irrigation facilities. Upon completion of the present project, migration from nearby places is expected. In order to promote land development in the area, the local people will be made aware that high value lands are acceptable to the banks and microfinance institutions to provide loans for them to start their own economic/social ventures.

iv. Women Empowerment

109. Women will largely benefit from this project, as they are the ones who spend a great deal of time in fetching water. With the operation of the water supply scheme, time will be saved. As contaminated water can lead to diseases the women of the family also have to spend a good deal of their time to care for the sick family members. With the improvement of water supply, there will be marked reduction in the occurrence of infectious disease in the area. This will

provide more time to spend on other economic and social activities leading to empowerment. In order to augment the impact, the water supply system will be regularly maintained so that it operates smoothly and health and awareness programmes will be given to the local people.

v. Quality of Life Values

110. The project will provide good quality water and improved sanitation facilities. It is likely to bring improvement in personal, household and community hygiene practices. This will result in good family health and community health. These improvements in lives of the locals will bring about overall improvement in quality of life of the locals in the long-run.

B: Adverse Impacts

B-1: Pre-construction Phase

111. The pre-construction works involves field survey and investigation, development of design & detailed drawings, carrying out cost estimate etc. This also includes discussion with WUSC and revision of design if necessary. As there will be no construction activities involved; there will be no construction related adverse impacts.

112. The Rapid Environmental Assessment (REA) Checklist for water supply and sanitation was used to identify potential impacts/issues/concerns of the sub-project as per design (Annex 1). The REA identified the issues and concerns that should be considered during design, impacts that should be mitigated during construction and impacts that should be mitigated or enhanced during operation. The considerations made during design are listed in Table VI-2:

Table VI-2: REA-identified Impacts/Issues/Concerns and Mitigation Measures Taken during Project Preparation Phase

REA identified Impacts/Issues/Concerns	Measures taken during FS/DED to mitigate impacts/issues/concerns
Unsatisfactory raw water quality	During the detailed engineering design stage, water sample from existing tubewells was tested. Test revealed Total Hardness and total Alkalinity are significant. This information has guided design of water treatment.
Delivery of unsafe water to the distribution System	Design proposes basic treatment using pressure filter, softening and disinfection. This IEE proposes “hands on” training by a licensed & accredited laboratory for the first few years of operation under the Water Safety Plan included in the sub project design & continuing training there-after.
Health hazards arising from inadequate design of facilities for receiving, storing and handling of Cl & other chemicals	Design has included a “housed” dosing unit.
Delivery of water to distribution system, Which is corrosive due to inadequate attention of feeding of corrective chemicals	Design has proposed DI, and HDPE pipes. The PE pipes of class 6kgf is chosen to avoid any leakage issues
Contamination of drinking water source and other environmental receptors from household and public toilets	The design of toilets includes septic tanks that are designed as per national standards and codes to allow for maximum retention of septage. This includes ensuring septic tanks are sealed and water tight. Toilets will be established at least 30m down-stream of the drinking water source.

Risk to public and environmental health due to inappropriate siting and design of septage disposal pit.	The septage disposal pit (similar to sludge drying bed technology) is to be designed and constructed in accordance to international best practice and acceptable standards (e.g. USEPA standards etc). This includes; (i) locating disposal pits at least 300 m away from the nearest dwelling, and 30m down-stream of the drinking water source; (ii) pits are to be only established in relatively flat land with no more than 8% slope; and (iii) site selected for establishment of pits should not be where food crops are grown.

B-2: Construction Phase

a: Physical Environment

i. Erosion and land surface disturbance

113. Excavation and digging works during construction may lead to soil erosion, silt runoff, and unsettling of land and street surfaces. Haphazard disposal of the excavated earth can disturb the road surface. The activity as such will be a nuisance and discomfort to the road users and inhabitants. Accordingly water stagnation in the construction area especially during the rainy season may occur. The construction sites are public lands and are unused lands.

114. Public land will be used for construction of project components such as deep boring, treatment unit, OHT, office building and guard house at Sidhanath tole beside the open space of Thapachaur. Nearly 1790.06 Sq.m land will be used for the project structures.

115. Pipe-laying works are are proposed through existing public road RoWs as far as possible. Hence, disturbance is minimal. However, some disturbances and damages to public or private properties can take place at Thapachauraha, Banagau, Bhanu tole, Mahalaxmi tole and Sangam tole. All the distribution and transmission pipelines will be placed in 90 cm trench and backfilled.

116. Precautionary measures will be taken, proper backfilling of excavated trenches will be done and the excavated soil will be stacked properly. Construction activities will be, as far as possible, avoided during the rainy season. Topsoil will be conserved and resurfaced with compaction.

ii. Underground Water Quality and state of water table

117. Due to the continue extraction of ground water, there will be fluctuation in ground water level. As the water is proposed to be extracted from the depth of about 120m, below the impervious strata, there shall be insignificant effect to the existing shallow tube wells which are generally at the level of 10 to 15m.

iii. Damage to the Existing Facilities

118. During the construction period, while excavating the earth, existing water supply distribution pipe lines, side-drains and compound walls may get damaged in few places particularly in the major settlement and market areas of Thapachauraha, Banagau, Bhanu tole, Mahalaxmi tole and Sangam tole. A commercial open shed which lies within the project construction site will need to be dismanteled.

119. Timely and proper reinstatement of any damage to public or private property will be carried out. A proper inventory of any damages to existing facilities will be kept. Any grievance regarding such damage will be dealt with priority and will be addressed timely.

iv. Air and Noise pollution

120. The construction activities like laying of transmission and distribution pipes, construction of storage reservoirs, transport and installation of pumps, construction of deep tube-well will produce some extent of air pollution and noise for a certain period of time. There will be some activities such as transportation, loading/unloading of construction materials, stockpiling of construction materials, disposal of spoil, and earthworks. These will cause effect into air quality due to dust generation and vehicular emissions. Use of power horns and movement of heavy vehicles can cause serious disturbance to the community, educational institutes, hospitals/health posts and residences.

121. The air pollution concerns related to the project will be addressed by using the vehicles and equipments with low emissions. Regular water sprinkling will be carried out at places where dust pollution is caused due to plying of construction related vehicles. The vehicles carrying construction materials will be covered, and drop height of the hauling vehicles will be minimized. Burning of waste in the campsites or at construction sites will be restricted.

122. The noise nuisance will be controlled by use of soft horns in vehicles used in construction. The construction activities near core settlements and/or healthcare facilities will be restricted after 7 pm and before 6 am. Construction schedules will be discussed with locals so as to minimize any disturbance in major community functions or activities.

vi. Impact on water bodies

123. There will be some impacts on water bodies located within the project area during the construction phase. Tilkeni khola, Tilachaur khola, Bangau khola and Jimuwa khola are the surface water bodies that are likely to be polluted. Possible activities, which may influence the water quality, are listed below.

- Haphazard disposal of solid waste in the vicinity of water bodies
- Haphazard quarrying of construction materials from river beds
- Sediment and excavated materials may be transported to water bodies during rain
- Leakage and disposal of oil and grease from construction equipment

124. The excavation works will cause turbidity in water up to a certain extent. However the quantity is limited with respect to the discharge of water in Mahakali River, and the impact will be there for short period of time.

125. Mitigation measures are avoiding disposal of spoil or waste onto water bodies, and restriction of washing and fishing by workers in local surface water bodies. The effluent and sludge will be disposed off only in designated areas and regular monitoring of the river or stream water quality should be done.

vii. Waste Management and Disposal

126. Waste like excess grease, lubricants, paints, etc may pollute soil and water resources. Solid wastes from construction campsites are also likely to be a visible source of pollution. However, waste segregation, containment and safe disposal are expected to be conducted as per standard practices.

127. Proper waste management and disposal system will be done during the construction period. Proper toilets for the workers will be installed before starting the work. Waste like excess grease, lubricants will be collected in plastic containers and will be sold to scrap dealer. Solid waste and other construction waste will be deposited near by the labour camp and will be cleared after the completion of the construction works.

b: Biological Environment

128. The major project structures will be built on un-used and vacant land surfaces. These will be constructed on land owned by WUSC. However, transmission and distribution lines may pass through agricultural land and private lands. Only scattered plants of local species and fruit plants are observedd in these sites, and thus minor impacts are anticipated only during the construction period. Most of the pipe lines pass along the roadside (RoW) and only a few numbers of plants and patches of bushes have to be cleared up within the transmission pipe line stretches.

129. The potential environmental impacts of the project on local flora and fauna during construction and post construction phases will be low as it involves no tree felling along the distribution line, minimum loss of grazing land, and no loss of agriculture lands. Some of the impacts that may likely to occur are described below:

i. Loss of vegetation cover

130. The loss of vegetation cover and species diversity due to earthwork primarily in the construction sites of deep tubewells, reservoir, treatment units and office building sites. During the construction, there will be loss of around 11 trees of non-timber, timber type and local fruits (3 trees of Sissau - *Dalbergia sissoo*, 1 tree of Teak - *Tectona grandis*, 1 tree of Guava - *Psidium guajava*, 2 trees of Mango – *Mangifera indica* and some other small trees). However, the impacts will be minimized as far as possible.

131. Some of the topsoil and vegetation may also be lost during pipe laying works. No distribution line passes through the forest area. To protect the topsoil and vegetation, the topsoil will be kept separately and replaced in its original position after laying the pipes. Tree cutting will be avoided and fetching of fuel-wood by workers will be prohibited.

132. The project components require a very small area of land for implementation and environmental impacts on the vegetation and natural eco-system will not be significant.

ii. Impact on fauna

133. The project service area is within the built up area. Population dynamics of resident and migratory birds and reptiles at the project site may be affected during the construction period due to various construction activities. But these effects will be of temporary in nature. The condition will be normal after construction is over.

134. Any kind of bird hunting or poaching by workforce will be strictly prohibited. Awareness programs will be conducted in the campsites and in the project communities regarding conservation of the wildlives.

135. Since there is Buffer Zone of Shuklaphanta National Park within 2 km of the project area, the workforce will be given following instructions;

a. Strictly prohibition from fodder collection in forest area,
b. Restriction in conducting any activities in streams,
c. Ban of hunting and poaching activities or any activities related to that

136. Code of conduct will be provided to all the technicians and workers regarding the activities that may disturb any migratory or local species of amphibians, birds and other fauna. Shuklaphanta National Park office and its team will be coordination on regular basis to be aware if there is any ecological condition which needs to be notified to the locals and workforce during construction period so that any possible disturbance can be avoided.

iii. Impact on aquatic life

137. Some of the construction activities and protection works are proposed at the bank of the river. These construction activities will physically disturb the water quality for a certain period of time and may cause adverse impact on aquatic life. But these effects will be temporary in nature.

138. Disposal of waste or spoil onto water bodies will be strictly prohibited, and fishing by the workforce will be restricted.

c: Socio-economic Environment

i. Disturbance to community activities

139. Construction activities, particularly construction works on roads will cause disturbances to the community activities, festivals and social events. The free movement of vehicular traffic and pedestrians will be affected. Noise produced due to the operation of machines may disturb the neighbourhood in construction areas. The impacts to human settlement including villages, cattle sheds and farmlands will be very low.

140. The construction schedules will be shared with the locals and notice of any major works that might hinder public activities will be provided well in advance.

ii. Social Dispute and Dissatisfaction

141. There is a possibility of influx of outside workforce. There are chances of disharmony of the influx population with the local community. Social dispute may arise if there are any irresponsible behaviour of the workers such as gambling and excess drinking. Disposal of waste, improper sanitation practices, etc by the workforce may also bring dissatisfaction in the local communities. On the other hand, the local who are willing to get employment in the project may not get employment benefits from the project causing dissatisfaction and conflicts.

iii. Occupational health and safety (OHS)

142. Health and safety of workers particularly of those involved in concreting, trench cutting, formwork and rebar fixing in the overhead tank is of prime concern. Injuries, falling sick and chances of communicable diseases are also possible cases for the workforce. These risks may arise at different work fronts. However, provision and use of safety equipments, first aid services and medical insutances will keep these risks to possible minimum level. The records of PPE equipment provided will be kept and the use of PPEs will also be documented. Awareness activitie will be conducted at all the workr-fronts.

iv. Community health and safety

143. Since some of the construction works take place near the settlements, and the pipelaying works will be through the settlements, there are chances that the local people may face small accidental cases. This is critical primarily for chilredn and old-aged people. Chances of communicable diseases are also a concern. Stock-piles sites, spoil disposal sites and movement of vehicles for construction activities are some of the aspects of construction works which may pose threat to health and safety of the community.

v. Resettlement, relocation and compensation issue

144. The major structures are to be constructed on public land or on land belonging to WUSC. Similarly, the distribution system network falls within the public property line/RoW. Therefore resettlement or relocation is not required. However some cases of loss of crops during pipelaying, damage to compound wall may arise. These will be avoided as far as possible.

145. Within the project construction site, there is a small open shed built for the purpose of selling of local agricultural products. This will need to be removed, and it will be compensated by building a new community block near the Sidhanath-Baijanath temple.

B-3: Operation & Maintenance Phase

i. Risk to exposure to chemicals

146. Direct exposure to Bleaching Powder is toxic and the workers will have to deal with it during the operation of the system. Ingestions, inhalations, application to body parts, especially to the eyes, nose, and mouth are of extreme hazard to the workers handling chlorine and bleaching powder. The WTP will be operated and maintained in accordance with a sludge management plan.

147. Proper training and required safety gears will be made available for the use of worker involved in handling of bleaching powder. Facilities of washing and shower for operators/workers in case of accidental exposure will also be provision.

ii. Impact on water bodies and aquatic life

148. The effluent produced from the periodic backwashing of the filter plant, if discharged directly to the river course may cause harm to the water bodies and aquatic life especially during the dry season when the flow will be less. The WTP will be operated and maintained in accordance with a sludge management plan.

iii. Risk of supply of contaminated water

149. Contamination of source or in reservoir, leakage and contamination through pipelines and contamination at point-of-use during operation phase may adversely affect the health of the consumers. Lack of regular maintenance could be a concern.

150. Any leaks in pipes will be immediately maintained. Water Safety Plan (WSP) will be formed for the project, and its team will be trained and mobilized affectively.

C: Evaluation of the Impacts

151. The impacts are evaluated based on their impact levels, coverage of area and duration of the impacts. The evaluation will be used to emphasize the need to address the concerns. Magnitude, geographical extent and duration of impacts are defined below;

152. Magnitude: This can be low-L (minor), medium-M (moderate), and high-H (major), depending on the scale or severity of change.

153. Geographical extent: If the action is confined to the sub-project area, it is referred as site specific (Ss), if it occurs outside area but close to sub-project area, the extent of impact is local (Lc), if it occurs far away from the sub-project, it is referred as regional (R).

154. Duration: It can be short term (St - i.e. less than 3 years), medium term (Mt - i.e. 3-20 years), and long term (Lt - i.e. more than 20 years).

155. For the Impact evaluation the matrix method with numerical ranking is used for the quantitative ranking of the predicted impacts. The numerical scale mentioned in the National EIA Guidelines 1993 has been adopted for this sub-project. The numerical scale is as:

Magnitude		**Extent**		**Duration**	
High	60	Regional	60	Long Term	20
Moderate	20	Local	20	Medium Term	10
Minor	10	Site Specific	10	Short Term	05

156. The combined less than 45 is termed as insignificant impact; 45-75 is termed as Significant and beyond 75 is termed as very significant impact. Following table summarizes the evaluations of the impacts;

Table VI-3: Evaluation of the Environmental Impacts

Impacts	Nature	Magnitude	Extent	Duration	Total score and significance
Beneficial Impacts					
Construction stage					
Employment Opportunity and Increase of Income	Direct	M (20)	Lc (20)	St (5)	Significant (45)
Skill Enhancement	Direct	M (20)	Lc (20)	Mt (10)	Significant (50)
Enterprise Development and Business Promotion	Direct	M (20)	Lc (20)	Mt (10)	Significant (50)
Operation Stage					
Improvement in health and saving of time	Direct	M (20)	Lc (20)	Lt (20)	Significant (60)
Increased markets and Higher Market values	Indirect	M (20)	Lc (20)	Lt (20)	Significant (60)
Appreciation of land value	Indirect	M (20)	Lc (20)	Lt (20)	Significant (60)
Women Empowerment	Direct	M (20)	Lc (20)	Lt (20)	Significant (60)
Quality of Life Values	Indirect	M (20)	Lc (20)	Lt (20)	Significant (60)
Adverse Impacts					
Construction stage					
Physical Environment					
Erosion and land surface disturbance	Direct	M (20)	Ss (10)	Lt (20)	Significant (50)
Underground water quality and state of water table	Direct	M (20)	Ss (10)	Lt (20)	Significant (50)
Damage to existing facilities	Direct	L (10)	Ss (10)	St (5)	Insignificant (25)
Air Pollution and Noise nuisance	Direct	L (10)	Lc (20)	St (5)	Insignificant (35)
Impacts of water bodies	Direct	L (10)	Lc (20)	Mt (10)	Insignificant (40)
Waste disposal	Direct	M (20)	Lc (20)	Mt (10)	Significant (50)
Biological Environment					
Loss of vegetation cover	Direct	M (20)	Ss (10)	Mt (10)	Insignificant (40)
Impacts on fauna	Direct	L (10)	Lc (20)	Mt (10)	Insignificant (40)
Impacts on aquatic lives	Direct	L (10)	Lc (20)	Mt (10)	Insignificant (40)
Socio-economic Environment					
Disturbance to community activities	Direct	M (20)	Ss (10)	St (5)	Insignificant (35)

Impacts	**Nature**	**Magnitude**	**Extent**	**Duration**	**Total score and significance**
Social dispute and dissatisfaction	Indirect	M (20)	Ss (10)	St (5)	Insignificant (35)
Occupational health and safety	Direct	H (60)	Ss (10)	Mt (10)	Significant (80)
Community health and safety	Direct	H (60)	Ss (10)	Mt (10)	Significant (80)
Resettlement, relocation and compensation issues	Direct	L (10)	Lc (20)	St (5)	Insignificant (35)
Operation & Maintenance Stage					
Risk of exposure to chemicals	Direct	M (20)	Lc (20)	Lt (20)	Significant (60)
Impact on water bodies and aquatic life	Direct	L (10)	Lc (20)	Mt (10)	Insignificant (40)
Risk of supply of contaminated water	Direct	H (60)	Lc (20)	St (5)	Significant (85)

VII: Analysis of Alternatives

A. With- and Without-Subproject Alternatives

157. The project area is a major junction and booming marketplace. The town is facing increased problems to water supply. The overall sanitary condition of the project area is reasonably satisfactory, but still improvements are required.

158. Doing nothing about these challenges would be allowing the subproject municipality to further develop as "under-serviced" area, put the health of its residents and the general public at more risks, and worsen its living environment. This would impede: (i) further social and economic development project municipality and (ii) Nepal's delivery of its commitment to SDG 6th to increase the proportion of population with sustainable access to safe drinking water and basic sanitation. Hence, do-nothing or without-project alternative is not chosen.

159. The 'with subproject' alternative will contribute to the realization of the Updated 15-Yr Development Plan for Small Towns Water Supply and Sanitation Sector and to the delivery of Nepal's commitment to SDG 6th.

B. With subproject's location alternative:

160. The project area is a very needy area in terms of safe water needs. Strategically, the investment in water and sanitation in this belt will improve the overall socio-economic aspects of the Province as it serves as a market junction to the surrounding rural municipalities and it also lies close to the Dhangadhi and Attariya.

161. The project components are selected at technically safe site where there is no social dispute as well. Minimization of loss of vegetation cover is also considered. Avoiding tree clearance and damage to cultivated land has also been considered in site selection.

162. Since the settlements in Chakkifanta are scattered, 3 separate District Management Areas (DMAs) are established. This is based on the principle of managing a large water network into a number of areas, typically of between 500 and 3000 connections, each established area having a defined and permanent geographical and/or hydraulic boundary. With other possibilities as well, the proposed sub-systems will be an easy-to-operate and cost effective option for the scattered location of the settlements.

C. Alternatives Related to technology, materials and implementation procedure

163. The proposed system is a small scale project. Since the yield of the proposed deep tubewells is reliable, it is expected that the water supply will be smooth. Another probable source of water is Mahakali River which is located about 5 km west of the project area which defines boarder of Nepal and India at many places. Although the hardness of water in the surface source is likely to be low with no calcium deposition problem in pipes, the cost of tapping the water will be considerably high due to high pipe and energy cost.

164. The major component of a ground water based water supply system consists typically of boreholes with pumps, treatment unit, reservoir and distribution system. It was assessed that the proposed water supply system with adequate treatment will have very small negative impact on the environment. However, there will be substantial improvement in personal hygiene thereby increasing the quality of life and community health. All water supply components will be constructed on the land owned by WUSC.

165. The work involved is labor intensive and minimum use of mechanical equipment is involved. Most of the construction work will be done manually, avoiding heavy equipment which will produce minimum environmental impacts. Trained human resources will be employed.

166. The working procedures proposed are participatory one and the beneficiaries will be actively participating in all the phases of the project. Except from some mechanical equipment for drilling of boreholes, most of the raw materials used will be local in nature. Similarly, as far as possible, local people will be employed for the project so that the chances of conflict are minimal.

VIII ENVIRONMENTAL MANAGEMENT PLAN

167. 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 assignment conducted for the subproject; (iii) detailing specific actions deemed necessary to assist in mitigating the environmental impact of the subproject; and (iv) ensuring that safety recommendations are complied with.

168. A copy of the EMP will 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.

A. Institutional Arrangement

169. The Ministry of Water Supply (MoWS) will be the Executing Agency, working through the Department Water Supply and Sewerage Management (DWSSM), which will establish a Project Management Office (PMO) for the project[17] headed by a Project Director. The DWSSM will also establish Regional PMO (RPMO) in Nepalgunj.

170. The PMO will be responsible for overall project planning, management, implementation, monitoring and reporting for the project. The PMO will also be responsible for screening the proposed subprojects in accordance with the subproject selection criteria for the project, assisting the municipalities in conducting feasibility studies, reporting to and being point of liaison with ADB on the project; quality control of detailed design and construction supervision; procurement of civil works contractors; support for capacity building; and overseeing safeguard compliance. The PMO will liaise with WUSCs or municipalities to sign the management agreement prior to the award of contract for each subproject. The PMO will also engage all consultants under the project.

171. The RPMO will report to the PMO and be supported and monitored by PMO to implement the projects in the field and manage contractors and consultants. The RPMO will manage the detailed design and construction supervision with support from DSMC that PMO would engage. The DSMC will be based at the respective RPMO. For each subproject, a dedicated implementation core group will be established in the field, at each WUA's office,[18] headed by a qualified engineer from the RPMO to conduct day-to-day project management, planning and construction supervision. The TDF will coordinate with RPMO, WUSC and municipalities at least on monthly basis.

