



खानेपानी मन्त्रालय

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काठमाडौं, नेपाल।

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श्री खानेपानी तथा ढल व्यवस्थापन विभाग,
पानीपोखरी, काठमाडौं।

0/C

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

प्रस्तुत विषयमा तहां विभाग माफत स्वीकृतिका लागि मन्त्रालयमा प्राप्त भएको आयोजना व्यवस्थापन कार्यालय, सहरी खानेपानी तथा सरसफाई आयोजना पानीपोखरी काठमाण्डौं, प्रस्तावक रहेको चैतपुर नगर खानेपानी तथा सरसफाई आयोजनाको परिमार्जित प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन नेपाल सरकार (सचिवस्तर) मिति २०७६।०३।२७ को निर्णयानुसार स्वीकृत गरिएको व्यहोरा निर्देशानुसार अनुरोध छ।

बोधार्थ :

श्री आयोजना व्यवस्थापन कार्यालय,
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पानीपोखरी, काठमाण्डौं।

संलग्न :

स्वीकृत प्रारम्भिक वातावरणीय परीक्षण (IEE) प्रतिवेदन २ प्रति।

(अञ्जना महर्जन)

ईन्जिनियर



Government of Nepal
Ministry of Water Supply
Department of Water Supply and Sewerage Management
Urban Water Supply & Sanitation Sector Project
Project Management Office
Panipokhari, Maharajgunj, Kathmandu

Initial Environmental Examination (IEE)
of
Chainpur Town Water Supply and Sanitation Project
Chainpur, Bajhang
Sudurpaschim Province



Submitted To

Ministry of Water Supply
Singhadurbar, Kathmandu

Submitted By

Project Management Office
Third Small Towns Water Supply and Sanitation
Sector Project
Department of Water Supply and Sewerage
Management
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ACRONYMS

ADB	Asian Development Bank
amsl	above mean sea level
DCC	District Coordination Committee
DSMC	Design, Supervision and Management Consultant
DWSSM	Department of Water Supply and Sewerage Management
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environment Protection Act
EPR	Environment Protection Rules
GoN	Government of Nepal
GRM	Grievance Redress Mechanism
HH	Household
lpcd	litres per capita per day
ICG	Implementation Core Group
IEE	Initial Environmental Examination
MoFE	Ministry of Forests and Environment
MoWS	Ministry of Water Supply
NAAQS	National Ambient Air Quality Standard
NEA	Nepal Electricity Authority
NDWQS	National Drinking Water Quality Standard
PMO	Project Management Office
REA	Rapid Environmental Assessment
RP	Resettlement Plan
RPMO	Regional Project Management Office
TDF	Town Development Fund
UWSSSP	Urban Water Supply and Sanitation (Sector) Project
WUSC	Water User and Sanitation Committee
ESS	Environmental Safeguards Specialist


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Weights and Measures

C	Celsius/centigrade
dBa	decibel audible
Ha	hectare/s
Km	kilometer/s
Kph	kilometer/s per hour
M	meter/s
Kph	kilometer/s per hour
m ³	cubic meter/s
Masl	meter/s above sea level
mg/l	milligram/s per liter
Mm	millimeter/s


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कार्यकारी सारांश

पृष्ठभूमी

यस प्रस्तावित आयोजनाका प्रस्तावक शहरी खानेपानी तथा सरसफाई आयोजनाको आयोजना व्यवस्थापन कार्यालय हो । यो कार्यालय खानेपानी तथा ढल निष्कास व्यवस्थापन विभाग (खा.पा.त.ढ.नि.व्य.वि.) अन्तर्गत पर्दछ । यो आयोजना साना शहर र नगरोन्मुख वस्तिहरूको खानेपानी तथा सरसफाई सेवा सुधारमा केन्द्रित रहेको छ । यो आयोजना समुदायको आवश्यकता अनुसारको माग र सोका लागि समुदायकै सक्रिय सहभागिता र व्यवस्थापनको सिद्धान्तमा आधारित छ । यस उपयोजनाबाट जयपृथ्वी नगरपालिकाको वडा नं. ९, १० र ११ का वासिन्दा लाभान्वित हुनेछन् ।

प्रारम्भिक वातावरणीय परीक्षणको उद्देश्य, ए. वि. बै.को नीति, र नेपाल सरकारका ऐन तथा कानून यस प्रारम्भिक वातावरणीय परीक्षणको मूल उद्देश्य भनेको यस आयोजनाका कार्यहरूबाट वातावरणमा पर्न सक्ने नकारात्मक असरहरूको पहिचान गरी ती असरहरूलाई न्यून गर्नु, निर्मूल गर्नु वा ऐनको स्वीकार्य सिमामा ल्याउन आवश्यक र उपयोगी उपाय तथा सुझावहरू योजनाबद्ध रूपमा दिनु हो ।

नेपाल राष्ट्रको प्रचलित कानून, नियम तथा एशियाली विकास बैंकको नीति अनुसार कुनै पनि विकासको योजना तथा निर्णय प्रक्रियामा वातावरणीय असरहरू बारे ध्यान पुर्‍याउनु पर्ने हुन्छ । नेपाल सरकारको कानूनी प्रक्रिया अनुसार यो प्रस्तावित परियोजनाले वातावरण संरक्षण ऐन, २०५४ र वातावरण संरक्षण नियमावली, २०५४ को पालना गर्नुपर्ने हुन्छ । प्रस्तावित प्रारम्भिक वातावरणीय परीक्षणले वातावरण संरक्षण नियमावली (२०५४) को अनुसूची १ अन्तर्गत दफा-ए को उपदफा ८ को पालना गर्दछ ।

बर्गीकरण

एशियाली विकास बैंकको सुरक्षण नीति कथन (जुन २००९) अनुसार यो परियोजना श्रेणी “बी” मा पर्दछ र एशियाली विकास बैंकको निर्देशिका अनुसार समेत यो प्रारम्भिक वातावरणीय परीक्षण गरिएको छ ।

अध्ययन विधि

खानेपानी मन्त्रालयद्वारा स्वीकृत कार्यसूची (टी.ओ.आर.) का आधारमा यो प्रतिवेदन तयार गरिएको छ । यस अध्ययनले वातावरण संरक्षण ऐन (२०५४) तथा वातावरणय संरक्षण नियमावली (२०५४), र साथै एशियाली विकास बैंकको सुरक्षण नीति कथन (जुन २००९) का प्रावधान, विधि तथा व्याख्याहरूको पालना गरेको छ । यस अध्ययनका सिलसिलामा प्रतिवेदन अध्ययन, फिल्ड अध्ययन, संकलित तथ्यहरूको विश्लेषण तथा सूचना संप्रेषण तथा सार्वजनिक सहभागिताका क्रियाकलापहरू गरिएका छन् । सार्वजनिक सूचना प्रकाशन, सूचना टाँसको मुचुल्का र सार्वजनिक छलफल गरी सरोकारवालाहरू का सुझावहरू प्रतिवेदनमा उल्लेख गरिएको छ । भौतिक वातावरणीय अवयवहरू, जैविक वातावरणका पक्षहरू तथा सामाजिक-आर्थिक अवस्थाहरूको सुक्ष्म रूपमा अध्ययन गरी स्थानीय सरोकारवालाहरू सित आयोजना कार्यान्वयन गर्दा हुन सक्ने सकारात्मक एवम् नकारात्मक प्रभावहरूका बारेमा छलफल गरिएको छ । यी अध्ययन विशेषत आयोजनाको प्रत्यक्ष रूपमा निर्माणका काम हुने ठाउँहरू - प्रत्यक्ष असर पर्ने क्षेत्र र त्यसको वरिपरि नजिकको क्षेत्रमा गरिएको छ ।

Signature
Engineer



आयोजनाका मुख्य संरचनाहरू

प्रस्तावित चैनपुर खानेपानी तथा सरसफाई आयोजना सतही जलस्रोतमा आधारित मिश्रित प्रणाली हो । यसका दुईवटा कम्पोनेन्टहरू छन् : खानेपानी वितरण र सरसफाई । खानेपानी वितरण अन्तर्गत पानीको स्रोतका लागि सम्प-वेल निर्माण, प्रशोधन प्रणाली, पानी भण्डारण ट्याङ्की निर्माण, गार्ड हाउस निर्माण, वितरण प्रणालीको निर्माण, पाईप विछ्याउने कार्य, घरधारा जडान एवं कार्यालय भवन निर्माणका कार्यहरू हुनेछन् । दोस्रो पाटोमा सरसफाई कार्यक्रम छ, जस अन्तर्गत घरधुरी शौचालय निर्माणमा सहयोग र सार्वजनिक शौचालयको निर्माण पनि प्रस्ताव गरिएको छ । आयोजना संचालन र व्यवस्थापन प्रभावकारी बनाउन उपभोक्ता समितिको भवन निर्माण कार्य पनि गरिनेछ ।

वातावरणको वर्णन

यस आयोजनाको कार्यक्षेत्र बझाङ जिल्लाको सदरमुकाम चैनपुर रहेको छ । आयोजनाले कुनै पनि वन क्षेत्रको उपभोग गर्ने छैन । आयोजना क्षेत्र समुन्द्री सतहबाट १३००-१७०० मिटरको उचाईमा रहेको छ । यस आयोजनाका संरचनाहरू सार्वजनिक जग्गामा अवस्थित छन् । यसका संकलन र वितरण पाईपहरू बाटोको RoW भित्र पर्दछन् । आयोजनाको निर्माण कार्य क्षेत्र भित्र कुनैपनि किसिमको सिमसार तथा संरक्षित क्षेत्रहरू छैनन् । आयोजना क्षेत्रमा बजार क्षेत्र पनि पर्दछ । वडा नं. १० मा मुख्य चैनपुर बजार रहेको छ ।

आयोजना क्षेत्र वरीपरी वन क्षेत्र रहेको छ । आयोजना क्षेत्रमा सल्ला, खरी, खिर्रो, बाँभ र लालीगुराँस आदि प्रजातिका रुखहरू पाईन्छन् । सेती नदी यहाँको प्रमुख नदी हो भने बाहुलिगाड खोला, भुवनी खोला र दुङ्गी खोला यस आयोजना क्षेत्र छुने पानीका स्रोतहरू मध्ये प्रमुख हुन् । घाँसे मैदान र खोलानालाको आसपासमा पाइने वन पनि आयोजना क्षेत्रमा र आयोजना क्षेत्रको नजिक देखिन्छन् । आयोजना क्षेत्र भित्र कुनै पनि किसिमको संरक्षित क्षेत्र छैन । आयोजना क्षेत्रमा खेतीजन्य भूभाग पनि रहेको छ ।

चैनपुर एक शहरोन्मुख बस्ती हो जहाँ आर्थिक कारोबार बढ्दो कममा छन् । आयोजना क्षेत्रका घरधुरीको औसत मासिक आय करिब रु ३०,८१६ रहेको छ । बाहिरका बस्तीहरूबाट बसाई सरी आएका बासिन्दाहरू तथा भाडामा बस्ने मानिसहरूको बढ्दो जनसंख्याका कारण आयोजना क्षेत्रको जनसंख्या बृद्धि उल्लेखनीय रहेको देखिन्छ । विद्यमान खानेपानी प्रणालीको क्षमता नपुग देखिन्छ र हाल ४.३% घरधुरीले मात्रै खानेपानी गुणस्तर राम्रो रहेको बताएका छन् । अधिकांश घरहरूमा चर्पीको व्यवस्था छ तर केहीमा अझै मापदण्ड अनुसारको चर्पी बनाउन बाँकी रहेको छ । बजार क्षेत्रमा सार्वजनिक शौचालय संचालनमा छ तर बढ्दो शहरीकरणका कारण सरसफाई सम्बन्धी थप सुविधाको आवश्यकता देखिन्छ ।

वातावरणीय व्यवस्थापन तथा अनुगमन योजना

यस आयोजनाको कार्यान्वयनले गहन प्रकृतिका नकारात्मक वातावरणीय प्रभाव पर्ने देखिदैन र संभावित नकारात्मक प्रभावहरू पनि स्थानीय र सजिलै सँग निराकरण गर्न सकिने प्रकारका रहेका छन् । खानेपानी वितरण प्रणालीका मुख्य वातावरणीय मुद्दा निर्माणसंग सम्बन्धित क्रियाकलाप जस्तै पानी संकलन गर्न सम्पवेल निर्माण, प्रशोधन इकाई निर्माण, भण्डारण ट्याङ्की निर्माण र पाइप लाइन विछ्याउँदा भीड तथा सडकको सतह खुकुलो हुदाँ हुने भूक्षय हुन सक्ने जस्ता प्रभावहरू रहेका छन् । वडा नं. १० को जि.प्र.का. क्षेत्रमा र वडा नं. ११ को पानी ट्याङ्की बस्ने क्षेत्रमा भूक्षय हुन सक्ने अवस्था भएको कारण आवश्यक संरक्षणका कार्य गर्न सुझाइएको छ । सम्पवेल निर्माण क्षेत्री नदीको बगरबाट नजिक रहेको

Engineer



कारण आवश्यक सुरक्षण र व्यवस्थापनका प्रावधानहरु निर्माण गर्नु पर्ने हुन्छ । नकारात्मक प्रभाव न्यूनीकरण गर्न सावधानीका उपायहरु वातावरणीय व्यवस्थापन योजनामा उल्लेख गरिएका छन् । आयोजनाको मुख्य संरचना स्थानको छनौट उपभोक्ता समितिको सल्लाह र सुझाव अनुरूप गरिएको छ र त्यसको लागि कुनै पनि संरचना र जनसमुदायलाई विस्थापित वा पुनर्स्थापना गर्नु नपर्ने देखिन्छ । प्रशोधन इकाइ, भण्डारण ट्याङ्की र पानी शुद्धिकरण प्रणाली निर्माण गर्नको लागि आवश्यक पर्ने जग्गा उपभोक्ता समितिले आयोजनाको निर्माण कार्य शुरु हुनु अगाडी नै हाशील गर्नेछ । निर्माण चरणको छोटो समयको लागि हावा, पानी तथा ध्वनी प्रदुषण हुने देखिन्छ । त्यसै गरी कामदारहरुको सुरक्षा पनि एउटा चासोको विषयको रूपमा छ । समग्र रूपमा हेर्दा प्रस्तावित आयोजनाबाट सो क्षेत्रका जैविक, भौतिक, आर्थिक, सांस्कृतिक तथा सामाजिक वातावरणमा कुनै गहन प्रभावको सम्भावना निकै कम देखिन्छ ।

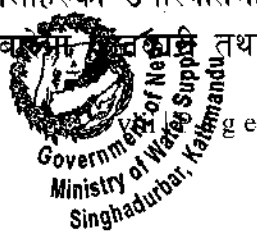
प्रारम्भिक वातावरणीय परिक्षण प्रतिवेदनको एउटा मुख्य अंशको रूपमा वातावरणीय व्यवस्थापन योजना बनाईएको छ, जसमा निम्न कुराहरु समेटिएका छन् : (क) आयोजना कार्यान्वयन चरणमा पर्ने सक्ने नकारात्मक वातावरणीय प्रभाव न्यूनीकरणका उपायहरु सुझाउने र सकारात्मक अवसरहरु अभिवृद्धिका उपायहरु दिने, (ख) जिम्मेवार निकायद्वारा वातावरणीय अनुगमन तथा न्यूनीकरणको प्रतिवेदन तयार गर्ने, (ग) सूचना सम्प्रेषण तथा सार्वजनिक छलफल गर्ने, र (घ) गुनासो सम्बोधन गर्ने संयन्त्र बनाउने । डिजाईनमा सूधार एवं संशोधन गरेर धेरै जसो वातावरणीय नकारात्मक असरहरुलाई न्यूनीकरण गरिएको छ । वातावरणीय व्यवस्थापन योजनालाई निर्माण कार्यको ठेक्का सम्भौताको एउटा अंशको रूपमा राखिएको छ । नकारात्मक प्रभाव न्यूनीकरणको कार्यान्वयन राम्रो संग भएको वा नभएको जाँच गर्न अनुगमन गर्नु जरुरी छ । त्यसैले निर्माण र संचालन अवधिमा हुने क्रियाकलापहरुलाई समेटेर एउटा विस्तृत अनुगमन कार्यक्रम तयार पारिएको छ । आयोजना शुरु गर्नु अगाडि आयोजना व्यवस्थापन कार्यालयद्वारा नकारात्मक प्रभाव न्यूनीकरणका उपायहरुको कार्यान्वयन गर्नका लागि कार्य योजना र वातावरणीय योजना अनुसारको अनुगमन योजना बनाइने छ । सो योजना निर्माण र संचालन कार्यको ठेक्का संगै संलग्न गरिनेछ । यस प्रस्तावित वातावरणीय व्यवस्थापन योजना कार्यान्वयनका लागि रु १४,५०,००० विनियोजन गरिएको छ ।

यस आयोजनाबाट स्थानीय जनताहरुले प्रसस्त सकारात्मक फाईदा प्राप्त गर्नेछन्, जसमध्येका मुख्य फाईदाहरु निम्नानुसार छन्: (क) सुरक्षित खानेपानीको सुविधामा जनताको पहुँचमा वृद्धि हुने एवं सरसफाईको क्षेत्रमा सुधार, (ख) आयोजना क्षेत्रमा रोजगार बढ्नु र सीप अभिवृद्धि हुनु र (ग) चैनपुर शहरका बासिन्दाहरुको जीवनस्तरमा सुधार आउनु ।

स्थानीय सहभागिता, सूचना सम्प्रेषण र गुनासो सम्बोधन

प्रारम्भिक वातावरणीय परिक्षणको प्रतिवेदन लेखनका क्रममा समुदायसंग छलफल गरिएको छ । यस्ता छलफलहरु लाई पूरै आयोजना निर्माण चरणसम्म निरन्तरता दिइनेछ । मिति २०७५ जेठ ४ गतेका दिन आर्थिक अभियान राष्ट्रिय दैनिकमा प्रारम्भिक वातावरणीय परिक्षणका लागि राय सुझाव पेश गर्ने सम्बन्धमा १५ दिने सार्वजनिक सूचना जारी गरियो । उक्त सूचना विभिन्न कार्यालय तथा स्थानहरुमा टाँस गरी सोको मुचुल्का गरियो । स्थानीय निकायका प्रतिनिधिहरु तथा कारवालाहरुको उपस्थितिमा यस आयोजनाका बारेमा र प्रतिवेदनमा उल्लेख गरिएका वातावरणीय प्रभावहरुका बारेमा जानकारी तथा

Engineer



छलफल पनि गरिएको छ । समुदायका कुनैपनि गुनासाहरूलाई तुरुन्तै सम्बोधन गर्ने हेतुले प्रारम्भिक वातावरणीय प्रतिवेदनमा गुनासो सम्बोधन प्रक्रिया विस्तृत रूपमा वर्णन गरिएको छ ।

निष्कर्ष

यस आयोजना बाट स्थानीय बासिन्दाहरूले चौविसै घण्टा आवश्यकता अनुसार सुरक्षित खानेपानी पाउनेछन् र सरसफाईको अवस्थामा सुधार हुनेछ जसले गर्दा आयोजना क्षेत्रका बासिन्दाहरूको जीवन स्तरमा सुधार आउनेछ । यस आयोजनाको प्रकृति, आयोजना क्षेत्रको वातावरण एवम् आर्थिक सामाजिक अवस्था र स्थलगत निरीक्षण एवम् सरोकारवाला संगको सरसल्लाहलाई मध्यनजर गर्दा यस आयोजनाबाट आयोजना क्षेत्रमा न्यून नकारात्मक वातावरणीय असर पर्ने देखिन्छ । संभावित प्रभावहरू धेरै जसो स्थानीय प्रकारका छन् र सुझाइएका प्रभाव न्यूनीकरणका उपयुक्त उपाय कार्यान्वयन गरिएमा र नियमित अनुगमन गरिएमा यी प्रभावहरूलाई सजिलै एवम् कम खर्चमा न्यूनीकरण गर्न सकिनेछ । यस आयोजना कार्यान्वयनका लागि प्रारम्भिक वातावरणीय परिक्षण मात्रै गरे पुग्ने देखिन्छ र अतिरिक्त वातावरणीय प्रभाव अध्ययन गर्नु नपर्ने देखिन्छ ।

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Engineer



EXECUTIVE SUMMARY

Background

The Project Management Office (PMO) of Department of Water Supply and Sewerage Management (DWSSM) is the proponent of the current project. The project is a part of the Urban Water Supply and Sanitation (Sector) Project (UWSSSP) of the Government of Nepal which aims to construct/extend drinking water supply systems, drainage and sanitation facilities as well as provide sanitary health education to the community in the small urban towns of the country. The project embraces the community managed demand responsive approach and is being implemented under ADB finance. The proposed project will facilitate wards 9, 10 & 11 of Jaya Prithivi Municipality.

Purpose of IEE, ADB Policy, GoN Acts and Rules

The purpose of this Initial Environmental Examination (IEE) is to examine the environmental implication of proposed project and its activities to ensure that it will not damage the environment and to provide measures to remove or reduce those impacts into acceptable limits.

Law of Nepal and ADB Policy, both require that the environmental implications of individual developments are taken into account in the planning and decision making process. The statutory requirement of the Government of Nepal, that has to be adhered to for the proposed project, is the Environment Protection Act, 1997 and Environment Protection Rules, 1997 (and amendments 2007). The present IEE study fulfils the requirements pertaining to Rule 3, Clause H, sub-clause 8 of Schedule 1 of EPA, 1997 (including amendments).

Categorization

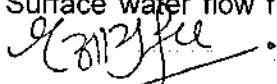
The present IEE study fulfils the requirements pertaining to Rule 3 of EPA 1997, and Clause H of Schedule 1 of EPA 1997 (including amendments). Similarly, as per ADB Safeguard Policy Statement (SPS) 2009, the project is classified as Environment Category B and IEE is required as per the checklist suggested by ADB.

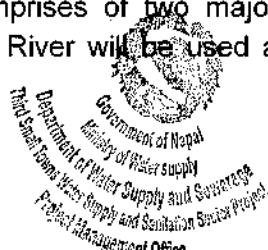
Methodology Adopted

This Initial Environmental Examination report has been prepared based on the Terms of Reference (TOR) approved by the Ministry of Water Supply, Government of Nepal. The study has followed the provisions outlined in the Environment Protection Act, 1997 and Environment Protection Rules, 1997 and Safeguard Policy Statement, 2009 of the Asian Development Bank (ADB). The major activities undertaken during the preparation of IEE are outlined (i) Desk Study, (ii) Field Work, (iii) Data Processing, and (iv) Consultation and Information Dissemination. Public Notice was issued, deed-of-inquiry of the notice was collected, and a public consultation was held. The suggestions from the stakeholders were shared with design team and were incorporated in the report. Physical environmental aspects, biological aspects and detailed socio-economic aspects were examined carefully and discussed with the stakeholders, especially in the Direct Impact Zone (DIZ). Indirect Impact Zone (IIZ) was also defined and observed.

Components of the project

The proposed Chainpur Urban Water Supply and Sanitation Project have conjunctive use of surface water sources. The project comprises of two major components; Water supply and Sanitation. Surface water flow from Seti River will be used as water source. The system also


Engineer



consists of water treatment facilities and ground reservoirs from where water will be distributed through distribution pipelines. The second component is sanitation services. The project will provide standard design options for household toilets, promote sanitation through OBA model, and will also construct a Public Toilet. A building for functional operation of User's Committee will also be built.

Description of the Environment

The project area lies in the district headquarters of Bajhang district located at 29°33' North Latitude and 81°12' East Longitude. The altitude of the project area lies at 1300 m-1700 m above the sea level in the mid hill region. The project area is situated in the Mahabharat Range and the Basin of Seti River at the confluence of BauliGaad River. The geology of the area shows that the area consists of grey to dark grey phyllite, quartzite and phyllitic schist with thick bedded, fine grained, grey to dark grey shale. The area also consists of grey, greenish-grey, gritty phyllite and phyllitic quartzite, metasandstone and conglomerate beds with white, massive quartzite and basic rocks. There are no protected areas or wetlands within the project site locations.

It is a rapidly urbanizing town and the commercial activities are increasing. The household average monthly income of the service area is estimated as Rs.30,816. In-migration rate and increase of rental population has resulted to high population growth. The existing water supply system has been unable to serve growing population. The present water supply situation is not satisfactory. Only 4.3% of the households think the quality of drinking water supplied is good. Regarding the health and sanitation condition, most of the households have toilet facility. The town has been declared Open Defecation Free zone in December 2015. The project area has core market and settlement area. Chainpur market of ward number 10 is the main market area.

Environmental impacts, mitigation and monitoring

No remarkable significant adverse environmental impacts have been predicted and the anticipated negative impacts are of local in nature and low in magnitude. The main activities that may cause environmental concerns are construction activities such as sump-well construction works, reservoir and treatment plant construction, and laying of transmission mains and distribution lines. Impacts related to degradation of land surface and unsettling of street surfaces due to excavation and trenches are of concerns. Ji.Pra.Ka area of ward number 10, and reservoir construction site of ward 11 need protective works in terms of land instability concerns. Similarly, bank protection works will be required to protect the sump well near the bank of Seti river.

The mitigation measures are precautionary types such as proper and timely back filling of the excavated trenches and avoiding cutting of vegetation. The main issues related to the sanitation component are during the operational phase such as nuisance due to increased sewer sludge. The mitigation measures are related to the periodic maintenance, cleaning and safe disposal of sludge. The locations of major structures have been acquired in consultation with the user committee and no households or community have been displaced or resettled. Temporary impacts on ambient air, water and noise levels are expected. Occupational health and safety remains a concern in the work fronts. In overall, there are very limited adverse impacts on the biological and socio-economic environment of the project area.

Monitoring is necessary to check the implementation of mitigation measures and a detailed monitoring schedule has been designed specifying the regular and periodic monitoring activities during the project construction and operation phase. Before the operation of the project, PMO will

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develop detailed work plan for implementing mitigation measures and monitoring plans based on Environmental Management Plan which will be incorporated into the construction and operation contracts. Budget of NRs 1,450,000 has been allocated for implementation of EMP works.

There are many beneficial impacts of the project. The major ones are; (i) Improved Access of safe water for all the households of the project area, (ii) Employment increase along with skill enhancement of the local people, and (iii) Improvement in quality of life of the people of the project area.

Public consultations, Information Disclosure, and Grievance Redress Mechanism

Local communities were informed and consulted during the field study period. A 15 days public notice was published in the national daily newspaper (Arthik Abhiyan National Daily, 18th May, 2018) seeking written opinions from concerned local bodies, schools, health posts and related local organizations and concerned people. A copy of the public notice was also affixed in the notice boards of the above mentioned organizations in the project area and a deed of enquiry (*muchulka*) was collected. A public consultation was conducted and opinions, concerns and suggestions of the local stakeholders were gathered through a consultation process. A Grievance Redress Committee (GRC) will be formed at Municipality level and any person with a grievance related to the project works can contact the project team to file a complaint.

Conclusions

The project will bring overall improvement in quality of life of the people of the project area. However, considering the nature of the project; environmental situations of the area and based on the detailed field survey and consultation with the relevant stakeholders, it can be concluded that the project benefits outweigh the risks and these potential risks can be overcome through the proposed mitigation measures and its monitoring. The impacts are mostly local in nature and can be easily mitigated with low cost mitigation measures. Hence IEE is sufficient for the project, and classification of the project as Category "B" for environment as per ADB's SPS 2009 is confirmed. No further special study or detailed Environmental Impact Assessment (EIA) is needed to be undertaken.


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1. NAME AND ADDRESS OF THE PROPONENT AND INSTITUTIONS PREPARING THE REPORT

Name of the Proposal:

The name of the proposal is 'Initial Environmental Examination (IEE) of Chainpur Town Water Supply and Sanitation Project'. It lies in Bajhang District of Far-Western Region, Sudurpaschim Province of the country.

1.1. Name and Address of the Proponent

The project falls under the Urban Water Supply and Sanitation Sector Project (UWSSSP). The Department of Water Supply and Sewerage Management (DWSSM) is the proponent of the project. DWSSM will be the responsible agency for the implementation of the proposal. The name and address of the proponent is given below;

Name of the Proponent

Project Management Office
Urban Water Supply and Sanitation Sector Project
Department of Water Supply and Sewerage Management
Ministry of Water Supply
Government of Nepal

Address of the Proponent:

Panipokhari, Kathmandu, Nepal
Phone: 977 1 4423848, 977 1 4412348
Fax: 977 1 4413280
Email: info@stwsssp.gov.np
Website: www.stwsssp.gov.np

1.2. Consultant Preparing the Report

BDA/PEA (JV) has worked on behalf of the proponent for conducting IEE studies and preparing IEE report using all the prevalent guidelines, acts, policies and regulations. The name and address of the consultant is given below;



Building Design Authority (P.) Ltd.

Architectural, Engineering & Planning Consultants

G.P.O. Box 2882, Kamaladi, Kathmandu, Nepal
Tel: 4-227383 / 4-245200 / 4-247706 / 4-247836
Fax: 977-01-4223836, E-mail: bda@bda.gov.np

Plush Engineers & Architects

Engineering & Architectural Design, Project Planning & Evaluation, Socio Economic Survey etc.

P. O. Box : 2882, Kamaladi, Kathmandu
Tel : 4247706, 4227383, 4247799, 4248200




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2. SUMMARY OF THE PROPOSAL

2.1. Introduction (General Information of Proposal)

Along with the Third Small Towns Water Supply and Sanitation Sector Project, the Urban Water Supply and Sanitation (Sector) Project (UWSSSP) will support the Government of Nepal (GoN) in providing water supply and sanitation facilities and services to around 22 additional small towns in Nepal. Asian Development Bank (ADB) has already supported the GoN through successful implementation of earlier two phases of projects in over 50 towns. Drawing experience from the past projects, the new phase project will fund physical investments in water and sanitation infrastructure in selected small towns in Nepal and non-physical investments in institutionalizing sector reforms, capacity building, project management and service delivery improvement.

UWSSSP will be funded by a loan using a sector lending approach of ADB. The Executing Agency is the Ministry of Water Supply (MoWS) and the implementing agency is the Department of Water Supply and Sewerage Management (DWSSM).

The outcome will be inclusive and sustainable water supply and sanitation service delivery in selected small towns in Nepal. The project will have 3 outputs; (i) Improved water supply and sanitation infrastructure in selected small towns; (ii) Strengthened sector policy, institutional framework, service delivery and project implementation; and (iii) Improved project implementation and financing platform. The IEE is based on an assessment of these components, focused on output (i), within the project area.

2.2. Objective of the Proposal

Chainpur is a growing small town with dense settlement pattern in core project service area. It is the main market center of Bajhang district. Chainpur Water Supply System was constructed under WSSDO and it was handed over to WUSC in 2065 B.S. The scheme covers the part of the municipality where water is distributed through 638 private and community taps. Although this piped water supply services is available, its design limits have been exhausted and there is a demand for its rehabilitation and extension in terms of water quality.

Hence, the objective of the proposal is to ensure adequate and safe drinking water to the targeted population of the project area. It is envisioned that the project implementation will also improve the condition of women and all beneficiaries in terms of water fetching, family hygiene and sanitation.

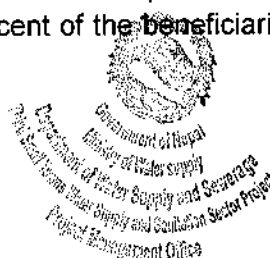
2.3. Relevancy of the Proposal

The existing water consumption scenario indicates that on average only 42 and 39 liter per capita per day of water being consumed in rainy and dry season respectively. Around 43 percent of the households get water from public tap and 7 percent of them are dependent on traditional sources such as spring water. Furthermore, more than 79.5 percent of the beneficiaries feel the quality of supplied water is either moderate or satisfactory.



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Due to high in-migration ratio and increase of rented population, WUSC is unable to serve enough water supplies. The level of services in terms of quality, quantity, coverage is quite insufficient. Considering the present service level, water demand, water quality and condition of existing system, there is need for a water supply to upgrade the existing water supply situation in order to meet growing water demand in the service area. Thus, the proposed project proposal is very relevant in present context of the water and sanitation status of the project area.

2.4. Rationality of IEE

The project needs to be studied from the environmental point of view as per EPA 1997 and EPR 1997 (and its amendments). The proposed water supply and sanitation project is an extension and rehabilitation of the existing scheme which is primarily meant to distribute water to market area. The Project does not involve construction of any tunnels; relocation and resettling people or households, and construction of river training works.

The proposed sub-project is classified as environment Category B project as per the ADB's Safeguard Policy Statement (SPS) 2009 and an Initial Environmental Examination (IEE) has to be carried out. As per Rule 3 of Environment Protection Act 1997 and Environment Protection Rules (EPR) 1997 (including amendments), all projects under consideration are required to undergo either an IEE or EIA. The screening criterion for the application of IEE is clearly mentioned in the Schedule 1 of EPR. All the criteria lie within the range of Schedule 1 of EPR. Hence EIA is not required and an Initial Environmental Examination (IEE) is sufficient for the proposed project.

Table 1 compares the status of the project with regards to the conditions defined by Environment Protection Act 1997 and Environment Protection Rules 1997 (and its amendments 2007) for which a drinking water would require IEE.

Table 1: IEE requirement threshold limits as per EPR 2054, and project conditions

SN	Condition described in the Act and Rules	IEE Required as per the EPR Schedule 1, H	Conditions in this Project
Clause H, Subclause 8	Supply of water to a population of	5,000 to 50,000	The design population is 15,455 in 2038

The design year population of the project is 15,455. As the design population of the proposed project is within the threshold of 5,000 - 50,000 population for new water supply project (*Schedule 1, Clause H, sub-clause 8, EPR 1997*) for which IEE is needed, IEE is required and sufficient for the proposed project.

The studies have been conducted as per the ToR for IEE of Chainpur Town Water Supply and Sanitation Project which has been approved by MoWS. The environmental issues identified by the TOR have been looked into in detail and EMP and has been designed to address these issues.


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2.5. Objectives of IEE

IEE is a tool for incorporating environmental concerns at the project level and is carried out as a part of the detailed study. The objectives are:

- To establish baseline environmental status of the project area
- To identify, predict and evaluate the potential beneficial and adverse impacts of the project on the physical, biological and socio-economical resources in the project area
- To suggest enhancement measures to augment the benefits of the project and to propose suitable mitigation measures to avoid, minimize and compensate the adverse impacts of the project
- To prepare appropriate Environmental Management Plan (EMP) with monitoring aspects
- To inform public about the proposed project and its impact on their livelihood
- To prepare an IEE as per the EPR, 1997

The present IEE has been conducted for the water supply and sanitation project proposed for Chainpur Town Water Supply and Sanitation Project of Jaya Prithivi Municipality of Bajhang district. It discusses the environmental impacts, mitigation measures and monitoring provisions relating to the location, design, construction and operation & management of the scheme.

The scope of the study is to study and prepare the IEE report as per the format indicated by EPR (1997). The study has strived to completeness and objectiveness in terms of environmental sensitivity and safeguards with respect to the project activities. The study focused in the zone of influence of the project. Its impact zones were studied with respect to the activities related to the project. Physical, biological and socio-economic aspects of the environment and the associated concerns were studied.

2.6. Scope of the Study

The scope of the study is to study and prepare the IEE report as per the format indicated by EPR (1997) together with the instructions provided by the project management office. The task during the preparation of this report included description of the project with reference to the physical, biological and social environment, and identification of potential impacts, mitigation measures and monitoring plan and related topics. However, the study does not limit itself only here, but has strived to completeness and objectiveness.

The study focused in the zone of influence of the project. Its impacts zones were studied with respect to the activities related to the project. Physical, biological and socio-economic aspects of the environment and the associated concerns were studied.

The current studies were conducted as per the ToR of Chainpur Town Water Supply and Sanitation Project which has been approved by MoWS. The environmental issues identified by the TOR have been looked into in detail and EMP and has been designed to address these issues. The impacts of providing infrastructure in the areas were assessed and the Initial Environmental Examination (IEE) Report and Environmental Monitoring Plan prepared. Studies are conducted fulfilling the requirements of ADB's Safeguard Policy Statement 2009 and GoN's Environment Protection Rules (1997 and amendments).

Discussions with the locals, consultations with the key persons, coordination with related stakeholders, surveys and specific studies with related stakeholders are the range of activities of this IEE study.



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3. DESCRIPTION OF THE PROPOSAL

3.1. Type of Proposal

Chainpur Town Water Supply and Sanitation Project is a basic infrastructure development project with motive of gender strengthening in the long run. The project has been conceptualized as surface water based water supply system integrated with sanitation improvement in the project area. The focus of outputs is on water and sanitation status improvement in household level under a community owned water supply system management approach.

3.2. Salient Feature of the Proposal

The project is under detailed design phase. Design of the overall system, and site-specific project components have all been finalized. Table 2 provides the project's salient features;

Table 2: Salient Features of Chainpur Town Project

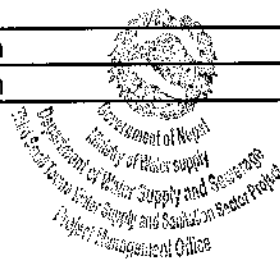
SN	Items	Description															
1	Name of the Project	Urban Water Supply and Sanitation (Sector) Project, Chainpur Town Water Supply and Sanitation Project, Chainpur - Bajhang															
2	Type	Pumping															
3	Study Level	Final Detailed Engineering Design Report															
4	Location Area																
	Region/Province	Far Western Region/Sudurpaschim Province															
	District	Bajhang															
	VDC/Municipality	Chainpur (Now Jaya Prithvi Municipality)															
	Wards	Wards 9,10 & 11															
5	Available Facilities																
	Road	Seti Highway (connected to East-west highway in Attariya through Dhangadhi- Dadeldhura-Bajhang Highway)															
	Nearest Airport	Dhangadhi airport; and Chainpur (not functional now)															
	Existing Water Supply System	Partly covered by piped water supply system, springs are used.															
	Electricity, Communication	Available															
	Health Services	Available															
	Banking Facilities	Available															
6	Source Characteristics																
	Source Name and Type	Sumps wells 2 Nos. in the bank of Seti river															
	Source Location	Bhopur, Ward No. 11															
	Proposed Tapping yield(lps)	23.41 lps															
7	Project Components																
		<table> <tr> <th>Sub Systems</th><th>Reservoir sizes (m³)</th><th>Remarks</th></tr> <tr> <td>Bhopur</td><td>50</td><td>Proposed Ground based</td></tr> <tr> <td>Damdur</td><td>25</td><td>Existing 38 Cum RCC Reservoir will be used</td></tr> <tr> <td>Chainpur Bazaar</td><td>450</td><td>Proposed Ground based</td></tr> <tr> <td>Airport</td><td>100</td><td>Proposed Ground based</td></tr> </table>	Sub Systems	Reservoir sizes (m ³)	Remarks	Bhopur	50	Proposed Ground based	Damdur	25	Existing 38 Cum RCC Reservoir will be used	Chainpur Bazaar	450	Proposed Ground based	Airport	100	Proposed Ground based
Sub Systems	Reservoir sizes (m ³)	Remarks															
Bhopur	50	Proposed Ground based															
Damdur	25	Existing 38 Cum RCC Reservoir will be used															
Chainpur Bazaar	450	Proposed Ground based															
Airport	100	Proposed Ground based															

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SN	Items	Description	
			based
		Total	625
	Valve Chambers (Nos.)	Valve Chamber Type 1 (1500x900x1000) : 19 #	
		Valve Chamber Type 2 (900 x900x1000) : 69 #	
		Air Valve Chamber Type 1 (1500x900x1000) : 4 #	
		Air Valve Chamber Type 2 (900 x900x1000) : 3 #	
		Washout Chamber Type 1 (1500x900x1000) : 10 #	
		Washout Chamber Type 2 (900x900x1000) : 31#	
	Community Stand Posts	Nil	
	Household Connection (Nos.)	2,131 in design year 2038 1,165 (during construction phase)	
		Transmission	
	Total Length of pipe (m)	Description	
		Length (m)	
		Pumping Main	
		909	
		Gravity Main	
		4,103	
		Sub Total	
		5,012	
		Distributions	
Subsystems			
Length of Pipes (m)			
Bhopur			
3,909			
Damdur			
1,983			
Chainpur Bazaar			
7,938			
Airport			
5,174			
Sub Total			
19,005			
Total			
24,017			
Treatment Unit	Lime dosing unit, Aerator, Pressure filter and Disinfection Unit		
Public Toilet	1 public toilet has been proposed including compound wall, gate, septic tank, soak pit The project also support household sanitation promotion through an OBA model for the ultra poor families in the service area		
Fire hydrants	5 numbers		
8	Social Status		
	Survey Year Population (2015)	6,454 (permanent) 1,298 (floating) [Total 7,752]	
	Base Year Population (2018)	7,059 (permanent) 1,417 (floating) [Total 8,476]	
	Design Year Population (2038)	12,911 (permanent) 2,544 (floating) [Total 15,455]	
	Household Nos. (2015, and 2038)	1,065 in 2015, and 2,572 in 2038	
	Average Family Size	6.01	
9	Total Water Demand		
	Survey year 2015	906.23(m ³ /day) [10.49 lps]	
	Base Year 2018	987.80(m ³ /day) [11.43 lps]	
	Design year 2038	2020.46(m ³ /day) [23.38 lps]	
10	Total Cost of the Project (NRs.)		
	Water Supply Sector	NRs 242.6272 million	
	Sanitation Sector	NRs 8.0371 million	
11	Cost Sharing Arrangement for water supply component (NRs)		
	NRs 242.6271 million		
	1) GoN Grant @ 70%	Rs 169.8390 million	
	2) WUSC Contribution		
	a) upfront cash contribution @ 5%	Rs 12.1314 million	
	b) Loan through TDF @ 25%	Rs 60.6568 million	



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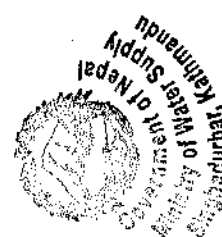


SN	Items	Description	
12	Cost Sharing Arrangement for Sanitation Component (NRs)	8.0371 million	
	1) GoN / ADB Grant @ 85%	Rs 6.8315 million	
	2) Local Body (WUSC, VDC & others) 15%	Rs 1.2056 million	
13	Per capita Investment (for water supply sector including floating population) NRs	a) Base Year : 28,625.19	
		b) Design Year : 15,698.94	
14	Monthly Tariff	Band	NPR per Cum
		Minimum up to 6 Cum	34.00
		More than 6 cum up to 10 Cum	51.00
		More than 10Cum up to 20Cum	75.50
		More than 20 Cum	114.75
15	Project Status	Detailed Engineering Design Phase	

3.3. Location of Proposal

Chainpur is situated in Bajhang district in Sudurpaschim Province. The location of the project area is 29°33 North Latitude and 81°12 East Longitude. It is situated in the basin of the Seti River at the confluence of Bauli Gaad River. It is the district headquarters of Bajhang district. It is an ancient town and market centre of the district. The town has been declared as a Municipality in May 2014 called Jaya Prithvi Municipality. The project town is surrounded by Sunikot and Bhatekhola to the East, Daulichour in the North, Rithapata in the West and Luyanta & Henmantabada in the South.

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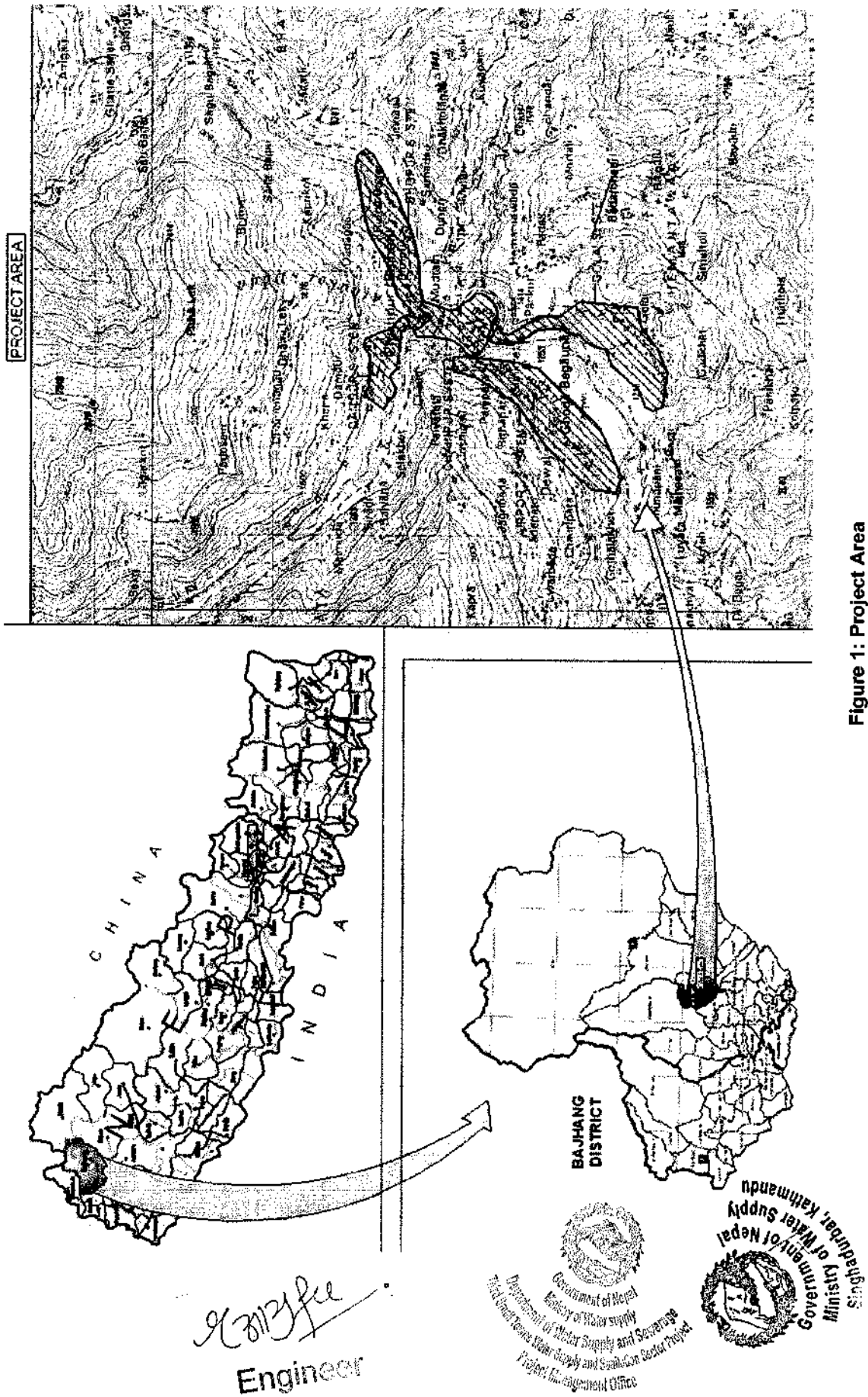


Figure 1: Project Area

3.4. Impact Area Delineation

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 and google 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).

(a) Direct Impact Zone (DIZ)

The areas directly affected by the project activities are demarcated as Direct Impact Zone. The service area that is ward boundary of ward 9, 10 & 11 were delineated as Direct Impact Zone. DIZ can also be said to be the *Core Area of Impact*. This is the area where the impacts are directly observed as the project activities take place in this area.

(b) Indirect Impact Zone (IIZ)

The area around the DIZ that could be indirectly affected due to project construction and implementation activities such as mobility of people, equipment, vehicles, noise, dust, vibration are demarcated as the Indirect Impact Zone. Thus, the areas within 200m of buffer around the DIZ are delineated as Indirect Impact Zone. This area can also be termed as *Surrounding Area of Impact*. In this area, there will be no project activities but activities related to project may have impacts in these areas as well.

3.5. Materials To Be Used

Aggregates sand, cement, iron rods, bricks and other local as well as non-local materials will be required for the project construction and operation. The materials as Aggregates, Sand, Stone, Timber, Bricks are considered to be local materials. Construction materials will be bought from nearby crushers, and through certified suppliers. Quarry sites and crusher plants operated nearby will be used as supply source of construction materials. The project does not need its own quarry site or crusher plant. 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.

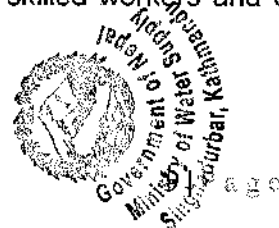
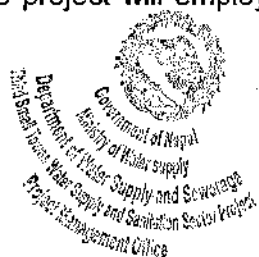
3.6. Energy To Be Used

Diesel and petrol for vehicles and generators, LPG for cooking in the campsites, and electricity for lighting and motors are the basic needs during construction phase. Regular electricity from national grid will be required for the operation phase. Generators will be in place for power back-up.

3.7. Human Resources Requirement

During the construction phase, the project will generate around 7,000 man-days of skilled workforce and 43,000 man-days of semi-skilled/unskilled workforce. During the Operation and Maintenance Phase, the project will employ 4 skilled workers and 3 skilled/unskilled workers for 1 year; and during regular operations after that - the project will employ 6 skilled workers and 6 semi-skilled/unskilled workers regularly.


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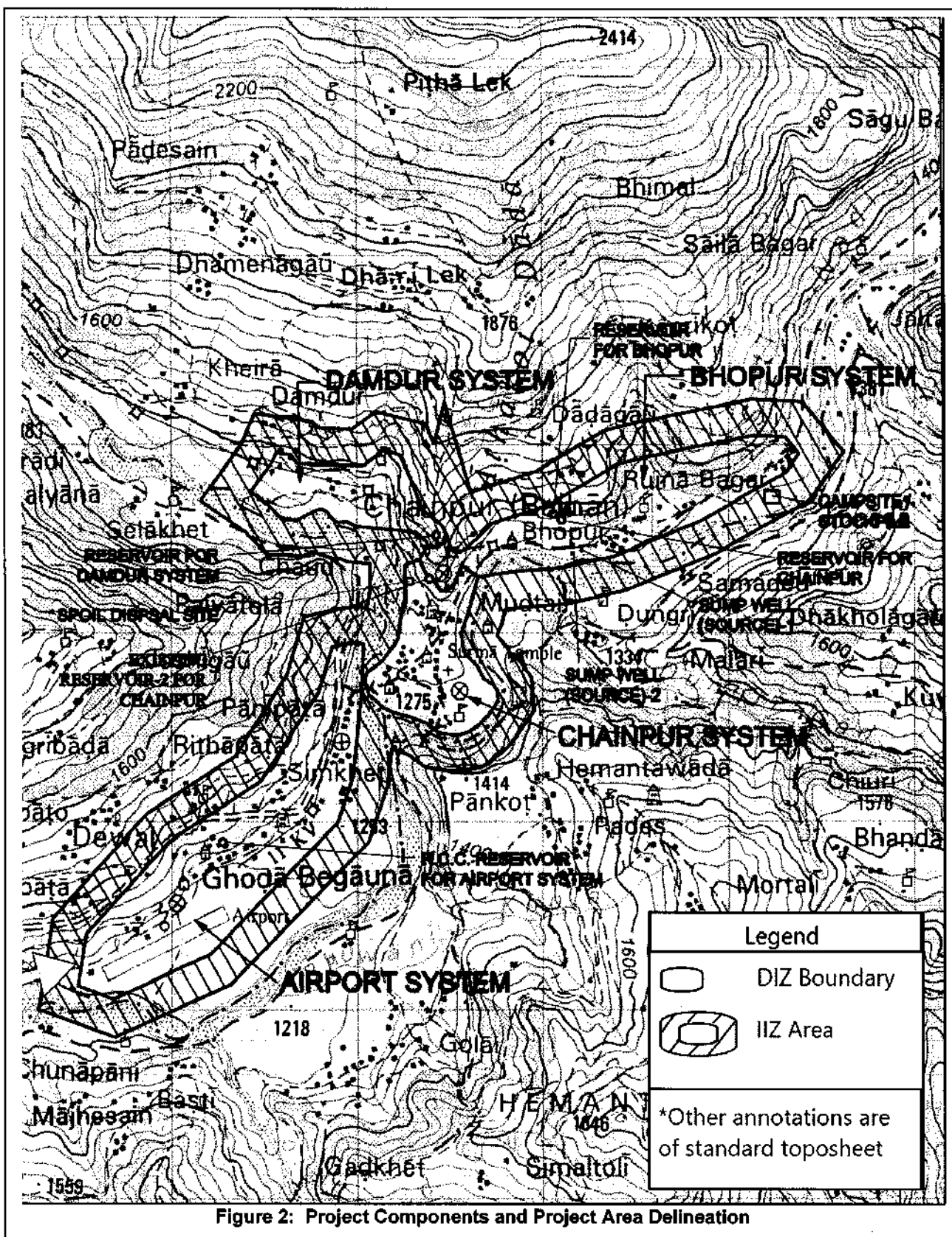


Figure 2: Project Components and Project Area Delineation

K. B. J. P.
Engineer



3.8. Methods Adopted During Study

The present Initial Environmental Examination report has been prepared based on the Terms of Reference (TOR) approved by the Ministry of Water Supply, Government of Nepal. The study has followed the provisions outlined in the Environment Protection Act, 1997 and Environment Protection Rules, 1997 and Safeguard Policy Statement, 2009 of the Asian Development Bank (ADB). The major activities undertaken during the preparation of IEE are outlined below;

3.8.1. Desk Study

Existing secondary data relevant to the proposed project was collected from various published and unpublished sources from different governmental and non-governmental organizations. Municipality profile of Jaya Prithvi Municipality, Detailed Engineering Design Report, toposheet of project area, EPA 1997 and EPR 1997, Environmental Assessment Review Framework for Urban Water Supply and Sanitation (Sector) Project 2018 - ADB were specifically reviewed. Policies, legislations and guidelines relevant to the project were also referred. Specifically, water supply, sanitation, urban aspects and biodiversity aspects were considered.