172. The WUSC, on behalf of the WUA[19] or the municipality[20] will be responsible for operation and maintenance (O&M) of the water supply and sanitation facilities constructed, operating under a management agreement with DWSSM. WUSC consist of nine executive members,[21] at least three of whom are women. The subproject will fund the WUA's minimum prescribed staffing and

[17] DWSSM will continue the existing PMO established and operational for the Third Small Towns Water Supply and Sanitation Sector project.

[18] The implementation core group, as a minimum, comprises of (i) an Engineer, a Social mobilizer, and an EMP monitor, RPMO; (ii) an Administration Staff, a Finance Staff, and an Engineer or Junior Engineer, WUSC.

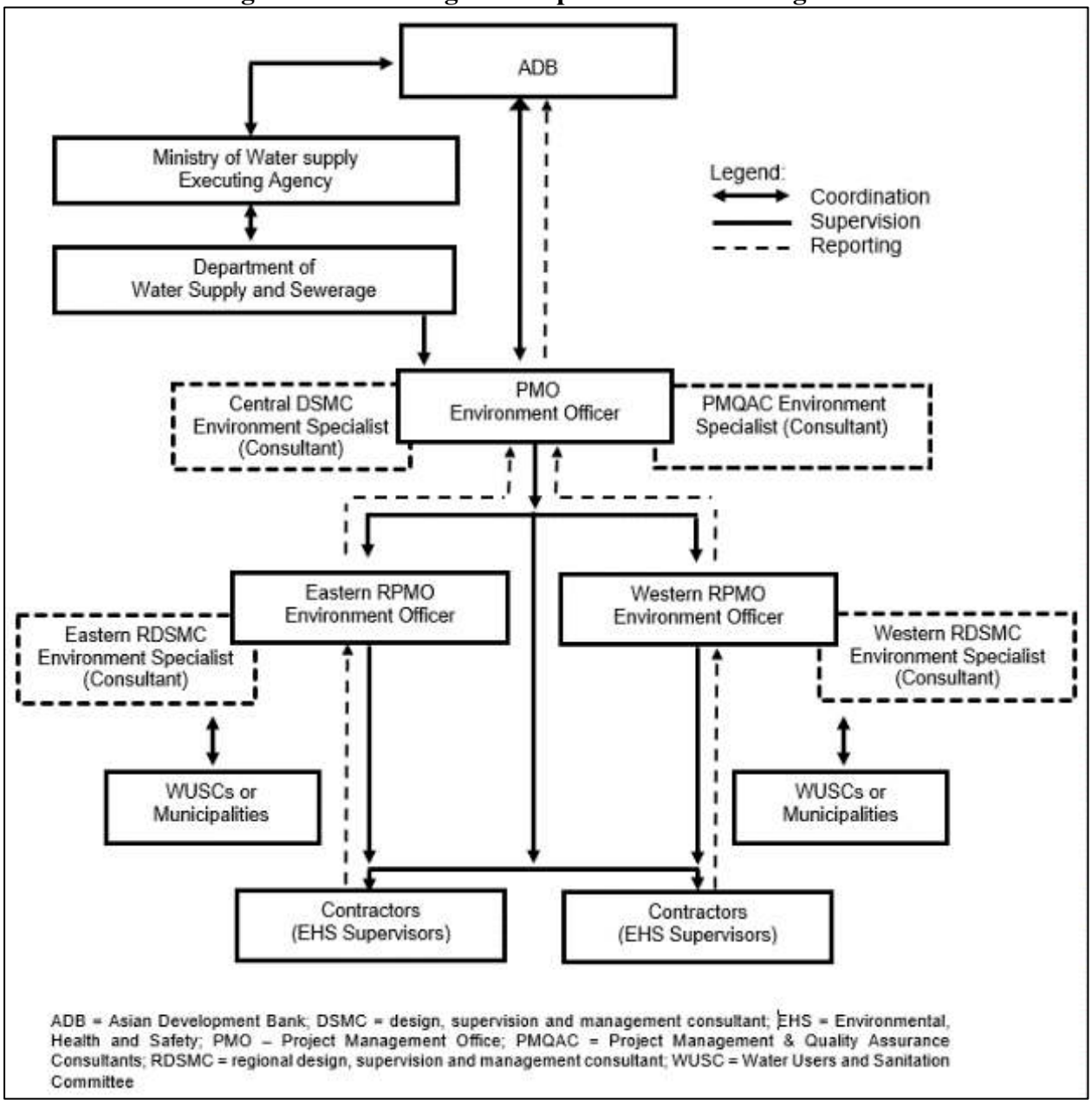
[19] WUAs are registered with the district water resources committee as a user association under the Water Resources Act (1992).

[20] As the project is a demand based open access project, the WUAs or the municipalities can apply for funding a proposed subproject that meets the subproject selection criteria.

[21] WUSCs will be formulated by ensuring proportional representation of gender, caste and ethnic groups. It shall include at least 33% representation of women.

other resource requirement, as outlined in the management agreement with DWSSM for sustainable operations of the system during the project period. For the subprojects yet to be selected and where WUA does not exist initially, or when the municipality doesn't have the capacity and chooses to delegate the operation to user's representatives, an interim user committee (IUC) will be first established in the feasibility stage by representing potential consumers. The IUC will work with the RPMO and DSMC in undertaking a feasibility study, confirm the technical proposals and the boundaries of the service areas. WUAs will be developed from IUC at the detailed design stage.

Figure VIII-1: Safeguard Implementation Arrangement



ADB = Asian Development Bank; DSMC = design, supervision and management consultant; EHS = Environmental, Health and Safety; PMO – Project Management Office; PMQAC = Project Management & Quality Assurance Consultants; RDSMC = regional design, supervision and management consultant; WUSC = Water Users and Sanitation Committee

173. **Project Management Office.** A project officer (Environment) will be engaged in PMO to ensure implementation of environmental safeguards. He/she will be provided with necessary consultant support, and capacity development and training. The responsibilities of the Environment Officer are:

(i) review and confirm existing IEEs and EMPs are updated based on detailed designs, that new IEE/EMP prepared by DSMC comply to exclusion criteria and project selection guidelines as stipulated in the EARF and government rules; and recommend for approval to PMO;

(ii) approve subproject environmental category;
(iii) ensure that EMP is included in bidding documents and civil works contracts;
(iv) provide oversight on environmental management aspects of subproject and ensure EMP is implemented by RPMO and contractor;
(v) establish a system to monitor environmental safeguards of the project including monitoring the indicators set out in the monitoring plan of the EMP;
(vi) 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;
(vii) supervise and provide guidance to the RPMO to properly carry out the environmental monitoring and assessments as per the EARF;
(viii) review, monitor and evaluate effectiveness with which the EMPs are implemented, and recommend necessary corrective actions to be taken;
(ix) consolidate monthly environmental monitoring reports from RPMO and submit semi-annual monitoring reports to ADB;
(x) ensure timely disclosure of final IEE/EMP in project locations and in a form accessible to the public;
(xi) assist with ongoing meaningful consultation and assist in setting up of GRM in respect of environment concerns;
(xii) address any grievances brought about through the Grievance Redress Mechanism (GRM) in a timely manner as per the IEE;
(xiii) undertake regular review of safeguards-related loan covenants, and the compliance during program implementation; and
(xiv) organize periodic capacity building and training programs on safeguards for project stakeholders, PMO, RPMO, and WUA.

174. **Regional Project Management Offices.** The environmental officer assigned by DWSSM to the RPMO will receive support from (i) the PMO environmental officer, (ii) environmental specialist from PMQAC; and (iii) the environmental specialist and EMP monitor of the regional DSMC to carry out the following:

(i) prepare new IEE and EMP in accordance with the EARF and government rules;
(ii) include EMP in bidding documents and civil works contracts;
(iii) comply with all government rules and regulations;
(iv) take necessary action for obtaining rights of way;
(v) oversee implementation of EMP including environmental monitoring by contractors;
(vi) take corrective actions when necessary to ensure no environmental impacts;
(vii) submit monthly environmental monitoring reports to PMO;
(viii) assist with ongoing meaningful consultation and assist in setting up of GRM in respect of environment concerns; and
(ix) address any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEE.

175. **Project Management and Quality Assurance Consultant.** The Project Management and Quality Assurance Consultants (PMQAC) will provide support to the PMO in the following areas. The detailed TORs are in the PAM:

(i) ensure that the quality of the designs and construction of all water supply and sanitation components implemented under the project are to the required standards; and
(ii) assist the PMO with the overall planning, implementation and monitoring of the project during all stages of implementation including adherence to all environmental and social safeguards' requirements.

176. **Regional Design, Supervision and Management Consultant.** The RDSMC will provide support to the RPMO in the following areas. The detailed TOR is given in the PAM:

(i) prepare quality feasibility studies, detailed engineering designs, safeguards documents and bid documents

(ii) provide effective construction supervision and contract management of all water supply and sanitation components implemented under the project in its region
(iii) assist the RPMO with the overall planning, implementation and monitoring of each subproject during all stages of implementation including adherence to all environmental and social safeguards requirements
(iv) work closely with the Water User and Sanitation Committees (WUSC), respective project municipalities and communities to ensure that the citizens are aware of project benefits and their responsibilities
(v) ensure that poor and vulnerable groups will benefit equally from the project.

177. **Civil Works Contract and Contractor.** The contractor will be required to designate an Environment, Health and Safety (EHS) 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 contractor will be required to submit to RPMO, for review and approval, a site-specific environmental management plan (SEMP) including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; (iii) monitoring program as per SEMP; and (iv) budget for SEMP implementation. No works can commence prior to approval of SEMP. The contractor will be required to undertake day to day monitoring and report to the respective RPMO and DSMC.

178. A copy of the EMP or approved SEMP will be kept on site during the construction period at all times. Non-compliance with, or any deviation from, the conditions set out in the EMP or SEMP constitutes a failure in compliance and will require corrective actions. The EARF and IEE specify responsibilities in EMP implementation during design, construction and O&M phases.

179. The PMO and RPMO will ensure that bidding and contract documents include specific provisions requiring contractors to comply with: (i) all applicable labor laws and core labor standards on (a) prohibition of child labor as defined in national legislation for construction and maintenance activities; (b) equal pay for equal work of equal value regardless of gender, ethnicity, or caste; and (c) elimination of forced labor; and with (ii) the requirement to disseminate information on sexually transmitted diseases, including HIV/AIDS, to employees and local communities surrounding the subproject sites.

180. **Capacity Building**. The design review and technical audit consultant (DRTAC) safeguards experts (environmental and social) will be responsible for training the; (i) PMO's safeguards officers (environmental and social); (ii) RPMO's engineer and social development officer. Training modules will need to cover safeguards awareness and management following both ADB and government requirements as specified below:
(i) Introduction to environment and environmental consideration in water supply and wastewater projects;
(ii) Review of IEE and integration into the detailed project design;
(iii) Improved coordination within nodal departments; and
(iv) Monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers before deployment to work sites.

181. **Water Users' and Sanitation Committee.** WUSC is the eventual operators of the completed projects. The key tasks and responsibilities of WUSC are, but not limited to:

Before Construction
(i) Facilitate public consultation and participation, information dissemination and social preparation.
(ii) Provide available data to DSMC-ESS during IEE
(iii) Assist in securing tree-cutting permits and/or registration of water source.
(iv) Participate in training programs.

During Construction

(i) Assist in the observance of the grievance redress mechanism.
(ii) 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.
(iii) Facilitate public consultations, as necessary.

During Operation

(i) Implement the Environmental Management Plan and Water Safety Plan.
(ii) If applicable, actively work with the engaged licensed and accredited laboratory in water quality monitoring.
(iii) Prepare the environmental monitoring report as per IEE.
(iv) Ensure observance of the grievance redresses mechanism.

182. **Licensed and Accredited Laboratory.** 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 WUSC. 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 WUSC.

B. Environmental Management Plan

183. An environmental management plan (EMP) has been developed to provide mitigation measures to reduce all negative impacts to acceptable levels.

184. The EMP will guide the environmentally-sound construction of the subproject and ensure efficient lines of communication between PMO, RPMO, PIU, consultant and contractor. The EMP will (i) ensure that the activities are undertaken in a responsible non-detrimental manner; (i) provide a pro-active, feasible and practical working tool to enable the measurement and monitoring of environmental performance on site; (ii) guide and control the implementation of findings and recommendations of the environmental assessment conducted for the subproject; (iii) detail specific actions deemed necessary to assist in mitigating the environmental impact of the subproject; and (iv) ensure that safety recommendations are complied with. The EMP includes a monitoring program to measure the environmental condition and effectiveness of implementation of the mitigation measures. It will include observations on- and off-site, document checks, and interviews with workers and beneficiaries.

185. The contractor will be required to (i) carry out all of the mitigation and monitoring measures set forth in the approved EMP; and (ii) implement any corrective or preventative actions set out in safeguards monitoring reports that the employer will prepare from time to time to monitor implementation of this IEE, EMP and site-specific EMP (SEMP). The contractor shall allocate budget for compliance with these IEE, EMP and SEMP measures, requirements and actions. The contractor will be required to submit to PIU, for review and approval, a SEMP including (i) proposed sites/locations for construction work camps, storage areas, hauling roads, lay down areas, disposal areas for solid and hazardous wastes; (ii) specific mitigation measures following the approved EMP; and (iii) monitoring program as per EMP. No works can commence prior to approval of SEMP.

Environmental Management Plan (EMP)

Table VIII-1: Environmental Management Plan Matrix

Field	Impacts	Mitigations Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
1. Prior to Construction Activities					
Consents, permits, clearances, no objection certificate (NOC), etc.	Failure to obtain necessary consents, permits, NOCs, etc can result to design revisions and /or stoppage of works	- Obtain all of the necessary consents, permits, clearance, NOCs, etc. prior to start of civil works. - Acknowledge in writing and provide report on compliance all obtained consents, permits, clearance, NOCs, etc.	PMO, RPMO,& DSMC	Incorporated in final design and communicated to contractors	Prior to award of contract
Existing utilities	Disruption of services	- Identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction - Require contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. - Require contractors to prepare spoils management plan (see Annex 2-D for outline).	DSMC, RPMO	List of affected utilities and operators; Bid document to include requirement for a contingency plan for service interruptions (for example provision of water if disruption is more than 24 hours),	During detailed design phase
Drinking water supply	Extraction of unsatisfactory raw water quality	- During the detailed engineering design stage, test water sample from existing tube well located near proposed deep tubewells. - Design to include treatment using pressure filter, softening and disinfection is recommended along with provisions for lab unit and kits.	PMO, RPMO & DSMC	Incorporated in final design and communicated to contractors	Prior to award of contract
Sanitation (Public Toilet)	Contamination of ground water due to seepage of wastewater from the public toilet Contamination of surface water due to effluent or runoff from the public toilet Nuisance to community due to odour	- Ensure design includes (i) appropriate lining of to avoid seepage of wastewater; (ii) appropriate number of treatment chambers; and (iii) provision of adequate water supply to ensure efficient operation, cleaning and maintenance of the toilet during operation phase - A proper septage management shall be developed and followed.	PMO, RPMO, & DSMC	Incorporated in final design and communicated to contractors	Prior to award of contract
Construction camps, stockpile areas, storage areas, and disposal areas	Disruption to traffic flow and sensitive receptors	- Determine locations prior to award of construction contracts	DSMC, RPMO	List of selected sites for construction work camps, stockpile areas, storage areas, and disposal areas.	During detailed design phase

Field	Impacts	Mitigations Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
				Written consent of landowner/s (not lessee/s) for reuse of excess spoils to agricultural land	
Waste generation	Generation of solid waste, wastewater from labor camp and other construction waste may cause pollution	- Mechanism of safe disposal will be developed in the project site before the actual commencement of work - Prohibition of unwanted littering and discharge of waste. - Proper management of solid waste will be done using lined pits for waste disposal	Contractor	Contractor records. visual inspection	During detailed design phase
EMP Implementation Training	If no training is done, there is a possibility of the EMP not implemented efficiently and accurately, leading to unfavorable impacts to environment, workers and community.	- Project manager and contractors to undergo training on EMP implementation, including standard operating procedures (SOP) and occupational health and safety (OHS) for construction works. - Timely implementation of the EMP. - Development and execution of measures for any unanticipated environmental impacts.	PMO, RPMO and DSMC. Contractor's Environmental Supervisor	Record of completion (Safeguards Compliance Orientation or Training)	During detailed design phase prior to mobilization of workers to site.
2. During Construction Activities					
A. Physical Characteristics					
Topography landforms, geology and soils and/or river morphology and hydrology	Surface cutting and excavation works may cause erosions and impact on the local hydrology.	- Soil erosion will be minimized by taking precautionary measures such as: (i) reuse of excavated soil, (ii) immediate and proper backfilling of the trenches, and (iii) the excavated soil temporarily stored properly against erosion by using barriers or silt traps.	Contractor	Records of sources of materials and records of potential areas of soil erosion; Sites of reservoir construction, treatment plant construction, transmission mains and distribution pipelines.	Daily (or as often as necessary especially during monsoon or rains) by contractor. Monthly visual inspection by RPMO and DSMC-ESE.
Community facilities	Damage to existing facilities (like drains, compound walls and pavements) An open shed built for selling of local agricultural products will be relocated/compensated	- Existing infrastructure (such as water distribution pipes, electricity pylons, etc.) shall be relocated before construction starts at the subproject sites. - Prior permission shall be obtained from respective local authority for use of water for construction. Use of water for construction works shall not disturb local water users. - If construction work is expected to disrupt,	Contractor	List of any public or private infrastructure disturbed by the proje project works Minutes of meetings with the locals or affected persons	As per need, or field-inspection if any such case is foreseen

Field	Impacts	Mitigations Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
		users of community shall be served 7 days in advance and again 1 day prior to start of construction. - Ensure any damage to properties and utilities will be restored or compensated to pre work conditions. - A new community block/unit will be built at suitable site nearby the existing location			
Water bodies and water quality	Pollution of water bodies, contamination of water sources due to waste disposal, transport of sediments from worksites and/or construction camps (if any)	- All earthworks must be conducted during dry season to maximum extent possible to avoid the difficult working conditions that prevail during monsoon season such as problems from runoff. - Location for stock yards for construction materials shall be identified at least 300m away from water courses. Place for storage of fuels and lubricants will be away from any drainage leading to water bodies - Take all precautions to prevent entering of wastewater into streams, watercourses, or irrigation system. Install temporary silt traps or sediment basins along the drainage leading to the water bodies. - While working across or close to any water body, the flow of water must not be obstructed. Ensure no construction materials like earth, stone, or appendage are disposed of in a manner that may block the flow of water of any watercourse	Contractor	Areas for stockpiles and sites of storage of fuels and lubricants and waste materials; Number of physical measures (like silt traps installed). Visual inspection. Water quality sampling, if practical and reasonable.	Visual inspection by RPMO and DSMC-ESS on weekly basis Weekly field monitoring Water quality monitoring, if practical and reasonable.
Ambient air	Conducting works at dry season and moving large quantity of materials may create dusts and increase in concentration of vehicle-related pollutants (such as carbon, monoxide, sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons) which will affect people who live and work near the sites.	- Water sprinkling at dry exposed surfaces and stockpiles of aggregates at least twice daily, or as necessary. - If re-surfacing of excavated portion of roads cannot be done immediately, spread of crushed gravel over backfilled surfaces - Require trucks delivering aggregates and cement to have tarpaulin cover and maintain a minimum of 2" free board - Limit speed of construction vehicles in access roads to maximum of 30kph. - Ensure use of equipment and fuel complying with applicable emission standards	Contractor	Location of stockpiles; Number of complaints from sensitive receptors; Heavy equipment and machinery with air pollution control devices; Certification that vehicles are compliant with air quality standards.	Daily monitoring (when there are ongoing works) by contractor. Monthly visual inspection by RPMO & DSMC-ESS. Air quality monitoring, if practical and reasonable.
Acoustic environment	Construction activities will be on settlements	- Involve the community in planning the work program so that any particularly noisy or	Contractor	Results of monitoring noise levels	Daily monitoring (when there are ongoing works) by

Field	Impacts	Mitigations Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
	along and near schools, and areas with small-scale businesses. Temporary increase in noise level and vibrations may be caused by excavation equipment, and the transportation of equipment materials, and people.	otherwise invasive activities can be scheduled to avoid sensitive times. - Plan activities in consultation with local administration so that activities with the greatest potential to generate noise are conducted during periods of the day which will result in least disturbance. - Restrict noisy activities to daytime. - Minimize drop heights when loading and unloading coarse aggregates. - Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; - Utilize modern vehicles and machinery with the requisite adaptations to limit noise and exhaust emissions, and ensure that these are maintained to manufactures' specifications at all times. - All vehicles and equipment used in construction shall be fitted with exhaust silencers. Use silent type generators (if required) - If it is not practicable to reduce noise levels to or below noise exposure limits, the contractor must post warning signs in the noise hazard areas. Identify any building at risk from vibration damage and avoiding any use of pneumatic drills or heavy vehicles in the vicinity. Complete work in these areas quickly.		(Maintain maximum sound levels not exceeding 80 decibels when measured at a distance of 10m or more from the vehicle/s) Number of complaints from sensitive receptors	contractor. Monthly inspection by RPMO & DSMC-ESS. Noise level measurement, on as needed basis and/or if practical and reasonable.
Waste disposal	Pollution of water and land resources, and cases of vector borne diseases due to haphazard waste disposal	- Waste minimization and waste segregation will be prioritized - Practices of composting will be promoted - Containment of hazardous waste will be carried out	Contractor	On-site situation in campsites (if any), work sites and their vicinities	Monthly monitoring by RPMO & DSMC-ESS
B. Biological Characteristics					
Vegetation	Loss of vegetation cover during construction works and laying of the pipelines (Around 11 trees are expected to be felled)	- Greenery promotion around the construction sites and road alignments where possible - Tree felling will be avoided, and if any such cases occur, prior approval from the local bodies will be received and compensatory plantation @ 1:25 will be carried out - Trees of local economic value and	Contractor	Area of greenery that has been cleared Number of trees cut (only if unavoidable) Complaints or grievances by the locals	Monthly monitoring by RPMO & DSMC-ESS

Field	Impacts	Mitigations Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
		aesthetic significance will be planted under compensatory plantation - Locally demanded spcies like lokta should be promoted			
Impacts on Fauna	Disturbances to local and migratory birds, reptiles and mammals	- No heavy vehicles will be made available to run on the road that may disturb the wildlife of the area - Horn prohibited sign will be placed in nearby wildlife inhabited area - Prohibit workforce from any wood logging, hunting - Designating stockpiling areas - Providing alternative fuel to workers for cooking.	Contractor	Vehicles running nearby wildlife inhabited area will be monitored Number of complaints from sensitive receptors on disturbance of poaching fishing, etc.	Monthly visual inspection by RPMO & DSMC-ESS
Aquatic system	Disposal of waste on or nearby water bodies, sediment transport and leakage/disposal of hazardous waste may harm the aquatic lives in the rivers/steams of subproject area	- Washing of vehicles on rivers will be restricted - Disposal of waste of any kind on water bodies will be strictly prohibited - Fishing in rivers will be prohibited for workforce	Contractor	Local streams and rivers (*Tilachaur khola, Tilkeni khola and Bangau Khola*) will be monitored; Any grievances from locals regarding disposal of waste onto water bodies will be referred	Monthly visual inspection by RPMO & DSMC-ESS
C. Socioeconomic Characteristics					
Community activities	The construction related activities that generate dust, noise and impede access will disturb the local residents	- To minimize the disturbances, construction work will be conducted as quickly as possible. - The local residents will be consulted and informed about the work schedule and possible disturbances in advance. - Temporary diversions and signboards will be provided for the pedestrians.	Construction contractor	Time schedule of construction work; Information related to construction activity to local residents Number of temporary diversions sign, signboards etc.	Daily (or whenever there are construction activities) by contractor Monthly visual inspection by RPMO & DSMC-ESS
Social harmony	Poor sanitation practices by workforce may cause pollution of surrounding environment. Social problems may arise due to bad behavior of the workforce such as gambling, alcoholism and disrespect to local people and culture	- Include in workers training adherence to proper housekeeping practices at worksites. - Local people should be given priority to work (recommended that more than 60% local workers whenever available) in the subproject which helps to minimize the chances of cultural discrepancy and conflict due to increased labor from outside.	Construction contractor	Daily entry-sheet of the workforce in the campsites Number of local people versus outside workers in the subproject area will be regularly monitored	Monthly inspection at campsites (if any) by RPMO & DSMC-ESS.