The desk study also involved the preparation of questionnaires/checklists/matrices for detailed field study to collect primary data 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).

3.8.2. Field Work

Detailed field investigations were carried out to collect baseline information on the physical, biological, socio-economic and cultural environment of the project area. The local communities and key persons were consulted to understand the social, biological and physical nature of the area. Walk-through survey was conducted in the project area. Checklists, forms and questionnaires were used to collect the primary information. Followings are the studies covered;

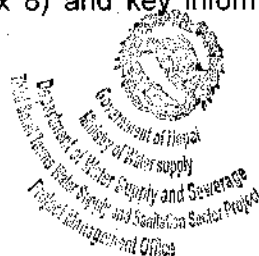
Physical Assessment

Existing physical attributes of the project area were studied from topographical maps and site observation, complemented by secondary sources of information from reports and interviews. Information on the location, topography, land use, geology, and soil hydrology were collected during field work and from the reports obtained from different institutions. Sampling and laboratory analysis of water samples were conducted. Field observation checklists were also used for study of the physical environment.

Biological Assessment

The ecological attributes of the area was gathered during the field survey. Information on vegetation pattern, wildlife, parks, reserves and sensitive habitats were screened and collected where relevant. Identification of wild flora and fauna, rare and endangered species was carried out during field observation and questionnaire surveys. The scientific names of the flora and fauna were later recorded. Checklists (Annex 8) and key informant questionnaires were also used for the study of biological environment.


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Socio-economic Assessment

Socio-economic and cultural environment of the project area such as population, caste, ethnicity, community structures, distribution of income and sources of livelihood, and expected water users were obtained through various secondary and primary sources of data. These included literature review, questionnaire surveys, and consultations with key persons covering wide range of stakeholders. Questionnaires (Annex 6) were used for socio-economic and cultural aspects of the environment. Beneficiary groups and local authorities were also consulted for details on local socio-economy. The following tools were used for the collection of primary data:

- ✓ Focus Group Discussion (FGD) - Consultations were carried out with local communities. FGD was organized with key informants and other representative stakeholders.
- ✓ Socioeconomic survey - Questionnaire was used to collect socio-economic information of all the households within the service area.
- ✓ Walk-through survey - It was used to document environmental features according to the project component sites.
- ✓ Topographical map - It was used to show environmental features on the map during walkthrough survey and consultations.
- ✓ Photographs - Specific photographs were taken to show different environmental features of the project area and its surroundings.

3.8.3. Data processing

The information obtained from the desk study and field works were processed in a standard format to maintain consistency. The data were tabulated and maps were interpreted. The impacts were then evaluated. The mitigations and monitoring measures were then proposed based on the impacts identified during the study.

3.8.4. Impact Prediction and Evaluation

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

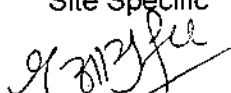
Magnitude: This can be low-L (minor), medium-M (moderate), and high-H (major), depending on the scale or severity of change.

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).

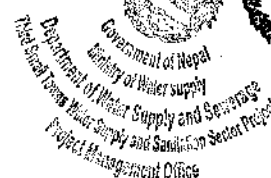
Duration: It can be short term (St - i.e. less than 3 years), medium term (Mt - i.e. 3-20 years), and long term (Lt - i.e. more than 20 years).

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	
High	60	Regional	60
Moderate	20	Local	20
Minor	10	Site Specific	10


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Duration
Long Term
Medium Term
Short Term


Government of Nepal
Ministry of Water Supply and Sanitation
Project Management Office


20
Chainpur Town Water Supply and Sanitation Project
Government of Nepal
Ministry of Water Supply and Sanitation
Singha Durbar, Kathmandu

3.8.5. Consultation and Information Dissemination

Public consultation and information dissemination process is necessary to inform the local people and concerned agencies about the project and to obtain their concerns, issues and suggestions. The methods adopted for conducting public consultations included holding meetings with district officials, concerned departments, institutions and NGOs. Key informant consultations and meetings were also held with the stakeholders within the project area.

A 15 days public notice was published (18th May 2018, *Arthik Abhiyan*) in the national daily newspaper seeking written opinions from Municipality office, DCCs, schools, health posts and related local organizations and concerned people. A copy of the Public Notice was also posted in the notice board of Municipality office, health institutions and other public areas in the project area and the deed of inquiry was collected. A recommendation letter from the municipality office has also been received.

The final IEE report, after incorporating the comments from the concerned department and ADB, will be made available in their respective websites and will be made available to anyone interested upon request.

3.9. Environmental Baseline Information

3.9.1. Physical Resources

TOPOGRAPHY, GEOLOGY AND SOILS

The proposed Chainpur Town Water Supply and Sanitation Project are located in Jaya Prithivi Municipality in Bajhang district of Sudurpaschim Province. It is situated in the basin of the Seti River at the confluence of BauliGaad River. The altitude of the project area (from distribution to intake) is varying from 1300 m to 1700 m above the sea level.

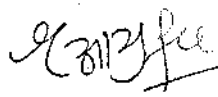
Geologically it is situated in the Mahabharata range which consists of grey to dark grey phyllite, quartzite and phyllitic schist with thick bedded, fine grained, grey to dark grey shale. The area also consists of grey, greenish-grey, gritty phyllite and phyllitic quartzite, metasandstone and conglomerate beds with white, massive quartzite and basic rocks.

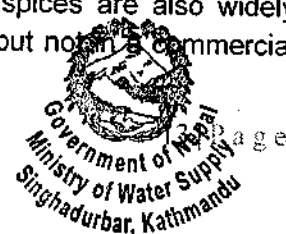
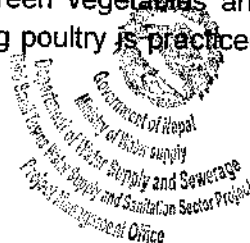
In general soil type along the road can be classified as alluvial, colluvial and residual. Generally, the soils are of light to medium textured. Colluvial soil is the most dominant soil in the project area. Alluvial deposits and plains are among the fertile flat lands in Chainpur town.

LAND USE

The major chunk of land is used for agricultural purpose. The site proposed for sump wells is a public land, and all the reservoirs as well as guard houses are in public land. The transmission and distribution pipelines will be through public land and RoWs of the roads. The service area is surrounded by commercial areas and agricultural lands where different crops are grown. The bazaar area has grid pattern roads. No planned land use has been observed. No specific area has been designated for industries. There are a few small scale industries as well.

In Chainpur, agriculture is the main occupation where the main product being paddy, maize and wheat. Cash crops like medicinal herbs, fruits, green vegetables and spices are also widely cultivated. Horticulture and livestock rising including poultry is practiced but not in a commercial scale.


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CLIMATE

The project area has sub tropical climate. The maximum temperature varies from 25°C to 32°C in summer and 2°C to 12°C in the winter. The average rainfall is 1500 mm. Almost 75% of rainfall occurs during monsoon (June to September).

AIR QUALITY AND NOISE LEVEL

The air quality of the area can be considered to be good based on site observation and feedback of the locals during interaction with them. Though vehicular movement is regular, traffic is low. The topography of the area also facilitates for free air circulation. No major point sources of air pollution are present in the project area.

Generally noise levels ranging between 55 dBA to 70 dBA were recorded, through instantaneous measurements, in the core-market area. Besides, in other places also no significant noise is experienced. Noise pollution was monitored by using a mobile application.

SURFACE WATER

Seti River is the major river system with Bahuli Gaad joining as a main tributary. Other surface surface water sources are Vanka, Bire Khola, Kharakhola and Balzade. These sources were studied for tapping water. It was observed that there are no existing sources of water pollution almost 1 km upstream the source site of the project. Since the Total Sanitation campaign has had good results in the project area, any direct disposal of sewerage pipes onto surface water source has not been observed and not anticipated. Samples were tested to monitor the water quality of project area.

3.9.2. Ecological Resources

The forests found in the project area of community managed as well as national forests. Pine forests and *Alnus* forests are common with *Quercus* species along the hill slopes. Forests, bush land, grass land and the riverine water bodies are the primary habitat sites for the flora and fauna in the project area. The agricultural area and settlements also provide habitats to fauna accustomed with the human settlements only. Most of the floral species in the agricultural lands are exotic species with limited local flora of ethno-botanical and agro-economic values only.

FLORA AND FAUNA

The dominant forest and fodder species reported in the project area are Bhimal (*Grewia oppositifolia*), Khari (*Celtis australis*), Khirro (*Sapium insigne*), Koiralo (*Bauhinia variegata*), Ritha (*Sapindus mukorissi*), Tooni (*Toona ciliate*) and in the upper part Paiyu (*Prunus cerasoides*), Lali Gurans (*Rhododendron arboreum*), Kaphal (*Myrica esculenta*), Utis (*Alnus nepalensis*), khote salla (*Pinus roxburghii*), Bajh (*Quercus semecarpifolia*), Chutro (*Barberis aristata*), Aiselu (Rusberry) etc.

Non-timber forest products (NTFPs) are defined as any kind of product derived from forest species other than timber and fuelwood. The main NTFP species found in the project area are: Allo (*Girardiana diversifolia*), Majitho (*Rubia manjith*), Dhasingare (*Gaultheria fragrantissima*), bojo (*Acorus calamus*), etc.

Leopard (*Panthera pardus*), Barking deer (*Muntiacus muntjak*), Porcupine (*Hystix indica*), Jackal (*Canis aureus*), Monkey (*Macaca mulatta*), Jungle Cat (*Felis chaus*) are the wild animals reported in the proposed road area. Similarly birds are Kalij pheasant (*Lophura lencomelana*), Danphe (*Lophophorus*), Pegion (*Columba livia*), etc. The main species of fish found in Seti River (which falls in the watershed of proposed road) is Asla (*Schizotharax sps*).

There are no protected areas in the project area and its close vicinity.



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3.9.3. Social and Cultural Resources

HOUSEHOLD AND POPULATION

The project area covers ward number 9, 10 & 11 of Jaya Prithivi Municipality of Bajhang district. The service area accommodates a total population of 7752; of which 6,454 is permanent population and 1,298 is rental population. Major settlements/toles of the service area Chaud, Dewal, Kholabada, Rithapata, Simkhet of ward 9; Chainpur, Damdur, Badi Wada, Bangala Tole, Bank Tole, Basanta Tole, Bista Tole, Bramada tole, Bypass Road, Campus Road, Chari Dhunga, Chauraha, Surma Devi Marga, KulaliGaun, Shanti Marg of ward 10, and Bhopur, RuinaBagar, Bhopur, Laltin Bazar of ward 11.

Table 3: Household and Population in project areas

Ward No.	Major Tole / Settlement	HHs	Population		
			Permanent	Rental	Total
9	Chaud, Dewal, Kholabada, Rithapata, Simkhet	202	1184	21	1205
10	Chainpur, Damdur, Badi Wada, Bangala Tole, Bank Tole, Basanta Tole, Bista Tole, Bramada tole, Bypass Road, Campus Road, Chari Dhunga, Chauraha, Surma Devi Marga, KulaliGaun, Shanti Marg	766	4593	1192	5785
11	Bhopur, RuinaBagar, Bhopur, Laltin Bazar	97	677	85	762
Total		1065	6454	1298	7752

Source: Socio-economic Survey, December 2015

Among the total permanent population (7752) in the service area, 3313 are male and 3141 are female. Male population is slightly higher (51.33 %) than the female population (48.66 %).

CASTE AND ETHNICITY

The proposed project service area comprises multi caste / ethnic groups. Each caste and ethnicity is characterized by its own customs, traditions, culture and nature of occupation with which they are associated. Brahmin and Chhettri, comprising 76.96 percent of total families, are the most prevailing caste group in the service area. Dalit are the next major group with 17.37 percent, followed by Janajati which constitutes about 4.79 percent.

Table 4: Caste/Ethnicity

S.N.	Ethnicity	Ward No.			Total	%
		9	10	11		
1	Brahman/Chhetri	175	554	80	809	76.96
2	Janajati	2	41	8	51	4.79
3	Dalit	25	152	8	185	17.37
4	Others		19	1	20	1.88
Total		202	766	97	1065	100.00

Source: Socio-economic Survey, December 2015

OCCUPATION

Although, the economy of the area is gradually shifting from rural agricultural economy to business and service based, majority of the households are still dependent on agriculture. As the socio-economic data shows, nearly 55 percent of the households have agriculture as occupation. Business is another main occupation of 28 percent households, followed by service (13%). As in

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the other parts of Nepal remittance has been playing important role in local economy of the service area. The percent of household by occupation is illustrated in Figure 3.

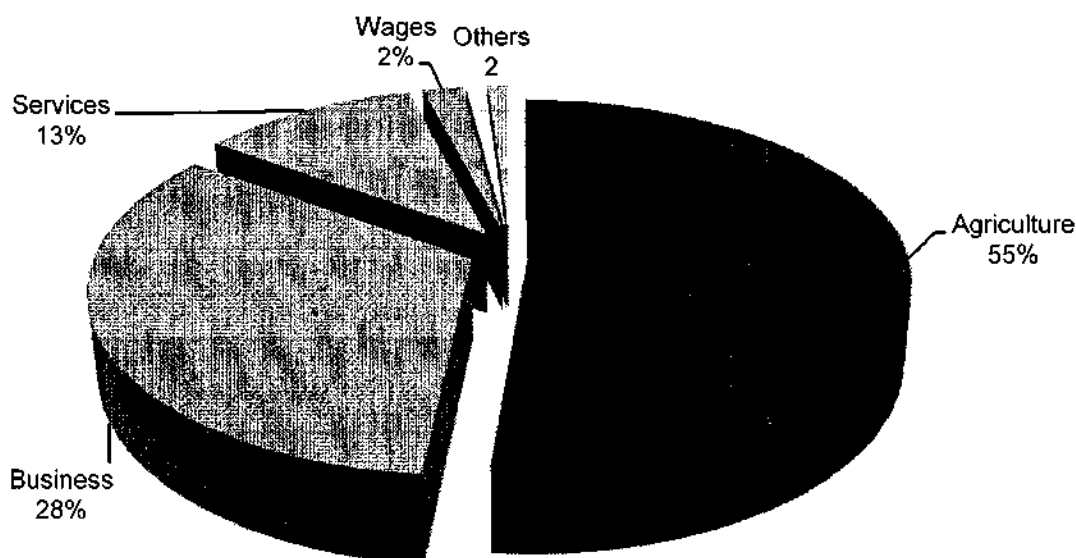


Figure 3: Household's Main Occupation

ECONOMIC CHARACTERISTICS

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-5, which indicates that 54.5 percent of them have income range NRs. 20,001-50,000 per month. Likewise, 32.3 percent of households fall under the income range NRs. 8,001-20,000 category. As the data shows 9.3 percent of households have highest income level (more than NRs.50,000/ month), whereas 1.5 percent of the households have lowest income level i.e. less than NRs.5,000 per month. The average monthly income of the households in the service area is NRs. 30,816.

Table 5: Monthly Average Income Range

S.N.	Income Range (NRs.)	Ward			Total	%
		9	10	11		
1	<5000		15	1	16	1.5
2	5000-8000	2	19	5	26	2.4
3	8001-20000	88	228	28	344	32.3
4	20001-50000	105	424	51	580	54.5
5	>50000	7	80	12	99	9.3
	Total	202	766	97	1065	100

Source: Socio-economic Survey, December 2015

EXISTING WATER SUPPLY CONDITION

The existing Chainpur Water Supply System was constructed under WSSDO and handed over to WUSC in B.S 2065. The scheme covers part of the Municipality, which supplies water through around 638 house connections. However, coverage is less than 50 % of the total population of the proposed project area. The distribution system is very unsystematic. Distribution pipelines can be seen everywhere up on the street. Leaking water from the pipes is common problem and water is distributed 2 hours a day.

Due to high in-migration ratio and increase of rented population, WUSC is unable to serve enough water supplies. The level of services in terms of quality, quantity, coverage is quite insufficient. Regarding the perception of beneficiaries toward water quality 79.5 percent of the respondents feel the quality of supplied water is satisfactory or moderate and only 4.3 percent of them feel good, where as 16.2 percent of the respondents said the water quality is unsatisfactory.

Table 6: Satisfaction in terms of Water Quality

S.N	Water Quality	Ward Number			Total	Percent
		9	10	11		
1	Good	13	26	7	46	4.3
2	Satisfactory	183	586	78	847	79.5
3	Unsatisfactory	6	154	12	172	16.2
Total		202	766	97	1065	100.00

Source: Socio-economic Survey, December 2015

EXISTING SANITATION CONDITION

This town has recently been declared ODF in December 2015. In general the overall sanitation condition of the project area was observed satisfactory. Most of the households in the market area have permanent type of private latrine and others have temporary type of private latrine. It was reported that all the colleges / schools, hospital and government offices have toilets.

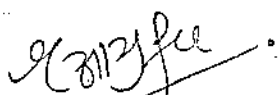
Lined drain is observed in limited part of the core bazaar area. No water logged area is found as sufficient natural slope exists. The proper management of solid waste by the different agencies has not been developed till now in this town. People were found to manage solid waste in the pits prepared in the backyard of their house.

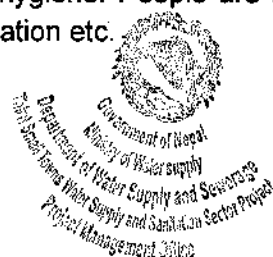
Regarding the drainage facility, less than 1 percent of the respondents reported that they have access to drainage, whereas nearly 99 percent of them do not have access to it. The sewerage system has not been developed in the service area so far.

EXISTING HEALTH SITUATION

There is one District Hospital and one Health Centre located at Chainpur Bazaar. The district Hospital has 15 beds and providing basic health care facilities. Most of the people visit District Hospital and Chainpur Health Centre for general health treatment. However local people visit Mahendranagar, Nepalgunj or even Kathmandu for treatment of complicated health problems. Additionally total 7 numbers of medical shops are available in this area.

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


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CULTURAL ASPECTS

Bajhang is one of the tourist destinations as it has Palace of the Royals; Khaptad Baba Temple, Ram Mandir, Surma Sarowar (lake), etc. Surmadevi temple, Ghaldeu temple, Kalika temple, Dandadeo temple, Lagamandu temple, Nandev temple, Siddhadeo temple, Pathapale are among the religious sites in and around the project area. The most popular festivals of the service area are Dashain, Tihar, and Teej. The project area has no physical or cultural heritage and archaeologically important monument and object of art.

3.10. Review of Policies and Legislation

Various national and local legal and institutional framework within which the environmental assessment was carried out are listed below;

NEPAL'S ENVIRONMENTAL POLICY AND LEGAL FRAMEWORK

- The Constitution of Nepal defines the right to live in clean environment as one of the fundamental rights of its citizens (Article 16). It prescribes for the State to give priority to the protection of the environment and prevention of its further damage due to physical development activities (Clause 5 of Article 35). Proceeding from, and conformable to, the Constitution, the Government of Nepal has passed a series of environmental laws, policies and implementing regulations and standards. Among these, the basic legislation that provide the framework within which environmental assessment is carried out in A.
- Environment Protection Act (EPA), 1997, 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 Science, Technology and Environment, 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 MoPE) 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.
- Environment Protection Rules (EPR), 1997, and its amendments in 1999 and 2007, define the implementing rule and regulations of the IEE/EIA process, elaborating the provisions in the EPA. The preparation, review and approval of IEE and EIA reports are dealt with in Rules 3 to 7 and 10 to 14. Schedules 1 and 2 list down the projects of activities that are required IEE and EIA, respectively, as amended in 2007.
- The environmental policies, laws and rules that are relevant to the Project are presented in Table 7;



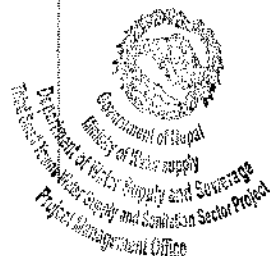
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Table 7: The Relevant Environmental Policies, Laws and Guidelines of Nepal

Policy/Law/Guideline	Year	Relevant Provisions	Remarks
Constitution of Nepal	2072	The Constitution of Nepal made the provision to every person has the right to live in a clean environment. It also made provision that the State shall make necessary arrangements to maintain the natural environment. The State shall give priority to special protection of the environment, and rare wildlife, and prevent further damage due to physical development activities, by increasing awareness of the general public about environmental cleanliness. 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. 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; 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.	Provision shall be made for the protection of the forest, vegetation and biodiversity, their sustainable use and for equitable distribution of the benefits. GoN IEE has been approved. Use of water resource has been granted by the District Office. Sites for main structures have been acquired accordingly. Unidentified sites for office building, guard house, guard house cum building, will be acquired accordingly. EMP prescribes the compliance with NDWQS and its Directives during operation.
Water Resources Act	1992	The Act prohibits the extraction of boulders, rocks, pebbles, sand or soil from national forests, defined as all forests, excluding private	Community Forest Users' Group has approved use of forest for the project. No trees will be cut. EMP stipulates no illegal quarrying of

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Policy/Law/Guideline	Year	Relevant Provisions	Remarks
 Ministry of Labour Singha Durbar, Kathmandu		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.	natural aggregate materials.
Child Labour Prohibition and Regulation Act	2001	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 or work 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
Labour Act	2017	The Act emphasizes OHS Policy; Safety & Health Committee; OHS arrangements including child care center; workplace safety; environment of work place; and specific Labour Audit	Additional rest period for certain female employees, Specific provisions relating to the safety of the works having health hazards are also there in the Act
Labour Rules	2018	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.	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.
Solid Waste Management Act	2011		EMP prescribes eco-friendly management of solid and hazardous wastes.
Drinking Water Rules	1998	The Rules: (i) gives the procedure for the settlement of dispute on use of water sources; (ii) requires water supplier to maintain the quality of water as prescribed in the Water Resources Act; (iii) prohibits water supplier to construct structures and conduct activities that would pollute the water source and cause significant environmental effects	Monitoring of the quality of supplied water is prescribed in eth EMP following the NDWQS Directives. GoN has approved the Project's IEE Report.
Local Government Operations Act	2017	The Local Government Operation Act, 2017 empowers the local authority for the conservation of local natural resources and implementation of environmental conservation activities along with prime responsibility of conducting development projects which includes water supply, sanitation and awareness activities.	Provides basis for Local Government to monitor the environmental performance of the projects. EMP provides the responsibilities of LGs in EMP implementation.
National Environmental Policy and Action Plan	1993	Of its five objectives, most relevant to the Project are to: (i) mitigate adverse environmental impacts; and (ii) safeguard national & cultural	Project will not impact on physical cultural heritage & biodiversity. EMP provides

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Policy/Law/Guideline (NEPAP)	Year	Relevant Provisions	Remarks
National Water Supply and Sanitation Policy	1988	heritage & preserve biodiversity, within & outside protected areas The Policy requires the: (i) monitoring of water quality supplied by completed WSS projects; and (ii) evaluation of their benefits in improving health (e.g., reducing water-borne diseases) and in relieving the sufferings of women and other disadvantaged groups in carrying out their responsibilities over water collection and maintenance of sanitation and hygiene.	measures to mitigate impacts. Monitoring of the quality of supplied water is prescribed in the EMP following the NDWQS Directives.
National Urban Policy	2007	Policy gives importance to environment conservation while carrying out urban development works and natural resource use; thus, supporting the required environmental conservation and protection in donor-assisted development projects.	ADB IEE is conducted to ensure environmental conservation and protection.
National Urban Water Supply and Sanitation Sector Policy	2008	The Policy requires the IEE or EIA of proposed WSS projects in accordance with the EPA/EPR to: (i) incorporate consultations with key stakeholders, including end-point users; & (ii) specify measures to mitigate environmental impacts prior to, during construction & operation, as well as corrective measures.	GoN IEE has been approved. This ADB IEE will be submitted to ADB for review and approval.
Updated 15-Yr Development Plan for Small Towns Water Supply and Sanitation Sector	2009	The Plan defines the population threshold of "small towns" to be in the range of 5,000 to 40,000. Reference to Schedules 1 and 2 of the EPR, as amended in 2007, places water supply projects in small towns under Schedule 1 or within the threshold of water supply projects requiring only an IEE. The Plan emphasizes monitoring and evaluation as an important component to determine impacts.	EMP prescribes environmental effects and performance monitoring.
Implementation Directives for the National Drinking Water Quality Standards	2005	It sets out the water sampling, testing, analysis, monitoring and surveillance procedures to certify that the quality of supplied drinking water conforms to the National Drinking Water Quality Standards.	Monitoring of the quality of supplied water is prescribed in eth EMP following the NDWQS Directives.
Guidelines for removal of trees from government land	2071	This procedure simplifies the procedure of getting approval from the local authority/government for tree removal	
National Environmental Impact Assessment Guidelines, 1993		In order to integrate the environmental aspects in development projects and programs, the government has developed the National EIA Guidelines (1993). The guidelines provide guidance to project proponent on integrating environmental mitigation measures, particularly on the management of quarries, borrow pits, stockpiling of materials and spoil disposal, operation of the work camps, earthworks and slope stabilization, location of stone crushing plants, etc.	