Field	Impacts	Mitigations Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
Occupational Health & Safety	During the construction work, the laborers involved in the construction activities may be exposed to different level of health risks and are prone to accidents	- Mandatory use of safety measures (PPEs) such as mask, helmet, hand gloves and rubber boots, etc. - The laborers will be insured for their health and safety. - Provide safe drinking water for labours - First aid box will be kept at a proper and easily accessible place. - Prohibit child labour in all construction activities.	Construction contractor	Availability of personal protective equipment, First-aid facilities, Medical insurance coverage for workers, Housekeeping and condition of sleeping and sanitation facilities at campsite (if any), Roster of workers	Daily (or when there is a construction activity) by contractor. Monthly visual and document inspection by RPMO and DSMC-ESS
Community Health & Safety Hazards	Overall, communities will be exposed to cross-cutting threats from construction's impacts on air and water quality, ambient noise level; Chances of accidents, Communicable and transmittable diseases may potentially be brought into the community by construction workers	- Contractor's will maintain adequate space and adequate lighting, temporary fence, barriers and signage at worksites; - Children will be prohibited from active construction sites - Proper fencing of stockpile areas - Awareness programs on communicable diseases and hygiene practices will be carried out - Disseminate the GRM to communities and affected stakeholders during consultations - Sensitive localities in terms of risk of this impact are Thapachauraha, Banagau, Bhanu tole, Mahalaxmi tole and Sangam tole.	Construction contractor	Number of permanent signs, barricades and flagmen on worksites as per Traffic Management Plan (Annex 2-D); Number of complaints from sensitive receptors; Number of walkways, signs, and metal sheets placed at subproject location	Daily by contractor. Monthly visual inspection by RPMO & DSMC-ESS
Reinstatement and compensation issues	Dismantling of an existing commercial shed in the proposed project site of Thapachauraha	- Construction of a community hall as compensation to the existing facility that will be dismantled - Any compensation required will be paid through WSUC's coordination	Contractor/WUSC	Records of any grievance from the locals regarding any disturbance or damage on the public properties	Quarterly monitoring by RPMO & DSMC-ESS
D. Historical, Cultural, and Archaeological Characteristics					
Physical and cultural heritage	Project area holds no archaeological, paleontological, or architectural sites of heritage significance A temple (Siddhanath-Baijnath temple) is	- If by chance any such findings are spotted or suspected, the contractor will immediately stop work to allow further investigation - Proper fencing will be provided to isolate the project site from the temple area, and adequate route for the visitors and local	Contractor	Records of chance finds	Daily (when there are excavation activities) by contractor. Monthly visual inspection by RPMO and DSMC-ESS.

Field	Impacts	Mitigations Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
	situated nearby the proposed site. Disturbances may occur during construction period	passer-bys will be maintained so as to minimize any disturbance to local cultural practices			
During Operation and Maintenance Phase					
Exposure to chemicals	Excessive exposure to chlorine, hypochlorous acid, and hypochlorite ion generally results in irritation of the esophagus, a burning sensation in the mouth and throat, and spontaneous vomiting	- All disinfection chemicals require proper storage and handling practices - Provide safe storage for chemicals - Ensure that the person is hired, with knowledge of chlorine use for disinfection process during operation - Ensure use of PPE while using chemicals - Use of chlorine guideline as per WHO (Annex 8)	Contractor during DLP; WUSC or operator after DLP	Visual inspection	Daily (or as needed) by the operator.
Water bodies	Water pollution due to effluent produced from the periodic backwashing of the filter plant, if discharged directly to the river course may cause harm to the water bodies and aquatic life especially during the dry season when flow will be less.	- A settling tank is proposed for decanting of the slurry from the effluent during backwash	Contractor during DLP; WUSC or operator after DLP	Visual inspection Effluent sampling	For first year, DSMC After that WSUC daily inspection or as needed. Effluent sampling by the operator, only when necessary or practical.
Drinking water supply system	Delivery of unsafe water due to source contamination, leakage in pipes	- The operations and maintenance plan and training for staff will cover; (i) competent/cautions handling and storage of calcium Hypochlorite and qualified persons to implement/oversee disinfection and treatment; (ii) providing safe storage for chemicals; (iii) ensure capacity of WUSC to implement quick response to hazardous substance/waste spills; (iv) implement SPS-complaint EMP and a WSP; and (v) monitor water quality.	Contractor during DLP; WUSC or operator after DLP	Visual inspection Water Quality reports WTP records in the logbook	Daily or as needed visual inspection by the operator. Quarterly or as needed water quality testing by the operator.

C. Environmental Monitoring Program

186. Environmental monitoring will be done during construction at three levels:
(i) Monitoring development of project performance indicators by the PMO-ESS;
(ii) Monitoring implementation of mitigation measures by the Contractor; and
(iii) Overall regulatory monitoring of environmental issues by the PMO.

187. In addition to regular monitoring onsite (at town level) by the ICG and DSMC-ESS on the EMP implementation of the mitigation measures, monitoring of key environmental parameters is proposed. Table VIII-2 presents the indicative environmental monitoring plan for the subproject which includes relevant environmental parameters, with a description of the sampling stations, frequency of monitoring, applicable standards, and responsible agencies. This will be updated during detailed design to ensure EMP and monitoring program is commensurate to the impacts of the subproject.

Table VIII-2: Environmental Pollution Monitoring Program

	Field	Stage	Parameters	• Location	Frequency	Standards	Responsibility
1.	Air quality	• Prior to construction to establish baseline • Construction phase	PM_{10} SO2 (only if potential source is due to subproject) NOx (only if potential source is due to subproject)	• Work site locations • Along water transmission main 1-km interval from PTWs • Construction campsite locations	• 24-hour monitoring once in a season (except monsoons) for the constructi on period	• National Ambient Air Quality Standard s, 2003	Contractor
2.	Noise and vibration levels	• Prior to construction to establish baseline • Construction phase	Equivalent day and nighttime noise levels	• PTWs location • Along water transmission main 1-km interval from PTWs • Construction campsite locations	• Once in a season (except monsoons) for the constructi on period	• National Noise Standard Guideline s, 2012	Contractor
3.	Water quality	• Prior to construction to establish baseline • Construction phase	TSS, pH, BOD, fecal coliform, DO	• Adjacent to construction sites (to be identified by the (DRTAC or DSMC)	• Twice a year (pre-monsoon and post-monsoon) for the entire period of constructi on	• National Drinking Water Quality Standard s, 2005	Contractor

D. Institutional Capacity Development Program

188. 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.

189. WUSC does not have the capacity to monitor the quality of supplied water as prescribed in the NDWQS and its Directives. Although monitoring kits and laboratory rooms will be provided, this would not guarantee WUSC can handle monitoring appropriately. DWSSM has five regional laboratories; however some are not functioning fully due to lack of human resources. 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 WUSC actively participating to develop its capacity. 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 that the capacity of 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 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.

190. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work site. Contractor needs to prepare a Site-specific EMP (S-EMP) document before starting its construction work, and an EHS focal person should be appointed by the contractor. As of now (this IEE document reviewed in February 2020), the contractor has already assigned an EHS focal person. The proposed training project along with the frequency of sessions is presented in Table VIII-3. The Environmental Safeguard specialist & EMP Field Monitloring Staffs are responsible for organizaing different training program for Environmental Management.

Table VIII-3: Training Program for Environmental Management

Items	**Pre-construction/prior to construction**	**Construction**	
Training Title	Orientation workshop	Orientation program/ workshop for contractors and supervisory staff	Experiences and best practices sharing
Purpose	To make the participants aware of the environmental safeguard requirements of ADB and GON and how the project will meet these requirements	To build the capacity of the staffs for effective implementation of the designed EMPs aimed at meeting the environmental safeguard compliance of ADB and GON	To share the experiences and best practices aimed at learning lessons and improving implementation of EMP
Contents	**Module 1: Orientation** • ADB Safeguards Policy Statement • Government of Nepal Environmental Laws and Regulations **Module 2: Environmental Assessment Process** • ADB environmental process, identification of impacts and mitigation measures,	• Roles and responsibilities of officials/contractors/consultants towards protection of the environment • Environmental issues during construction • Implementation of EMP • Monitoring of EMP implementation • Reporting requirements	Experiences on EMP implementation – issues and challenges Best practices followed

Items	Pre-construction/prior to construction	Construction	
	formulation of an environmental management plan (EMP), implementation, and monitoring requirements • Review of environmental assessment report to comply with ADB requirements • Incorporation of EMP into the project design and contracts		
Duration	1 day	1 day	1 day on a regular period to be determined by PMO, ICGs, and (provide if DRTAC or DSMC)
Participants	Executing and implementing agencies, PMO, and PMO staff (technical and environmental) involved in the project implementation	PMO ICGs Contractors	PMO ICGs Contractors

E. Staffing Requirement and Budget

191. Costs required for implementing the EMP will cover the following activities:

(i) Updating IEE, preparing and submitting reports and public consultation and disclosure;

(ii) Application for environmental clearances; and

(iii) Implementation of EMP, environmental monitoring program and long-term surveys.

192. 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-ESS assisted by the PMO environmental safeguard officer. Therefore, no separate budget is required for the PMO-ESS.

193. 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.

194. The operation phase for mitigation measures are good operating practices to mitigate the environmental impacts of this phase & the responsibility remains to WUSC. All monitoring during the operation and maintenance phase will be conducted by WUSC. The Water Safety Plan, included in the project 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.

195. The indicative costs of EMP implementation are shown in Tables VIII-4 (by source of funds).

Table VIII-4: Indicative Cost of EMP and Safeguards Implementation and Its Monitoring

	Particulars	Stages	Unit	Total Number	Rate (NPR)	Cost (NPR)	Cost covered by
A	**Mitigation Measures**						
1	Protection/Reinstatement works	Construction phase				425,000.00	Civil works contract
2	Greenary management/ Promotion	Construction phase				300,000.00	Civil works contract
3	Compensation costs	Construction phase				225,000.00	Civil works contract
B	**Monitoring Measures**						
1.	Air quality monitoring	- Pre-construction - Construction	Per location	5	30,000.00	150,000.00	Civil works contract
2.	Noise levels monitoring	- Pre-construction - Construction	Per location			50,000.00	Civil works contract
3.	Water Quality Test	Pre-construction - Construction	Per Location	12	5000.00	100,000.00	Civil works contract
C	**Capacity Building**						
1.	(i) Orientation workshop for officials involved in the project implementation on ADB Safeguards Policy Statement, GoN environmental laws and regulations, and environmental assessment process; (ii) induction course contractors, preparing them on EMP implementation and environmental monitoring requirements (iii) lessons learned information sharing	Module 1 – immediately upon engagement of the (provide if DRTAC or DSMC) environmental specialists Module 2 – prior to award of civil works contracts (twice a year for 4 years) Module 3 - Upon completion of the project	lump sum	1 8 1	Module 1 – 300000.00 Module 2 – 100000.00 Module 3 – 200000.00	300,000.00 800,000.00 200,000.00	Covered under DRTAC or DSMC contract
D	**Administrative Costs**						
1.	Legislation, permits, and agreements	Permit for excavation, tree-cutting permits, etc	As per requirement	NA	NA	NA	NA (Coordinationand communication)
		IEE preparation and its presentation in MoWS	Lump sum	1	500,000	500,000	DSMC contract
E	**Other Costs**						
1.	Public consultations	Information	As per	Lump		50,000	Covered

	Particulars	Stages	Unit	Total Number	Rate (NPR)	Cost (NPR)	Cost covered by
	and information disclosure	disclosure and consultations including public awareness campaign through media	requirement	sum			under DSMC contract
2.	Awareness and sensitization on Ecological Sensitivity and Biodivesrity	Specifically regarding Shuklaphanta National Park/BZ				75,000	Civil works contract
3.	Water Sprinkling	During dry seasons, during heavy plying of construction vehicles, near sensitive areas				100,000	Civil works contract
4.	GRM implementation	Meetings, consultations, communication, and reporting/information dissemination		Lump sum		25,000	PMO cost
5.	Any unanticipated impact due to project implementation	Mitigation of any unanticipated impact arising during construction phase and		Lump sum	Contractor's liability	As per insurance requirement	Civil works contract – contractor's defect liability period
F	**Expert Monitoring Costs**						
	Environmental Specialist			1 MM	100,000	100,000	This cost is under the Contractor's contract
	Sociologist			1 MM	75,000	75,000	
	Support staff			2 MM	25,000	50,000	
	Cost of monitoring by MoWS/DWSSM					200,000	
	Transportation and logistics					75,000	
TOTAL						**3,800,000.00**	

IX INFORMATION DISCLOSURE, CONSULTATION AND PARTICIPATION

A. Information Disclosure, Consolations and Participations

196. Stakeholder consultation and participation was an essential process in project preparation and IEE study. The process in engaging stakeholders and affected people involved key informant interviews, on-site discussions with WUSC, and random field interviews of stakeholders. Table IX-1 lists the persons consulted during the IEE Study.

Table IX-1: Lists of People and Institutions Consulted

SN	Name	Organization/Address
1	Mr. Karbir Sing Aiyer	Chairperson, WUSC
2	Mr.Kamal Chand	Treasurer/Water User Committee
3	Mr.Mahabir Jhakri	Local beneficiary
4	Mr.Dil Bdr. Dhami	Local beneficiary
5	Mr.Khagendra Singh Bista	Representative of ward-8
6	Mr.Hari Pratap Mishra	Secretary of ward-8
7	Mr.Tilak Khatri	Local beneficiary
8	Mr.Ganesh Giri	Senior Health Assistant/Jimuwa Health Post
9	Mr. Surendra Bista	Mayor, Bheemdatt Municipality
10	Mr. Permananda Joshi	Ward Chairman, Ward 10
11	Mt. Harak Singh Dhami	Member, Ward 6
12	Mr. Dal Bahadur Bohora	Ward Member, Ward 6
13	Mr. Dhwaj Bahadur Bista	Ward Chairman, Ward 8
14	Ms. Bhanu Devi Sunar	Ward Member, Ward 8
15	Mr. Bhawan Singh Bista	Teacher, Ward 8
16	Ms. Annu Khadayat	Member, Ward 8
17	Mr. Padam Singh Bista	Member, Ward 8
18	Mr. Mangal Singh Dhami	Member, Ward 8
19	Mr. Nanda Lal Fidali	Member, Ward 8
20	Mr. Deepak Bahadur Singh	Member, Ward 8
21	Mr. Nar Bahadur Dhanuk	Member, Ward 8
22	Mr. Nar Pati Dhami	Member, Ward 8
23	Mr. Gagan Khadka	Member, Ward 8

197. During the IEE preparation, consultations were undertaken (Annex 5) in compliance with GoN's EPR as well. The following table summarizes the public consultations;

Table IX-2: List of Public Consultations and their Summary

SN	Meeting	Date	Location	Outcomes
1	Preliminary consultation	21st April 2018	Thapachauraha; proposed site (site visits and interaction with beneficiaries before the meeting)	The WUSC and beneficiaries were informed on project design and its possible environmental implications and WUSC was made aware of environmental safeguards requirements
2	Project preparation meeting (semi-formal)	28th April 2018	Cooperative office, Ward (site visits and interaction with beneficiaries before	WUSC and project design team agreed on incorporation of greenery protection; public safety and building of a new community hall as compensatory provisoin for

			the meeting)	the need of demolition of a local commercial shed in the proposed project site at Thapachauraha
3	IEE public consultation	23rd Jan 2019	Cooperative office, Ward (site visits and interaction with beneficiaries before the meeting)	The major concerns raised during the public consultations were greenery promotion, prioritization for local employment, waste/spoil disposal, and need of sanitation support through the project.
4	Follow-up meeting	31st Jan 2020	WUSC office	Agreed of ESMP implementation; appointing of EHS focal person by the contractor

198. Stakeholder consultations will continue throughout the implementation of the subprojects and operation. All stakeholders must be invited and encouraged to participate in community consultations. To facilitate the engagement of stakeholders, the PMO and ICG will maintain good communication and collaboration with WUSC and the Municipality. PMO, ICG, Contractors and/or WUSC will be open to the public to contact on matters concerning the progress of the subprojects, adverse impacts, mitigation measures and environmental monitoring and grievances. Future stakeholder consultations will be as follows:

- During the construction stage , if there would be a major change in design/alignment/location, the PMO and ICG will hold at least one public consultation meeting early on in the construction period to solicit perceived impacts, issues, concerns and recommendations from affected communities;
- Prior to construction, the PMO and ICG will conduct an intensive 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 ICG, and status of compliance with the Government's environmental safeguard requirements, among others, are attained/provided. Billboards about the subproject, implementation schedule and contact details of the executing agency, PMO-ES, ICG-ESA and Contractors will 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 ICG, WUSC and Municipality;
- During construction, regular random interviews will be conducted by the ICG-ESA every month to monitor environmental concerns of subproject communities;
- During operation, periodic random interviews will be conducted by the ICG and WUSC to monitor the environmental concerns of subproject communities;
- The public consultations and information disclosure will be continuous throughout the project cycle. PMO and ICG will be responsible for designing and implementing such aspects on the ground.

199. The GoN-approved IEE Report (in English), will be available at the offices of the PMO, ICG and WUSC for the perusal of interested parties. Copies may be made available upon formal request. The IEE and environmental monitoring reports will be disclosed on the ADB's and UWSSP website.

B. GRIEVANCE REDRESS MECHANISM

200. A project-specific GRM will be established to receive, evaluate and facilitate resolution of affected persons' concerns, complaints, and grievances related to social, environmental and other concerns on the project. The GRM will aim to provide a time-bound and transparent mechanism to resolve such concerns. Grievances may be channelled

through letters, emails, text messages (SMS), verbal narration, grievance boxes and registers. Suggested template for grievance redress form is in Annex 2-B.

201. A common GRM will be in place for social, environmental or any other grievances related to the subproject. The GRM will provide an accessible forum for receiving and facilitating resolution of affected persons' grievances related to the project. Project will publish the sample grievance registration form on its website, and publish it in local language and/or indigenous people dialect, at the hoarding board of each of the participating WUA or municipalities' office. Every grievance shall be registered with careful documentation of process adopted for each of the grievance handled, as explained below. The environmental and social safeguards officer (ESO/SSO) at the PMO will have the overall responsibility for timely grievance redress on environmental and social safeguards issues. The Social Safeguards Officer at the RPMO will be the focal person for facilitating the grievance redress at the local level.

202. A municipal-level public awareness campaign will be conducted on a regular basis as per the communication strategy of the project to ensure awareness on the project and its GRM. The social and environmental safeguards experts of the project management and quality assurance consultant (PMQAC) and regional design, supervision and management consultants (RDSMCs) will support the WUA or municipalities in conducting municipality-wide awareness campaigns, which will ensure that all stakeholders including poor and vulnerable are aware of the GRM and project's entitlements.

203. A grievance redress committee (GRC) will be formed at the Municipality level, comprising the Mayor as Chairperson of GRC, and Regional Project Manager RPMO as Secretary. The GRC members will comprise of (1) WUSC Secretary; (2) RPMO Engineer; (3) RPMO social /environmental (as relevant) officer, (4) representative of affected persons, (5) RDSMC's safeguards specialist (social/environment as relevant), (6) a representative of reputable and relevant CBO/SHG/organization working in the subproject area as invitee,[22] and (7) contractor's representative. The secretary of the GRC will be responsible for convening timely meetings and maintaining minutes of meetings. The concerned social safeguards expert of RDSMC will support the RPMO safeguard's officer and Project Manager of RPMO to ensure that grievances, including those of the poor and vulnerable are addressed. All GRCs shall have at least two women committee members. Along with representatives of the affected persons, civil society and eminent citizens can be invited as observers in GRC meetings.

204. 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 WUA or local bodies; and (iii) ensure feedback to the aggrieved parties about developments regarding their grievances and decisions of the GRC. The GRM procedure is depicted in Figure 5, and is outlined below in detail, 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. If affected persons are not satisfied with the response they can elevate it to the next level:

(i) **First Level of GRM** (WUA level): The first-level, which is also the most accessible and immediate venue for quick resolution of grievances will be the contractors, RDSMC field engineers and RPMO supervision personnel, who will immediately inform the WUA. Any person with a grievance related to the project works can contact UWSSSP to file a complaint. The municipal-

[22] If the complaints are related with IP/Dalits/other vulnerable groups, specific NGO/CBO that actively involved in development of these communities shall be involved.

level field office of the RPMO, in WUA's building, will document the complaint within 24 hours of receipt of complaint in the field, and WUA or local bodies will immediately address and resolve the issue at field-level with the contractor, supervision personnel of RPMO and RDSMC field engineers within 5 days of receipt of a complaint/grievance. The assigned RDSMC's 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 as well as to provide feedback to the complainant. If the complaint remains unresolved at the local level within 5 days, the WUA will forward the complaint to the municipality level GRM.

(ii) **Second Level of GRM** (Municipality level): The complainant will be notified by the WUA that the grievance is forwarded to the Municipality-level GRC. The Municipality-level GRC will be called for a meeting, called and chaired by the Mayor. 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 WUA. If the grievance remains unresolved within 10 days of receipt of complaint by WUA, the matter will be referred to the third level. The RPMO Engineer will be responsible for processing and placing all papers before the GRC, recording decisions, issuing minutes of the meetings, providing feedback to complainants and taking follow up actions so that formal orders are issued and decisions are carried out.