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Project Management Office

Ministry of Water Supply
Singhadurbar, Kathmandu

CONVENTIONS

Nepal is party to the following international environmental agreements that have broad relevance to works and environmental assessment of works under the Project: (i) World Heritage Convention, in 1978; (ii) Convention on Wetlands of International Importance Especially as Waterfowl Habitat (Ramsar Convention), in 1987; (iii) Convention on Biodiversity, in 1992, (iv) Vienna Convention for the Protection of the Ozone Layer and its Montreal Protocol and subsequent London Amendment, in 1994, and (v) Basel Convention on the Control of Trans boundary Movements of Hazardous Wastes and Their Disposal, in 1996. The relevance of the aforementioned environmental agreements to the Project are on their emphasis for human activities (such as development projects) to: (i) take on/institute measures to protect the local, as well as global, natural resources and/or environment; (ii) prevent and/or reduce the causes of climate change; and (iii) anticipate and mitigate the adverse impacts of climate change.

The Project does not and will not break or go against Nepal's commitment to these international agreements. It supports the country's effort to meet its committed target for SDG's sixth goal by 2015. Some of these policies relevant to the proposed project are described below.

OTHER DOCUMENTS

ADB's Safeguard Policy Statement, 2009

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

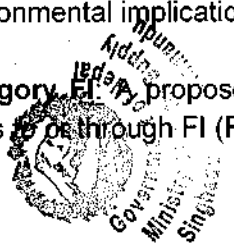
The nature of the assessment required for a project depends on the significance of its environmental impacts, which are related to the type and location of the project, the sensitivity, scale, nature and magnitude of its potential impacts, and the availability of cost-effective mitigation measures. Projects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

Category A: A proposed project is classified as category A if it is likely to have significant adverse environment impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment (EIA) is required.

Category B: A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A projects. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category A projects. An initial environmental examination is required.

Category C: A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed.

Category FI: A proposed project is classified as category FI if it involves investment of ADB funds through FI (Financial Intermediaries).



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The Bank has classified this sub project as of **Category B** and following normal procedures for project loans and accordingly an IEE has been conducted.

The projects comprise of water supply and sanitation improvement works. An initial Rapid Environmental Assessment (REA) (Annex 2) was undertaken and the Project classified by ADB as Category B and following normal procedures for project loans, an IEE was conducted.

The Asian Development Bank (ADB) affirms that environmental and social sustainability is a cornerstone of economic growth and poverty reduction in Asia and the Pacific region. Therefore, ADB's Strategy 2020 emphasizes assisting developing member countries (DMCs) as they pursue environmentally sustainable and inclusive economic growth. In addition, ADB is committed to ensuring the social and environmental sustainability of the projects it supports. The goal of the Safeguard Policy Statement (SPS) 2009 is to promote the sustainability of project outcomes by protecting the environment and people from potential adverse impacts of projects. ADB addresses the following objectives in its safeguard policy:

- To avoid adverse impacts of projects on the environment and affected people, where possible;
- To minimize, mitigate and /or compensate for adverse project impacts on the environment and affected people when avoidance is impossible; and
- To help borrowers' and clients' to strengthen their safeguard systems and develop the capacity to manage environmental and social risks.

ADB's SPS sets out the policy objectives, scope and triggers, and principles for three key safeguard areas:

- Environmental safeguard
- Involuntary resettlement safeguard, and
- Indigenous peoples safeguard

A project's environment category is determined by the category of its most environmentally sensitive component, including direct, indirect, induced, and cumulative impacts. Each proposed project is scrutinized as to its type, location, scale, sensitivity and the magnitude of its potential environmental impacts. The level of detail and comprehensiveness of the EIA or IEE are commensurate with the significance of the potential impacts and risks.

RELEVANT STANDARDS

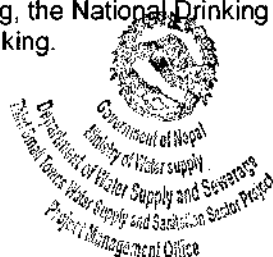
Table 8: Relevant Environmental Quality Standards

Particular	National Standard	International Standard
Ambient air quality	National Ambient Air Quality Standards, for Nepal, 2003	WHO Air Quality Guidelines, Global Update, 2005
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 shall be applied since these resources are used for drinking.



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3.11. Existing Conditions

Existing Water Supply

The existing water supply scheme covers 9, 10 & 11 of Jaya Prithivi Municipality, which supplies water through nearly 638 house connections. The present water supply and sanitation situation is not satisfactory. The town project areas have piped water system to serve some households and the remaining of the community depends upon springs and streams. The quality of water delivered through the existing system in the project area is not satisfactory. Treatment facilities are not provided.

Due to high in-migration ratio and increase of rented population, WUSC is unable to serve enough water supplies. The level of services in terms of quality, quantity, coverage is quite insufficient. In terms of water quality only 3.76 percent of the respondents feel the quality of supplied water is good, where as that of 80.81 percent feel satisfactory. About 15.43 percent of the respondents responded that the water quality of supplied water by existing systems is unsatisfactory.

Table 9: Satisfaction In Terms of Water Quality

S.N.	Water Quality	Ward Number			Total	Percent
		9	10	11		
1	Good	13	26	7	48	3.76
2	Satisfactory	183	586	78	1032	80.81
3	Unsatisfactory	6	154	12	197	15.43
Total		202	766	97	1277	100.00

Existing Sanitation Situation

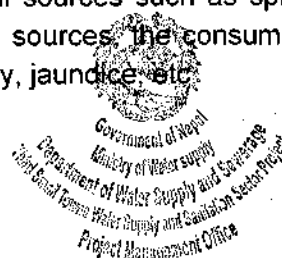
About 79.6 percent of the households in the project site has water seal latrine, 15.3 percent has pit latrine, 4.8 percent have ventilated pit latrine followed by cistern flush latrine (<1 percent). The overall sanitation condition of the project area was observed satisfactory. Most of the households in the market area have permanent type of private latrine and others have temporary type of private latrine. It was reported that all the schools have toilets; however there are three public toilets in the entire municipality.

Lined drain is observed in the limited part of the core-market area of the municipality. No water logged area is found as sufficient natural slope exists. Some of the households were even observed to dispose solid waste in nearby rivers in the service areas. Those wards where solid waste management services have not reached manage their waste themselves.

Type, Category and Need of the Project

The proposed project falls in category B of ADB environmental categorization. It is a mixed use of gravity and groundwater based pumping system, treatment plant, ground reservoirs and an elevated reservoir with a distribution system. The service area is wards 9, 10 & 11 of Jaya Prithivi Municipality. At present, 43 percent of the households are getting water from Public Tap and 7 percent of them are dependent on traditional sources such as spring/river. Due to the sub-standard quality of water withdrawn from these sources, the consumers are vulnerable to water borne diseases such as diarrhea and dysentery, jaundice, etc.


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Therefore the locals are highly enthusiastic on installing a regular piped water supply system to supply adequate quantity to the whole township and are ready to bear the costs and work for its construction and eventually run it. They have already formed a Drinking Water Users Group and have collected the required fund to contribute their share as upfront cash.

3.12. Size and Magnitude of Operation

As the total design water demand for the base year is 11.43 lps, the system will use gravity sources during the wet season (from June to November) and by pumping during the dry season. The project has been conceptualized as surface water based water supply system considering conjunctive use of surface sources. The water supply system has been designed for a base year population of 8,476 for the year 2018. The system has been designed to tap surface water source from an intake and using different water sources for a total design year population of 15,455 in 2038. Four numbers of water storage reservoir tanks has been proposed at different locations considering in mind the elevation difference of the service area. The capacity of 25 cum, 50 cum, 100 cum and 450 cum with total of 625 cum storage capacity reservoirs are designed for the collection and storage of water.

3.13. Proposed Schedule of Implementation

The work will be contracted to a contractor. The standard procedure for selection and tendering will be followed as per the norms of the Procurement Act and Regulations of Nepal. These will comprise of;

- tendering and approval of contract;
- presentation of security performance,
- field mobilization of workers, technicians, and professionals of the contractor;
- procurement and transportation of materials,
- construction of civil works and installation of electromechanical works, pipe works and
- Finishing works.

3.14. Components of the Project

a. Sub-Systems of the Project

Chainpur Town Water Supply and Sanitation Sector Project have been conceptualized as a piped water supply system considering conjunctive use of surface source. Service area has elevation difference in order of 300m. Thus considering the topography, landuse, settlement pattern and use of existing facilities; 4 separate distribution schemes are proposed and are briefly described below:

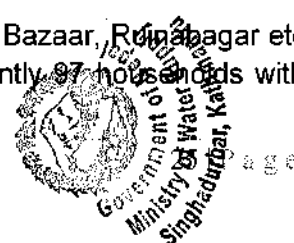
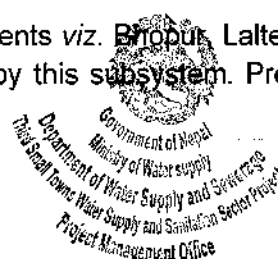
Damdur Sub system:

This scheme is proposed to serve part of ward 10 ie north-west portion of the service area. This scheme will mainly serve Damdur settlement located in higher elevation. This bears rural setting. Presently 69 households with 427 populations are residing; and this subsystem is designed to serve 673 populations.

Bhopur Sub system:

This will serve parts of ward 11. Major settlements viz. Bhopur, Lalteen Bazaar, Rungabagar etc are the main settlements that will be served by this subsystem. Presently 97 households with

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677 permanent population and 85 floating population (Total 762 population) are residing; and this subsystem is designed to serve a total of 1,344 populations.

Chainpur Bazaar Subsystem:

This subsystem is the largest subsystem which serves main bazaar of the service area in ward 10. The present day households are 697; permanent population is surveyed as 4,166. Considerable rental populations (1,192 in numbers) are also accounted. Total population served in survey year is 5,358. BadiTole, Badi Wada, Bagala Tole, Bagar, BaikeTole, Tole, Bista Tole, Bramadatole, etc are the major toles that are covered by this subsystem. This subsystem is designed to serve a total of 10,628 populations.

Airport Subsystem:

This scheme is proposed to serve part of ward 9 viz south-west portion near Airport. Few government offices and Bajhang District Hospital are located in this subsystem. Chaud, Dewal, Kholabada, Simkhet etc are the major settlements served by this subsystem. Presently 202 households with 1184 permanent and 21 rental population are residing; and this scheme is designed to serve 2,810 populations.

b. Water Source: Location & Yield

The sump well in the bank of flood plain of Seti River is expected to yield about 15 lps. The proposed area is having boulders, sand, gravel which seems good potential aquifers. Other sources are spring sources and perennial type. Discharge of these sources is very small compared to the Seti River and Consultant prefers not to consider taking into the account of climate change.

Two sump wells have been proposed in the bank of the Seti River. The location of the sump well is Bhopur, ward 11. Each sump well is expected to yield minimum of 14.6 lps. As the demand of water is 23.41 lps, the amount of water to be tapped from each sump well is 11.705 lps.

c. Water Quality Assessment / Treatment Facilities

Certified Laboratory was used to conduct chemical, bacteriological and physical tests of the proposed surface water (Annex 5). Samples from Seti River were collected in May 2018 to assess the raw water quality of proposed source. Since there is no existing sump well in the bank of the Seti River, the water sample was collected from the river directly.

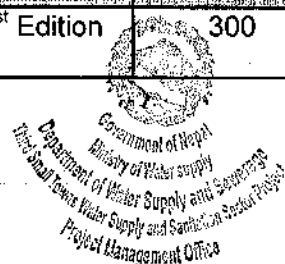

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Table 10: Water Quality Assessment

S.No.	Parameters	Units	Test methods	Observed Values	NDWQS, Nepal
PHYSICAL					
1	Colour	Hazen	2120 B, APHA, 21 st Edition	<5.0	5 (15)
2	Turbidity	NTU	2130 B, APHA, 21 st Edition	18	5 (10)
3	Conductivity	µS/cm	2510 B, APH, 21 st Edition	164	1500
4	pH		4500-H ⁺ B, APHA, 21 st Edition	7.6	6.5 – 8.5
5	Lab temperature	°C	2550 B, APHA, 21 st Edition	25.1	-
6	Taste	TFN	2160 B, APHA, 21 st Edition	N.O.	Not objectionable
7	Odor	TON	2150 A, APHA, 21 st Edition	N.O.	Not objectionable
8	Total Dissolved solid	mg/l	2540 C, APHA, 21 st Edition	103	1000
CHEMICAL					
9	Total Hardness	mg/l as CaCO ₃	2340 C, APHA, 21 st Edition	92	500
10	Carbonate Hardness	mg/l	Calculation	68	-
11	Calcium	mg/l	3500- Ca B, APHA, 21 st Edition	23.2	200
12	Total Alkalinity	mg/l as CaCO ₃	2320 B, APHA, 21 st Edition	68	-
13	Bicarbonate Alkalinity	mg/l as CaCO ₃	2320 B, APHA, 21 st Edition	68	-
14	Chloride	mg/l	4500-Cl ⁻ B, APHA, 21 st Edition	1.9	250
15	Ammonia	mg/l	4500-NH ₃ C, APHA, 17 th Edition	0.06	1.5
16	Nitrate	mg/l as NO ₃	4500-NO ₃ B, APHA, 21 st Edition	1.6	50
17	Fluoride	mg/l	4500-F D, APHA, 21 st Edition	0.2	0.5-1.5
18	Sulphate	mg/l	4500-SO ₄ B, APHA, 21 st Edition	112	250
19	Iron	mg/l	3111 B, APHA, 21 st Edition	2	0.3 (3)
20	Manganese	mg/l	3111 B, APHA, 21 st Edition	0.07	0.2
21	Arsenic	mg/l	3114 APHA, 21 st Edition	<0.005	0.05
22	Cadmium	mg/l	3111 B, APHA, 21 st Edition	<0.003	0.003
23	Mercury	mg/l	3112 B, APHA, 21 st Edition	<0.001	0.001
24	Chromium	mg/l	3111 B, APHA, 21 st Edition	<0.05	0.05
25	Lead	mg/l	3113 C, APHA, 21 st Edition	<0.01	0.01
26	Copper	mg/l	3113 C, APHA, 21 st Edition	<0.01	1
27	Aluminium	mg/l	3500-AI B, APHA, 21 st Edition	<0.01	0.2
BIOLOGICAL					
28	E. Coli	CFU/100 ml	9222 B, APHA, 21 st Edition	300	Nil

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Sample tests of the sources indicate most of the parameters comply with the NDWQS value. This is to be noted water samples were collected in the month of December, 2015. The turbidity is likely to increase in rainy season and may reach the value of 100 NTU. Thus treatment process comprising Lime Dosing unit, Aeration Tower, Pressure Filter and Chlorine Dosing Unit are proposed. The schematic diagram of the proposed treatment plant is as shown in Figure 4.

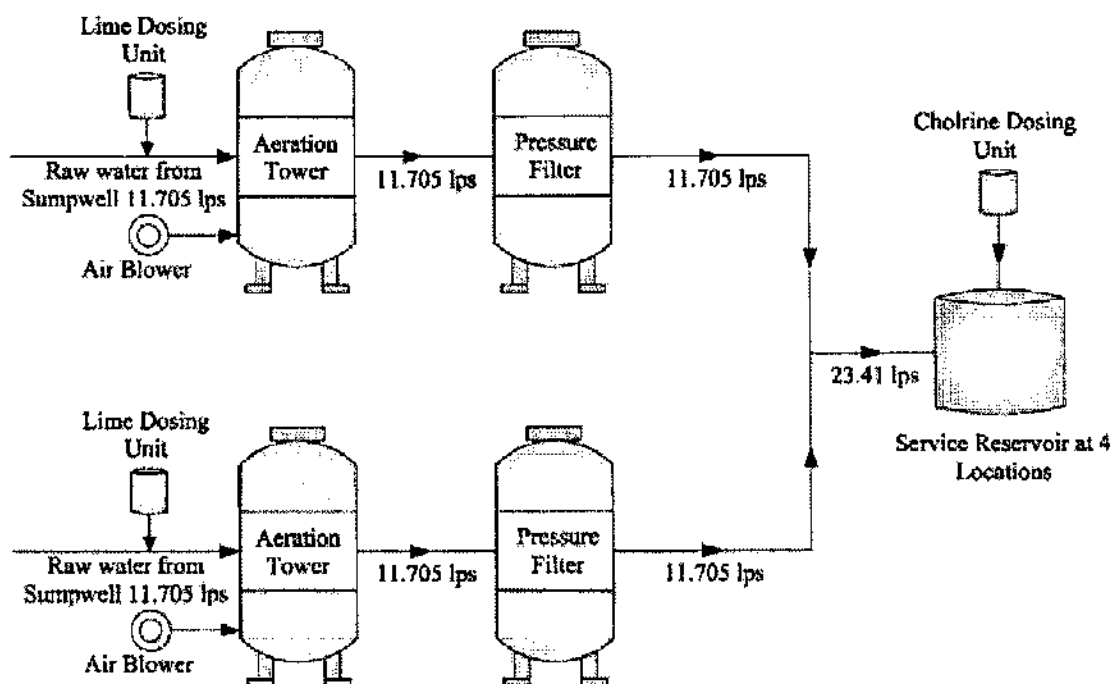


Figure 4: Schematic Diagram of Proposed Treatment Process, Chainpur - Bajhang

d. Details of Project Components

The project components include transmission mains, storage reservoirs, distribution networks, treatment units, guard house, office building and other temporary and permanent facilities. The details of the components are described below;

i. Transmission mains

Transmission mains of 5,043 m are estimated to convey water from source to distribution reservoirs of all the five. DI and GI pipes are proposed. For other sizes PE (HDPE) pipes are proposed. Following table describes the length and sizes of the transmission mains required.

Table 11: Transmission Main

SN	Systems	Length of Pipes (m)
1	Pumping Main	1125
2	Gravity Main	3918
	Total	5043

ii. Storage Reservoirs

The total storage requirement for the system at the end of design period i.e. 2038 is calculated as 625 m³. The provision of this quantity has been fulfilled by providing additional ground reservoirs. The reservoirs will be constructed of RCC and is designed as ground based tank as

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Government of Nepal
Ministry of Water Supply and Sewerage
Department of Water Supply and Sanitation Sector Project
Chainpur Town Water Supply and Sanitation Project
Project Management Office

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the terrain suggests. The following table summarizes the requirement of reservoir tanks subsystem-wise;

Table 12: Requirement of Reservoir

Sl. No.	Sub-system	Requirement (Cum)	Remarks
1	Bhopur	50	Proposed Ground based
2	Damdur	25	Existing 38 Cum RCC Reservoir will be used
3	Chainpur Bazaar	450	Proposed Ground based
4	Airport Subsystem	100	Proposed Ground based
TOTAL		625	

iii. Electrical Facilities

Settlements that are located in higher altitude than the available sources needs pumping. Thus submersible pumps, including control panel, 50 KVA transformers are proposed. Voltage Stabilizer is also proposed to take care of fluctuation. Standby power backup generators are also proposed.

iv. Distribution Network

The distribution system comprises of pipe network, which consists of mainly loops and branch in very few places. This network is analyzed using EPANET 2, a design analytical software tool. Distribution pipes are laid both sides of the all metaled and major roads. Single line pipes are proposed in earthen and other roads. HDPE pipes are predominantly used. Pipe class & size lesser than 6 kgf and 50 mm is not proposed to use. Existing pipes will not be used as these are leaking and found substandard (class of 4 kgf). The total distribution pipe length of the proposed system is about 18,473 km.

Table 13: Distribution of Road Networks

Sl. No.	Sub-system	Length (km)
1	Bhopur	3,909.00
2	Damdur	1,983.00
3	Chainpur Bazaar	7,406.00
4	Airport Subsystem	5,174.00
TOTAL		18,473

v. House Connections

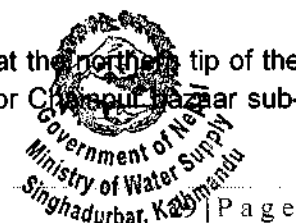
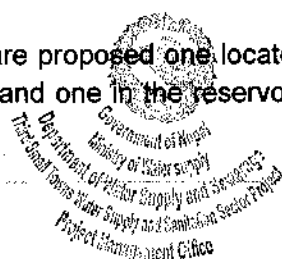
The system has been designed, predominantly as house to house connections and has been analyzed for a design capacity of providing a total of 2,131 house connections. However, initially during construction phase, only 1,165 house connections are provided to satisfy the need for the base year population.

vi. Appurtenances

These will primarily comprise of valve chambers or connector boxes to house in flow control valves for controlling flow in the pipeline and to the community taps etc. Altogether 136 valve chambers and 24 pipe type 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.

vii. **Guard House:** Three guard houses are proposed one located at the northern tip of the project area locating treatment units, and one in the reservoir for Chainpur Bazaar subsystem.

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viii. **Office Building/Laboratory Room:** One office building consisting manager's room, cash counters, meeting hall, lab room etc is proposed.

ix. **Temporary facilities/structures**

Temporary workforce camp and stockpile site will be required for the project implementation. Since the scale of this project is small, these facilities will occupy a small space, and will be there for around 18 months. Campsite with stockpile area has been proposed in Harure Danda area in ward 11. It has easy access and is not near any water source.

x. **O&M Equipment and Tools**

An assessment was done for the needed items. The UWSSSP has also some guide lines on it. 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;

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

xi. **Protection and Plantation works**

Plantation works are proposed in the vicinity and upstream of water sources. Few are also proposed in the office building area to improve the aesthetic look.

xii. **Sanitation Improvement**

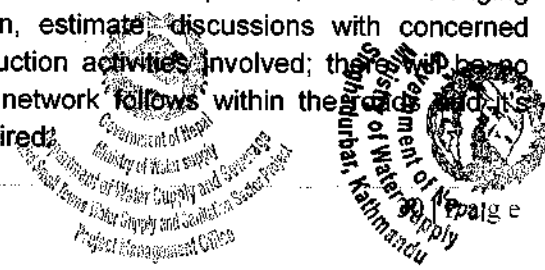
This component comprises of waste water management, solid waste management, public toilets etc and is described below:

- **Public Toilet:** Two public toilets are operating in the Bazaar area. But they are not adequate as the market and urban activities are increasing very fast. Hence there is need of an additional public toilet with sufficient facilities.
- **Individual Household Toilet Improvement:** It was learnt, some of the households have prepared pit latrines with bamboo, shrubs cover. The wall of pits is not found properly protected. Similarly toilet as such were also found made temporarily eg from bamboo, wooden post etc. Thus training programme in association with local bodies will be carried out for the proper construction of local material eg, cement plaster in bamboo woven to make wall, strengthening pit wall by locally available stone, use of RCC rings and cover and its molding methods etc. Accordingly awareness campaign is also carried out regarding public sanitation and health.

3.15. Land Requirement and compensation

The major structures are to be constructed on public or unused land parcels, or land belonging to WUSC. As the works involve review of design, estimate, discussions with concerned stakeholders and bidding processes and no construction activities involved; there will be no adverse impacts. Similarly, the distribution system network follows within the Right of Way (RoW). Therefore resettlement or relocation is not required.

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3.16. Construction and Operation Activities of the Project

The construction phase will include following activities;

- Excavation and surface clearing activities
- Earthworks for construction of treatment plant, reservoirs and pipeline extension, foundation works
- Machinery works like cutting of iron-rods, mixing of concrete; operation of generators as per need
- Mechanical works like vehicle operations, maintenance of vehicles and equipments
- Manual works assisted by equipment use; like masonry works, casting, pipeline laying, plumbing
- Transportation activities for construction materials

The operation phase will include following activities;

- Operation of electrical pumps
- Disinfection of water using Bleaching powder
- Water Quality Laboratory operation
- Backwash of treatment plant
- Drying and disposal of slurry/sludge

3.17. Sustainability Aspect

Since the source of water is surface water based on Seti River, the source is sustainable and no climate change impacts will have any impact on tapping of water in coming 20 years of design period. The WUSC have collected 5% upfront cash of the total project cost required. This shows the high degree of ownership by the local communities. The willingness to pay study also reveals that around 90% of the locals are willing to connect new household taps. The study also shows that the tariff range is within 5% of the lowest earning income group. Hence, financial sustainability is insured for the project's operational cost.

Institutionally, WUSC will bear all responsibility of administrative, technical and financial management of the utility system. WSSDO will monitor the status of WUSC management and provide advice as and when needed. Capacity building, leadership development, exposure visits and technical support to the WUSC are planned in the project development phase in order to ensure the sustainable functioning of the service.