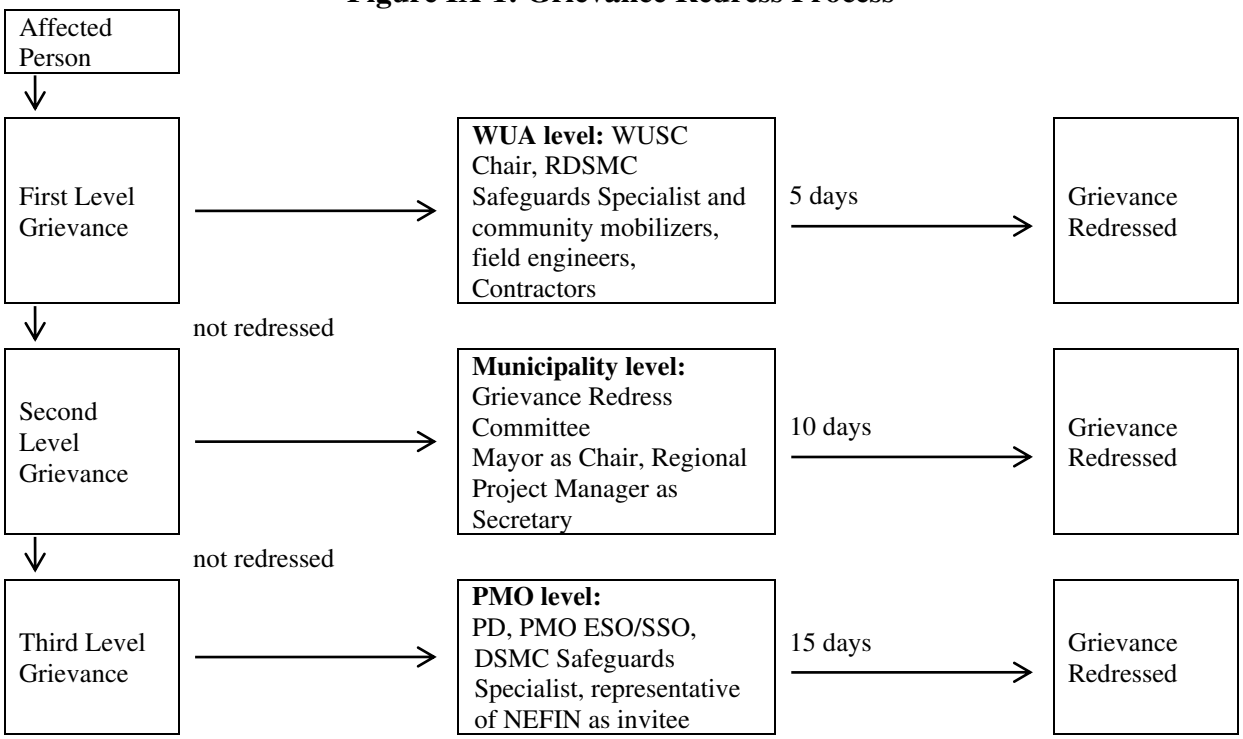
(iii) **Third Level of GRM** (PMO Level)**:** Any unresolved or major issues at Municipality level will be referred to the PMO for final solution. A representative of the Nepal Foundation for Indigenous Nationalities (NEFIN) will be invited to attend any meetings related to resolution of Indigenous Peoples grievances. Decision has to be made within 15 days of receipt of complaint from the Municipality-level GRC. The Project Director will sign off on all grievances received by the PMO. The concerned Deputy Project Director (DPD) and environmental and social safeguards officers (ESO and SSO) of PMO will be involved with support from the PMQAC's social/environment safeguards experts. The SSO will be responsible to convey the final decision to the complainant.

205. All paperwork (details of grievances) needs to be completed by the WUA member secretary assisted by RDSMC and circulated to the WUA Chairperson and members. At Municipality level, the RPMO Engineer will be responsible for circulation of grievances to the Regional Project Manager, DWSSM, Mayor and other GRC members, prior to the scheduled meetings. The RPMO's Engineer will be responsible for follow-through of all escalated grievances. All decisions taken by the GRC will be communicated to the affected persons by the RPMO's SSO.

206. 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.

207. In the event that the established GRM is not in a position to resolve the issue, the affected person also can use ADB's Accountability Mechanism 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 developing member countries (DMCs). The ADB's Accountability Mechanism information will be included in UWSSP Information Datasheet (PID), to be published in web and distributed to the affected communities, as part of the project GRM.

Figure IX-1: Grievance Redress Process



DSMC = design, supervision and management consultant; ESO=environmental safeguards officer; NEFIN = Nepal Federation of Indigenous Nationalities; PD = project director; PMO = project management office; RDSMC = regional design, supervision and management consultant; SSO = social safeguards officer; WUA = water users' association; WUSC = water users' and sanitation committee.

208. **Record Keeping and Disclosure**. Records at the municipal-level will be kept by the concerned WUA or local bodies member secretary, assisted by RDSMC, 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 PMO office, WUA, 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/ Municipality level, the RPMO's Engineer assigned as GRM focal person will be responsible for record-keeping, calling of GRC meetings and timely sharing of information with WUA or municipalities. For grievances escalated to PMO and above, the PMO's SSO will be responsible for maintenance of records, sending copies to RPMO and WUA for timely sharing of information with the person filing complaint.

209. **Periodic Review and Documentation of Lessons Learned**. The PMO's SSO will periodically review the functioning of the GRM at municipality or WUA level and field 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, WUA to RPMO SDO, and by RPMO to PMO SSO) in monthly and quarterly progress reports.

210. **Costs.** All costs involved in resolving the complaints (meetings, consultations, communication and reporting/information dissemination) at local (field/ward/municipal) level will be borne by the concerned focal organizations at each level: WUA at local level, and municipality at municipal level; and PMO at central level. Cost estimates for grievance redress are included in resettlement cost estimates.

Table IX-2: Suggested Format for Record Keeping of Grievances

SN	Date of receipt of grievance	Name and contact details of complainant	Description of complaint	Nature of complaint	Decisions taken	Response given to complainant and date	Whether closed

X MONITORING AND REPORTING

211. RPMO will monitor and measure the progress of EMP implementation. The monitoring activities will relate to the subproject's impacts that are identified in IEE. PMO, ICGs will compare the works completed and deviations from the original scope. They will also undertake site inspections and review documents to verify that the project complies with the EMP.

212. RPMO will submit monthly monitoring and implementation reports to PMO, who will take follow-up actions, if necessary. PMO will submit semi-annual monitoring reports to ADB. Project budgets will reflect the costs of monitoring and reporting requirements. For projects likely to have significant adverse environmental impacts during operation, reporting will continue on an annual basis. Monitoring reports will be posted in a location accessible to the public.

213. For projects likely to have significant adverse environmental impacts, the PMO will retain external experts to verify its monitoring information. PMO-ESS will document monitoring results, identify the necessary corrective actions, reflect them in a corrective action plan, and for each quarter, will study the compliance with the action plan developed in the previous quarter. Compliance with loan covenants will be screened by the PMO-ESO, with support from PMO-ESS.

214. ADB will review the project performance against MOWS's commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. ADB will monitor projects on an ongoing basis until a project completion report is issued. ADB will carry out the following monitoring actions to supervise project implementation:

(i) conduct periodic visits to projects with adverse environmental or social impacts;
(ii) conduct supervision and review by ADB's safeguard specialists/officers or consultants for projects with significant adverse social or environmental impacts;
(iii) review the periodic monitoring reports submitted by EAS to ensure that adverse impacts and risks are mitigated, as planned and as agreed with ADB;
(iv) work with EAS to rectify to the extent possible any failures to comply with their safeguard commitments, as covenanted in the legal agreements, and exercise remedies to re-establish compliance; and
(v) prepare a project completion report that assesses whether the objective and desired outcomes of the safeguard plans have been achieved, taking into account the baseline conditions and the results of monitoring.

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

216. The contractor will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites. The contractor needs to conduct regular monitoring of environmental status, compliance and standards in its working sites and campsites. This needs to be included in monthly reporting to the PMO Consultant in the format prescribed by the PMO Consultant. The Contractor shall facilitate for field visits in any and all monitoring activities planned by the PMO consultants, PMO / RPMO personnel and the ADB.

XI CONCLUSION AND RECOMMENDATIONS

217. Field study and analysis of the environmental aspects of the proposed project shows that the proposed project is not an environmentally critical intervention. The IEE shows that;

- The proposed Siddhanath-Baijnath Urban Water Supply and Sanitation Project and its components are not within environmentally sensitive area. Although the project area lies in same district as Shuklafanta National Park, there is safe distance and since the potential impacts are site specific or local in nature, there is no significant risk to the national park due to project activities. However, the project will follow the provisions and requirements not to disturb any environmentally sensitive areas or aspects in its vicinity.
- There will be some adverse impacts of the project implementation. However, the extent of adverse impacts is expected to be local, confined within the projects' main areas of influence, and the routes to and from these sites. With the EMP in place, the potential adverse impacts will either be eliminated or minimized to insignificant levels through appropriate measures.
- The few adverse impacts of significance during construction will be temporary and short-termed (i.e. most likely to occur only during peak construction periods). These will not be sufficient to threaten or weaken the surrounding resources.
- 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 community health, improved quality of life and safe communities as outcomes. Since it is near Birendranagar Municipality, the implementation of the project will help attract more development and investments in that belt of Sudurpashchim Province.

218. Based on the above findings, the classification of Siddhanath-Baijnath Urban Water Supply and Sanitation Project as Category B is confirmed, and no further special study or detailed EIA needs to be undertaken.

XII LITERATURE REVIEWED

ADB, 2003. Environmental Assessment Guidelines.
Constitution of Nepal (2015). Ministry of Law, Justice and Parliamentary Affairs, Law Books Management Board, Kathmandu
Environment Protection Act, (1997). Ministry of Science, Technology and Environment Kathmandu
Environment Protection Rules, (1997 and its amendments), Ministry of Science, Technology and Environment, Kathmandu
Environment Statistics of Nepal, CBS, 2011
Environmental Impact Assessment Guidelines,GoN, (1993).
National Conservation Strategy Implementation Project, National Planning Commission, His Majesty's Government, Nepal
Detailed Engineering Design Report of Chakkifanta Water Supply Sub Project, 2017
Labor Act (1991), Ministry of Law, Justice and Parliamentary Affairs, Law Books Management Board, Kathmandu
Local GovernMent Operations Act, (2017). Ministry of Law, Justice and Parliamentary Affairs, Law Books Management Board, Kathmandu
Municipality profile and baseline information of Bheemdatt Municipality, and National Population and Housing 2011, CBS, 2012
National Urban Policy (2007). Ministry of Law, Justice and Parliamentary Affairs, Law Books Management Board, Kathmandu
Shrestha K 1998. Dictionary of Nepalese Plant names. Mandala Book Point, Kathmandu, Nepal.
Solid Waste Management Act (2011). Ministry of Science and Technology and Environment, Kathmandu
The Updated Fifteen-Year Development Plan for Small Towns' Water Supply and Sanitation Sector,2009
Uprety, B.K (2003). Safeguard the Resources Environmental Impact Assessment Process and Practice, Kathmandu
Water Resource Act (1992). Ministry of Law, Justice and Parliamentary Affairs, Law Books Management Board, Kathmandu

ANNEX 1: REA Checklist
&
No Mitigation Scenario Checklists

ANNEX 1:
RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST FOR CHAKKIFANTA PROJECT AND PRELIMINARY CLIMATE RISK SCREENING CHECKLIST FOR SAMPLE SUB PROJECT TOWNS

Instructions

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (RSES) for endorsement by the Director, RSES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) 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.

Country/Project Title:	NEP: Urban Water Supply and Sanitation Sector Project
Subproject:	Siddhanath-Baijnath Urban Water Supply and Sanitation Project

Screening Questions	Yes	No	Remarks
A. Project Siting Is the project area			
Densely populated?		√	The population density is 13.21 per hectare which is not densely populated condition
Heavy with development activities?		√	There are only small scale development activities going on.
Adjacent to or within any environmentally sensitive areas?		√	Shuklaphanta National Park lies more than 3 km from the project area
Cultural heritage site		√	
Protected Area		√	
Wetland		√	
Mangrove		√	
Estuarine		√	
Buffer zone of protected area		√	
Special area for protecting biodiversity		√	
Bay		√	
B. Potential Environmental Impacts **Will the Project cause…**			
Pollution of raw water supply from upstream wastewater discharge from communities, industries, agriculture, and soil erosion runoff?		√	
Impairment of historical/cultural monuments/areas and loss/damage to these sites?		√	
Hazard of land subsidence caused by excessive ground water pumping?		√	

Screening Questions	Yes	No	Remarks
Social conflicts arising from displacement of communities ?		√	No displacement
Conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters?		√	No local water use disputes
Unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)?	√		Complete water treatment process is proposed under the Subproject. EMP recommends water quality monitoring as prescribed in the NDWQS & its Directives.
Delivery of unsafe water to distribution system?	√		Design proposes monitoring kits, a lab room. EMP recommends continuing training of WUSC in water quality monitoring, as prescribed in the NDWQS Directives and implementation of WSP
Inadequate protection of intake works or wells, leading to pollution of water supply?	√		Design proposes housing for intake wells, as well as perimeter fencing of the entire land area of the intake wells & associated facilities.
Over pumping of ground water, leading to salinization and ground subsidence?		√	
Excessive algal growth in storage reservoir?		√	
Increase in production of sewage beyond capabilities of community facilities?		√	Most of the communities have septic tanks leading to soak pits. EMP provides mitigation measures.
Inadequate disposal of sludge from water treatment plants?		√	Minimal sludge expected. EMP provides mitigation measures.
Inadequate buffer zone around pumping and treatment plants to alleviate noise and other possible nuisances and protect facilities?		√	
Impairments associated with transmission lines and access roads?	√		
Health hazards arising from inadequate design of facilities for receiving, storing, and handling of chlorine and other hazardous chemicals.	√		Ca(ClO)2, commonly used in basic water treatment, will be used. EMP provides measures to mitigate health and safety impacts from improper handling, potential accidents &/or human error in dosing.
Health and safety hazards to workers from handling and management of chlorine used for disinfection, other contaminants, and biological and physical hazards during project construction and operation?		√	
Dislocation or involuntary resettlement of people?		√	
Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		√	
Noise and dust from construction activities?	√		EMP provides mitigation measures.
Increased road traffic due to interference of construction activities?		√	EMP provides mitigation measures.
Continuing soil erosion/silt runoff from construction operations?		√	
Delivery of unsafe water due to poor O&M treatment processes (especially MWSS accumulations in filters) and inadequate chlorination due to lack of adequate monitoring of chlorine residuals in distribution systems?	√		EMP incorporates monitoring of distributed water according to the Directives for the NDWQS.

Screening Questions	Yes	No	Remarks
Delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals?	√		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?		√	
Excessive abstraction of water affecting downstream water users?		√	
Competing uses of water?		√	
Increased sewage flow due to increased water supply	√		Municipality plans for drainage manaegement
Increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant	√		Low cost sludge drying bed is an option for the municipality
Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		√	
Social conflicts if workers from other regions or countries are hired?	√		Expected as low concern. Priority will be given to local workers.
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?	√		EMP provides mitigation measures.
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?	√		EMP provides mitigation measures.

Preliminary Climate Risk Screening Checklist for Sample Sub-project Town

Screening Questions		Score	Remarks
Location and design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides	0	The sub-project is not likely to be affected by climate change and extreme weather events. For example all pipes will be constructed below ground no investments will be sited in flood plains etc.
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g. sea-level, peak river flow, reliable water level, peak wind speed etc.)	0	Not required
Materials and maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity, and hydro metrological parameters) affect the selection of project inputs over the life of project outputs (i.e. construction materials)	0	Not likely
Performance of Project Outputs	Would climate/weather conditions and related extreme events likely to affect the performance throughout their design life time?	0	Climate conditions will unlikely affect water quantity and quality of water supply system. The water supply schemes will be designed to meet the current and future demand. Further water supply system will be operated and maintained efficiently to reduce system losses. Water safety plans will be implemented to ensure water supplied is safe and potable at all times.

Options for answers and corresponding scores are given below.

Response	**Score**
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned as medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High): Low
Other comments: None

NO MITIGATION SCENARIO (SCOPING CHECKLIST) of Siddhanath-Baijnath UWSS Project

Checklist 1: Scoping Checklist Part 1 - Questions on Project Characteristics

No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
1. Will construction, operation or decommissioning of the Project involve actions which will cause physical changes in the locality (topography, land use, changes in waterbodies, etc)?				
1.1	Permanent or temporary change in land use, land cover or topography including increases in intensity of land use?	Yes	Slight changes in existing land cover status thus adding some built-up units in the existing open land	Not significant because the proposed land is currently unused, and the area is of small scale
1.2	Clearance of existing land, vegetation and buildings?	Yes	Existing land cover could be converted into built up area	Not significant
1.3	Creation of new land uses?	No		
1.4	Pre-construction investigations e.g. boreholes, soil testing?	No		
1.5	Construction works?	Yes	Surface water bodies; agricultural land could be polluted/disturbed due to haphazard disposal of spoil and waste during construction phase	Not significant because scale of work is small
1.6	Demolition works?	Yes	An open shed built for selling of agricultural products needs to be demolished	Not significant as the shed is not in regular use. However, it is a loss to community
1.7	Temporary sites used for construction works or housing of construction workers?	Yes	Chance of disposal of waste from temporary campsite thus polluting the local surface water bodies.	Not significant because scale of work is small
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations?	Yes	Disturbance to local socio-economic activities during construction phase	Not significant because scale of work is small
1.9	Underground works including mining or tunnelling?	No		
1.10	Reclamation works?	No		
1.11	Dredging?	No		
1.12	Coastal structures eg seawalls, piers?	No		
1.13	Offshore structures?	No		
1.14	Production and manufacturing processes?	No		
1.15	Facilities for storage of goods or materials?	Yes	Stockpile site is needed. This may disturb community safety, especially for children	The site selected for stockpile is not a prime public space.
1.16	Facilities for treatment or disposal of solid wastes or liquid effluents?	Yes	Small compost pits in campsites; Septic tank for Public toilet; Soak pit for sludge trap. These may pollute the	Not significant as these are in-house units, not community scale units.

No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
			surface water bodies	
1.17	Facilities for long term housing of operational workers?	Yes	WUSC building, guard house	Not significant as the land required is small
1.18	New road, rail or sea traffic during construction or operation?	No		
1.19	New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	No		
1.20	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No		
1.21	New or diverted transmission lines or pipelines?	Yes	Community safety if the trenches are not timely back-filled	Not significant as pipelines are small sized
1.22	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No		
1.23	Stream crossings?	No		
1.24	Abstraction or transfers of water from ground or surface waters?	Yes	Deep underground water sources will be used through deep boring	No, as the design has considered safe yield
1.25	Changes in water bodies or the land surface affecting drainage or run-off?	No		
1.26	Transport of personnel or materials for construction, operation or decommissioning?	Yes	Local construction materials need to be transported from within the project district	Not significant as the transportation needed is intermittent
1.27	Long term dismantling or decommissioning or restoration works?	No		
1.28	Ongoing activity during decommissioning which could have an impact on the environment?	No		
1.29	Influx of people to an area in either temporarily or permanently?	Yes	Temporary influx of workforce may cause disturbance to local social activities, harmony	Not significant as they will be coming for short time for specific works only
1.30	Introduction of alien species?	No		
1.31	Loss of native species or genetic diversity?	No		
1.32	Any other actions?	No		
2. Will construction or operation of the Project use natural resources such as land, water,				

No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
materials or energy, especially any resources which are non-renewable or in short supply?				
2.1	Land especially undeveloped or agricultural land?	Yes	Undeveloped land will be used	Not significant as the unused small land parcels are selected
2.2	Water?	Yes	Deep underground water sources are used	
2.3	Minerals?	No		
2.4	Aggregates?	Yes	These will be used from authorized local suppliers	
2.5	Forests and timber?	No		
2.6	Energy including electricity and fuels?	Yes	Electricity, Petrol, diesel, and LPG gas will be used. However these are not locally produced energy sources	Air pollution could be a concern if proper operation of vehicles and equipments not carried out
2.7	Any other resources?	No		
3. Will the Project involve use, storage, transport, handling or production of substances or materials which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health?				
3.1	Will the project involve use of substances or materials which are hazardous or toxic to human health or the environment (flora, fauna, water supplies)?	No		
3.2	Will the project result in changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)?	Yes	The surroundings of the worker's camp may be affected as they may not have access to safe supply of water and good sanitation practice.	Not significant as the campsites proposed are not within core settlements
3.3	Will the project affect the welfare of people e.g. by changing living conditions?	No		
3.4	Are there especially vulnerable groups of people who could be affected by the project e.g. hospital patients, the elderly?	No		
3.5	Any other causes?	No		
4. Will the Project produce solid wastes during construction or operation or decommissioning?				
4.1	Spoil, overburden or mine wastes?	Yes, spoil generation	Degradation of surface land and pollution of surface water sources due to spoil disposal	Not significant as scale of works is small
4.2	Municipal waste (household and or commercial wastes)?	Yes	Waste from campsite will increase municipal waste	Not significant as it is short term and small scale
4.3	Hazardous or toxic wastes (including radioactive wastes)?	No		
4.4	Other industrial process wastes?	No		

No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
4.5	Surplus product?	No		
4.6	Sewage sludge or other sludge from effluent treatment?	Yes	Normal sludge from backwash of water treatment plants	Not significant as it will contain sediments which are not toxic
4.7	Construction or demolition wastes?	Yes	Small volume of construction waste during construction phase, and some waste during decommissioning will be generated	Not significant as these are not hazardous
4.8	Redundant machinery or equipment?	No		
4.9	Contaminated soils or other material?	No		
4.10	Agricultural wastes?	No		
4.11	Any other solid wastes?	No		
5. Will the Project release pollutants or any hazardous, toxic or noxious substances to air?				
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources?	Yes	Ambient air pollution is a concern	Not significant as GoN standard vehicles and fuel are in use in general
5.2	Emissions from production processes?	No		
5.3	Emissions from materials handling including storage or transport?	Yes	During construction phase, dust generation by the unloading of materials like cement, aggregates, metal bars, etc. During operation phase, spills or leaks from stored chemicals (chlorination compound) for use in the water treatment and cleaning processes.	Not significant as the scale of works is not large; and these are only site specific activities of short term nature
5.4	Emissions from construction activities including plant and equipment?	Yes	Dust generation due to earthworks and other construction activities.	Not significant as these are short term
5.5	Dust or odours from handling of materials including construction materials, sewage and waste?	Yes	During construction phase, air pollution due to dust generation during unloading of construction materials like aggregates, cements, metal bars, etc. During operation phase, air pollution due to leaks from mishandling of chemicals used in the water treatment (e.g. coagulants, chlorine).	Not significant as the scale of works is not large; and these are only site specific activities of short term nature
5.6	Emissions from incineration of waste?	No		
5.7	Emissions from burning of waste in open air (eg slash material, construction debris)?	No		

No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
5.8	Emissions from any other sources?	No		
6. Will the Project cause noise and vibration or release of light, heat energy or electromagnetic radiation?				
6.1	From operation of equipment eg engines, ventilation plant, crushers?	Yes	Noise and vibration (limited) may cause community nuisance	Not significant as the scale of work is small, site specific and short term
6.2	From industrial or similar processes?	No		
6.3	From construction or demolition?	Yes	Noise may cause community nuisance	Not significant as the scale of work is small, site specific and short term
6.4	From blasting or piling?	No		
6.5	From construction or operational traffic?	Yes	Construction traffic will cause disturbance to community activities	Not significant as local roads are wide, and the activities are short term
6.6	From lighting or cooling systems?	No		
6.7	From sources of electromagnetic radiation (consider effects on nearby sensitive equipment as well as people)?	No		
6.8	From any other sources?	No		
7. Will the Project lead to risks of contamination of land or water from releases of pollutants onto the ground or into sewers, surface waters, groundwater, coastal waters or the sea?				
7.1	From handling, storage, use or spillage of hazardous or toxic materials?	No		
7.2	From discharge of sewage or other effluents (whether treated or untreated) to water or the land?	Yes	During operation, the backwash of treatment units will discharge sludge and grey water that pose risk of pollution of land and surface water	Not significant as this is done only periodically
7.3	By deposition of pollutants emitted to air, onto the land or into water?	No	The land nearby the workers camp may be polluted by the daily activities of the workers residing there temporarily.	Not significant as campsite is of small size
7.4	From any other sources?	No		
7.5	Is there a risk of long term build-up of pollutants in the environment from these sources?	No		
8. Will there be any risk of accidents during construction or operation of the Project which could affect human health or the environment?				
8.1	From explosions, spillages, fires etc from storage,	No		

No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
	handling, use or production of hazardous or toxic substances?			
8.2	From events beyond the limits of normal environmental protection e.g. failure of pollution control systems?	No		
8.3	From any other causes?	No		
8.4	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslip, etc)?	No		
9. Will the Project result in social changes, for example, in demography, traditional lifestyles, employment?				
9.1	Changes in population size, age, structure, social groups etc?	Yes	There is chance of in-migration due to this project that will affect the existing community, cultural identity, economic conditions etc.	No, the ethnicity of project area is of heterogeneous type.
9.2	By resettlement of people or demolition of homes or communities or community facilities e.g. schools, hospitals, social facilities?	No		
9.3	Through in-migration of new residents or creation of new communities?	Yes	People from the neighbouring remote areas may migrate to this project town to achieve improved living standards and this may bring change in demography as the population of the project area may be increased.	Not significant as the project area is a small section of the inner Terai belt with similar socio-economy
9.4	By placing increased demands on local facilities or services eg housing, education, health?	No		
9.5	By creating jobs during construction or operation or causing the loss of jobs with effects on unemployment and the economy?	Yes	Requirement of labour for the construction works prioritize the local people hence, providing employment opportunities to the local people.	Yes, because the skills they learnt during their employment period can be utilized in the future in other similar kind of works.
9.6	Any other causes?	No		
Question - Are there any other factors which should be considered such as consequential development which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality?				
9.1	Will the project lead to pressure for consequential	Yes	Urban growth and investments will be in rise	It is a cumulative aspect of

No.	Questions to be considered in Scoping	Yes/No/?	Which Characteristics of the Project Environment could be affected and how?	Is the effect likely to be significant? Why?
	development which could have significant impact on the environment e.g. more housing, new roads, new supporting industries or utilities, etc?		once the water supply system is functional. This is a positive aspect of development.	development related to the city/urban development plan of the municipality.
9.2	Will the project lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g. supporting infrastructure (roads, power supply, waste or waste water treatment, etc) housing development extractive industries supply industries other?	No		
9.3	Will the project lead to after-use of the site which could have an impact on the environment?	No		
9.4	Will the project set a precedent for later developments?	Yes	This is a positive impact. The safe access to water supply and sanitation by this project may create opportunities for other development works	Yes, because it will be the important factor for the sustainable development of the town
9.5	Will the project have cumulative effects due to proximity to other existing or planned projects with similar effects?	No		

Checklist 2: Scoping Checklist Part 2 - Characteristics of the Project Environment (Environmental Sensitivity)

Question - Are there features of the local environment on or around the Project location which could be affected by the Project? • Areas which are protected under international or national or local legislation for their ecological, landscape, cultural or other value, which could be affected by the project? • Other areas which are important or sensitive for reasons of their ecology e.g. • Wetlands, • Watercourses or other waterbodies, • the coastal zone, • mountains, • forests or woodlands • Areas used by protected, important or sensitive species of fauna or flora e.g. for breeding, nesting, foraging, resting, overwintering, migration, which could be affected by the project? • Inland, coastal, marine or underground waters? • Areas or features of high landscape or scenic value? • Routes or facilities used by the public for access to recreation or other facilities? • Transport routes which are susceptible to congestion or which cause environmental problems? • Areas or features of historic or cultural importance?	The buffer zone of Shuklaphanta National Park is around 2 km from the service area. There is very little or no implications of this project in this regard. Yes, the part of project area lying along the main road may be susceptible to traffic congestion during distribution pipeline laying works that may provide discomfort to the passer-by and also may disrupt the access to the roadside shops and houses.
Question - Is the Project in a location where it is likely to be highly visible to many people?	Yes. The proposed site for project components is within service area; but the population density is not very high and nor it is core market area.
Question - Is the Project located in a previously undeveloped area where there will be loss of greenfield land?	No; but there will be loss of few trees under the government owned land for which the WUSC has been provided permission to use land
Question - Are there existing land uses on or around the Project location which could be affected by the Project? For example: • Homes, gardens, other private property, • Industry, • Commerce, • Recreation, • public open space, • community facilities, • agriculture, • forestry, • tourism, • mining or quarrying	No
Question - Are there any plans for future land uses on or around the location which could be affected by the Project?	No
Question - Are there any areas on or around the location which are densely populated or built-up, which could be affected by the Project?	No
Question - Are there any areas on or around the location which are occupied by sensitive land uses which could be affected by the	There is a temple area nearby the project's proposed site for its components. But the area for the temple periphery/boundary is enough, and

Project? • hospitals, • schools, • places of worship, • community facilities	the project will not be disturbing the regular worshiping of the local temple devotees
Question - Are there any areas on or around the location which contain important, high quality or scarce resources which could be affected by the Project? For example: • groundwater resources, • surface waters, • forestry, • agriculture, • fisheries, • tourism, • minerals.	No
Question - Are there any areas on or around the location of the Project which are already subject to pollution or environmental damage e.g. where existing legal environmental standards are exceeded, which could be affected by the project?	No
Question - Is the Project location susceptible to earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions e.g. temperature inversions, fogs, severe winds, which could cause the project to present environmental problems?	No
Question - Is the Project likely to affect the physical condition of any environmental media? • The atmospheric environment including microclimate and local and larger scale climatic conditions? • Water – e.g. quantities, flows or levels of rivers, lakes, groundwater. Estuaries, coastal waters or the sea? • Soils – e.g. quantities, depths, humidity, stability or erodibility of soils? • Geological and ground conditions?	No
Question - Are releases from the Project likely to have effects on the <u>quality</u> of any environmental media? • Local air quality? • Global air quality including climate change and ozone depletion • Water quality – rivers, lakes, groundwater. Estuaries, coastal waters or the sea? • Nutrient status and eutrophication of waters? • Acidification of soils or waters? • Soils • Noise? • Temperature, light or electromagnetic radiation including electrical interference? • Productivity of natural or agricultural systems?	Yes The construction activities may shortly affect local ambient air quality especially during dry season. The grey water from campsite during construction phase, and effluents from backwash of treatment plants during operation phase may be pollution local surface water bodies Noise nuisance in close proximity to construction sites is potential It due to movement of vehicles for transporting materials
Question - Is the Project likely to affect the availability or scarcity of any resources either locally or globally? • Fossil fuels?	No

• Water? • Minerals and aggregates? • Timber? • Other non-renewable resources? • Infrastructure capacity in the locality - water, sewerage, power generation and transmission, telecommunications, waste disposal roads, rail?	
Question - Is the Project likely to affect human or community health or welfare? • The quality or toxicity of air, water, foodstuffs and other products consumed by humans? • Morbidity or mortality of individuals, communities or populations by exposure to pollution? • Occurrence or distribution of disease vectors including insects? • Vulnerability of individuals, communities or populations to disease? • Individuals' sense of personal security? • Community cohesion and identity? • Cultural identity and associations? • Minority rights? • Housing conditions? • Employment and quality of employment? • Economic conditions? • Social institutions?	Yes, Ambient air quality deterioration, noise levels and exposure to risks from stockpiles/trenches have potentiality to affect Community health & safety aspects during the construction phase This project may also result in the occurrence of communicable diseases due to temporary settlement of workers

Checklist 3: Significance of Impacts

Questions to be Considered	
1. Will there be a large change in environmental conditions?	No
2. Will new features be out-of-scale with the existing environment?	No
3. Will the effect be unusual in the area or particularly complex?	No
4. Will the effect extend over a large area?	No
5. Will there be any potential for trans boundary impact?	No
6. Will many people be affected?	No
7. Will many receptors of other types (fauna and flora, businesses, facilities) be affected?	No
8. Will valuable or scarce features or resources be affected?	No
9. Is there a risk that environmental standards will be breached?	No
10. Is there a risk that protected sites, areas, features will be affected?	No
11. Is there a high probability of the effect occurring?	No
12. Will the effect continue for a long time?	No
13. Will the effect be permanent rather than temporary?	No
14. Will the impact be continuous rather than intermittent?	No
15. If it is intermittent will it be frequent rather than rare?	No
16. Will the impact be irreversible?	No
17. Will it be difficult to avoid, or reduce or repair or compensate for the effect?	No

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ANNEX 2:
ENVIRONMENTAL STANDARDS, SAMPLE FORMS, FORMATS
AND
REPORTING TEMPLATE

ANNEX 2-A:
RELEVANT ENVIRONMENTAL QUALITY STANDARDS

B.1 Ambient Air Quality Standards

Parameter	Averaging Period	Nepal's Ambient Air Quality Standard ($\mu g/m^3$) *	WHO Air Quality Guidelines ($\mu g/m^3$) **	
			Global Update 2005	Second Edition ^ 2000
TSP	Annual	-	-	-
	24-hour	230	-	-
PM_{10}	Annual	-	20	-
	24-hour	120	50	-
$PM_{2.5}$	1-year	-	10	-
	24-hour	-	25	-
SO_2	Annual	50	-	
	24-hour	70	20	-
	10-minute	-	500	-
NO_2	1-year	40	40	-
	24-hour	80	-	-
	1-hour	-	200	-
CO	8-hour	10,000	-	10,000
	15-minute	100,000	-	100,000
Pb	1-year	0.5	-	0.5
Benzene	1-year	20	-	-

* National Ambient Air Quality Standards for Nepal, 2003. Obtained from Environment Statistics of Nepal 2011, Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics, Kathmandu, Nepal.

** Environmental, Health and Safety General Guidelines, 2007. International Finance Corporation, World Bank Group.

^ Air Quality Guidelines for Europe, Second Edition, 2000. WHO Regional Office for Europe, Copenhagen.

Parameter that either has no national standard value for 24-hour observation or with WHO guideline value for 24-hour observation as more stringent than that specified in the national standards.

B.2 Noise Level Standards

Receptor / Source	National Noise Standard Guidelines, 2012 (dB)		WHO Guideline Values for Noise Levels Measured Out of Doors * (One Hour L_{Aeq} in dBA)	
	Day	Night	07:00 - 22:00	22:00 - 07:00
Industrial area	75	70	70	70
Commercial area	65	55		
Rural residential area	45	40	55	45
Urban residential area	55	50		
Mixed residential area	63	55		
Quiet area	50	40	-	-
Water pump	65		-	
Diesel generator	90		-	

* Guidelines for Community Noise, WHO, 1999.

Source: Environmental, Health and Safety General Guidelines, 2007.
International Finance Corporation, World Bank Group.

B.3 National Drinking Water Quality Standards, 2006

Group	National Drinking Water Quality Standards, 2006			WHO Guidelines for Drinking-water Quality, 4th Edition, 2011*
	Parameter	Unit	Max. Concentration Limits	
Physical	Turbidity	NTU	5 (10) **	-
	pH		6.5 - 8.5	none
	Color	TCU	5 (15)	none
	Taste & Odor		Would not be objectionable	-
	TDS	mg/l	1000	-
	Electrical Conductivity	µc/cm	1500	-
	Iron	mg/l	0.3 (3)	-
	Manganese	mg/l	0.2	-
	Arsenic	mg/l	0.05	0.01
	Cadmium	mg/l	0.003	0.003
	Chromium	mg/l	0.05	0.05
	Cyanide	mg/l	0.07	none
	Fluoride	mg/l	0.5 - 1.5 ^	1.5
	Lead	mg/l	0.01	0.01
	Ammonia	mg/l	1.5	none established
Chemical	Chloride	mg/l	250	none established
	Sulphate	mg/l	250	none
	Nitrate	mg/l	50	50
	Copper	mg/l	1	2
	Total Hardness	mg/l	500	-
	Calcium	mg/l	200	-
	Zinc	mg/l	3	none established
	Mercury	mg/l	0.001	0.006
	Aluminum	mg/l	0.2	none established
	Residual Chlorine	mg/l	0.1 - 0.2	5 ^^
Micro Germs	E-coli	MPN/100ml	0	must not be detectable in any 100 ml sample
	Total Coliform	MPN/100ml	0 in 95% of samples taken	

* Health-based guideline values

** Figures in parenthesis are upper range of the standards recommended.

^ These standards indicate the maximum and minimum limits.

^^ From WHO (2003) Chlorine in Drinking-water, which states that this value is conservative.

Parameter with WHO guideline value as more stringent than natilonal standard value.

National Drinking Water Quality Standards was obtained from the Environment Statistics of Nepal 2011, Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics, Kathmandu, Nepal.

ANNEX 2-B:
SAMPLE GRIEVANCE REDRESS FORM
(To be available in Nepalese and English)

The _____ Project welcomes complaints, suggestions, queries and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enables us to get in touch with you for clarification and feedback. Should you choose to include your personal details but want that information remain confidential, please inform us by writing/typing* (CONFIDENTIAL)* above your name. Thank you.

Date	Place of registration			
Contact Information/personal details				
Name	Gender	*Male *Female	Age	
Home Address				
Place				
Phone No.				
E-mail				
Complaint/Suggestion/Comment/Question Please provide the details (who, what, where and how) of your grievance below: If includes as attachment/note/letter, please tick here:				
How do you want us to reach you for feedback or update on your comment/grievance?				

FOR OFFICIAL USE ONLY

Registered by: (Names of official registering grievance)	
Mode of communication: Note/Letter E-mail Verbal/Telephonic	
Reviewed by: (Names/positions of official(s) reviewing grievance)	
Action Taken:	
Whether Action Taken Disclosed:	Yes No
Means of Disclosure:	

ANNEX 2-C:
SAMPLE TRAFFIC MANAGEMENT PLAN

SAMPLE: TRAFFIC MANAGEMENT PLAN (TMP)

A. Principles

One of the prime objectives of this TMP is to ensure the safety of all the road users along the work zone, and to address the following issues:

- the safety of pedestrians, bicyclists, and motorists travelling through the construction zone;
- protection of work crews from hazards associated with moving traffic;
- mitigation of the adverse impact on road capacity and delays to the road users;
- maintenance of access to adjoining properties
- Avoid hazards in addressing issues that may delay the project.

B. Operating Policies for TMP

The following principles will help promote safe and efficient movement for all road users (motorists, bicyclists, and pedestrians, including persons with disabilities) through and around work zones while reasonably protecting workers and equipment.

- Make traffic safety and temporary traffic control an integral and high-priority element of every project from planning through design, construction, and maintenance.
- Inhibit traffic movement as little as possible.
- Provide clear and positive guidance to drivers, bicyclists, and pedestrians as they approach and travel through the temporary traffic control zone.
- Inspect traffic control elements routinely, both day and night, and make modifications when necessary.
- Pay increased attention to roadside safety in the vicinity of temporary traffic control zones.
- Train all persons that select, place, and maintain temporary traffic control devices.
- Keep the public well informed.
- Make appropriate accommodation for abutting property owners, residents, businesses, emergency services, railroads, commercial vehicles, and transit operations.

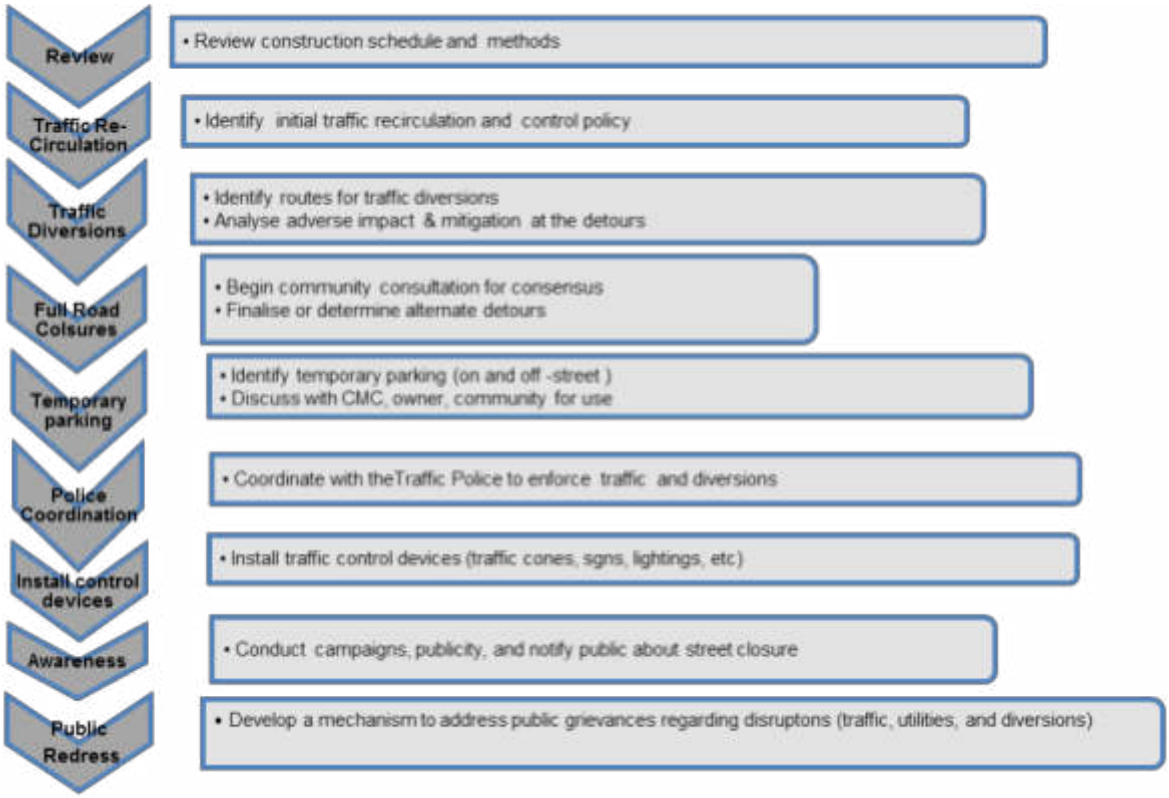
C. Analyze the impact due to street closure

Apart from the capacity analysis, a final decision to close a particular street and divert the traffic should involve the following steps:

- approval from the ICG, local administration to use the local streets as detours;
- consultation with businesses, community members, traffic police, PWD, etc, regarding the mitigation measures necessary at the detours where the road is diverted during the construction;
- determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents;
- determining if additional traffic control or temporary improvements are needed along the detour route;
- considering how access will be provided to the worksite;
- contacting emergency service, school officials, and transit authorities to determine if there are impacts to their operations; and
- developing a notification program to the public so that the closure is not a surprise. As part of this program, the public should be advised of alternate routes that commuters can take or will have to take as result of the traffic diversion.

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

Figure A: Policy Steps for the TMP



D. Public awareness and notifications

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

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

The ICG will also conduct an awareness campaign to educate the public about the following issues:

- traffic control devices in place at the work zones (signs, traffic cones, barriers, etc.);
- defensive driving behavior along the work zones; and
- reduced speeds enforced at the work zones and traffic diversions.

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

The campaign will cater to all types of target groups i.e. children, adults, and drivers. Therefore, these campaigns will be conducted in schools and community centers. In addition, the project will publish a brochure for public information. These brochures will be widely circulated around the area and will

also be available at the ICG, and the contractor's site office. The text of the brochure should be concise to be effective, with a lot of graphics. It will serve the following purpose:

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

E. Vehicle Maintenance and Safety

A vehicle maintenance and safety program shall be implemented by the construction contractor. The contractor should ensure that all the vehicles are in proper running condition and it comply with roadworthy and meet certification standards of GoN. All vehicles to be used at STWSSP shall be in perfect condition meeting pollution standards of GoN. The vehicle operator requires a pre state of shift checklist. Additional safety precautions will include the requirement for:

- Driver will follow the special code of conduct and road safety rules of Government of Nepal.
- Drivers to ensure that all loads are covered and secured drivers to ensure operation equipment can’t leak materials hauled
- Vehicles will be cleaned and maintained in designed places.

F. Install traffic control devices at the work zones and traffic diversion routes

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

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

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

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

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

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

The ICG and contractor will coordinate with the local administration and traffic police regarding the traffic signs, detour, and any other matters related to traffic. The contractor will prepare the traffic management plan in detail and submit it along with the EMP for the final approval.

ANNEX 2-D:
SPOIL MANAGEMENT PLAN

Spoil Management Plan (SMP)

Purpose and application: SMP is to describe how STWSSP will manage the spoil generated and reuse related to design and construction works. This is an integral part of EMP. The objective of SMP is to reuse of spoil from works in accordance with the spoil management hierarchy outlined in this document.