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4. IMPACTS OF THE IMPLEMENTATION OF THE PROPOSAL ON THE ENVIRONMENT

The potential impacts of the proposed Chainpur Water Supply and Sanitation Project are physical, biological, and socio-cultural in nature. They can occur at various phases of the project such as preconstruction, construction, and operation & maintenance phases. The magnitude of the impacts can be low, moderate, or high depending upon its severity, and can be temporary or long term, reversible or irreversible, local or wide-ranged. The impacts need not necessarily be limited to negative ones but can be positive as well.

4.1. Beneficial Impacts and Augmentation Measures

4.1.1. Construction Phase

i. Employment Generation and Increase in Income

A major direct beneficial impact of this project during construction stage is the creation of employment opportunity to the local community. Chainpur is economically vibrant town with growing market opportunities. The money that is earned by the wages will enhance various economic activities and enterprise development with multiplier effect. Increased earnings mean increased power to purchase. Thus local markets will see increased opportunity in shops, restaurants and amenities. This in-turn will bring more investments - thus multiplying the effect. In order to augment this impact, local people, particularly poor, dalits, ethnic minority and women, will be given priority for employment and job trainings.

ii. Skill Enhancement

Although many people in the project area are found unskilled at present, the construction of the water supply system and the distribution network is likely to enhance their skills in plumbing, fittings and other construction works. Furthermore, the project will also give on-job practical trainings to the workers which will enhance their technical skills. The skill and knowledge acquired from the project during construction will enhance employment opportunities of local people who can earn livelihoods from similar projects in the future. Workers, especially workers involved in pipe laying, will be given on-the-job training on plumbing bathroom fittings and other construction activities in order to augment the impact.

iii. Enterprise Development and Business Promotion

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 items of 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 laborers during the construction period. This will increase local trade and business in and around the project area.

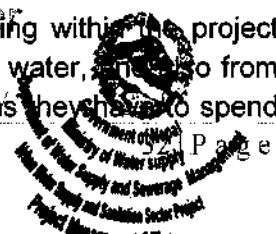
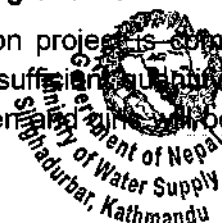
4.1.2. Operation and Maintenance Phase

i. Improvement in health and saving of time

After the water supply and sanitation project is complete, the people living within the project area will benefit from the supply of sufficient quantity and good quality of water, and also from improved sanitary conditions. Women and girls will be directly benefited as they have to spend

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less time in fetching water and thus have more time for study, regular household works and income generating activities. It is estimated that with shadow pricing of labor per day as NRs 350 for 55 working days of time saved per year for a household, around NRs 19,329 will be saved annually for a family from the saving of time of water fetching. The impact will be augmented through regular maintenance of the water supply and sanitation system by the users' group (WUSC).

ii. Development of Market center

The availability of good supply of drinking water will accelerate the rate of development of Chainpur as a leading market centre. In order to promote the development of market centre, the municipality shall ensure planned growth with required infrastructure facilities for healthy and hygienic environment in the market areas and regular operation & maintenance of the water supply and sanitation system.

iii. Appreciation of Land Value

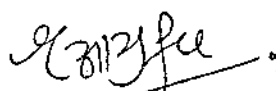
One of the major benefits of the project is that along with the availability of reliable and safe drinking water and sanitation services, the increase in economic activities will instigate increase in land price. Chainpur has fertile land and has irrigation facilities too. The availability of good drinking water could be one of the reasons for some many to invest in business sector in the project area. Upon completion of the present project, migration from nearby hills is also expected. In order to promote land development in the area, the local people will be 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.

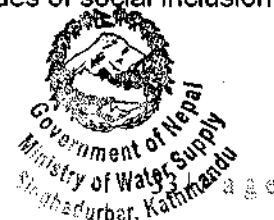
iv. Women Empowerment

Women will largely benefit from this project, as they are the ones who spend a great deal of time in fetching water. The study team has found that with the operation of the water supply scheme, their time will be saved. As there will be adequate supply of safe drinking water, there will be marked reduction in the occurrence of infectious disease and water borne diseases in the project area. This will save more time of women which otherwise they would be spending in taking care of the ill ones in family. The local women also expressed that this will provide them more time to spend in economic and social activities, thus leading to their empowerment. In order to augment the impact, the water supply system will be regularly maintained so that it operates smoothly, and awareness programmes will be given to the local people regarding health and hygiene with focus on gender.

v. Quality of Life Values

The project is expected to increase the existing quality of life values due to improvement in personal, household and community hygiene practices and health situations. The project will provide opportunities for jobs, will bring more investments and opportunities in the area, will provide good quality water, improved sanitation etc. Betterment in women's daily lifestyle through reduced water drudgery and improved health status of family will also be a positive aspect of this project implementation. Special considerations should be provisioned for the ultra poor communities, so that the benefits of the project are in-line with the values of social inclusion.


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4.2. Adverse Impacts

4.2.1. Pre-construction Phase

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. WUSC already has acquired land required for the construction of structures. As the works involve review of design, estimate, discussions with concerned stakeholders and bidding processes, there will be no adverse impacts.

4.2.2. Construction Phase

A: Physical Environment

i. Erosion and land surface disturbance

Excavation and digging of trenches during construction may lead to erosion and caving thereby causing soil erosion, silt runoff, and unsettling of street surfaces. There is possible landslide area along the slopes from where the transmission line is to be laid. Up to 50m span of slope needs slope protection works in the site in ward 11. In addition to this, in the working sites, haphazard disposal of the excavated earth can disturb and damage the road surface. This is a concern specially at *Ji Pra Ka* road in ward 10. 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. There is also chance of top-soil loss. Stockpiling of construction materials also degrade and disturb land.

ii. Damage to the Existing Facilities

During the construction time, while excavating the earth, existing water supply distribution pipelines and electric poles may get damaged in few places particularly in the bazaar area, ward number 10 despite of working carefully. Around 5 to 10 poles may need relocation.

iii. Air Pollution and Noise nuisance

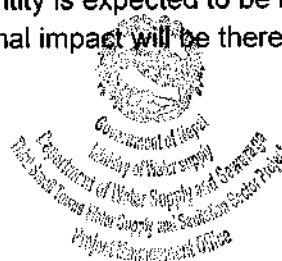
The construction activity will comprise of construction of sumpwells in the river banks of Seti River, laying of transmission and distribution pipes, construction of storage reservoirs, transport and installation of pumps. Other works do not involve heavy machines except in constructing dug-well which will produce some extent of noise for a certain period of time. There will be some activities such as transportation, loading/unloading of construction materials like sand and aggregates, stockpiling of construction waste and construction materials and earthworks. These will cause air pollution and noise pollution.

iv. Impact on water bodies

There will be some impacts on water bodies located within the project area during the construction phase. Haphazard disposal of solid waste in the vicinity of water bodies, natural transportation of sediment and excavated materials to the water bodies, and leakage/disposal of oil & grease from construction equipment are some of the activities, which may occur and thus degrade the water quality. The excavation work for RVT and other structures will cause turbidity in water up to a certain extent. However the quantity is expected to be limited with respect to the discharge of water in the rivers. Thus, very minimal impact will be there for short period of time.



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v. Waste Management and Disposal

Generation of waste from campsites and temporary work-centers are likely to affect environment of the project area. Solid waste, chemical waste and other sanitary waste will increase during the construction phase. At the end of construction phase, decommissioning of the temporary campsites will also generate solid waste. This will be also an environmental concern.

B: Biological Environment

The project area falls in a built up area with agricultural land without any forests. Only scattered plants of local species and fruit plants are available within the sub-project activity area and thus minor impacts are anticipated only during the construction period. Most of the pipe lines pass along the roadside and only a few numbers of plants and bushes have to be cleared up within the transmission pipe line stretches. The impacts to human settlement including villages, cattle sheds and farmlands will be very low. 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 are likely to occur are described below:

vi. Loss of vegetation cover

The loss of vegetation cover and species diversity due to earthwork primarily in the direct impact area of the sumpwell site will be minimized as it is located on open land. During the construction, there will be only a loss of herbs and shrubs cover. There is no need of felling any tree. The project components require a very small area of land for implementation and environmental impacts on the vegetation and natural eco-system do not seem to be significant.

vii. Impact on Fauna

The project site 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.

viii. Impact on aquatic life

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, especially fish population. But these effects will be temporary in nature.

C: Socio-economic Environment

i. Disturbance to community activities

Construction activities, particularly construction works on roads will cause disturbances to the community activities like daily mobility, festival celebrations and conducting of social events. The free movement of vehicular traffic and pedestrians will be affected. Noise produced due to the operation of machines may disturb these events in project sites and its neighbourhood during construction periods. Stockpiling of construction activities will also be a nuisance for community mobility and safety, especially of the children playing around.


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ii. Crop loss

During construction of access road, there may be damages to some of the locals' agricultural land. Around 1.5 ropanis of land may be temporarily disturbed or damaged and this will need compensation if the disturbance is during cultivation period of the land.

iii. Social Dispute and Dissatisfaction

There will be influx of outside workforce and any misunderstanding or any misconduct can cause problems with the local community. There is a possibility of social dispute in the community due to irresponsible behaviour of the workers such as gambling and drinking. On the other side, due to over-use of outside workers, the local population may not get adequate employment benefits from the project causing dissatisfaction and conflicts in the area.

iv. Occupational health and safety (OHS)

Life and health of workers, particularly of those involved in concreting, trench cutting, formwork and rebar fixing is of prime concern. Workers involved in mechanical works and all other works are also exposed to some level of health and safety risks.

4.3. Operation & Maintenance Phase

4.3.1. Risks from exposure to chemicals

Exposure and ingestion of Chlorine and Bleaching Powder are harmful, 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 health hazard to the workers handling chlorine and bleaching powder.

4.3.2. Impact on water bodies and aquatic life

Haphazard disposal of effluents and sludge from the treatment plant will not only be a nuisance to the public but also will affect the aquatic life by eventually finding its way to nearby water bodies.

4.3.3. Health Risk due to supply of untreated or polluted water

Health of the beneficiaries may be affected if water treatment system becomes non-functional. This may cause water borne diseases if proper precautions are not taken throughout the operation of the water supply system. Leakage in pipes and malfunctioning of treatment units may lead to such conditions.

4.3.4. Impacts of continuous operation of pumps

During the times when the pumps are operated using electricity, the pollution is negligible. However, the design has considered standby generator for operation of the pumps when there is discontinuity in electricity supply. This may cause short term increase in ambient air pollutants and increase in noise level. However, the electromechanical components are located more than 500 meters far from the major settlement or market area. Specifications of pumps and generators have been worked out so as to meet also low noise and pollution emissions.


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Resettlement, relocation and compensation issue

The major structures are to be constructed on land belonging to WUSC. Similarly, the distribution system network follows within the public property line. Therefore resettlement or relocation is not required.

4.4. Indirect, Induced and Cumulative Impacts

4.4.1. During Construction

A: Indirect and Induced Impacts:

The volume of vehicle movements that will be generated from the simultaneous construction of different components in different sites will create choke points at the narrow access roads and slow down mobility of people, good and services, particularly in the market area. Coupled with disruption of economic activities and social services from extended interrupted power supply due to relocation of power poles and/or likely accidental damages, agricultural production will be negatively affected. Regular dust falling on rice plants and other crops in the vicinity of project footprints would have some effect on the crops' yields.

B: Cumulative Impacts:

There are no known ongoing or proposed large scale developments in Chainpur town as yet. Hence, cumulative impacts will arise mainly from the construction of main project components and associated facilities.

Assuming all components are started simultaneously or almost simultaneously, without mitigation, cumulative impacts will be "significant" in magnitude during the peak construction period (about first four months of construction period). After this period, magnitude of cumulative impacts will lessen to "moderate" magnitude. The significant cumulative impacts would be dust, noise, road space limitation leading to slow mobility, access blocking, disruption of social services and economic activities, community and workers' health and safety hazards, generation of solid wastes and spoils.

4.4.2. During Operation

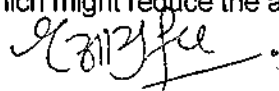
Indirect and Induced Impacts:

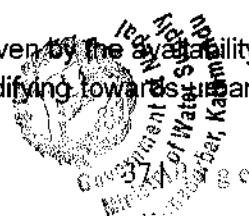
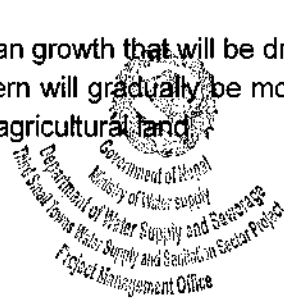
The indirect and induced impact of a reliable and sufficient water supply would be increased generation of wastewater and sewage. If inadequately managed, this situation would lead to contamination of supplied water through leaks or broken pipes in the distribution system.

With reliable and sufficient access to safe and potable water, the indirect positive impacts will be improved public hygiene and sanitation, leading to overall improvement in public health and quality of life. Enhancement measures include ensuring the quality of supplied water meets NDWQS through implementation of quality monitoring as prescribed in the EMP. Induced impacts of improved water supply system include rural-urban migration, more land conversion from rural to urban uses.

Cumulative Impacts:

The cumulative impact would be the increment in urban growth that will be driven by the availability of a reliable water supply system. The land use pattern will gradually be modifying towards urban settlements pattern which might reduce the available agricultural land.


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4.5. Evaluation of the Impacts

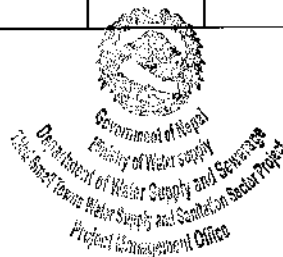
Scores have been assigned to the impacts based on the magnitude, extent and duration of the impact as discussed in the methodology section. The combined score up to 44 is termed as insignificant impact; 45-74 is termed as Significant and beyond 75 is termed as very significant impact. Following table summarizes the evaluations of the impacts;

Table 14: Evaluation of Environmental/Social 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)
Enhancement of Skills	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 status	Direct	M (20)	Lc (20)	Lt (20)	Significant (60)
Development of Market Center	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)
Damage to existing facilities	Direct	L (10)	Ss (10)	St (5)	Insignificant (25)
Air Pollution	Direct	L (10)	Lc (20)	St (5)	Insignificant (35)
Water Pollution	Direct	L (10)	Lc (20)	Mt (10)	Insignificant (40)
Noise nuisance	Direct	L (10)	Ss (10)	St (5)	Insignificant (25)
Waste management issues	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)
Crop loss	Direct	L (10)	Ss (10)	St (5)	Insignificant (25)
Social dispute and dissatisfaction	Indirect	M (20)	Ss (10)	St (5)	Insignificant (35)
Occupational health and safety	Direct	H (60)	Ss (10)	Mt (10)	Insignificant (80)
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)
Health Risk due to supply of untreated or polluted water	Direct	H (60)	Lc (20)	St (5)	Significant (85)
Impacts due to continuous operation of pumps	Direct	L (10)	Lc (20)	St (5)	Insignificant (35)



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5. ALTERNATIVES OF THE PROPOSAL

5.1. With- and Without-Project Alternatives

The town is facing increased demand of water supply and if not met, it will be one of the major problems for the Jaya Prithivi municipality. The overall sanitary condition of the project area is reasonably satisfactory. But there is still room of improvement in sanitation sector as well. Doing nothing about these challenges would be allowing the project municipality to further develop as “under-serviced”, 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.

5.2. Without-project’ or ‘do-nothing’ alternative

Doing nothing about these challenges would be allowing the project municipality to further develop as “under-serviced”, 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.

5.3. With project’ location alternative

The project area is a major junction and booming market place along the Seti highway, and is also connected to East-west Highway. Thus investment here in long term basic urban facility is very strategic. With the Project, 2,131 households (1,165 during construction phase and others later) in the municipality will have convenient access to reliable and adequate safe and potable water supply and easy access to sanitation at public place so that it helps to improve health and sanitation. As a result, good hygiene and sanitation practices will be promoted; there will be reduced health and safety risks.

In overall, ‘with project alternative’ will bring about enhanced public health and living environment that will contribute to improved quality of life in the municipality. Improved water supply and sanitation will create an enabling environment for local economic development and improved social services that communities within the sphere of influence of the municipality will benefit from; thus, contributing to the overall local economic development of the district.

5.4. Alternatives Relative to Planning and Design

The proposed system is a small scale intervention. The major components of water supply system as detailed in the feasibility study are: intake improvement and consideration of new intake (spring sources: Vankha, Baljade, Bire and Khara) as sources.


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Since the sources were too far and the transmission mains would need to pass across cliffs and forests, the option was reviewed. Hence, after water quality analysis, the source of sumwells from the banks of Seti River was considered as a better option - in terms of limited impacts and in terms of sustainable operation and maintenance.

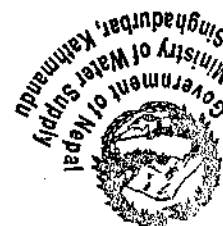
Lime dosing unit, Aerator, Pressure filter and Disinfection Unit were proposed as components of treatment system. In total, 4 new reservoirs and use of existing one with total 625 Cum capacity of reservoirs was proposed. The existing reservoir of 38 cum capacity was technically assessed, and its use was assured for the new system. The distribution mains, system appurtenances, guard room, office building, compound fencing etc are also the components specifically designed for the proposed project.

Regarding the feasibility of distribution system, two alternative analyses were analyzed; (a) Option I: distribution from single point (interconnecting reservoirs), and (b) Option II: adopting multiple distribution system. Option II was economical and thus suggested accordingly. During the field level presentation WUSC with community people also recommended for the same.

Regarding the treatment plant selection, the conventional design needs a larger space, hence aeration tanks and pressure filters have been proposed. With regular operation and maintenance works like backwashing, the treatment unit will function effectively for the 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. The WUSC has finalized the required site of land for RVT, treatment plant and other structures. All water supply components will be constructed on the land owned by WUSC. Apart from this, the project will not have any resettlement, relocation or compensation issue. Hence no further alternatives need to be assessed.


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6. MITIGATION MEASURES FOR THE ANTICIPATED IMPACTS

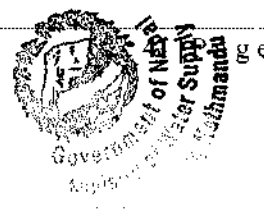
6.1. Mitigation Measures (to be) considered during Pre-construction Phase

The Rapid Environmental Assessment (REA) Checklists for water supply and sanitation were used to identify potential impacts/issues/concerns of the project as design (Annex 2). 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. Relating to design, the concerns would be the inadequate consideration/incorporation of the REA-identified impacts/issues/concerns that should be considered during design as listed in Table 15;

Table 15: REA checklist for IEE

Concerns over unsatisfactory raw water quality	During the detailed engineering design stage, water samples from surface source were tested. This information has guided design of water treatment and depth of well. However verification on the yield need to be carried out and confirmed before award of contract.
Disturbance or damage to existing public/community services	For prevention of damage to existing public service facilities, consultation with concerned utility companies during the pre-construction phase for ensuring alignment of water supply transmission and distribution pipeline, which is non conflicting with the existing network of public facilities, has been carried out
Delivery of unsafe water to the distribution system	Design proposes basic primary treatment, pressure filter and disinfection using $\text{Ca}(\text{ClO})_2$ and provisions for lab unit and kits. 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 project design & continuing training there-after.
Inadequate protection of intake structures	The area for the sump wells has adequate land for perimeter fencing to keep animals away from grazing nearby. Intake well has been located more than 30m upstream from sanitation facilities. Water quality monitoring will be conducted regularly (at least once very quarter). Disinfection will be conducted prior to commissioning and after repairs.
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.
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.

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The considerations of these aspects during the design stage of project development have certainly helped reduce the adverse impacts, and the scale of such impacts in the construction and post-construction phases of the project.

6.2. Construction Phase

A: Physical Environment

i. Erosion and land surface disturbance

During execution of construction works, precautionary measures will be taken. Backfilling of excavated trenches will be carried out timely and the excavated soil will be stacked at safe and authorized site/s. On-site refill and reuse will be prioritized. Timely slope protection will be carried out at sites as required; and especially near District Administration Office in ward number 10 as required. Major construction activities will be avoided during the rainy periods.

Since formation of topsoil is very long natural process, efforts will be made to safeguard the topsoil. The topsoil of about 20 cm thick will be placed at a separate place and the remaining excavation will be done. After placing the pipes in trenches and backfilling with other soil and compaction, the topsoil will be replaced to its original position and compacted. Also, stockpiling will be carried out at designated site and short term stacking of construction materials at construction sites will be covered and marked or barred using temporary facilities.

ii. Damage to the Existing Facilities

A repair team will be on standby for the repair of water supply pipe line for immediate repairs. To avoid any such damage, prior coordination will be established with other local authorities. Layout drawing will be at the site to avoid any kind of possible damage. All the electric poles, around 10, will be relocated meeting the standard requirements.

iii. Air Pollution and Noise nuisance

Use of power horns and movement of heavy vehicles can cause disturbances to the community, educational institutes, hospitals/health posts and residences. Mitigating measures to reduce air and noise pollution are:

- o Providing information to the public about the work schedule,
- o Allowing the use of vehicles only complying with NVMES 2069 or vehicles having green stickers meeting Vehicle Emission Standards 2057 during the project construction period,
- o Limiting the speed of vehicles, and prohibiting the use of power horns,
- o Equipment and vehicles will be regular maintained,
- o Prohibiting the operation of plants and construction vehicles between 7 PM to 6 AM in residential areas,
- o Avoiding work at culturally sensitive times (during religious festivals in the area),
- o Increasing the work force in sensitive areas so as to finish the work quickly,
- o Open burning of solid wastes, particularly in worker's camp/construction sites, will be prohibited &
- o Use of firewood as fuel will be prohibited in the work-camps.


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iv. Impact on water bodies

So as to mitigate this potential impact, the worker's camp will be located away from the vicinity of water bodies. Disposal of debris and waste into Seti River will be totally prohibited. Regular monitoring of the workers camp will be scheduled. In addition to this, the excavated soil will be stacked. Backfilling of trenches will be done timely, and before the rainy season. A separate area shall be allocated for the stacking of construction materials. An open space at Harure Danda in ward 11 is proposed as a campsite and stockpile area.

Fuel and lubricants will be stored in containers over well concealed surfaces which are at safe distance from any water bodies. Absorbent pads/mats will be placed at the stockpiles, workshops and campsites to control seepage during accidental spillage.

v. Waste Management and Disposal

Waste generated from the workers' camps will be properly disposed off. Organic waste like food waste and others will be used for composting. Pit composting and bin composting will be promoted. Inorganic waste will be collected in a bin and properly disposed off. 3R Principles will be regulated. Regular monitoring of the workers camps will be carried out. Temporary sanitary 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 dealers. Solid waste and other construction waste will be deposited in designated sites near by the campsite at Harure Danda and will be cleared after the completion of the construction works. After decommissioning, the reusables will be reused or sold, and only the residue will be landfilled at the designated disposal site of the municipality.

B: Biological Environment

i. Loss of vegetation cover

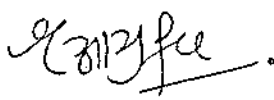
To protect the topsoil and vegetation, the topsoil will be kept separately and replaced in its original position after laying the pipes. Greenery promotion will be carried out in the user committee building premise in ward number 10 and around treatment unit. There is no need for felling of trees. However, for any unpredicted and unavoidable felling of trees, the compensatory plantation at the ration of 1:25 per tree cut will be carried out. Revegetation will be carried out in open space the site of reservoir construction of ward 11.

ii. Impact on Fauna

The workforce will be sensitized on importance of wildlife conservation. Horns will not be used unnecessarily in the areas close to any wildlife sensitive areas. The workers will not be allowed to conduct any kind of hunting activities. Code of conduct will be developed, explained to the workers and will be implied strictly.

iii. Impact on aquatic life

Washing of vehicles and clothes directly on rivers will be discouraged. Disposal of waste and spoil on to water bodies will be strictly regulated. Fishing by workforce in the local rivers will be strictly restricted.


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C: Socio-economic Environment

i. Disturbance to community activities

In order to minimize the disturbance to the community activities, a detailed Traffic Management Plan will be developed by Contractor during the early stage of construction phase for areas along the construction works to minimize traffic flow interference from construction activities. Local public will be notified about project construction activities in advance and schedules, routings and affected areas including road closures will be shared well ahead of time and discussed with the locals. Stockpiling or temporary stacking will be covered or barred using temporary facilities. Sign-boards in Nepali and English languages will be placed at properly visible sites.

ii. Crop loss

Compensation of crops will be provided if the pipe laying works damage standing crops in significant amount. This will be processed through User's Committee and compensation provision will be based on mutual understandings between the affected land owner and the User' Committee.

iii. Social Dispute and Dissatisfaction

Code of conduct will be developed and applied for the workforce. An employment policy will be prepared so that the local people may not be deprived of employment opportunities. Local people and women above the age of 16 will be given preference for employment. Wages will be settled based on DWEC (District Wage Evaluation Committee) with the list of employees.

iv. Occupational health and safety (OHS)

To mitigate or minimize the health risks for workers and to avoid any health hazards of the workers, adequate safety instructions will be provided to the contractor and monitored by the project. Following mitigation steps will be taken;

- Health and hygiene in the camp site (against unsafe working conditions, accidents, transmission of communicable diseases etc) will be given top priority. Potable drinking water and clean fuel for cooking will be made available for the workforce as needed
- Regular health checkups, proper sanitation and hygiene, health care will be provided. Awareness programs concerning human trafficking and the possibility of spread of STDs and HIV/AIDS will be conducted during focus group discussions.
- Personal protection equipment (PPE) viz., safety helmets, safety belt, boots, gloves will be provided to all construction workers.
- The loss of life or any type of injuries will be compensated and insurance to the workers will be provided. First aid kits, standby vehicle, and fire extinguishers will be provided in camp sites.

To avoid risks from accidents on site due to the movement of the public and workers, health and safety measures of the contract will also prohibit entry at construction sites to the public and the area will be barricaded and warning signs will be placed.