Objectives of SMP: The objectives of SMP are:

- To minimize spoil generation where possible
- Maximize beneficial reuse of spoil from construction works in accordance with spoil management hierarchy
- Mange onsite spoil handling to minimize environmental impacts on resident and other receivers
- Minimize any further site contamination of land, water, soil
- Manage the transportation of spoil with consideration of traffic impacts and transport related emissions

Structure of SMP:
Section 1: Introduction of SMP
Section 2: Legal and other requirements
Section 3: Roles and responsibilities
Section 4: Identification and assessment of spoil aspects and impacts
Section 5: Spoil volumes, characteristics and minimization
Section 6: Spoil reuses opportunities, identification and assessment
Section 7: On site spoil management approach
Section 8: Spoil transportation methodology
Section 9: Monitoring, Reporting, Review, and Improvements

Aspects and Potential Impacts
The key aspects of potential impacts in relation to SMP are listed in table below

Aspects	Potential Impacts
Air Quality	Potential for high winds generating airborne dust from the stock piles
Sedimentation	Potential for sediment laden site runoff from spoil stockpiles and potential for spillage of spoil from truck on roads
Surface and Groundwater	Contamination of water (surface and ground water)
Noise	Associated with spoil handling and haulage and storage
Traffic	Impacts associated with spoil haulage
Land Use	Potential for spoil to be transported to a receivable site that doesn't have permission for storage/disposal
Design specifications	Limitations on opportunities to minimize spoil generation
Sustainability	Limited sites for storage, reuse opportunities

Spoil volumes, Characteristics and Minimization

Spoil volume calculations: Estimate the volumes of spoils produced from each of the construction sites.

Characterization of spoil: Based on the type of spoil; characterization is done (sand stone, MWSS mix materials, reusable materials

Adopt Spoil Reduce, Reuse Opportunities
An overview of the assessment methodology to be used is mentioned below.

- Consideration of likely spoil characteristics
- Identification of possible reuse sites
- Screening of possible reuse opportunities

Identification of possible safe disposal sites for spoil: Those spoils which can't be reuse shall be properly disposed in designated areas, such disposal areas should be identified in project locations. Such disposal areas should be safe from environmental aspects and there should be any legal and resettlement related issues. Such areas need to be identified and prior cliental approval should be obtained to use it as spoil disposal area. The local administration must be consulted and if required permission should be obtained from them.

Storage and stock piling

Transportation and haulage route

Based on the above, the contractor will prepare a SMP as an integral part of EMP and submit it to the DSMC for their review and approval.

SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

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

Appendixes

- Photos
- Summary of consultations
- Copies of environmental clearances and permits
- Sample of environmental site inspection Report
- Others

ANNEX 2-E:
SAMPLE SEMI-ANNUAL ENVIRONMENTAL MONITORING REPORT TEMPLATE

This template must be included as an appendix in the EIA/IEE that will be prepared for the project. It can be adapted to the specific project as necessary.

INTRODUCTION

- Overall project description and objectives
- Description of sub-projects
- Environmental category of the sub-projects
- Details of site personnel and/or consultants responsible for environmental monitoring
- Overall project and sub-project progress and status

No.	Sub-Project Name	Status of Sub-Project				List of Works	Progress of Works
		Design	Pre-Construction	Construction	Operational		
		☐	☐	☐	☐		
		☐	☐	☐	☐		
		☐	☐	☐	☐		

COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS

No.	Sub-Project Name	Statutory Environmental Requirements	Status of Compliance	Action Required

COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

No. (List schedule and paragraph number of Loan Agreement)	Covenant	Status of Compliance	Action Required

COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

- Provide the monitoring results as per the parameters outlined in the EMP. Append supporting documents where applicable, including Environmental Site Inspection Reports.
- There should be Reporting on the following items which can be incorporated in the checklist of routine Environmental Site Inspection Report followed with a summary in the semi-annual Report send to ADB. Visual assessment and review of relevant site documentation during routine site inspection needs to note and record the following:
- What are the dust suppression techniques followed for site and if any dust was noted to escape the site boundaries;
- Adequacy of type of erosion and sediment control measures installed on site, condition of erosion and sediment control measures including if these were intact following heavy rain;
- Are their designated areas for concrete works, and refueling;
- Are their spill kits on site and if there are site procedure for handling emergencies;
- Is there any chemical stored on site and what is the storage condition?
- Is there any dewatering activities if yes, where is the water being discharged;
- How are the stockpiles being managed;
- How is solid and liquid waste being handled on site;
- Review of the complaint management system;
- Checking if there are any activities being under taken out of working hours and how that is being managed.

Summary Monitoring Table

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

Overall Compliance with CEMP/EMP

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

APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT
Brief description on the approach and methodology used for environmental monitoring of each sub-project

MONITORING OF ENVIRONMENTAL IMPACTS ON PROJECT SURROUNDINGS (AMBIENT AIR, WATER QUALITY AND NOISE LEVELS)

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

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

Air Quality Results

Site No.	Date of Testing	Site Location	Parameters (Government Standards)		
			PM10 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM10 (µg/m3)	SO2 (µg/m3)	NO2 (µg/m3)

Water Quality Results

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

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

Noise Quality Results

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Government Standard)	
			Day Time	Night Time

Site No.	Date of Testing	Site Location	LA_{eq} (dBA) (Government Standard)	
			Day Time	Night Time

ANNEX 2-F:
SAMPLE ENVIRONMENTAL SITE INSPECTION REPORT

Project Name
Contract Number

NAME: _____ DATE:
TITLE: _____ DMA:
LOCATION: _____ GROUP:

WEATHER CONDITION:
_____

INITIAL SITE CONDITION:
_____

CONCLUDING SITE CONDITION:

Satisfactory _____ Unsatisfactory_____ Incident_____ Resolved _____ Unresolved _____

INCIDENT:
Nature of incident:
_____

Intervention Steps:
_____

Incident Issues

Resolution

Project Activity Stage	Survey	
	Design	
	Implementation	
	Pre-Commissioning	
	Guarantee Period	

Inspection

Emissions	Waste Minimization
Air Quality	Reuse and Recycling
Noise pollution	Dust and Litter Control
Hazardous Substances	Trees and Vegetation

Site Restored to Original Condition Yes No

Signature
_____

Sign off

_____ _____

Name **Name**

Position **Position**

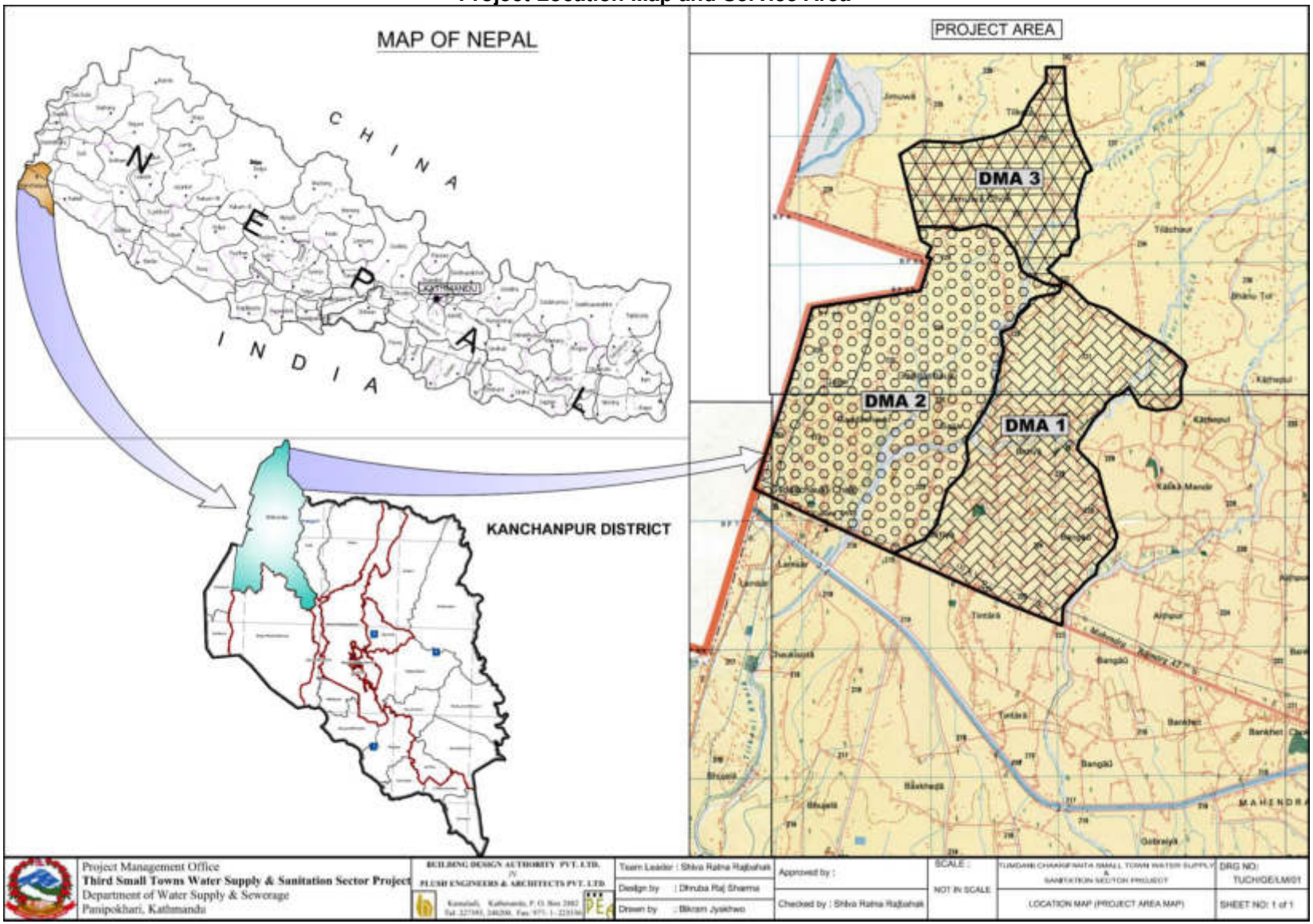
ANNEX 2-G: REFERENCE FOR PLANTATION COST BREAKDOWN (INDICATIVE)

SN	Activities	Unit	Description	Quantity	Area Req (ha.)	Rate, NRs	Total	Remarks
I	**Purchase of saplings**							
	Species A	Saplings		1000		15	15,000.00	
	Species B			1000		25	25,000.00	
II	**Pitting**							
	Pitting area for Species A	sq m	Spacing of 2.5mx2.5m	1000	0.625			Size: 45cm depth X 45cm diameter
	Pitting area for Species B	sq m	Spacing of 5mx5m	1000	2.5			
	Labour cost							
	Species A	Person/ha	25.6 per ha	16		500	8,000.00	
	Species B	Person/ha	6.4 per ha	16		500	8,000.00	
III	**Transportation**							
	Vehicle cost	Trip		2		10,000	20,000.00	
	Cost of unloading and manual carrying to site		100 saplings/ labour/day up to 3 km	2000		500	10,000.00	
IV	**Clearing plantation site**							
	Species A	Person/ha	4 persons/ha.		0.625	500	1,250.00	
	Species B	Person/ha	4 persons/ha.		2.5	500	5,000.00	
V	**Plantation**							
	Species A	Person/ha	9.6 persons/ha	6		500	3,000.00	
	Species B	Person/ha	2.4 persons/ha	6		500	3,000.00	
	Total						**98,250.00**	
	Overhead cost (@15%)						14,737.50	
	Grand Total						**112,987.50**	
VI	**After care (Cutting, prunning, ….)**	MM	Care taker	6	1	5000	**30000**	
							42,987.50	

Note: If plantation is not possible in a single site, it can be carried out in multiple sites. E.g. Community Forest/s near by, Public Parks, road sides, office premise, or any other potential sites

ANNEX 3:
PROJECT LOCATION AND SERVICE AREA

Project Location Map and Service Area



ANNEX 4:

IBAT INFORMATION ON BIODIVERSITY SENSITIVITY IN PROXIMITY OF PROJECT AREA

Protected Areas and Key Biodiversity Areas

The following sites are found within the selected buffer distances:

Features within 1 km

Priority Sites for Biodiversity		
Key Biodiversity Area	Sukla Phanta Wildlife Reserve CR/EN, VU, migratory birds/congregations, other	30,500 ha

Features within 5 km

National-level protected areas		
IUCN Category III-IV	Suklaphanta	39,323 ha
IUCN Category V-VI	Suklaphanta - Buffer Zone	29,289 ha

Features within 10 km

There are no additional features within 10 km.

ANNEX 5:

PUBLIC CONSULTATIONS
AND
MINUTES

आज मिति २०७५/०१/०८ गतेका दिन यस Chokhifanta Small Town Water Supply and Sanitation आयोजनाको पूर्व तयारीका लागि प्राविधिक, सामाजिक, GESI तथा वातावरणीय विज्ञका हलकल र तयारीका लागि "चक्लीफाटा साना शहरी खानेपानी तथा सरसफाई समिति"का पदाधिकारी र BDA/PEA JV का परामर्शदाताहरु, बीच छलफल सम्पन्न भएको छ;

क्र.सं.	नाम	संस्था	सही
१	कबीर सिंह धेरी, १०	अध्यक्ष, WUSG	
२	तुलबहादुर खड्का, ८	सचिव, WUSG	
३	जानकी देवी बिष्ट, १०	उपाध्यक्ष, WUSG	
४	लक्ष्मी साउद बिष्ट, ०८	सदस्य, WUSG	
५	मोहन ब. कार्की, TL	BDA/PEA JV	
६	मि श्री प्र. श्रेष्ठ, GESI Expert	,,	
७	Keshav Dhungana, Environmental Expert	Social	
८	Yogesh Shakya	Environmental Expert	
९	Gunjan Adhikari,	Team member	
१०	आगरती देवी साउदी, ०८	सदस्य, WUSG	

छलफलका विषय:

१. जग्गा प्राप्तिको प्रक्रिया सम्पन्न गरेको ।

२. प्राविधिक डिजाइन हलफल भएको ।

३. सामाजिक सर्भेको Data अध्ययन गराउने ।

४. प्रारम्भिक वातावरणीय अध्ययन (IEE) का प्रक्रिया अगाडि बढेको र अगाडी दिनमा के कसो गर्नुपर्ने बारेमा अरिले कहोरामा छलफल गर्‍यो ।

५. ADB का लागि IEE प्रतिवेदनको draft कुराई सकेको र नेपाल सरकारको नियम अनुसार IEE बनाउने प्रक्रिया अगाडी बढेको विषयमा छलफल गर्‍यो ।

UNOFFICIAL TRANSLATION (S.No. 1)

Today on 2075-01-08 (21st April 2018), a meeting has been held to discuss with the members of Chakkifanta Water Supply and Sanitation Project (now Siddhanath-Baijnath Water Supply and Sanitation Project) by the representative team of BDA/PEA JV (DSMC team) regarding the Social, GESI and Environmental aspects of the project as a preparatory interaction for this water supply and sanitation project;

Attendance

1. Mr.Karbir Singh Aiyer, Chairperson, WUSC
2. Mr. Tul Bahadur Khadka, Secretary, WUSC
3. Ms. Janaki Devi Bista, Deputy Chairperson, WUSC
4. Ms. Laxmi Khadayat Khinjali, Member, WUSC
5. Mr. Mohan Bahadur Karki, Team Leader, DSMC, BDA/PEA Jv
6. Mr. Mishri Prasad Shrestha, GESI expert, DSMC, BDA/PEA Jv
7. Mr. Keshav Dhungana, Social expert, DSMC, BDA/PEA Jv
8. Mr. Yogesh Shakya, Environmental expert, DSMC, BDA/PEA Jv
9. Mr.Gunjan Adhikari
10. Ms. Bhagrati Devi Suni, Member, WUSC

Discussions

1. It was discussed that the WUSC has conducted the process of getting permission of use of land for the project

2. Technical details of the project were discussed with the WUSC team

3. It was also dicussed that the data of social survey will be shared with the WUSC for their requirements

4. It was discussed that the process of Initial Environmental Examination (IEE) is underway for the subproject, and that the detailed studies will be continued

It was shared with the WUSC that draft of IEE report in ADB format has been drafted, and that the process as per rules of GoN is underway.

आजु मिती २०७४ ... ०१ गते का दिन यस श्री सिद्धनाथ कुँवाल्य रुखानेपानी उपभोक्ता समिति का अध्यक्ष श्री करवीर सिंह रोकी ज्यू का अध्यक्षतामा बैठक बस्यु निम्न प्रकारका निर्णय गरियो ।

उपस्थिति :

अध्यक्ष - करवीर सिंह रोकी
उपाध्यक्ष - जानकी देवी बिष्ट
सचिव - तुल ब रखड्का
कोषाध्यक्ष - कमल ब चन्द
सदस्य - बहादुर दमाइक
" - समिता दमाइक
" - लक्ष्मी रखायत रिजाल
" - भागरती देवी सुनार
" - प्रकाश ...

आमन्त्री - ... - वातावरण विशेषज्ञ
" - हरि अवस्थी - इन्जिनियर
वा.ड.प... - भवान सिंह दमुन्ना
" " - प्रेम ब. चन्द
जनता के अभ्याश - भवान सिंह बिष्ट

उपस्थित :

महावीर चन्द
उद्धव चन्द
वडा नं. १० - केशव लाल पन्त
" - तेज सिंह बिष्ट
प्रजातन्त्र कांग्रेस उपाध्यक्ष - प्रेम सिंह कुँवर
वडा नं. १० म.म. ... - दीपक ब. विष्ट
जुन देवि दमाई
किना बिष्ट
उद्धव सिंह बिष्ट
मानमती बिष्ट
हरि चन्द
सुशिला कुमारी बिष्ट

आगमी
उपस्थिति (छाप)

निर्णय नं. १. आज मिति २०७४।१०।०४ गते का दिन यस सिङ्गलाय, त्रिभुवन खानेपानी तथा सरसफाई आयोजनाको प्रारम्भिक वातावरणीय परीक्षण (IEE) को मस्यौदा नेपाल सरकारको वातावरण व्यवस्थापन नियमावली २०५४ अनुसार गा.वि.स./न.पा. ८ तिलाचौर मा परामर्शदाता BDA / PEA JV का प्रतिनिधि र स्थानीय सरोकारवाला हरूको निम्नानुसार उपस्थितिमा इलफल कार्यक्रम संचालन भएको छ।

निर्णय नं. २ :
आयोजनाको पुपास्थितिमा वातावरणीय असर सम्बन्धी इलफल गर्दा भूमिगत स्रोत भएकोले वातावरणीय असर खासै छैन। सम्बन्धित निर्माण क्षेत्र मा रहेको साल्ला मसलाको रुख र सिसमको रुखहरु भएकोले स्थानीय को सिफारिस लिई जिल्ला वन बाट स्वीकृति लिने र ट्यसको साटो १ रुख को बराबर २५ वटा रुख रोप्ने निर्णय गरियो।

निर्णय नं. ३ स्थानीय रोजगारीलाई प्राथमिकता र निर्माण अवधिमा स्थानीय युवाहरु लाई सिपमूलक तालिम दिने।

निर्णय नं. ४. पानी स्रोत को नियमित परीक्षण र पानीको गुणस्तर अनुसार प्रशोधनका लागी उचित प्राविधिक व्यवस्थापन हुनु पर्ने।

निर्णय नं. ५. निर्माण को क्रममा उत्सर्जन हुने ठूला माटो ढुङ्गा व्यवस्थापन को लागी वा.नं. ८ को श्री त्रिभुवन उच्च मा.वि. तिलाचौर मा मैदान सुधार उन्नति को लागी निर्णय गरियो।

निर्णय नं. ६. प्रारम्भिक डिजाइनमा एक मात्र सार्वजनिक शौचालय भएकोमा थप एक शौचालय वा.नं. १० को सुकासाल चौराहमा सम्भव भएसम्म फाइनल डिजाइनमा समावेस गर्ने निर्णय गरियो।

आगमी

Unofficial Translation (S.No. 2)

On date 2075/10/09 (23rd January 2019) a meeting was conducted under chairmanship of the Chairperson of Siddhanath-Baijnath Water Supply and Sanitation Project under the presence of the following person;

Presence:

1. Mr.Karbir Singh Aiyer, Chairperson, WUSC
2. Ms. Janaki Devi Bista, Deputy Chairperson, WUSC
3. Mr. Tul Bahadur Khadka, Secretary, WUSC
4. Mr. Kamal Bahadur Chand, Treasurer, WUSC
5. Mr. Bahadur Dhanuk, Member, WUSC
6. Mrs. Ramila Dhanuk, Member, WUSC
7. Mrs. Laxmi Khadayat Khidari, Member, WUSC
8. Ms. Bhagrati Devi Suni, Member, WUSC
9. Mrs. Prakash Joshi, Member, WUSC
10. Mr. Yogesh Shakya, Environmental expert, DSMC, BDA/PEA Jv
11. Mr.Chhabi Awasthi, Engineer, DSMC, BDA/PEA Jv
12. Mrs. Bhawana Singh Thagunna, Ward Repreesntative, Ward 8
13. Mr. Prem Bahadur Chand, Ward Repreesntative, Ward 8
14. Mrs. Bhawana Singh Bista, Beneficiary
15. Mr. Mahabir Chand, Beneficiary
16. Mr. Uddav Chand, Beneficiary
17. Mr. Keshav Datta Pant, Beneficiary
18. Mr. Tej Singh Bista, Beneficiary
19. Mr. Prem Singh Badal, Beneficiary
20. Mr. Deepak Bahadur Bista, Beneficiary
21. Mrs. Joon Devi Damai, Beneficiary
22. Mrs. Bina Bista, Beneficiary
23. Mr. Uddhav Singh Bista, Beneficiary
24. Mr. Hari Chand, Beneficiary

Meeting Notes:

Decision 1: A meeting with the stakeholders on the Initial Environmental Examination (IEE) of Siddhanath Bainjnath Water Supply and Sanitation Project is conducted as per EPR 2054 at Tilachaur as coordinated by consultant representatives from BDA/PEA Jv to discuss on the following aspects.

Decision 2: The environmental impacts of the project was dsicussed. The project is ground water source based, and no major concern is observed in the project area. However, since the project's construction site has some trees, there is need of replantation for any felling of trees at the rate of 25 trees per tree cut.

Decision 3: The local employment will be given priority and the local youth will be provided with skill training during project implementation phase.

Decision 4: The water quality needs to be monitored regularly and the provision of proper water treatment should be made for supply of potable water.

Decision 5: To manage the spoil generated from the project works, it was agreed that the spoil can be used to grade/level the open land present within the playground of Shree Tribhuwan Higher Secondary School of ward 8.

Decision 6: Sanitation aspects were discussed and some of the participants requested to consider if there can be provision of additional public toilet (for sanitation provision at Sukhasal Chauraha of ward number 10) under the project design as now there is provision of 1 Public toilet.

आज मिती २०६६/१०/१६ गते का दिन यस श्री सिद्धनाथ वैनाथ खानेपानी उपभोक्ता तथा सरसफाई समिति का उपाध्यक्ष श्री जानकी विष्ट ज्यु को अध्यक्षता मा बैठक बसी तपसिल बमोजिम को निर्णय गरीयो ।

उपस्थिति

१- अध्यक्ष श्री करवीर सिंह सेरी
२-उपाध्यक्ष " जानकी देवी विष्ट
३-सचिव " दुर्गा बहादुर खडका
४ कोषाध्यक्ष " कमल बहादुर चन्द
५- सदस्य " बहादुर धाउके
६- " " रमिला देवी धाउके
७ " " लक्ष्मी खड्‌गायत (खड्‌काली)
८ " " भागरथी देवी खुडी भागरथी
९ " " प्रकाश दत्त जोशी

आमन्त्रीत

१-श्री केशव डुंगाना, Social Safeguard specialist, BDA/PEA,
२- " योगेश शाक्य, Environmental specialist, BDA/PEA
३ " अनन्त प्रसाद गौतम ITECO-UNIC-SV-CRG
४ " बलराम यादव ICG. Eng-

प्रस्ताव हरु

१- वाल बाउन्ड्री सम्बन्धमा
२- सार्वजनिक शौचालय को जग्गा उपलब्धता सम्बन्धमा
३- IEE कार्यक्रम सम्बन्धमा
४- कायदा र सुरक्षा सम्बन्धमा

निर्णय नं: १ प्रस्ताव १ माथी छलफल गर्दा कम्पाउण्ड भवन वाल बाउन्ड्री निर्माण रहेको र मन्दिर र खानेपानी को रिजर्भ ट्याङ्की को पाटेशन वाल समेत निर्माण आवश्यक भो गर्नु पर्ने BOQ मा उल्लेख भएको र सोही अनुसार कार्य संचालन गर्दै निर्णय गरीयो ।

रमिला भागरथी

निर्णय नं: २ प्रस्ताव २ माथी छलफल गर्दा सार्वजनिक सौचालय
को जडित रवोड़ी कार्य भई रहेको ले र एक सिघ्रजनित
उपलब्ध गराई कार्यन्वय गर्ने निर्णय गरीयो।

निर्णय नं. ३ प्रस्ताव ३ माथी छलफल गर्दा आयोजना को IEE प्रतिवेदन
अनुसार S-EMP तयार गरी निर्माण व्यवसायी कार्यान्वयन
ले काम गर्दै पर्ने विषय मा छलफल गरीयो। र निर्माण
व्यवसायी को तर्फबाट EHS Focal Person तत्काल -
खटाउनु पर्ने विषय मा सहमति गरीयो।

निर्णय नं. ४. प्रस्ताव ४ माथी छलफल गर्दा स्थानिय समुदाय र
कामदार हरूको सुरक्षा को बारेमा संवेदनशिल हुनुपर्ने
र सुरक्षा का उपाय हरू अपनाउनु पर्ने विषय मा छलफल
गरीयो।

रमिला [signature] आगाती

[signatures]

UNOFFICIAL TRANSLATION (S.No. 3)

Today on 2076-10-17 (31st January 2020), a meeting has been held in the chairpersonship of Mrs. Janaki Bista, Deputy Chairperson of the WUSC in the office of the WUSC of Siddhanath-Baijnath Water Supply and Sanitation Project to discuss and decide as per the following aspects of the project;

Attendance

1. Mr.Karbir Singh Aiyer, Chairperson, WUSC (not present, informed)
2. Mrs. Janaki Devi Bista, Deputy Chairperson, WUSC
3. Mr. Tul Bahadur Khadka, Secretary, WUSC
4. Mr. Kamal Bahadur Chand, Treasurer, WUSC
5. Mr. Bahadur Dhanuk, Member, WUSC
6. Mrs. Ramila Devi Dhanuk, Member, WUSC
7. Mrs. Laxmi Khadayat Khidali, Member, WUSC
8. Ms. Bhagrati Devi Suni, Member, WUSC
9. Mrs. Prakash Datta Joshi, Member, WUSC

   Invited

10. Mr. Keshav Dhungana, Social Safeguards Specialist, DSMC, BDA/PEA Jv
11. Mr. Yogesh Shakya, Environmental Specialist, DSMC, BDA/PEA Jv
12. Er. Balaram Yadav, ICG, RPMO
13. Er. Ananta Prasad Gautam, CSE, ITECO

Agenda

1. About the Wall Boundary in the project site
2. About public toilet
3. About IEE implementation
4. About workers and their safety

Agenda

1. Regarding the agenda number 1, it was discussed that the community building is wihtin a bounded area; and also that the partition wall that seperates the construction site from the temple premises should be constructed by the contractor as it is provisioned in the BoQ.
2. Regarding the agenda number 2, it was discussed that the process for land for construction of public toilet will be finalized soon.
3. Regarding the agenda number 3, it was discussed that the contractor should prepare a Site Specific Environmental Management Plan (S-EMP) and work as per; and it was also discussed that the contractor should soon mobilize its EHS focal person.
4. Regarding the agenda number 4, it was discussed that the project team needs to sensitively deal the community safety and workers' safety aspects, and hence implementation of the safety measures was also discussed.

NOTIFICATION OF GRC

श्री सिद्धनाथ बैजनाथ खानेपानी उपभोक्ता तथा सरसफाई समिति

भि.न.पा. ८, थापाचोक तिलाचौर, कञ्चनपुर

प.सं.:- ०७६/७७
च.नं. २८

फोन नं. ०९९-५५१८७
ई-मेल :-siddhanathbaijhnath76@gmail.co

मिति : २०७६/१०/२६

श्रीमान वडा अध्यक्ष ज्यू
वडा समितिको कार्यालय

- भि.न.पा. वडा नं. ६
- भि.न.पा. वडा नं. ८
- भि.न.पा. वडा नं. १०

विषय : गुनासो सुनवाई समिति गठन भएको जानकारी बारे ।

उपरोक्त विषय सम्बन्धमा यस भिमदत्त नगरपालिका वडा नं. ६, ८ र १० मा सचालित श्री सिद्धनाथ बैजनाथ खानेपानी उपभोक्ता तथा सरसफाई समिति अन्तर्गत मिति २०७६/०७/२० मा गुनासो सुनवाई समन्वय समिति गठन भईसकेको र जनस्तरबाट हुने कुनै पनि गुनासाहरु संकलन गरी यस गुनासो सुनवाई समिति मार्फत यस श्री सिद्धनाथ बैजनाथ खानेपानी तथा सरसफाई समितिलाई उपलब्ध गराई दिनहुन अनुरोध गरिन्छ । साथै यस गुनासो सुनवाई समन्वय समितिका पदाधिकारीहरुको सुचि यस प्रकार छ ।

करवीर सिंह ऐरी
अध्यक्ष

जि.आर.सि. समिति : (पहिलो चरण)

१. अध्यक्ष : श्री करवीर सिंह ऐरी
२. सदस्य : श्री सुरक्षण विज्ञ, क्षेत्रिय डिजाईन सुपरिवेक्षण तथा परामर्शदाता
३. सदस्य : श्री समाजिक परिचालक, क्षेत्रिय डिजाईन सुपरिवेक्षण तथा परामर्शदाता
४. सदस्य : श्री निर्माण सुपरिवेक्षण ईन्जिनियर, क्षेत्रिय डिजाईन सुपरिवेक्षण तथा परामर्शदाता
५. सदस्य : श्री प्रतिनिधि, निर्माण व्यवसायी
६. आमन्त्रित सदस्य : आवश्यकता अनुसार

दोस्रो चरण :

१. अध्यक्ष : नगर प्रमुख, श्री सुरेन्द्र बिष्ट
२. सचिव : RPMO, आयोजना प्रमुख
३. सदस्य : समाजिक वातावरण सुरक्षाविद, क्षेत्रिय डिजाईन सुपरिवेक्षण तथा परामर्श
४. सदस्य : RPMO Engineer
५. सदस्य : आयोजनाबाट प्रभावितहरुको प्रतिनिधि
६. सदस्य : निर्माण व्यवसायी, प्रतिनिधि
७. सदस्य : उपभोक्ता समिति, सचिव
८. सदस्य : RPMO, समाजिक वातावरण विद
९. आमन्त्रित सदस्य : आवश्यकता अनुसार

GRC DETAILS

Date of Formation: 6th November 2019

1st Level GRC

S.No.	Name	Designation	Designation/Status on GRC
1	Mr. Karbeer Singh Aiyer	WUSC Chairman	Chairman GRC
2.	Mr. Gauri Prasad Sharma	Social Safeguard Specialist – DRSMC	Member
3.	Construction Supervision Engineer	Construction Supervision Engineer- DRSMC	Member
4.	Social Mobilizer	Social Mobilizer - DRSMC	Member
5.	Contractor Representative	Contractor Representative	Member

2nd Level GRC

S.No.	Name	Designation	Designation/Status on GRC
1	Mr. Surendra Bista	Mayor, Bhimdutta Municipality	Chairman GRC
2.	Mr. Purna Prasad Upadhyaya	Regional Project Manager-RPMO	Member, Secretary
3	Mr. Gauri Prasad Sharma	Social Safeguard Specialist-DRSMC	Member
.4	Mr. Ananta Prasad Gautam	Construction Supervision Engineer - DRSMC	Member
5.	Social Safeguard Officer	Social Safeguard Officer-RPMO	Member
6.	Mr. Balram Yadav	ICG Engineer - RPMO	Member
7.	Sub project Affected Family Representative	Affected Family Representative	Member
8	Mr. Tul Bahadur Khadaka	Secretary-WUSC	Member
9	Mr. Keshav Bhatta	Engineer-Contractor	Member

Unofficial Translation (S.No. 4)

Letterhead of Siddhanath Biajnath Water Supply and Sanitation Project

Date: 9th February 2020

To,
The Chariperson,
Ward 6, 8 & 10 - Bheemdatt Municipality.

Subject: Regarding Notification on formation of Grievance Redress Committee

Regarding the subject, it is informed that a Grievance Redress Committee (GRC) has been formed on 6th November 2019 for Siddhanath Urban Water Supply and Sanitation Project being implemented in wards 6, 8, and 10 of this Bheemdatt municipality so as to address the grievances and problems that may arise during the project implementation. If there is any grievance in project's ward level, we request you to forward it to the committee as per. The list of members of the GRCs is as followings;

……..
Chairperson, WUSC
Karberr Singh Aiyer
(Signed and Stamped)

1st Level GRC

SN	Name	Designation	Designation/Status on GRC
1	Mr. Karbeer Singh Aiyer	WUSC Chairman	Chairman GRC
2.	Mr. Gauri Prasad Sharma	Social Safeguard Specialist – DRSMC	Member
3.	Construction Supervision Engineer	Construction Supervision Engineer-DRSMC	Member
4.	Social Mobilizer	Social Mobilizer – DRSMC	Member
5.	Contractor Representative	Contractor Representative	Member

2nd Level GRC

SN	Name	Designation	Designation/Status on GRC
1	Mr. Surendra Bista	Mayor, Bhimdutta Municipality	Chairman GRC
2.	Mr. Purna Prasad Upadhyaya	Regional Project Manager-RPMO	Member, Secretary
3	Mr. Gauri Prasad Sharma	Social Safeguard Specialist-DRSMC	Member
.4	Mr. Ananta Prasad Gautam	Construction Supervision Engineer - DRSMC	Member
5.	Social Safeguard Officer	Social Safeguard Officer-RPMO	Member
6.	Mr. Balram Yadav	ICG Engineer - RPMO	Member
7.	Sub project Affected Family Representative	Affected Family Representative	Member
8	Mr. Tul Bahadur Khadaka	Secretary-WUSC	Member
9	Mr. Keshav Bhatta	Engineer-Contractor	Member

RECEIVED, SIGNED AND STAMPED BY:
Ward Office Representatives of Ward 6, Ward 8, and Ward 10

ANNEX 6:
SURVEY QUESTIONNAIRE

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s|+;+=	vfBfGg jfnL	jfnL nufPsf] lf]qkmn	pTkfbg kl/0ffd
!= vfBfGg afnL			
	wfg		
	ux'		
	ds}		
	sf]bf]		
	bfn u]8fu'8L		
	cGo		
@= gub] jfnL			
	cfn'		
	tf]/L		
	t/sf/L		
	cGo		

-v_ pQm hUufdf nufPsf] kmnkm"n / cGo af]6 lj?jfsf] ljj/0f lbg'xf]; ?

s|+;+=	af]6lj?jf	lj?jf ;+Vof		hDdf
		kmn nfPsf]	kmn gnfPsf]	
!	kmnkm"n			
@	sfutL			
#	;'Gtnf			
%	cfFk			
^	d]jf			
&	cDaf			
*	lnRrL			
(	s6x/			
!)	s]/f			
!!	cf?			
!@	gf:kftL			
!#	cf?jv8f			
!$	cGo			
!%	8fn] 3fF;			

s|+;+=	af]6lj?jf	lj?jf ;+Vof		hDdf
		kmn nfPsf]	kmn gnfPsf]	
!^	kfv'/L			
!&	sfe|f]			
!*	j8x/			
!(	vgfof]			
@)	6fsL			
@!	lub/L			
@@	cGo			
@#	OGwgsf] nflu k|of]u ug]{ af]6 lj?jf			
@$	sf7df k|of]u x'g] af]6lj?jf			
@%	jfF; lgufnf]			

#=^ s] tkfO{sf] hUufdf ePsf] ut aif{sf] pTkfbgn] tkfO{sf] kl/jf/nfO{ vfg kof{Kt eof] ?

eof] ☐ ePg ☐

#=& olb ck\|of{Kt eof] eg] slt dlxgfsf] nflu k'u]g ? dlxgf

-s_ ltg dlxgf -v_ 5 dlxgf

-u_ gf} dlxgf -3_ afx\| dlxgf

#=* cfˆgf] pTkflbt vfBfGg ck\|of{Kt ePsf] a]nf cfˆgf] kl/jf/nfO{ s;/L v'jfpg' x'G5 <

s= C0f u/]/ v= gf]s/Laf6 ePsf] cfDbfgLaf6

u= Jofkf/Lsf] cfDbfgLaf6 3= ef/L af]s]/ ePsf] cfDbfgLaf6

8= b}lgs dhb'/af6 ePsf] r= cGo

==========

#=(kz'kfng ;DaGwL M

tkfO{sf] 3/df slt ÷s:tf kz' kIfLx? kfNg' ePsf] 5 ?

s|=;+=	kz'k+IfL	;+Vof
!	ufO{	
@	uf]?	
#	e};L	
$	af5f	
%	afl5	
^	kf8f	
&	kfl8	
*	/fFuf]	
(	3f]8f	
!)	afv|f	

s|=;+=	kz'k+IfL	;+Vof
!!	af]sf	
!@	v;L	
!#	kf7f÷kf7L	
!$	;'Fu'/÷a+u'/	
!%	xfF;	
!^	s'v'/f	
!*	cGo -v'nfpg]_	

$= 3/ kl/jf/sf] jflif{s cf}ift cfDbfgL M

>f]t	Jfflif{s cfDbfgL -?=_	>f]t	jflif{s cfDbfgL -?=_
s[lifaf6		cGo >f]tx?	
vfBfGg		gf]s/L, ;]jf	
gub]jfnL		Hofnf dhb'/L / e/Lof	
kmnkm'n		lgj[lte/0f	
hDdf -!_		Jofkf/	
kz'kfngaf6		3/]n' pBf]u	
b'Uw pTkfbg		k]zfut ;]jf	
c08f s'v'/f xfF; lasL|		df5f lasL|	
af5f÷af5L÷uf]? ÷lals|		cGo	
e}l; ÷/fFuf] lals|		hDdf -#_	
af]sf÷v;L÷e]8f÷afv|f lals|			
;'u+/÷a+u'/ lals|			
s'v'/f÷xfF; ljls|			
hDdf -@_			
hDdf cfo -!+@+#_M			

%= 3/ kl/jf/sf] jflif{s cf}ift vr{ M

ljj/0f	hDdf /sd -?=_	ljj/0f	hDdf /sd -?=_
Rf.dn		Lrof	
Bfn		bfp/f	
ds}		lah'nL	
t/sf/L		dl§t]n	
b'3÷bxL		cf}iflw	
df5f÷df;'		lzIff	
t]n÷Wo"		sk8f	
d/–d;nf		rf8kj{	
g'g		cGo	
lrgL			

ljj/0f	hDdf /sd -?=_	ljj/0f	hDdf /sd -?=_
		hDdf vr{	

^=kfgLsf] cfk"lt{

-s_ tkfO{n] o; vf]nfsf] kfgL pkof]u ug'{ x'G5 ls x'b}g ?
u5'{ □ ulb{g □

-v_ olb vf]nfsf] kfgL k|of]u ug'{ x'G5 eg] s'g k|of]hgsf] nflu k|of]u ug'{x'G5 ?
l;+rfO{ □ g'xfpg], sk8f w'g] □
lkpg] □ cGo □

&=:jf:Yo ;DalGwM

-s_ tkfO{sf] kl/jf/df s'g} ;b:o ljut jif{df lj/fdL ePsf lyP ?

lyP □ lyPgg\ □

-v_olb lyP eg] lgDg ljj/0f lbg'xf];\ ?

s|;+	gftf	k'?if	dlxnf	pd]/	/f]u
!					
@					
#					
$					

-/f]usf] k|sf/M– lb;fkvfnf, cfp+, 6fOkmfO{8, x}hf, dn]l/of, 6LjL, hG8L;, 5fnf ;DaGwL, lgdf]lgof, bd, /Strfk, P8\; / of}g /f]u, cGo_

-u_ lj/fdL kbf{ ;j{k|yd sxfF hfg'x'G5

==========

-3_ ToxfF lgsf] geP sxfF hfg'x'G5 ? s|dz pNn]v ug'{xf]; .

s|+=;+	hfg] 7fpF	/x]sf] :yfg	b"/L -ls=dL=_
!	c:ktfn		
@	x]Nykf]:6		
#	x]Ny ;]G6/		
$	cfo'a]{lbs cf}ifwfno		
%	lglh lSnlgs/cf}ifwL k;n		
^	wfdL emfs|L		
&	cGo		

***= dlxnfsf] cj:yfM**

-s_ >dsf] jlu{s/0f

s|+=;+	sfdsf] ljj/0f	lx:;f k|ltztdf	
		k'?if	dlxnf
!	vghf]t		
@	dn /fVg]		
#	hldg tof/L		
%	/f]Kg]		
^	uf]8d]n		
&	l;+rfO{		
*	sf6\g]		
(	af]Sg] / yGsfpg]		
!)	cGg k|;f]wg -s'6fO{ lk;fO{_		
!!	3fF; bfp/f		
!@	uf]7fnf]		
!#	d]nfkft		
!$	vfgf ksfpg]		
!%	kfgL kw]/f]		
!^	aRrfaRrL / a'9fa'9L x]/ljrf/		

-v_ ;DklQdf clwsf/

s|+=;+	sfdsf] ljj/0f	lx:;f k|ltztdf	
		k'?if	dlxnf
!	3/		
@	hUuf		
#	kz'		
%	u/uxgf		
^	pBf]u wGbf		
&	cGo		

-u_ lg0f{o k\|ls\|ofdf clwsf/

s|+=;+	sfdsf] ljj/0f	lx:;f k|ltztdf	
		k'?if	dlxnf
!	jfnL /f]Hg]		
@	kz' v/Lbljs|L		
#	u/uxgf v/Lbljs|L		
%	cGg v/Lbljs|L		
^	kmnkm"n v/Lbljs|L		

s|+=;+	sfdsf] ljj/0f	lx:;f k|ltztdf	
		k'?if	dlxnf
&	kz'hGo kbfy{ v/Lbljs|L		
*	sf7 bfp/f v/Lbljs|L		
(	ljxfjf/L		
!)	kl/jf/ lgof]hg		
!!	5f]/f5f]/L k9fO{ n]vfO{		
!@	cGo		

(= d'cfAhf ;DaGwLM

-s_ tkfO{sf] 3/ **/** hUufsf] d'cfAhf s] df rfxg' x'G5

gub □ hUufsf] ;§f hUuf □ cGo □

-v_ olb tkfO{n] d'cfAhf gubdf kfpg' eof] eg] pQm d'cfAhf /sd s] df k|of]u ug'{ x'G5

hUuf lsGg] □ 3/ jgfpg] □ C0f ltg]{ □
Aofkf/ ug]{ □ cGo □

!)= k|:tfj sfof{Gjog ubf{ s] s:tf] k|efj kg{ ;Sb5 ;f] ;DaGwL /fo ;'emfj 5
;sf/fTdsM gsf/fTdsM

ANNEX 7:
CHLORINE USE GUIDELINES

CHLORINE GUIDELINE VALUE

In humans and animals exposed to chlorine in drinking-water, specific adverse treatment related effects have not been observed.

Chlorine in drinking water is safe for consumption .The small amount of chlorine typically used to disinfect water does not pose risks to human health. The World Health Organization (WHO) has established a guideline value of 5 mg/L for chlorine in drinking water, meaning that such concentrations are considered acceptable for lifelong human consumption. Furthermore, WHO concludes that this value is "conservative," as no adverse effects from chlorine in drinking water were observed in studies reviewed by WHO.

Guideline values for chlorine WHO Guidelines for drinking water quality (2004)

Chlorine	**below 5 milligrams per liter (mg/L)***

*For effective disinfection, there should be a residual concentration of free chlorine of 0.5 mg/L after at least 30 min contact time at pH<8.0

Chlorination does not harm aquatic environments

Chlorinated drinking water is unlikely to be harmful when discharged into aquatic environments. An extensive risk assessment conducted under European Union guidelines examined potential harm from various processes to make drinking water using sodium hypochlorite. This assessment found no significant environmental risks from chlorine or byproducts formed during drinking water chlorination. The DBPs formed in drinking water depend on the nature and quantity of organic matter present as well as on the disinfectant and other treatments used. In drinking water the principal byproducts are trihalomethanes (THMs; mainly chloroform) and halo-acetic acids (HAAs), with smaller amounts of other byproducts. Direct 'whole effluent' experiments representing various uses, including drinking water, have shown that no significant amounts of persistent and potentially bio-accumulative substances are formed. Toxicity tests on these mixtures demonstrated that the presence of DBPs did not increase the toxicity.

A major concern from the past was the formation of some highly-chlorinated, high-hazard molecules, such as dioxins, resulting from chlorine used in paper pulp bleaching. However, dioxins were only formed from 'active chlorine' under specific conditions: acid pH and in the presence of certain phenols such as those abundant in the lignin component of wood. There is no significant formation of dioxins or other high-hazard molecules at neutral or alkaline pH. All current uses of 'active chlorine' for microbial control and cleaning take place at alkaline or neutral pH.