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6.3. Operation & Maintenance Phase

6.3.1. Risks from exposure to chemicals

Exposure and ingestion of Chlorine and Bleaching Powder are harmful, and the workers will have to deal with it during the operation of the system. The storage procedures, in-plant handling and dosages of chlorine (bleaching powder) will be addressed. Procedures and guidelines will be developed for its handling. These procedures and guidelines will be prepared by the contractor during the last period of construction phase and will be approved by the consultant. The cost will be included in the contract document itself. First aid measures will be introduced for emergencies. Training on the handling and on dosage of the chemicals will be given to the staff.

6.3.2. Impact on water bodies and aquatic life

The measures to be taken are to mitigate the impacts are as follows;

- 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.
- As the backwash water mainly contains suspended solids a small pond of 20,000 litres capacity will be constructed for decantation and will be drained off to river/stream course.
- To avoid the impact to aquatic life, the effluent and sludge will be disposed off only in designated areas and regular monitoring of the river or stream water quality will be done.
- Septic tanks will be built as per design of public toilets, and standard designs will also be provided to the household latrines.

6.3.3. Health Risk due to supply of untreated or polluted water

To avoid any health risk due to any chance of supply of untreated or polluted water, the User's Committee must be very effective in proper operation and maintenance of the whole water supply system, and of the Water Treatment Unit and disinfection units in particular. Timely maintenance of any leaking pipes should be carried out. Water Safety Plan (WSP) must be well prepared and effectively implanted through an active committee. Regular water quality tests and prompt actions should be carried out to correct any problems in water quality.

6.3.4. Impacts of continuous operation of pumps

To mitigate the concern, the electromechanical components are located more than 500 meters far from the major settlement or market area. In addition to this, the specifications of pumps and generators have been worked out so as to meet also low noise and pollution emissions.


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6.4. Mitigation measures for Cumulative Impacts

Measures to mitigate the adverse impacts during construction phase are based on source based monitoring of pollution sources, and coordination among offices while working in communities.

Mitigation measures of potential impacts of land use pattern and rapid urban growth would be rational land use planning of the municipality and the district, incorporating environmental management for sustainable growth.

6.5. Implementation of Mitigation Measures

Most of the mitigation measures specified will be incorporated as part of the contractual obligations during the project construction and therefore will be integrated into the project design and tender documents. By including mitigation measures in the contract monitoring and supervision of mitigation implementation will be covered under the normal engineering supervision provisions of the contract. The mitigation measures implementation will be monitored through direct observation, records of contractors, consultation with people etc weekly or daily as required.

a. Project Design for implementation

For most of the adverse environmental impacts likely to occur during project construction and operational phase, mitigation measures will be integrated in the design of the project itself so as to strengthen the benefits and sustainability of the project. This will enhance the mitigation measures in terms of specific mitigation design, cost estimation of the mitigation measure, and specific implementation criteria. The proponent will ensure that the mitigations measures are included in the design of the project.

b. Project Contract

The project contract will clearly specify the mitigations measures that are part of the project construction and the contractor will be bound by the parameters identified in the environmental assessment pertaining to specific mitigation measures. The proponent will ensure the compliance of the proposed measures from the contractor and the final acceptance of the completed work will not occur until the environmental clauses have been satisfactorily implemented.

c. Bill of Quantities

The tender instruction to the bidders will explicitly mention the site-specific mitigation measures to be performed, the materials to be used, labour camp arrangements, and waste disposal areas, as well as other site specific environmental requirements.


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The environmental impacts related to different project activities and its corresponding mitigation measures are tabulated in Table 16;

Table 16: Impacts and Mitigation Measures

Project Activity	Potential Environmental Impact	Proposed Mitigation Measures	Indicative Cost (NRS)
Detailed Design			
Selection of water supply source	Concerns over unsatisfactory raw water quality	Water quality sampling/testing, and its reconfirmation	Included in Detailed Design cost
Design of alignment for pipe-laying	Disturbance/damage to communities structures/facilities	Place water pipes away from existing utilities during design. Under unavoidable cases, identify and include locations and operators of these utilities in the detailed design documents to prevent unnecessary disruption of services during construction phase Consultation with local authorities, offices like Division Road Office Provide budget for restoration/replacement of damaged utilities, and require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services	
Designing of source/intake & reservoirs	Risk of tapping of contaminated water, and Seismic risks like cracking of reservoirs	Choosing of treatment unit with comparative analysis of the treatment options Preparation and implementation of WSP to be planned Design all reservoirs and structures under the project as per appropriate seismic resistance	
Designing of treatment units	Health hazards arising from inadequate design of facilities for receiving, storing and handling of CI & other chemicals	Design has included a "housed" dosing unit. Standard operation methods has been prescribed in design	
Apply for relevant permits	Delay in project due to absence of necessary statutory permits and approvals	Obtain Letters of Approval and agreement for: (i) temporary acquisition/easements of land and properties; (ii) disruption of water supply and other utilities; (iii) required permits from relevant authorities (e.g., Department of Forest and Soil Conservation, Department of Archaeology, etc.) prior to construction works; (iii) avoid tree cutting, and establish a requirement that if necessary, cut only trees that are marked and have been agreed from relevant authorities for removal; and compensatory tree plantation to be carried out at the rate of 25 saplings for each felled tree.	

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Government of Nepal
Ministry of Water Supply
Department of Water Supply and Sanitation
Chainpur Town Water Supply and Sanitation Sector Project
Project Management Office

Government of Nepal
Ministry of Water Supply
Singhadrabar, Kathmandu

Project Activity	Potential Environmental Impact	Proposed Mitigation Measures	Indicative Cost (NRs)
Construction			
Construct workforce camp establishment	Haphazard camps resulting in social stress and degradation of local environment	Establish workforce camps in designated sites only and in consultation with local community. All camps are to include sanitary facilities for men and women.	Civil works contract
Employment	Local people may be deprived of opportunities, minors may be employed	Employ local people (and women in jobs and follow core labor standards) Equal pay for men and women	
Transportation of materials	Traffic congestion and public annoyance	Prepare and implement traffic plans to prevent traffic jams and annoyances to the public in coordination with relevant local authorities and communities.	Civil works contract
Dumping of waste in the river	Water and land pollution; and	Provide designated areas with collection bins for wastes.	Civil works contract
Construction of toilets in the camps	Spillage/leakage concerns	Provide toilet facilities and prohibit open defecation.	
Storing of materials in the project area		Prohibit washing of vehicles next to rivers and streams. Proper storage of construction aggregates, hazardous and toxic materials, lubricating oils and used batteries in safe areas and the proper segregation and disposal of chemical containers, packaging materials, plastic bags etc. Fuel and lubricants will be stored in containers over well concealed surfaces which are at safe distance from any water bodies. Absorbent pads/mats will be placed at the stockpiles, workshops and campsites to control seepage during accidental spillage.	
Handling of toxic materials		Provide training to workforce on safe handling of toxic materials and OHS measures during construction.	Civil works contract
Dumping of excess material			
Movement of vehicles	Air quality deterioration	Dust suppression on roads or at open sites by sprinkling water as required at regular intervals. Routine monitoring of dust (total suspended particulates) to meet air quality standards; and limit vehicle speed. See that vehicles comply with the National Vehicle Mass Emission Standards, 2056 Regular maintenance of vehicles.	Civil works contract 100,000

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Project Activity	Potential Environmental Impact	Proposed Mitigation Measures	Indicative Cost (NRs)
Earthworks		Provide proper ventilation in confined working areas.	
Stockpiling of construction waste and construction materials		Covering of stacked spoil and soil Limit the time of temporary stacking of construction materials in residential and market areas Stockpiles to be maintained only at designated sites	
Movement of vehicles Operation of construction machineries and equipment Horn honking	Noise and vibration	Monitoring of noise levels regularly at site to meet the noise standards. Fit mufflers in vehicles to control noise. Limit the speed of vehicles and decreasing drop-heights Regular maintenance of equipment. Compensate and repair damages caused by vibration during construction activities.	25,000
Pipe laying	Slope instability	Maintaining the slope Construction of Gabion walls in case instable slopes Vegetation protection, greenery promotion Pipe-laying will be conducted in coordination with Division Road Office	300,000
	Vegetation clearance	Avoid tree cutting. Obtain necessary tree cutting permits, if at all needed under unforeseen conditions, and if cut, will plant tree saplings at the rate of 25 saplings for each felled tree. Will also compensate all private trees and community forests if affected	
	Disturbance to community Impacts to business activity including temporary relocation of vendors	Prior to construction, hold community meetings to inform them of construction works. Distribute project information. Advanced notice should be provided at least 1-2 weeks in advance.	25,000

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Project Activity	Potential Environmental Impact	Proposed Mitigation Measures	Indicative Cost (NRs)
		Place WUSC phone hotline on signs in visible areas. Make community fully aware of grievance mechanism and provide contact info of PMO and ICG unit. Maintain access to avoid disturbance to residents and businesses by providing planks and leaving spaces for businesses and residents to maintain access. Manage traffic flows, conduct work at night where possible. Trenches open for only 1-3 days & works should be quickly completed. Avoid full street closure to fullest extent possible. Businesses losing income due to disturbance are compensated as per the resettlement plan. Temporary sites to be restored to natural and stable conditions as per agreement with land owner Proponent report in writing that temporary areas have been vacated and restored to pre-project conditions before acceptance of the works Provide employment opportunity to the affected people to the extent possible Assist vendors in shifting prior to construction and to return to original location when construction is complete in relevant sections Avoid disturbance to tourist areas	
Construction of project components	Reinstatement of community services and infrastructures	Compensate or reinstate/relocate community assets that are disturbed such as irrigation canals, electricity poles, telephone lines, drinking water pipes, sewerage lines, roads, etc. to the satisfaction of the people. Avoid disturbance to any historic/heritage buildings or structures by taking necessary precautions (work away from any heritage buildings, hand digging, no heavy equipment, etc.)	625,000
Handing over of outside workforce, money and unwanted activities	Increase in crime and community stress	Greenery promotion Prohibit gambling and alcohol consumption in contractors' campsites. Instruct the outside workforce to respect the local cultures, traditions, rights etc.	100,000



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Project Activity	Potential Environmental Impact	Proposed Mitigation Measures	Indicative Cost (NRs)
Project activities relating to health and safety issues at work areas	Health and hygiene (unsafe working conditions, accidents, fire hazard, transmission of communicable diseases etc.)	Provide security in contractors' camps, and Implement code of conduct for the workforce Ensure measures (fencing and/or barriers) to protect public from construction site. Provide regular health check-ups, proper sanitation and hygiene, health care, and control of epidemic diseases to the workforce.	
		Launch awareness programs concerning human trafficking and the possibility of spread of STDs and HIV/AIDS using brochures, posters, and signboards Make available first aid kits, and fire extinguishers in campsites Make available protection gears to all construction workers and compensate for the loss of life or any type of injuries Provide insurance to the workers and training in OHS and community health and safety. Ensure all work areas are clearly demarcated and marked and protect public from getting near to the trenches. Provide alternate potable water supply during maintenance works and notify the public in advance.	50,000 Civil works contract
Traffic management at construction sites	Traffic congestion (temporary disruption to local access due to open trenches, excavation across roads or road closures due to construction).	Develop and implement a traffic plan and road safety plan to minimize traffic flow interference from construction activities Coordinate with local authorities (police, municipality, local area committees, etc.) to manage traffic during construction period Provide advance public awareness and public notification of construction activities, schedule, routing, and affected areas including road closures Erect alternative routing signage in Nepali and English. Arrange for night time construction for activities in congested/ heavy daytime traffic areas Arrange for onsite "grievance handling" through use of liaison officers Undertake trench closure and facilitate surface rehabilitation or paving as quickly as feasible	

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Project Activity	Potential Environmental Impact	Proposed Mitigation Measures	Indicative Cost (NRs)
Employment opportunities, project activities in settlement and market areas	Social disharmony; Sanitation issues, and gender issues	Awareness activities for environmental conservation; WASH trainings; social safeguards meetings	25,000
Operational Phase			
Operation of the system; Operation of treatment units	Health and hygiene (unsafe working conditions, accidents, fire hazard, transmission of communicable diseases etc.)	Provide regular health checkups, proper sanitation and hygiene, health care, and control of epidemic diseases to the staff. Make available first aid kits in worksites Provide insurance to the workers and training in OHS and Community Health and Safety.	WUSC to manage for the provisions
Operation of the system	Health risks due to contaminated water	Conduct regular monitoring of water quality from treatment plants to ensure water delivered to public meets national standards Conduct regular O&M of the system; provide alternate potable water supply during maintenance works and notify the public in advance Develop and Implement Water Safety Plan and promote Point of Use (PoU) treatment options	80,000 WUSC to manage for the provisions WSP cost is incorporated in the Civil contract



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7. ENVIRONMENT MANAGEMENT PLAN

7.1. Environment Management Plan and its Objectives

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

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.

The basic objectives of the EMP are to:

- to ensure that all mitigation measures and monitoring requirements will actually be carried out at different stages of project implementation and operation - pre-construction, construction and operation and maintenance;
- to recommend a plan of action and a means of testing the plan to meet existing and projected environmental problems;
- to establish the roles and responsibilities of all parties involved in the project's environmental management;
- to describe mitigation measures that shall be implemented to avoid or mitigate adverse environmental impacts and maximizing the positive ones;
- to ensure implementation of recommended actions aimed at environmental management and its enhancement; and
- to ensure that the environment and its surrounding areas are protected and developed to meet the needs of the local people, other stakeholders and safeguard the interests of the common people.

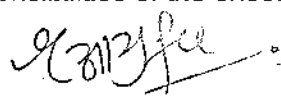
A Safeguard Unit within the project should be established and be headed by a senior environmental expert, a sociologist and a legal expert with adequate support staff.

7.2. Institutional Arrangement

Executing and implementing agencies:

The Ministry of Water Supply will be the executing agency with responsibility of project execution agency with responsibility of project execution delegated to the Department of Water Supply and Sewerage Management (DWSSM). The Water Supply and Sanitation Division/Sub-division Office (WSSDOs) are the project implementing agencies. Water User's and Sanitation Committees of participating towns are the implementing agencies.

The key responsibilities of the executing and implementing agencies are as follows:


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Prior to construction

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

7.3. Safeguard Implementation Arrangement

Project Management Office (PMO):

The safeguard officers (environmental safeguard officer and social safeguard officer) of the PMO will receive support from safeguards experts (environmental and social) of the Project Management Consultants (PMC) as specified below:

- Confirm existing IEEs/EMPs are updated based on detailed designs and that new IEEs/EMPs are prepared in accordance with the EARF and government rules;
- Confirm whether EMPs are included in bidding documents and civil works contracts;
- Provide oversight on environmental management aspects of projects and ensure EMPs are implemented by regional project management offices (Eastern RPMO and Western RPMO) and contractors;
- Establish a system to monitor environmental safeguards of the project including monitoring the indicators set out in the monitoring plan of the EMP;
- Facilitate and confirm overall compliance with all Government rules and regulations regarding site and environmental clearances as well as any other environmental requirements as relevant;
- Supervise and provide guidance to the RPMO to properly carry out the environmental monitoring and assessments as per the EARF;
- Review, monitor and evaluate the effectiveness with which the EMPs are implemented, and recommended necessary corrective actions to be taken as necessary;
- Consolidate monthly environmental monitoring reports from RPMO and submit semi-annual monitoring reports to ADB;
- Ensure timely disclosure of final IEEs/EMPs in project locations and in a form accessible to the public; and
- Address any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs.



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Regional Project Management Offices (Eastern and Western RPMO):

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

- Prepare new IEEs/EMPs in accordance with the EARF and government rules;
- Include EMPs in bidding documents and civil works contracts;
- Comply with all government rules and regulations;
- Take necessary action for obtaining rights of way;
- Oversee implementation of EMPs including environmental monitoring by contractors;
- Take corrective actions when necessary to ensure no environmental impacts;
- Submit monthly environmental monitoring reports to PMO, and;
- Address any grievances brought about through the Grievance Redress Mechanism in a timely manner as per the IEEs.

Civil Works Contracts and Contractors:

EMPs are to be included in bidding and contract documents and verified by the PMO and RPMO. The contractor will be required to designate an environment supervisor to ensure implementation of EMP during civil works. Contractors are to carry out all environmental mitigation and monitoring measures outlined in their contract. The government will ensure that bidding and contract documents include specific provision requiring contractors to comply with all; (i) applicable labor laws and core labor standards on (a) prohibition of child labor as define in national legislation for construction and maintenance activities, on (b) equal pay for equal work of equal value regardless of gender, ethnicity or caste, and on (c) elimination of forced labor; and (ii) the requirement to disseminate information on sexually transmitted diseases including HIV/AIDS to employees and local communities surrounding the project site.

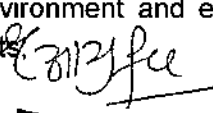
Contractors will only start the civil works activities in communities surrounding the project site. Contractors will only starts the civil works activities in the section/project sites that has IR/IPP impacts upon the completion of RP/IPP implementation and after receiving clearance from the WUSC and endorsed by RPMO's SDO.

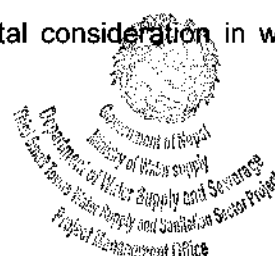
Capacity Building:

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

Sensitization;

- Introduction to environment and environmental consideration in water supply and wastewater projects.


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- Review of IEEs and integration into the project detailed design;
- Improved coordination within nodal departments; and
- Monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites.

Water Users and Sanitation Committees (WUSCs):

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

Prior to construction

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

During construction

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

During operation

- Implement the EMP and the Water Safety Plan.
- If applicable, actively work with the engaged licensed and accredited laboratory in water quality monitoring.
- Prepare the environmental monitoring report as per IEE.
- Ensure observance of the grievance redress mechanism.

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 the WUSC on the same. The laboratory will ensure that while carrying out the water quality monitoring as prescribed in the National Drinking Water Quality Standard and its Directives, 'hands-on' training is provided to the WUSC.


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An Environmental Management Plan (EMP) is proposed for defining the mitigation activities, the responsible agencies for implementation of those mitigation measures and its effective monitoring. Table 17 presents the proposed EMP for the project;

Table 17: Environmental Management Plan

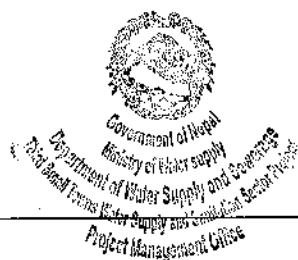
Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
1. Prior to Construction Activities					
Consents, permits, clearances, no objection certificate (NOC), etc.	Failure to obtain Necessary consents, permits, NOCs, etc can result to design revisions 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. Include in detailed design drawings and document all conditions and provisions if necessary	PMO, RPMO, & DSMC	Incorporated in final design and communicated to contractors	Prior to award of contract
Existing utilities  Engineer	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 activities Require construction contractors to prepare a contingency plan to include actions to be done in case of unintentional interruption of services. Require contractors to prepare Spoil Management Plan	DSMC, RPMO	List of affected utilities and operators; Bid document to include requirement for a contingency plan for service interruptions (example provision of water if disruption is more than 24 hours); Spoil Management Plan	During detailed design phase Review of spoils management plan

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Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
Water Supply	Health hazards arising from inadequate design of facilities for receiving, storing and handling of CI & other hazardous chemicals	(i) Source to be well protected, (ii) Tube wells to be cased appropriately and installation of a screen; and (iii) a test pit should be established and water quality monitoring should be conducted regularly (at least once every quarter). Disinfection of the tube well should be conducted prior to commissioning and after repairs. Design has included a "housed" dosing unit with appropriate ventilation, and training for staff in handling as per material safety data sheets (MSDS).	PMO, RPMO, & DSMC	Incorporated in final design and communicated to contractors.	Prior to award of contract
Sanitation (Toilets and septage disposal)	Contamination of drinking water source and other environmental receptors from household and public toilets Risk to public and environmental health due to inappropriate location and design of septage disposal unit	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 downstream of the drinking water source. 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. US EPA standards etc). This includes: (i) locating disposal pits at least 300m away from the nearest dwelling, (ii) pits are to be established only 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.	PMO, RPMO, & DSMC	Incorporated in final design and communicated to contractors.	Prior to award of contract

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Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
Construction work camps, stockpile areas, and storage areas, and disposal areas.	Disruption to traffic flow and sensitive receptors; and causing pollution	Determine locations prior to award of construction contracts. Locations should not be too close to residential areas, schools or medical centers; and should not be disturbing water bodies, forest areas and agricultural land	DSMC, RPMO	List of selected sites for construction work camps, hot mix plants, stockpile areas, storage areas, and disposal areas. Written consent of landowner/s (not lessee/s) for reuse of excess spoils to agricultural land	During detailed design phase
Sources of Materials	Extraction of materials can disrupt natural land contours and vegetation resulting in accelerated erosion, disturbance in natural drainage patterns, ponding and water logging, and water pollution.	Prepare list of sources of required quarry materials	DSMC, RPMO	List of sources of materials	During detailed design phase, as necessary with discussion with detailed design engineers and RPMO
EMP Implementation	Impacts to the environment, workers, and community	Project manager and all key workers will be required to undergo EMP implementation including spoils management, standard operating procedures (SOP) for construction works;	PMO, RPMO and DSMC. Contractor's Environmental Supervisor	Proof of completion (Safeguards Compliance Orientation), and	During detailed design phase prior to mobilization of workers to site

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Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
		health and safety (H&S), core labor laws, applicable environmental laws, etc		Deputation of EMP at worksite	
Construction Works Topography, landforms, geology and soils and/or river morphology and hydrology	Significant amount of sand, gravel or crushed stone will be required for this project. Extraction of natural aggregate materials may cause localized changes in topography and landforms (if on land) or river morphology and hydrology (if on river).	- Contractor's should be required to first utilize readily available sources with environmental clearance and license to operate and that still have a high ratio of extraction capacity over loss of natural state. - Borrow areas and quarries (if these are being opened up exclusively for the project) must comply to environmental requirements, as applicable. No activity will be allowed until formal agreement is signed between project, landowner and contractor. - Coordinate with ministry and local authorities regarding restrictions in quarrying from rivers. As much as possible, alternative source should be identified.	Contractor	Records of sources of Materials	Monthly by RPMO
Air quality	Conducting works at dry season and moving large quantity of materials may create dust nuisance and increase in concentration of vehicle-related pollutants (such as carbon monoxide, sulphur oxides, particulate matter, nitrous oxides, and hydrocarbons) which	- Confine earthworks according to a staking plan and excavation segmentation plan that should be part of the working document - Water dry exposed surfaces and stockpiles of aggregates at least twice daily, or as necessary - If re-surfacing of disturbed 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' freeboard	Construction 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.	- Visual inspection by RPMO & DSMC-ESS on monthly basis - Frequency and sampling sites to be finalized during detailed design stage and final location of project components

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Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
	will affect people who live and work near the sites.	- Limit speed of construction vehicles in access roads and work sites to maximum of 30 kph. - Arrangements to control dust through provision of windscreens, water sprinklers - Monitor air quality.			
Noise nuisance	Construction activities will be along settlement belts 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. However, the proposed project will follow existing ROW alignment	- Involve the community in planning the work program so that any particularly noisy or 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. Overtime work should avoid using noisy/high noise generating equipment. - Limit engine idling to maximum 5 minutes. - Minimize drop heights when loading and unloading coarse aggregates. - Spread out schedule of materials, spoil & waste transport - Horns should not be used unless it is necessary to warn other road users or animals of the vehicle's approach; - All vehicles and equipment used in construction shall be fitted with exhaust silencers. Use silent-type generators (if required). - Monitor noise levels. Maintain maximum sound levels not exceeding 80 decibels (dBA) when measured at a distance of 10 m or more from the source.	Construction Contractor	- Number of complaints from sensitive receptors; - Use of silencers in noise-producing equipment and sound barriers; - Equivalent day and night time noise levels	- Visual inspection by RPMO & DSMC-ESS on monthly basis - Frequency and sampling sites to be finalized during detailed design stage and final location of project components

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Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
Water quality	Trenching and excavation, run-off from stockpiled materials, and chemical contamination from fuels and lubricants may result to silt-laden runoff during rainfall which may cause siltation and reduction in the quality of adjacent bodies of water. The impacts are negative but short-term, site-specific within a relatively small area and reversible by mitigation measures.	• 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. Workers in a posted noise hazard area must wear hearing protection. • Prepare and implement a spoils management plan. • Prioritize re-use of excess spoils and materials in construction activities. If spoils will be disposed, consult with DDC on designated disposal areas. • All earthworks must to 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 stockyards for construction materials shall be identified at least 300m away from watercourses. Place storage areas for fuels and lubricants away from any drainage leading to water bodies. • Take all precautions to minimize the wastage of water in the construction activities. • Take all precautions to prevent entering of wastewater into streams, watercourses, or irrigation system. Install temporary silt traps or sedimentation basins along the drainage leading to the water bodies. • Ensure diverting storm water flow during construction; it shall not lead to inundation and other nuisances in low lying areas. • While working across or close to any water body, the flow of water must not	Contractor	• Areas for stockpiles, storage of fuels and lubricants and waste materials; • Number of silt traps installed along trenches leading to water bodies; • Records of surface water quality inspection; • Effectiveness of water management measures; • No visible degradation to nearby drainage, water bodies due to construction activities	• Visual inspection by RPMO and DSMC-ESS on weekly basis • Frequency and sampling sites to be finalized during detailed design stage and final location of project components