ANNEX 8:
WATER QUALITY TEST REPORT

Nepal Environmental & Scientific Services (P) Ltd.
G.P.O. Box: 7301, Thapathali, Kathmandu, Nepal
Phone : +977-1-4244989, 4241001, Fax No.: +977-1-4226028, Email: ness@mos.com.np
http://www.nesspltd.com

NESS/Lab, M-03/R1.1

QS Test Report / Certificate

NS Accreditation No. Pra. 01/053-54

Entry No. : NCL - 218(W) (1) - 12 - 2017
Date Received : 05 - 12 - 2017
Sample : Ground Water
Date Completed : 14 - 12 - 2017
Client : BDA-PEA JV
Sampled By : Client
Location : Jhapachauraha Bhimdutta Municipality, Ward No. 8 (Inside Sidhanath Temple)
Owner : Public Land
Area : 5 Katha/ for Used 3 Katha

S. N.	Parameters	Test Methods	Observed Values	NDWQS, Nepal
1.	pH at 19°C	Electromeric, 4500 - H^+ B, APHA	6.8	6.5 - 8.5
2.	Electrical Conductivity, (µS/cm)	Conductivity Meter, 2510 B, APHA	547	1500
3.	Turbidity, (NTU)	Nephelometric, 2130 B, APHA	4	5
4.	Total Hardness as $CaCO_3$, (mg/L)	EDTA Titrimetric, 2340 C, APHA	342	500
5.	Total Alkalinity as $CaCO_3$, (mg/L)	Titrimetric, 2320 B, APHA	335	-
6.	Chloride, (mg/L)	Argentometric Titration, 4500 - Cl^- B, APHA	13.90	250
7.	Ammonia, (mg/L)	Direct Nesslerization, 4500 - NH_3 C APHA	0.30	1.5
8.	Nitrate, (mg/L)	UV Spectrophotometric Screening, 4500 - NO_3^- B, APHA	6.79	50
9.	Nitrite, (mg/L)	NEDA, Colorimetric, 4500 - NO_2^- B, APHA	<0.02	-
10.	Calcium, (mg/L)	EDTA Titrimetric, 3500 - Ca B &	76.95	200
11.	Magnesium, (mg/L)	3500 - Mg B APHA	36.46	-
12.	Arsenic, (mg/L)	SDDC, 3500 - As, C. APHA	N. D. (<0.01)	0.05
13.	Iron, (mg/L)	Direct Air - Acetylene AAS, 3111 B,	0.27	0.3
14.	Manganese, (mg/L)	APHA	N. D. (<0.02)	0.2

N. D.: Not Detected

Note:
NDWQS: National Drinking Water Quality Standard - 2063; AAS: Atomic Absorption Spectrophotometer; UV: Ultraviolet; EDTA: Ethylenediaminetetraacetic acid; NTU: Nephelometric turbidity unit; NEDA: N-1-Naphthylethylenediamine dihydrochloride; APHA: American Public Health Association.

Remarks: All observed values complied the prescribed NDWQS for drinking water.

(Analyzed By) (Checked By) (Authorized Signature)

Note:
1. This report/certificate is in reference to Laboratory Quality Control Manual, QS (017).
2. The result of parameters refers only to the tested samples. Endorsement of products is neither inferred nor implied.
3. Liability of our institute is limited to the invoiced test parameters & amount only.
4. Samples will be destroyed after three months from the date of issue of test certificate unless otherwise specified.
5. This report is not to be reproduced wholly / partially & cannot be used as an evidence in the Court of Law & should not be used in any advertizing media without our permission in writing.
6. The clients are requested to take back their hazardous samples along with the report/certificate.

Nepal Environmental & Scientific Services (P) Ltd.
G.P.O. Box: 7301, Thapathali, Kathmandu, Nepal
Phone : +977-1-4244989, 4241001, Fax No.: +977-1-4226028, Email: ness@mos.com.np
http://www.nessptld.com

NESS/Lab. M-03/R1.1

QS Test Report / Certificate

NS Accreditation No. Pra. 01/053-54

Entry No. : NCL - 322 (W) (3) - 02 - 2018
Date Received : 12 - 02 - 2018
Sample : Water (Thapa Chok)
Date Completed : 27 - 02 - 2018
Client : PEA-BN JV
Sampled By : Client

S. N.	Parameters	Test Methods	Observed Values	NDWQS, Nepal
1.	pH at 19°C	Electrometric, 4500 - H^+ B, APHA	7.3	6.5 - 8.5
2.	Electrical Conductivity, (µS/cm)	Conductivity Meter, 2510 B, APHA	579	1500
3.	Turbidity, (NTU)	Nephelometric, 2130 B, APHA	10	5
4.	Color, (Chromacity Unit)	Spectrophotometric, 2120 C, APHA	N. D. (<0.05)	5
5.	Total Hardness as $CaCO_3$, (mg/L)	EDTA Tirimetric, 2340 C, APHA	378	500
6.	Total Alkalinity as $CaCO_3$, (mg/L)	Tirimetric, 2320 B, APHA	368	-
7.	Chloride, (mg/L)	Argentometric Titration, 4500 - Cl⁻ B, APHA	12.82	250
8.	Ammonia, (mg/L)	Direct Nesslerization, 4500 - NH_3 C APHA	N. D. (<0.05)	1.5
9.	Nitrate, (mg/L)	UV Spectrophotometric Screening 4500 - NO_3 B, APHA	14.76	50
10.	Nitrite, (mg/L)	NEDA, Colorimetric, 4500 - NO_2 B, APHA	N. D. (<0.02)	-
11.	Fluoride, (mg/L)	SPANDS, 4500 – F D, APHA	<0.05	0.5-1.5
12.	Sulphate, (mg/L)	Gravimetric Method with ignition of Residue, 4500 – SO_4^{2-} C, APHA	2.47	250
13.	Calcium, (mg/L)	EDTA Titrimetric, 3500 - Ca B & 3500 - Mg B APHA	101.60	200
14.	Magnesium, (mg/L)		30.14	-
15.	Iron, (mg/L)	Direct Air - Acetylene AAS, 3111 B, APHA	0.45	0.30
16.	Manganese, (mg/L)		N. D. (<0.02)	0.20
17.	Arsenic, (mg/L)	SDDC, 3500 - As. C, APHA	N. D. (<0.01)	0.05

N. D.: Not Detected

Note:
NDWQS: National Drinking Water Quality Standard - 2063; AAS: Atomic Absorption Spectrophotometer; UV: Ultraviolet; EDTA: Ethylenediaminetetraacetic acid; NTU: Nephelometric turbidity unit; NEDA: N-1-Naphthylethylenediamine dihydrochloride; APHA: American Public Health Association.

Remarks: *Except turbidity and iron, all observed values complied the prescribed NDWQS for drinking water.*

(Analyzed By) (Checked By) (Authorized Signature)

Note:
1. This report/certificate is in reference to Laboratory Quality Control Manual, QS (017).
2. The result of parameters refers only to the tested samples. Endorsement of products is neither inferred nor implied.
3. Liability of our institute is limited to the invoiced test parameters & amount only.
4. Samples will be destroyed after three months from the date of issue of test certificate unless otherwise specified.
5. This report is not to be reproduced wholly / partially & cannot be used as an evidence in the Court of Law & should not be used in any advertising media without our permission in writing.
6. The clients are requested to take back their hazardous samples along with the report/certificate.

ANNEX 9:
CHECKLISTS

Checklist for Physical Environment

A. Topography/Physiography

1. Study of Topographic maps/ other available maps and identify the ground topographic characteristics of land covered by the proposed project
2. Verify the topographic characteristics of the land in the field
3. Soil Type

B. Climate and Meteorology

1. Study of published data of regarding temperature, rainfall, humidity, wind speed and direction, solar radiation
2. If possible classify the climatic zone and its verification
3. Visit the meteorological office of the district and get latest information

C. Air Quality

1. Collect any data on air quality of the area from previous literature
2. Investigate on the air polluting activities of the area (traffic, biomass burning, industries, other anthropogenic activities

D. Erosion and land Stability

1. Identification of erosion prone area along the road alignment
2. Investigate the erosion features and potentials of the local streams and gullies

E. Land Use

1. Investigate on the land use of the Project Blocks from the topo-maps, and other available land use maps
2. Investigate the land use affected by the project structures and subsidiary facilities
3. Investigate on the land use potentials of the area

CHECKLIST OF PLANT RESOURCES

Date:

S.No.	Name of plants	Uses			Others
		Fuel-wood	Fodder	Medicine	

Note:……
……
……
……
……...

CHECKLIST OF WILDLIFE ANIMALS

Date:

S.N.	Wild Animals	Remarks

Note:……
……
……
……
……...

CHECKLIST OF (Birds)

Date:

S.No.	Birds	Remarks

Note:……
……
……
……

ANNEX 10:
LETTER OF PERMISSION TO WUSC

भीमदत्त नगरपालिका
नगर कार्यपालिकाको कार्यालय
कञ्चनपुर
सुदूरपश्चिम प्रदेश, नेपाल

प. सं. – २०७४।०७५
च. नं. २३८६

मिति: २०७४।११।०३

श्री सिद्धनाथ बैजनाथ तेस्रो खानेपानी तथा सरसफाई उपभोक्ता समिति
भी.न.पा. ८
कञ्चनपुर।

बिषय:- अनुमति दिइएको बारे।

उपरोक्त सम्बन्धमा न.पा. वडा समितिको कार्यालय वडा नं. ८ को मि २०७४।११।०३ च.नं. २६६ को प्रप्त पत्रनुसार वडा नं. सिट नं. ०२०-१२९४-४ को कित्ता.नं. ४२३ मध्ये पुर्व तर्फ क्षे.फ. ०१७९० मा खानेपानी योजना संचालन गर्न सिद्धनाथ बैजनाथ तेस्रो खानेपानी तथा सरसफाई उपभोक्ता समितिलाई निर्माण गर्न अनुमति दिइएको छ।

बोधार्थ:

१- श्री ८ नं. वडा समितिको कार्यालय

06/11/90/20

सुशिला धन्द सिंह
उप-प्रमुख

Bhimdutta Municipality
Office of Municipality Execution
Kanchanpur

Province- 7 of Nepal

Letter No: 2074/075
Reference No (dispatched no.): 2386

Date: 2020-February-3

Subject: Regarding given permission

Shree Sidhhanath Baijanath Third Water Supply and
Sanitation User Committee
Bhimdutta Municipality: 08
Kanchanpur.

As mentioned in the subject and letter from the office of Bhimdutta Municipality Ward no: 8, dated on 17 March, 2018, reference no: 266, it is permitted that Shree Sidhhanath Baijanath Third Drinking Water and Sanitation User Committee can use the land recorded in sheet no. 020-1294-4, eastern part of the land with the area of: 01790 from the plot no: 423 for the operation of drinking water supply project.

Reference
Office of Ward Committee
Ward no: 08

……
(signed and stamped)

Sushila Chand Singh

Deputy Mayor

ANNEX 11:
PHOTOGRAPHS

Photo 1: Meeting / Interaction with stakeholders including Municipality at land acquisition site: Thapachaur, Bhimdatta Municipality

Photo 2: Proposed site for the project at Siddhanath near to Thapachaur, Bhimdatta Municipality-8

Photo 3: Proposed site for different structures of the project

Photo 4: Site visit and interaction with WUSC/local people at proposed site
(*the open shed at the right of the photo-view will be relocated*)

Photo 5: A temple, Sidhanath-Baijnath Temple, nearby the proposed site
(*the area proposed is to the left o the photo-view and is a part of the land bounded as public land*)

Photo 6: Public Consultation on environmental safeguards (*January 2019*)

ANNEX 12:
APPROVAL OF IEE FROM MOWS

नेपाल सरकार

खानेपानी मन्त्रालय

फोन नं.: ४२००९१३
फ्याक्स : ९७७-१-४२००४३३
सिंहदरबार,
काठमाडौं, नेपाल ।

VISIT Nepal Year 2020

पत्र संख्या :- ०७६।०७६
चलानी नं :- ४९१

मिति २०७६।०९।१६

श्री सहरी खानेपानी तथा सरसफाइ (क्षेत्रगत) आयोजना,
पानीपोखरी, काठमाडौं ।

विषय : प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन स्वीकृती सम्बन्धमा ।

प्रस्तुत विषयमा तहाँ विभाग मार्फत स्वीकृतिका लागि यस मन्त्रालयमा प्राप्त भएको सहरी खानेपानी तथा सरसफाइ (क्षेत्रगत) आयोजना, प्रस्तावक रहेको तपसील बमोजिम आयोजनाहरुको परिमार्जित प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन नेपाल सरकार (सचिवस्तर) को मिति २०७६।०९।१६ को निर्णयानुसार स्वीकृत भएको व्यहोरा निर्देशानुसार अनुरोध छ ।

आयोजनाहरु :

१ लिवाङ्ग सहरी खानेपानी तथा सरसफाइ आयोजना, रोल्पा
२ सिद्धनाथ बैजनाथ सहरी खानेपानी तथा सरसफाइ आयोजना, कञ्चनपुर
३ प्रगतिनगर सहरी खानेपानी तथा सरसफाइ आयोजना, दाङ्ग

(मधुसुधन खनाल)
इन्जिनियर

बोधार्थ :
श्री खानेपानी तथा ढल व्यवस्थापन विभाग,
पानीपोखरी, काठमाडौं ।

संलग्न :
स्वीकृत प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन २ प्रति ।

Government of Nepal
Ministry of Water Supply Singh Durbar
Kathmandu, Nepal
Tel: 4211693; Fax: 977-1-4211433

Letter No.: 076/077
Serial No.:291

Date: 01-01-2020

To,
Urban Water Supply and Sanitation (Sector) Project
Panipokhari, Kathmandu

Subject: Regarding the Approval of Initial Environmental Examination (IEE) Report

Like to inform as per decision made on the related subject, the revised IEE report of the following listed project submitted by the Department to this Ministry for approval of had been approved on 01-01-2020 by secretarially level decision of Government of Nepal.

Projects:

1. **Liwang, Urban Water Supply and Sanitation Project (Rolpa)**
2. **Siddhanath Baijnath, Urban Water Supply and Sanitation Project (Rolpa)**
3. **Pragatinagar, Urban Water Supply and Sanitation Project (Rolpa)**

_____
Madhusudan Khanal
Engineer

CC:
Department of Water Supply and Sewage Management
Panipokhari, Kathmandu
.
Attached:
Approved Initial Environmental Examination (IEE) Report: 2 Copy

SAUW IEE Review - Information Log

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

Project:	**Nepal: Urban Water Supply and Sanitation Project (UWSSP): Siddhanath Baijanath (Kanchanpur District) Water Supply and Sanitation Subproject**		
Loan No.:	3711	**Package No.:**	**W03**
Components:	Proposed source	New Deep Tube Wells – 2 nos.	
	Water treatment plant	Pressure Filters – 2 nos. Softener – 2 nos. Disinfection Unit (1 1000-liter mixing tank and 1 250-liter dosing tank) Water Quality Laboratory – 1 no. with area of 24 sq.m.	
	Distribution Network.	52.904 km	
	Transmission Mains.	1.908 km	
	Pumps	2 Nos. (+ 2 standby); Capacity of 30 kw & 35 kw	
	Household Connection (Nos.)	1730 for base year	
	11 KV transmission lines	120 m.	
	Electrical Transformers	1 no. (160 kva)	
	Office Building	1 no. with footprint of 200 sq. m.	
	Guard House	2 nos. with footprint of 35 sq. m. each	
	Generator House	2 nos. with footprint of 30 sq. m. each	
	Standby Electrical Generator	1 of 200 kva	
	Public Toilets	1 no. (35 sq. m.)	
	Fire Hydrants	21 numbers	
Contract Type:	Civil Works		
Date of IEE:	December 2019		

Draft IEE?	Updated/Revised IEE?	Others
		Based on the report, it is the final IEE and components are based on final detailed engineering design.

	Activity	Status		Detailed Comments and Further Actions Required
1.	Environmental assessment has been satisfactorily conducted based on ADB REA Checklist and scoping checklist.[1]	**Yes**	**No**	The assessment also included evaluation on compliance with the subproject selection criteria in the EARF. Evaluation reveals compliance. Water sources are deep tube well. No issue on surface water downstream users is expected.
		X		
2.	Environmental assessment based on	**Yes**	**No**	IEE report is based on final detailed design.
		X		

[1] ADB Rapid Environmental Assessment Checklist for screening and categorization. Scoping Checklist ("No Mitigation Scenario" Checklist) for scope of IEE, identification of impacts and development of environmental management plan.

	Activity	Status					Detailed Comments and Further Actions Required
	latest project components and design						
3.	Statutory Requirements[2]		Forest Clearance				The IEE report explicitly states that around 11 trees will be cut. Tree replacement with ratio of 25:1 will be implemented. Tree felling clearance will be obtained by the PMO/RPMO. No civil works will commence unless tree felling clearance, if required, is obtained. PMO to report status in the SEMR.
			No Objection Certificate				To be obtained by PMO/RPMO if needed. No civil works will commence unless NOC, if required, is obtained. PMO to report status in the SEMR.
			Site Location Clearance				To be obtained by PMO/RPMO if needed. No civil works will commence unless site location clearance, if required, is obtained. PMO to report status in the SEMR.
			Environmental Compliance Certificate				PMO obtained MOWS-approved IEE. PMO to attach copy of approval document in the SEMR.
			Permit to Construct (or equivalent)				To be obtained by PMO/RPMO if needed. No civil works will commence unless permit to construct (or equivalent), if required, is obtained. PMO to report status in the SEMR.
			Permit to Operate (or equivalent)				To be obtained by PMO/RPMO if needed. No civil works will commence unless permit to operate (or equivalent), if required, is obtained. PMO to report status in the SEMR.
			Others				
5.	Policy, legal, and administrative framework	**Adequate**		**Not Adequate**			Section II discusses the policy, legal and administrative framework of the subproject.
		X					
		Included discussions and requirements of the:					
		Yes	National regulation/law on EIA				
		Yes	Environmental agency				
		Yes	Relevant international environmental agreements				
		Yes	Environmental standards (IFC's EHS Guidelines)				
6.	Anticipated environmental impacts and mitigation measures	**assessed impacts and risks:**		**mitigation measures included:**			
				Yes	**No**	**n/a**	
			Biodiversity conservation	X			Protection status of species at the project sites was verified through IUCN Red List and IBAT. The Suklaphanta Wildlife Reserve near the project site (within 1km according to IBAT) is considered a

[2] If applicable, include date accomplished or obtained.

	Activity	Status					Detailed Comments and Further Actions Required
							key biodiversity area where several IUCN Red List species are known to exist. **Important Reminder:** PMO/RPMO and Contractors should be strict in implementing the mitigation measures presented in the IEE report in order to avoid impacts to biodiversity. This includes, among other measures in the EMP, the following: (i) Regular coordination with Suklaphanta National Park office during implementation phase; (ii) Implementation of a code of conduct for all technicians and workers during the implementation phase so as not to disturb any migratory or local species of amphibians, birds and other fauna; and (iii) No poaching or hunting, especially in forest areas, national parks and buffer zone of national parks.
			Pollution prevention and abatement	X			Pollution prevention and abatement measures are included.
			Health and safety	X			Community and occupational health and safety measures are included.
			Physical cultural resources	X			No PCRs identified at the subproject sites.
			Cumulative impacts			X	
			Transboundary impacts			X	
7.	Impacts from Associated Facilities[3]	**Addressed**	**Not Addressed**	**Not applicable**			
				X			
8.	Analysis of Alternatives	**Yes**		**No**			An analysis of alternatives is provided, but this is not required.
		X					
9.	EMP budget included	**Yes**		**No**			Section VIII (Table VIII-4)provides indicative budget of NPR 3,800,000 for EMP implementation.
		X					
10.	EMP implementation integrated in FAM/PAM and bid documents	**Yes**		**No**			(i) Included in PAM during loan processing. (ii) Section VIII includes discussion on the inclusion of the
		X					

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

	Activity	Status		Detailed Comments and Further Actions Required
				EMP in the bid and contract documents. PMO and the RPMO will have the responsibility to ensure compliance with this requirement.
11.	Consultation and Participation	**Yes**	**No**	Section IX discusses the conduct of consultations. Minutes of consultations with the English translation are attached as Annex 5. **Important Reminder:** Ensure to conduct continuous consultations and report results in applicable SEMR.
		X		
12.	Grievance Redress Mechanism	**Yes**	**No**	
		X		
		Description of GRM.		Section X discusses the GRM.
		GRC members identified.		Section X discusses the GRC membership.
		GRM established and notified?		GRM is established. Copies of notifications at GRC level 1 and 2, including English translation, are included in Annex 5. **Important Reminder:** Ensure to provide the notification of GRC level 3 in the next SEMR. Refer to the same reminder provided in the review of SEMR for the period July – December 2019.
13.	Disclosure	To be complied	Endorsement to disclose on ADB website	To be complied after endorsement from PMO is received by ADB.
		To be complied	Disclosed on project website	To be complied by PMO once clearance of the IEE is received from ADB.
		To be complied	Relevant information available to stakeholders and affected people in language and form they understand.	To be complied by PMO once clearance of the IEE is received from ADB.
14.	Mobilized PMO Environment Specialist	**Yes**	**No**	This is confirmed in the SEMR for January – June 2019.
		X		
15.	Mobilized RPMO Environment Specialist	**Yes**	**No**	This is confirmed in the SEMR for January – June 2019.
		X		
16.	Mobilized PMQAC / DRTAC Environment Specialists	**Yes**	**No**	This is confirmed in the SEMR for January – June 2019.
		X		
17.	Mobilized DSMC/RDMSC Environment Specialists	**Yes**	**No**	This is confirmed in the SEMR for January – June 2019.
		X		
18.	Confirm bid and contract documents and/or EMP include requirement for the contractor to appoint EHS supervisor and/or nodal person for environment safeguards	**Yes**	**No**	
		X		Section VIII explains this role and responsibility of the contractor.

	Activity	Status		Detailed Comments and Further Actions Required
19.	If contract awarded already, confirm contractor's appointment of EHS supervisor and/or nodal person for environmental safeguards	**Yes**	**No**	
		X		This package is been awarded. Section VIII explains that contractor has the responsibility to appoint an environment supervisor. Accordingly, contractor has already appointed its EHS supervisor and/or nodal person for environmental safeguards.
20.	Awareness training on compliance to safeguard requirements	**Yes**	**No**	Section VIII discusses the institutional capacity development program, schedule, and topics for the subproject, which PMQAC will supervise. **Important Reminder:** The package has been awarded recently. PMO to ensure that awareness training on compliance with safeguard requirements is conducted per Training Program in Section VIII of the IEE report. Include report on the outcome of training in the next SEMRs.
		X		
21.	Monitoring and Reporting	**Yes**	**No**	
		X		Section XI clarifies the monitoring and reporting roles of stakeholders. Submission of SEMRs is being complied with.
22.	**Others/Remarks**			
	Documents/References:	1. Revised Final IEE report for Siddhanath Baijanath Subproject dated December 2019 2. Final IEE report for Siddhanath Baijanath Subproject dated December 2019 3. Draft IEE report for Siddhanath Baijanath Subproject dated July 2018 4. EARF of UWSSP.		