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Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
		be obstructed. Ensure no construction materials like earth or stone are disposed in any manner that may block the flow of water of any watercourse and cross drainage channels. • Monitor water quality according to the Environmental Management Plan.			
Sanitation (Waste management) and aesthetic values  Engineer	Construction works will potentially involve cutting of few shrubs. Construction works will temporarily affect the landscape with excavated soils, residual spoils, stockpiles of aggregates and construction materials (such as pipes), solid wastes, and haphazard parking of construction equipment.	• Prepare a debris disposal plan. • Remove all construction and demolition wastes on a daily basis. • Coordinate with local authority for beneficial uses of excess excavated soils or immediately dispose to designated areas. Avoid stockpiling of any excess spoils. • Lighting on construction sites shall be pointed downwards and away from oncoming traffic and nearby houses. • In areas where the visual environment is particularly important or privacy concerns for surrounding buildings exist, the site may require screening. This could be in the form of shade cloth, temporary walls, or other suitable materials prior to the beginning of construction. • The site must be kept clean to minimize the visual impact of the site. Manage solid waste according to the following preference hierarchy: reduce, reuse, recycling and disposal to designated areas.	Construction Contractor	• Number of complaints from sensitive receptors; • Worksite clear of hazardous wastes such as oil/fuel • Worksite clear of any wastes, collected materials from drainages, unutilized materials and debris • Transport route and worksite cleared of any dust/mud	Visual inspection by RPMO & DSMC-ESS on monthly basis
Biological environment  Department of Water Supply and Sewerage Chainpur Town Water Supply and Sanitation Project Project Management Office	Activities are located in WUSC acquired area. There are no protected areas in or around	• Restrict any tree-cutting. No trees, shrubs, or groundcover may be removed or vegetation stripped without the prior clearance of the DSMC who will coordinate closely with community forest users' group.	Contractor	• RPMO and PMO to report in writing the number of trees cut and planted if any greenery is	Visual inspection by RPMO & DSMC-ESS on monthly basis

Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
	project sites. Not tree felling is required	- All efforts shall be made to preserve trees by evaluation of minor design adjustments/ alternatives (as applicable) to save trees. - Prohibit workers from harvesting, cutting trees for firewood and poaching from forests and fishing from rivers and from - Conduct greenery promotion activities as per need, and maintain the saplings for the duration of contract.		Number of complaints from sensitive receptors on disturbance of vegetation, poaching, fishing, etc.	
Community Services	Road closure is not anticipated. Hauling of construction materials and operation of equipment on-site can cause traffic problems. However, the proposed project will follow existing ROW alignment.	- Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of delivery sites. - Maintain safe passage for vehicles and pedestrians throughout the construction period. - Schedule truck deliveries of construction materials during periods of low traffic volume. - Notify affected sensitive receptors by providing sign boards informing nature and duration of construction activities and contact numbers for concerns/complaints. - Increase workforce in front of critical areas such as institutions, place of worship, business establishment, hospitals, and schools. - Consult businesses and institutions regarding operating hours and factoring this in work schedules. Ensure there is provision of alternate access to businesses and institutions during construction activities, so that there is no closure of these shops or any loss of clients. (As per a detailed Traffic Management Plan)	Construction Contractor	- Traffic route during construction works including number of permanent signages, barricades and flagmen on worksite should be maintained. - Number of complaints from sensitive receptors; - Number of signages placed at project location - Number of walkways, signages, and metal sheets placed at project location	Visual inspection by RPMO & DSMC-ESS on monthly basis

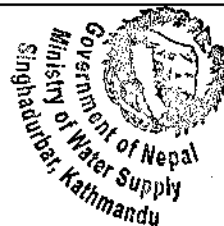
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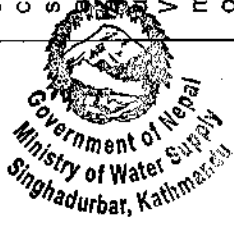

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Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
Socio-economic status	Social conflict with workers from outside the project area along with employment and wage concerns of the local people	• Priority hiring of labour force from communities in the project area and its vicinity. This will have the added benefit of avoiding social problems that sometimes occur when workers are imported into host communities, and avoiding environmental and social problems from workers housed in poorly serviced camp accommodation. • Secure construction materials from local market.	Construction Contractor	• Employment records; • Records of sources of Materials • Records of compliance to Labor Act 2017, district wages	Visual inspection by RPMO & DSMC-ESS on monthly basis
Community infrastructure, facilities and activities	The invasive nature of excavation and the project sites being in built-up areas of town where there are a variety of human activities, the project implementation will result to impacts to the sensitive receptors such as residents, businesses, and the community in general. Cultivated land may be damaged during construction of access road. Excavation may also damage existing infrastructure (such as water	• Obtain details from nature and location of all existing infrastructure, and plan excavation carefully to avoid any such sites to maximum extent possible; • Integrate construction of the various infrastructure projects to be conducted in town (roads, water supply, etc.) so that different infrastructure is located on opposite sides of the road where feasible and roads and inhabitants are not subjected to repeated disturbance by construction in the same area at different times for different purposes. • Consult with local community and authority to inform them of the nature, duration and likely effects of the construction work, and to identify any local concerns so that these can be addressed. • If construction work is expected to disrupt users of community water bodies, notice to the affected community shall be served 7 days in advance and again 1 day prior to start of construction. • Ensure any damage to properties and	Construction Contractor	• Utilities Contingency Plan • Number of complaints from sensitive receptors	Visual inspection by RPMO & DSMC-ESS on monthly basis

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Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
	distribution pipes, electricity facilities, etc) located alongside the roads.	utilities will be restored or compensated to pre-work conditions.			
Occupational health and safety	There is invariably a safety risk when construction works such as excavation and earthmoving are conducted in urban areas. Workers need to be mindful of the occupational hazards which can arise from working in height and excavation works. Potential impacts are negative and long-term but reversible by mitigation measures.  	maintain necessary living accommodation and ancillary facilities in functional and hygienic manner in work camps. • Ensure (i) uncontaminated water for drinking, cooking and washing, (ii) clean eating areas where workers are not exposed to hazardous or noxious substances; and (iii) sanitation facilities are available at all times. • Provide medical insurance coverage for workers; • Provide H&S orientation training to all new workers to ensure that they are apprised of the basic site rules of work at the site, personal protection, and preventing injuring to fellow workers; • Ensure the visibility of workers through their use of high visibility vests when working in or walking through heavy equipment operating areas; • Ensure moving equipment is outfitted with audible back-up alarms; • Mark and provide sign boards for risk areas such as energized electrical devices and lines, service rooms housing high voltage equipment, and areas for storage and disposal. Signage shall be in accordance with international standards and be well known to, and easily understood by workers, visitors, and the general public as appropriate; and	Construction Contractor	• Site-specific H&S Plan • Equipped first-aid stations • Medical insurance coverage for workers • Number of accidents • Records of supply of uncontaminated water • Condition of eating areas of workers • Record of H&S orientation trainings • Use of PPEs • Permanent sign boards for hazardous areas • Signages for storage and disposal areas • Condition of sanitation facilities for workers	• Visual inspection by RPMO (monthly) and DSMC-ESS on weekly basis

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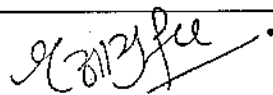
Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
		Disallow worker exposure to noise level greater than 85 dBA for duration of more than 8 hours per day without hearing protection. The use of hearing protection shall be enforced actively.			
Physical and cultural heritage	There are no scheduled or unscheduled archaeological, Paleontological, or architectural sites of heritage significance within or adjacent to project sites.	Stop work immediately to allow further investigation if any finds are suspected.	Construction Contractor	Records of chance finds	Visual inspection by RPMO and DSMC-ESS on monthly basis
Post Construction					
Risk of exposure to chemicals	Health risks for operators and staff is a threat as there will be stock of disinfection chemicals	- Operational manual will be strictly implemented - Use of gloves and masks will be made compulsory for the operators while entering and working in Chlorine stores, and during dosing	Contractor and WUSC during 1 st year WUSC from the 2 nd year of operation	DSC monitors during 1 st year WUSC monitors from the 2 nd year of operation	Weekly
Local environment	Pollution of nearby water bodies is possible if the desludging/clearing of treatment units is not carried out properly	- Settling units will be placed and used to contain the slurry of the treatment units during cleaning or desludging of such units - Proper septic tanks are designed for the public toilets	Contractor and WUSC during 1 st year WUSC from the 2 nd year of operation	DSC monitors during 1 st year WUSC monitors from the 2 nd year of operation	Six-monthly; and as per required
Drinking water supply system	Delivery of Unsafe Water. (contamination,	The operations and maintenance plan and training for staff will cover; (i) competent/cautious handling and storage of Calcium Hypochlorite and	PMO, RPMO, DSMC and WUSC	- Water quality reports - WTP records in the log book.	During O&M of the system. Quarterly monitoring

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Field	Impacts	Mitigation Measures	Responsible for Implementation	Monitoring Indicator	Frequency of Monitoring
	excessive algal growth in reservoirs, improper dosing)	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-compliant EMP and a WSP; (v) monitor water quality. The water tanks are designed to be closed. In addition; (i) maintenance of chlorine residual in the system at all times including the cleaning of reservoirs as per the O&M schedule.			
Decommissioning of Workforce Campsites/workshops	Degradation of land, nuisance, aesthetic loss and pollution	- Remove all spoils wreckage, rubbish, or temporary structures (such as buildings, shelters, and latrines) which are no longer required; - All disrupted utilities restored, all affected structures rehabilitated/compensated - The area that previously housed the construction camp is to be checked for spills of substances such as oil, paint, etc. and these shall be cleaned up. - All hardened surfaces within the construction camp area shall be ripped, all imported materials removed, and the area shall be topsoiled and revegetated	Contractor	RPMO/PMO report in writing that (i) worksite is restored to original conditions; (ii) camp has been vacated and restored to pre-project conditions; (iii) all construction related structures not relevant to O&M are removed; and (iv) worksite clean-up is satisfactory.	Weekly



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7.4. Environmental Monitoring Program

Environmental monitoring will be done during construction on three levels:

- i. Monitoring development of project performance indicators by the PMO-ESS;
- ii. Monitoring implementation of mitigation measures by the DSMC team; and
- iii. Overall regulatory monitoring of environmental issues by the PMO.

During the project construction phase, monitoring of key environmental parameters related to the mitigation measures is proposed as per Table 18 below which presents the indicative environmental monitoring plan for the project which includes relevant environmental parameters, with a description of the sampling stations, frequency of monitoring, applicable standards, and responsible agencies.

Table 18: Environmental Monitoring Program

Source-based monitoring							
SN	Field and Source	Stages/Phases	Parameters	Location	Frequency	Standards	Responsibility
1	Campsite monitoring	Construction, Post-construction	OHS aspects; SWM; Drinking water quality; Provisions of space & light; Code of conduct; First aid facilities	Temporary campsites; rented rooms/flats of workforce	2 weekly	NDWQS 2005, WHO Guideline values	Joint Monitoring Team (Biannually by RPMO/PMO)
2	Monitoring in work fronts	Construction	OHS aspects; Air quality; noise levels	All active working sites	Weekly	NAAQS 2003, WHO Guidelines	
3	Monitoring in access roads	Construction	Air quality; noise levels	All roads where project vehicles ply	Weekly	NAAQS 2003, WHO Guideline values	
4	Stockpile/Disposal site monitoring	Construction		Designated stockpile area, informal stockpiles, designated disposal sites	Monthly	Contract Specifications	
5	Workforce monitoring	Construction		All active working sites	2 weekly	Contract Specifications	


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Sink-based monitoring						
SN	Field and Source	Stages/Phases	Parameters	Location	Frequency	Standards
1	Monitoring in residential areas	Construction	Air quality, noise levels	Residential areas along pipelines	Monthly	NAAQS 2003, WHO Guideline values
2	Monitoring in religious sites/markets	Construction	Air quality, noise levels	Religious sites/markets areas along pipelines	Monthly	NAAQS 2003, WHO Guideline values
3	Monitoring in surface water sources	Construction	Water quality SW disposal	Rivers/streams within 500 m of project components/units	Six monthly	NDWQS 2005
4	Monitoring in proposed drinking water sources	Pre-construction, Construction and Post-construction	Water quality	Sources identified for the project	Quarterly	NDWQS 2005
5	Public/Open spaces	Construction	Greenery Promotion	Open spaces within the service wards	Quarterly	Contract Specifications
						Joint Monitoring Team (Biannually by RPMO/PMO)

Note: Joint Monitoring Team comprises of authoritative representatives at least from the Supervision Consultant, the Contractor, and the WUSC (at least 1 from each party).



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7.4.1. Environmental Monitoring Cost

The cost of regular monitoring works will be inbuilt in the EMP and the civil work's contract of the contractor.

Other monitoring will works will have additional costs for involvement of a authorized team. The project level monitoring team will submit its report to MoWS. Total cost of environmental monitoring (field visits, observation, review of reports and report preparation) is estimated NRs. 335,000.

Table 19: Environmental Monitoring Cost

Manpower requirement	Duration (month)	Rate (NRs)	Amount (NRs)
Team Leader/Environmental Specialist	1	75,000	75,000
Water Resource Engineer	1/2	60,000	30,000
Socio-economist	1/2	60,000	30,000
Cost of Monitoring by MoWS	1	50,000	50,000
Support staff	1	25,000	25,000
Transportation cost		LS	75,000
Report preparation & sampling/lab. Test		LS	50,000
Total			335,000

7.4.2. Types of Monitoring and Monitoring Parameters

Monitoring is an ongoing component of the environmental assessment process and subsequent environmental management and mitigation activities. There are basically three types of environmental monitoring:

Baseline Monitoring - It is done if the project is not going to be implemented recently (in this project not required)

Compliance Monitoring - It verifies whether contract environmental clauses and the mitigation measures are properly implemented in the field.

Impact Monitoring - It confirms whether the environmental mitigation measures specified in the project design and contract are correctly formulated.

The nature and purpose of environmental monitoring will be different in the pre-construction, stage, construction stage and operation stage of the project.

Pre-construction Stage

Monitoring at this stage of project is to:

- Confirm that plan, route selection and design of the road has considered the recommendation made by IEE
- Judge the level of preparation for implementing the construction related mitigation, and
- Prepare up-to-date environmental status of specific site where the impacts are assessed to be significant


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Construction Stage

This stage of monitoring is to check compliance with the best practices, norms and standards and on implementation of the mitigation measures prescribed by IEE. The following parameters will mainly be focused on:

- i. Disposal of spoil and construction wastes and its consequences
- ii. Disruption of natural water courses, drainage work and its consequences
- iii. Slope protection measures
- iv. Loss, stratification or degradation of forest vegetation
- v. Care, sensitivity or disruption of community infrastructures
- vi. Loss or degradation or threat to private properties
- vii. Care, sensitivity or disruption to cultural sites

Operation Stage

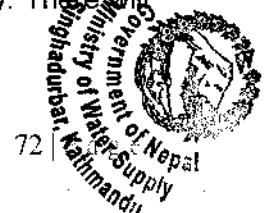
- i. The monitoring in this stage is mainly related to road features, road induced activities and their impacts on receiving environment. The following parameters are mainly monitored during operation stage:
- ii. Drainage structures, their outfall and damage to private properties, community properties and natural resources
- iii. Effectiveness of the slope protection and soil erosion measures
- iv. Encroachment into road side, public land, forest or marginal land
- v. Status of waste disposal sites
- vi. Road accidents
- vii. Symptoms of emergence of road side settlements, changes in agricultural pattern
- viii. Activities of road neighboring communities
- ix. Illegal felling of trees and hunting of wildlife

7.5. Institutional Capacity Development Program

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.

WUSC does not have the capacity to monitor the quality of supplied water as prescribed in the NDWQS and its Directives. Albeit monitoring kits and laboratory rooms will be provided, this would not guarantee WUSC can handle monitoring appropriately. DWSSM has five regional laboratories; however some are not functioning fully due to lack of manpower. Considering that public health is a critical concern associated with water supply, it is recommended that a licensed and accredited laboratory be engaged to conduct water quality monitoring for at least the first 2-3 years of operation with the WUSC actively participating to develop WUSC capacity. The conduct of water quality monitoring should be carried out in such a way that WUSC will be "learning by doing". After the engagement period, there should be continuing periodic training of new persons to ensure capacity of the WUSC is sustained. The cost for monitoring during operation is based on the assumption that a licensed laboratory will be engaged for both the monitoring requirements and to train the WUSC. A Water Safety Plan is included in project design and will oblige the operator to carry out water quality monitoring accordingly. There will


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be sufficient fund to include training by the licensed and accredited lab, while monitoring water quality.

The PMO-ESS will be responsible for trainings on environmental awareness and management in accordance with both ADB and government requirements. Specific modules customized for the available skill set will be devised after assessing the capabilities of the target participants and the requirements of the project. Typical modules would be as follows: (i) sensitization; (ii) introduction to environment and environmental considerations in water supply and wastewater projects; (iii) review of IEEs and integration into the project detailed design; (iv) improved coordination within nodal departments; and (v) monitoring and reporting system. The contractors will be required to conduct environmental awareness and orientation of workers prior to deployment to work sites. The proposed training project along with the frequency of sessions is presented in Table 20 below;

Table 20: Training Program for Environmental Management

Items	Pre-construction/prior to construction	Construction	
Training Title	Orientation workshop	Orientation program/ workshop for contractors and supervisory staffs	Experiences and best practices sharing
Purpose	To aware the participants 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	To share the experiences and best practices aimed at learning lessons and improving EMP implementation
	Module 1: Orientation	• Roles and responsibilities of officials/contractors/consultants on Safeguards	Experiences on EMP implementation – issues and challenges
Contents	• ADB Safeguards Policy Statement	• Environmental issues during construction	Best practices followed
	• GoN Environmental Laws and Regulations	• Implementation of EMP	
		• Monitoring of EMP	
	Module 2: Environmental Assessment Process	• Reporting requirements	
	• ADB environmental process, identification of impacts and mitigation measures, 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
Participants	Executing and implementing agencies, PMO, and PMO staffs (technical and environmental) involved in the project implementation	PMO RPMO Contractors	PMO RPMO Contractors

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7.6. Staffing Requirement and Budget

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.

The infrastructure involved in each scheme is generally straightforward to build. Environmental monitoring during construction will also be straightforward and will involve periodic site observations and interviews with workers and others, plus checks of reports and other documents. This will be conducted by PMO-ESS assisted by the PMO environmental safeguard officer. Therefore, no separate budget is required for the PMO-ESS. 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. The indicative costs of EMP implementation are shown in Table 21;

Table 21: Indicative Cost of EMP Implementation

Table 21: Indicative Cost of EMP Implementation							
Particulars		Stages	Unit	Qty	Rate (NRs)	Cost (NRs)	Cost covered by
A. Mitigation Measures							
1	Protection works and rehabilitation works	Construction				6,25,000	Contractor's contract
2	Slope stabilization	Construction				3,00,000	
3	Greenery promotion/plantation	Construction				1,00,000	
4	Crop compensation	Construction				1,00,000	
B. Monitoring Measures							
1	Water Quality	Pre-construction/ - Construction	Sample	10	8,000	80,000	Contractor's contract
2	Air Quality Monitoring	Pre-construction/ - Construction	Sample	5 x 2	10,000	100,000	Contractor's contract
3	Noise level Monitoring	Pre-construction/ - Construction	Sample	L/S		25,000	Contractor's contract
C. Capacity Building							
	(i) Orientation workshop for officials involved in the project implementation on ADB Safeguards Policy Statement, Government of Nepal environmental laws and regulations, and environmental assessment process;	Immediately upon engagement of the PMO-ESS (DSMC) prior to award of civil works contracts					
	(ii) induction course to contractors, preparing the EMP implementation and environmental monitoring requirements related to mitigation measures; and taking immediate action to remedy unexpected adverse impacts or ineffective found during the course of implementation; and mitigation	After the first training, and within 6 months of start of project contract					Covered under PMC or DSMC contract

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	Particulars	Stages	Unit	Qty	Rate	Cost	Cost
	measures						
	(iii) lessons learned information sharing	Prior to start of Phase 2 and upon completion of the project					
D. Human Resources Costs							
1	PMO Environment Safeguards Officer	Construction phase	1				Budget covered through PMC
2	RPMO Environment Safeguard Assistants	Construction phase	2				Budget covered through DSMC
3	PMO Environmental Safeguard Expert	Responsible for environmental safeguards of the project at PMO level	P/M				Remuneration and budget for travel covered in the PMC contract
4	DSMC Environmental Safeguard Specialist	Responsible for environmental safeguards of the project at RPMO level	P/M				Remuneration and budget for travel covered in the DSMC contract
E. Administrative Costs							
1	Legislation, permits, and agreements	Permit for excavation, tree-cutting permits, etc	Lump sum				These consents are to be obtained by contractor at his own expense.
2		Environmental clearances as per EPA 1997 and EPR, IEE presentation at review committee related expenses	Lump sum	1			PMO cost
F. Other Costs							
1	Public consultations and information Disclosure	During pre-construction and construction phase, including public awareness campaign through media	As per requirement		Lump sum		Covered under DSMC Contract
2	GRM implementation	Costs involved	Lump sum				PMO cost

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	Particulars	Stages	Unit	Qty	Rate	Cost	Cost
		in resolving complaints (meetings, consultations, communication and reporting/information dissemination)					
3	Any unanticipated impact due to project Implementation	Mitigation of any unanticipated impact arising during construction phase		Lump sum	Contractor's liability	As per insurance requirement	Civil works contract-contractor's insurance defect liability period
4	Social Safeguard and GESI activities	Costs involved in resolving complaints (meetings, consultations, communication, and reporting/Informing	As per requirement	Lump sum		45,000	Civil works contract
5	Awareness Activities					50,000	Civil works contract
6	Internal Monitoring; Notices and meetings					25,000	Civil works contract
Total						14,50,000	

7.7. Implementation Schedule

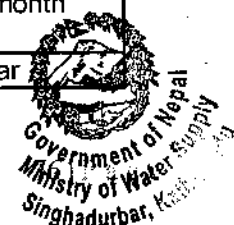
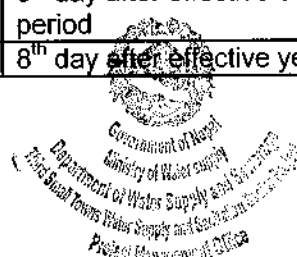
Environmental management will be implemented from the detailed design phase through to procurement, construction and operation. Table 22 presents the indicative time frame of key EMP activities in relation to project implementation schedule.

Table 22: Environmental Management Implementation Schedule

	Activity	Indicative Time Frame
PROJECT IMPLEMENTATION		
	Detailed Design & Bidding Documents	Q2 Y0
	Procurement	Q3 Y0
	Construction	Q4 Y0 – Q4 Y2
	Contractor Operating Period	Q3 Y2 – Q4 Y3
	Handover to WUSC for Operation	Q3 Y3 – Q1 Y4
	Defects Liability Period	Q3 Y2 – Q4 Y4
ENVIRONMENTAL MANAGEMENT		
	Overall	
1	Design Review and Technical Audit Consultant (DRTAC)-Engagement of Environmental Specialist	Starting Q4 Y0 (5 yrs of intermittent inputs)
2	PMO's submission of Environmental Monitoring Report (EMR)	
	Monthly EMR for project's Monthly Progress Report	8 th day after effective month
	Semi-Annual EMR during construction for submission to ADB	8 th day after effective 6-month period
	Annual EMR for submission to ADB	8 th day after effective year

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Activity		Time Frame
Prior to Construction Mobilization		
1	Finalization of EMP, (if applicable) revision of IEE	Q2 Y0
2	ADB review & approval of revised IEE & EMP.	Q 2 Y0
3	Obtaining Government's approval of IEE Report	Q2 Y0 – Q3 Y0
4	Community preparation (including disclosure of Final IEE & its EMP)	Q4 Y0
5	Establishment of baseline data (as set out in the EMP)	Q4 Y0 (shall have been done prior to award of contract)
6	Preparation of C-EMP by selected Contractor, review of C-EMP	Q4 Y0, before Notice to Proceed is
	against SPS-compliant EMP.	Given
Construction Period		
Mobilization to Demobilization		
1	Implementation of mitigation measures and conduct of environmental effects monitoring following the C-EMP.	Q4 Y0 – Q4 Y2
2	Submission of Environmental Monitoring Report (EMR)	Q4 Y0 – Q4 Y2
	- Monthly, by Contractor	5 th day of the month following the effective month
	- Quarterly, by Contractor or by Licensed Laboratory	3 rd day of the month following the effective quarter
Operation Period (potentially could start even before DLP is over)		
1	Implementation of mitigation measures & monitoring activities as specified in the EMP	Starting anytime between Q3 Y3 & Q1 Y4
2	Submission of EMR	anytime between Q3 Y3 & Q1 Y4
	Monthly, by Operator	5 th day of the month following the effective month
	Quarterly, by Operator or (if applicable) by Licensed Laboratory	3 rd day of the month following the effective quarter

Note: Y0 = Design Year; Y1 to Y4 = Year 1 to Year 4 from start of Construction Contract

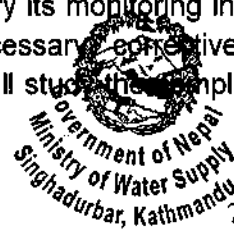
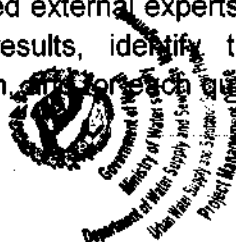
7.8. Monitoring and Reporting

RPMO will monitor and measure the progress of EMP implementation with assistance from DMSC. The monitoring activities will correspond with the project's risks and impacts, and will be identified in the IEE for the project. In addition to recording information on the work and deviation of work components from original scope PMO, RPMO, and DSMC) will undertake site inspections and document review to verify compliance with the EMP and progress toward the final outcome.

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. The suggested monitoring report format is in Annex 2-E. The 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 at the minimum on an annual basis. Monitoring reports will be posted in a location accessible to the public.

PMO will retain qualified and experienced 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

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the action plan developed in the previous quarter. Compliance with loan covenants will be screened by the PMO, with support from the PMC. Ministry of Forests and Environment (MoFE) will monitor the project as the third party monitoring the compliance and effectiveness of the EMP implementation in the project.

ADB will review project performance against the 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 site visits for projects with adverse environmental or social impacts;
- ii. Conduct supervision missions with detailed 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 as appropriate; 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.

7.9. Public Consultations and Information Disclosure

Public Consultation

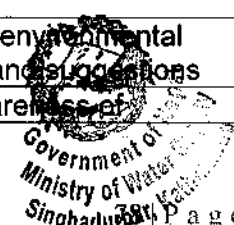
For public involvement, following procedures were followed during the IEE report preparation:

- i. A 15 days public notice was published (18th May 2018, *Arthik Abhiyan*) in the national daily newspaper seeking written opinions from Municipality office, DCCs, schools, health posts and related local organizations and concerned people.
- ii. A copy of the public notice was also affixed in the notice boards of the above mentioned organizations in the project area and a deed of enquiry (*muchulka*) was collected.
- iii. The IEE team discussed with the local communities and related stakeholders like Municipality office, ward offices, etc during the field survey to collect their concerns and suggestions.
- iv. Three meetings were held in Chainpur regarding the project and its environmental concern. DSMC members explained about the project and the probable environmental impacts.

Table 23: Summary of the Public Consultations

Public Consultations			
1	7075/02/10	31	Brief sharing of project and discussion on possible impacts
2	7075/03/03	19	Detailed project sharing, environmental aspects, local concerns and suggestions
3	7075/03/03	27	General information and awareness of

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The minutes of meeting of the Public Consultation is attached in Annex 4.

Consultation will be a continuing process throughout activity implementation and in environmental monitoring activities. Additional consultations will include key informant interviews and random interviews with affected persons/households

Table 24: List of People and Institutions Consulted

SN	Name	Organization/Address	Male/ Female
1	Birendra Bahadur Khadka	Mayor, JayaPrithvi Municipality	M
2	Wajir Khadka	Chairman-Ward 9, JayaPrithvi Municipality	M
3	Dal Bahadur Bista	Chairman-Ward 10, JayaPrithvi Municipality	M
4	Keshav Bahadur Rokaya	Chairman-Ward 11, JayaPrithvi Municipality	M
5	Sher Bahadur Bista	Finance Officer, JayaPrithvi Municipality	M
6	Hari Shankar Joshi	JayaPrithvi Municipality	M
7	Bina KC	Beneficiary	F
8	Debaki Sing	Beneficiary	F
9	Kabita Surbankar	Beneficiary	F
10	Bisna Nepali	Beneficiary	F
11	Kamal Kumar Joshi	Beneficiary	M
12	Lokendra Bista	President, WUSC Chainpur	M
13	Khadga Subarnakar	Vice President, WUSC Chainpur	M
14	Prem Prakash Chhatyal	Secretary, WUSC Chainpur	M
15	Juna Jagri	Treasurer, WUSC Chainpur	F
16	Kanthe Khadka	Member, WUSC Chainpur	M
17	Dipak Oli	Member, WUSC Chainpur	M
18	Babin Singh	Member, WUSC Chainpur	M
19	Punam Joshi	Member, WUSC Chainpur	F
20	Nirmala Singh	Member, WUSC Chainpur	F
21	Priya Bishta	Beneficiary, JayaPrithvi Municipality	F
22	Pratibha Khatri	Beneficiary, JayaPrithvi Municipality	F
23	Krishna Nepali	Beneficiary, JayaPrithvi Municipality	F
24	Bhagwati Durai	Beneficiary, JayaPrithvi Municipality	F
25	Salikram KC	Beneficiary, JayaPrithvi Municipality	M
26	Narendra Bhandari	Beneficiary, JayaPrithvi Municipality	M
27	Top Bahadur KC	Beneficiary, JayaPrithvi Municipality	M
28	Amar Raj Khatri	Chief Administrative Officer, JayaPrithvi Municipality	M
29	Bishnu Prasad Koirala	Principal, Shree Jalpa Secondary School	M
30	Shyam Bahadur Khati	Beneficiary, Ward 4 - JayaPrithvi Municipality	M
31	Kesh Bahadur Khati	Beneficiary, Ward 4 - JayaPrithvi Municipality	M

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Issues Raised and Suggestions

- The Mayor of the municipality suggested on ensuring the adequacy, quality and sustainability of the water supply from the project
- The Chairperson of Ward 10 suggested for proper/adequate protections to be provided for the project structures to be built on the bank of Seti River
- Beneficiary, Mrs Bina KC suggested on need of proper protection/stabilization works in the site where water reservoir tanks are to be made
- The need of Public Toilet, and its sustainable operation was raised as a concern, IT was discussed that a local club can be mobilized for its sustainable operation. Provision of water through a public tap-point was also discussed to support the proper operation of the toilet.
- Timely implementation of project so that the environmental impacts do not get more aggravated,
- Minimal loss of vegetation, and suggested for greenery promotion

Information Disclosure

The draft IEE was provided to be kept at the information centre of Jaya Prithivi Municipality, Bajhang and at User Committee's office for public disclosure. Information will also be disseminated through person to person contacts and interviews and group discussions. Available institutions at the local level will also be informed through notices pasted on notice boards of the concerned ward offices, schools, health posts and public places. The approved IEE report will be accessible to interested parties and general public through websites www.stwssp.gov.np

Following offices will get the Final IEE report:

- Jaya Prithivi Municipality, Bajhang District, Sudurpaschim Province
- Water Supply and Sanitation Division Office (WSSDO) Bajhang
- Ministry of Water Supply, Kathmandu

For the benefit of the community, the summary of the IEE has been translated in the local language and made available at locations specified.

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7.10. Grievance Redress Mechanism

Context

As stipulated in SPS 2009, ADB requires the borrower/client to establish and maintain a grievance redress mechanism to receive and facilitate resolution of affected peoples' concerns, complaints, and grievances about the Project's environmental and social performance. The grievance redress mechanism shall address affected people's concerns and complaints promptly, using an understandable and transparent process that is gender responsive, culturally appropriate, and readily accessible to all segments of the affected people at no costs and without retribution. The mechanism should not impede access to the country's judicial or administrative remedies. The affected people will be appropriately informed about the mechanism. Under Nepal's Environment Protection Rules 2054 (1997) and as amended in 1999 and 2007, any person/party affected by the pollution/emissions generated by a project/activity may lodge complaint with the concerned sector agency (CSA). If investigation by CSA confirms the lodged complaint, the Proponent will be issued notice to institute corrective actions within a prescribed timeframe. The CSA may carry out the cleaning activities of the affected area by itself at its own cost but to be recovered from the proponent with 25% surcharge (Articles 17, 18 and 20 of EPR 1997).

The Grievance Redress Mechanism

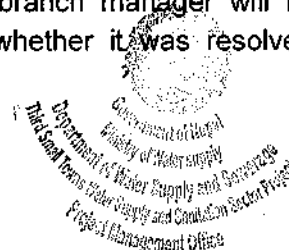
A grievance redress mechanism (GRM) will be established to receive, evaluate, and facilitate the resolution of affected people's concerns, complaints, and grievances about the social and environmental performance of the project. The GRM aims to provide a trusted way to voice and resolve concerns linked to the project, and to be an effective way to address affected people's concerns. The GRM for the project is outlined below, and consists of three levels with time-bound schedules and specific persons to address grievances.

First level of GRM

The first level and most accessible and immediate contact for the fastest resolution of grievances are the contractors and supervision consultants on site. Prior to construction of any works, the community awareness consultants, DSMC, and contractors are to hold local community meetings to notify the local residents and businesses of the temporary disturbance, and to inform them of the project. If a local area committee (LAC) exists, they should also be informed. If any complaints arise, the contractors, DSMC, and PMO can immediately resolve the complaint on site. The PMO regional units viz RPMO; can also be involved in grievance redress at this stage. The DWSSM hotline and PMO office phone number will be posted in public areas within the project area and construction sites.

Any person with a grievance related to the project can contact the project to file a complaint. The RPMO is staffed with a consumer relations officer to field and resolve complaints. The consumer relations officer or branch manager will document the complaint, and immediately address and resolve the issue with the contractor within 1-2 days, if the complaint remains unresolved at the field level. The branch manager may seek the assistance of the DSMC safeguards specialists (the environmental specialist or social safeguards specialist) to help resolve the issue. The consumer relations officer or branch manager will notify the PMO safeguards unit that a complaint was received, and whether it was resolved. The branch


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manager will fully document the following information: (i) name of the person, (ii) date complaint was received, (iii) nature of complaint, (iv) location, and (v) how the complaint was resolved.

Second level of GRM

Should the grievance remain unresolved; the branch manager will forward the complaint to the PMO safeguards unit. The person filing the grievance will be notified by the consumer relations officer or Branch Manager that the grievance was forwarded to the PMO safeguards unit. For resettlement issues, the resettlement officer will address the grievance; for environmental issues, it will be the environmental officer. Grievances will be resolved through continuous interactions with affected persons, and the RPMO will answer queries and resolve grievances regarding various issues, including environmental, social, or livelihood impacts. Corrective measures will be undertaken at the field level by the RPMO safeguards staff within 7 days. The relevant safeguards unit staff will fully document the following information: (i) name of the person, (ii) date complaint was received, (iii) nature of complaint, (iv) location, and (v) how the complaint was resolved.

Third level of GRM

Should the grievance remain unresolved, the PMO 's project director will activate the third level of the GRM by referring the issue (with written documentation) to the local Grievance Redress Committee (GRC) of the DWSSM, who will, based on review of the grievances, address them in consultation with the PMO safeguards unit, project director, and affected persons. The local GRC will consist of members of the PMO, affected persons, and local area committee, among others determined to provide impartial, balanced views on any issues. The GRC should consist of around five persons. A hearing will be called with the GRC, if necessary, where the affected person can present his or her concern/issues. The process will promote conflict resolution through mediation. The local GRC will meet as necessary when there are grievances to be addressed. The local GRC will suggest corrective measures at the field level and assign clear responsibilities for implementing its decision within 15 days. The functions of the local GRC are as follows: (i) to 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) to record grievances of affected persons, categorize and prioritize them, and provide solutions within 15 days; and (iii) to report to the aggrieved parties developments regarding their grievances and decisions of the GRC. The PMO safeguards officers will be responsible for processing and placing all papers before the GRC, recording decisions, issuing, minutes of the meetings, and taking follow-up action to see that formal orders are issued and the decisions carried out.

Fourth level of GRM

In the event that a grievance is not addressed by the contractor, DSMC, RPMO, PMO or GRC, the affected person can seek legal redress of the grievance in the appropriate courts, the fourth level of the GRM, which is the formal legal court system. The grievance redress mechanism and procedure is depicted in Figure 5 below;


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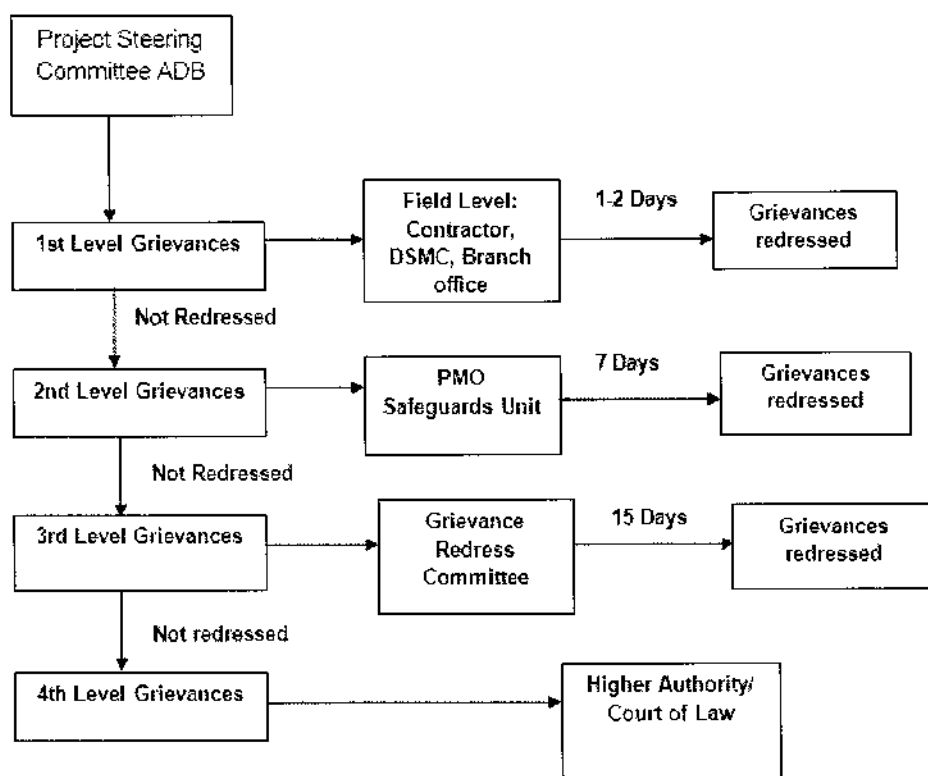


Figure 5: Grievance Redress Mechanism

Costs

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

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8. CONCLUSIONS

IEE study shows that this proposed project is not an environmentally critical intervention. The IEE indicates that:

The project area does not lie within or is not situated adjacent to environmentally sensitive areas. However disturbances to biological resources must be limited to possible extent.

Degree of negative impacts is expected to be local, confined within the 'areas of influence'. Cutting and excavation works, blasting, etc are some of the prime concerns. Slope instability and spoil disposal are also among the foreseen challenges to the local environment. With mitigation measures in place, the potential adverse impacts during construction phase would be site-specific and short term.

The adverse impacts are foreseen to be of temporary and short-term nature which would be manifested only during peak construction time. These will not be sufficient to threaten or weaken the surrounding resources. Preparation and implementation of an EMP would mitigate the impacts and would lower their significance to acceptable levels. Simple mitigation measures, basically integral to socially and environmentally responsible construction practices, are commonly used at construction sites and are known to the contractors. The designed mitigation measures are affordable and easy to implement on time.

During operation phase, accidental chance of delivery of unsafe water is a concern. This can be mitigated with good operation and maintenance, prompt action on leaks, and complying with the required quality monitoring of supplied water as per national standards.

The proposed project will have following beneficial results: (i) improved access to reliable supply of safe drinking water; (ii) promotion of good hygiene and sanitation practices; and (iii) enhanced public health and improved quality of life.

In light of the above findings, the classification of the *Chainpur Town Water Supply and Sanitation Project* as Category B is confirmed, and no further special study or EIA needs to be undertaken to comply with the Safeguard Policy Statement of ADB and EPR 1997 of the Government of Nepal.


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9. REFERENCE

Environment Protection Act, Government of Nepal, 1996

Environment Protection Regulations, Government of Nepal, 1997 (and amendments)

Final Feasibility Study of Chainpur Town Water Supply and Sanitation Project

Detailed Engineering Design Report of Chainpur Project, June 2018

Environmental Assessment and Review Framework, Urban Water Supply and Sanitation Sector Project, 2018, Asian Development Bank

Safeguard Policy Statement, June 2009, Asian Development Bank

The Updated Fifteen-Year Development Plan for Small Towns' Water Supply and Sanitation Sector, 2009


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ANNEXES

- Annex 1: Approved Terms of Reference
- Annex 2: Sample Forms, Formats and Report Template
- Annex 3: Project Location, Service Area and Schematic Map
- Annex 4: Public Notice, Deed of Inquiry, Recommendation Letter
- Annex 5: Water Quality Test Report
- Annex 6: Survey Questionnaire
- Annex 7: Chlorine Use Guideline
- Annex 8: Checklists
- Annex 9: Photographs
- Annex 10: Comments Incorporation Matrix



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ANNEXES


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नेपाल सरकार

खानेपानी मन्त्रालय

(खानेपानी तथा वातावरण माहाशाखा)

फोन नं. ४२११६९३
फ्याक्स नं. ९७७-१-४२११६९
सिंहदरबार,
काठमाडौं, नेपाल ।



१४६४
०६६/१/२६

प. संख्या :- ०७४१०७५

चलानी नं. :- ५५२

मिति:- २०७५/११/२६

विषय: प्रारम्भिक वातावरणीय परिक्षण (IEE) को कार्यसूची (ToR) स्वीकृती सम्बन्धमा ।

श्री खानेपानी तथा ढल निकास विभाग,
पानीपोखरी, काठमाडौं ।

प्रस्तुत विषयमा तर्हावाट स्वीकृतिका लागि मन्त्रालयमा प्राप्त बभ्राङ्ग जिल्लामा प्रस्तावित चैनपुर, बभ्राङ्ग नगर तेस्रो साना शहरी खानेपानी तथा सरसफाइ आयोजना को प्रारम्भिक वातावरणीय परिक्षण (IEE) अध्ययनको लागि तयार गरिएको कार्यसूची प्रतिवेदन (ToR) नेपाल सरकार (सचिवस्तर) को मिति २०७५/११/१० को निर्णयानुसार स्वीकृत गरिएको व्यहोरा निर्देशानुसार अनुरोध छ ।

बोधार्थ:

श्री आयोजना व्यवस्थापन कार्यालय,
तेस्रो साना शहरी खानेपानी तथा सरसफाइ आयोजना,
पानीपोखरी, काठमाडौं ।

(स्वीकृत कार्यसूची (ToR) को १ प्रति संलग्न गरिएको)

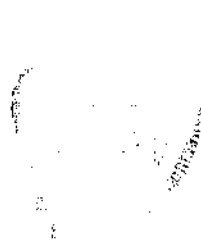
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[Handwritten signature]
विदुर भा
(इन्जिनियर)
Department of Water Supply and Sewerage
Ministry of Health
Government of Nepal
Project Management Office
Third Small Towns Water Supply and Sanitation Sector Project

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०७/११/२६

ANNEX 1: APPROVED TERMS OF REFERENCE (TOR)



TERMS OF REFERENCE (ToR)
for
INITIAL ENVIRONMENTAL EXAMINATION
of
**CHAINPUR SMALL TOWN WATER SUPPLY AND
SANITATION PROJECT**
CHAINPUR, BAJHANG DISTRICT

Government of Nepal
Ministry of Water Supply and Sanitation
Department of Water Supply and Sewerage
Third Small Towns Water Supply and Sanitation Sector Project
PROJECT MANAGEMENT OFFICE
Panipokhari, Kathmandu

Submitted by:
Building Design Authority P. Ltd.
JV Plus Engineers & Architects P. LTD
Kamaladi, Kathmandu, Nepal

November, 2017

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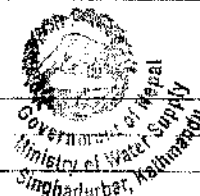


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List of Abbreviations

ADB	Asian Development Bank
CBS	Central Bureau of Statistics
DC	Direct Current
DDC	District Development Committee
DI	Ductile Iron
DL	Distribution Line
DMA	District Meter Area
DSMC	Design Supervision and Management Consultant
DTW	Deep Tube Well
DWSS	Department of Water Supply & Sewerage
EA	Executing Agency
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPA	Environment Protection Act
EPR	Environment Protection Rules
ES	Environmental Safeguards
FGD	Focus Group Discussion
GI	Galvanized Iron
GoN	Government of Nepal
GRC	Grievance Redress Committee
HDPE	High Density Polyethylene Pipe
HH	Household
HP	Horse Power
IA	Implementing Agency
IEE	Initial Environmental Examination
IO	International Organization
KV	Kilo Volt
kVA	Kilo Volt Ampere
MoWSS	Ministry of Water Supply and Sanitation
NDWQS	National Drinking Water Quality Standard
NGO	Non-Governmental Organization
NPR	Nepalese Rupee
O&M	Operation & Maintenance
OBA	Output Based Aid
OHT	Over Head Tank
PAM	Project Administration Manual
PMO	Project Management Office
RCC	Reinforced Cement Concrete
RPMO	Regional Project Management Office
RVT	Reservoir Tank





ToR for Initial Environmental Examination of Chainpur Small Town Water Supply and Sanitation Project

SS	Stainless Steel
SSTWSSSP	Second Small Towns Water Supply and Sanitation Sector Project
STW	Shallow Tube Well
STWSSSP	Small Towns' Water Supply & Sanitation Sector Project
TDF	Town Development Fund
TL	Transmission Line
ToR	Terms of Reference
TSTWSSSP	Third Small Towns' Water Supply & Sanitation Sector Project
VDC	Village Development Committee
WASH	Water, Sanitation and Hygiene
WSSDO	Water Supply and Sanitation Division
WTP	Water Treatment Plant
WUA	Water Users' Association
WUSC	Water Users' & Sanitation Committee



Chapter 1

1. NAME AND ADDRESS OF THE PROPONENT

The Environment Protection Rules 1997 (and amendments) mentions that a Terms of Reference (TOR) for an Initial Environmental Examination (IEE) is required.

This Terms of Reference (TOR) has been prepared in order to carry out an IEE for Chainpur Small Town Water Supply and Sanitation Project in Bajhang District. The proposed proponent is the Project Management Office (PMO), Third Small Towns Water Supply and Sanitation Sector Project (TSTWSSSP) of the Department of Water Supply & Sewerage, The Ministry of Water Supply and Sanitation, Government of Nepal is responsible for the preparation of the IEE report. The name and address of the proponent is given below:

Name of the Proponent:

Project Management Office
Chainpur Small Town Water Supply and Sanitation Sector Project
Third Small Towns Water Supply and Sanitation Sector Project
Department of Water Supply and Sewerage
Ministry of Water Supply and Sanitation
Government of Nepal

Address of the Proponent:

Panipokhari, Kathmandu, Nepal
Phone: 4423848, 4412348
Fax: 4413280
Email: info@stwsssp.gov.np
Website: www.sstwsssp.gov.np



Chapter 2

2. BACKGROUND AND DESCRIPTION OF THE PROJECT

2.1 Project Background

The Third Small Towns Water Supply and Sanitation Sector Project is designed with the principle of community management, making it demand responsive, and adopting a participatory approach. The Participatory Approach aims for greater community participation in planning, implementation along with their operation and maintenance activities of the water supply sector. Demand responsiveness is demonstrated by the willingness to pay for improved service delivery and ultimately aims at 30% cost recovery. Community management is essential for making the community empowerment so that the community can take full responsibilities on the financial, technical and managerial aspects on the operation & maintenance activities.

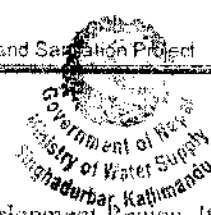
In terms of financing, 70% of the cost will be contributed by GoN. In regard to cash contribution to be made by WUSC, the initial cash contribution of WUSC should be a minimum of 5% of the civil works contract in the form of upfront cash contribution. The remaining 25 % is to be borrowed from TDF as a loan at an interest rate not exceeding 5% per annum with a maturity of 25 years including a grace period of five years. The project ensures full participation of the Water Users and Sanitation Committee in the formulation, implementation and operation and maintenance of the water supply, sanitation and drainage facilities.

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 adverse impacts to acceptable levels. This is done through the environmental assessment process, which has become an integral part of the lending operations and project development and implementation.

2.2 Objective of TOR

The main objectives of this TOR is to guide the subsequent IEE study, to produce a comprehensive and coherent IEE Report as per the Environment Protection Act, 1997 and Environment Protection Rules, 1997 (with amendments). The specific objectives of the proposed IEE study are:

- Identify the major issues that may arise as a result of proposed works on the bio-physical, socioeconomic and cultural environment of the project area,
- Recommend practical and site specific environmental mitigation and enhancement measures and prepare and implement the environmental monitoring plan for the project,
- Provide information on the general environmental setting of the Chainpur Town area. Make sure that IEE is sufficient for the proposed water supply project.



2.3 Description of the Project

2.3.1 Location and Accessibility of the Project Area

Chainpur is situated in the Bajhang district of the Seti Zone in Far Western Development Region. It is situated in the basin of the Seti River at the confluence of the Seti River and Bauli Gaad River. It has a sub-tropical type of climate. Almost 89% of the rainfall occurs during the monsoon (June to September). The project area lies at 29° 33 North Latitude and 81° 12 East Longitude. The altitude of the town is 1325 m above mean sea level.

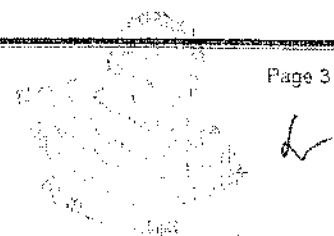
It is an ancient town and market centre of the district. It is the district headquarter and also the main market centre of the Bajhang district. The town was declared as Jaya Prithvi Municipality in May 2014. The project town is surrounded by Sunikot and Bhatekhola VDCs in the East, Daulichour in the North, Rithapata VDC in the West and Luyanta & Henmantabada VDCs in the South.

2.3.2 Proposed Service Area

The proposed town project covers Ward nos. 3, 4, 6 and 10 of Jaya Prithvi Municipality of Bajhang district. The major settlements/Toles of the service area are Chaud, Dewal, Kholabada, Rithapata, Simkhet in Ward Number 3; Chainpur, Damdur, Badi Wada, Bangala Tole, Bank Tole, Basanta Tole, Bista Tole, Bramada tole, Bypass Road, Campus Road, Chari Dhunga, Chauraha, Surma Devi Marga, KulaliGaun, Shanti Marg in Ward Number 4; Bhopur, RuinaBagar, Bhopur, Laltin Bazar in Ward Number 6; and BahunBada, BajalBada, Khati Wada, FulbariBada, Gelai, Joshi Bada, Sinkedadha in Ward Number 10. The area accommodates a total population of about 9,179 of which 7,881 is the permanent population and 1,298 the rental population.

Table 2-1: Major Settlements, Households and Total Population by Ward

Municipality	Ward No.	Major Tole / Settlement	HHs	Population		
				Permanent	Rental	Total
Jaya Prithvi	3	Chaud, Dewal, Kholabada, Rithapata, Simkhet	202	1184	21	1205
	4	Chainpur, Damdur, Badi Wada, Bangala Tole, Bank Tole, Basanta Tole, Bista Tole, Bramada tole, Bypass Road, Campus Road, Chari Dhunga, Chauraha, Surma Devi Marga, KulaliGaun, Shanti Marg	766	4593	1192	5785
	6	Bhopur, RuinaBagar, Bhopur, Laltin Bazar	97	663	84	747
	10	BahunBada, BajalBada, Khati Wada, FulbariBada, Gelai, Joshi Bada, Sinkedadha	212	1441	1	1442
Total			1277	7881	1298	9179



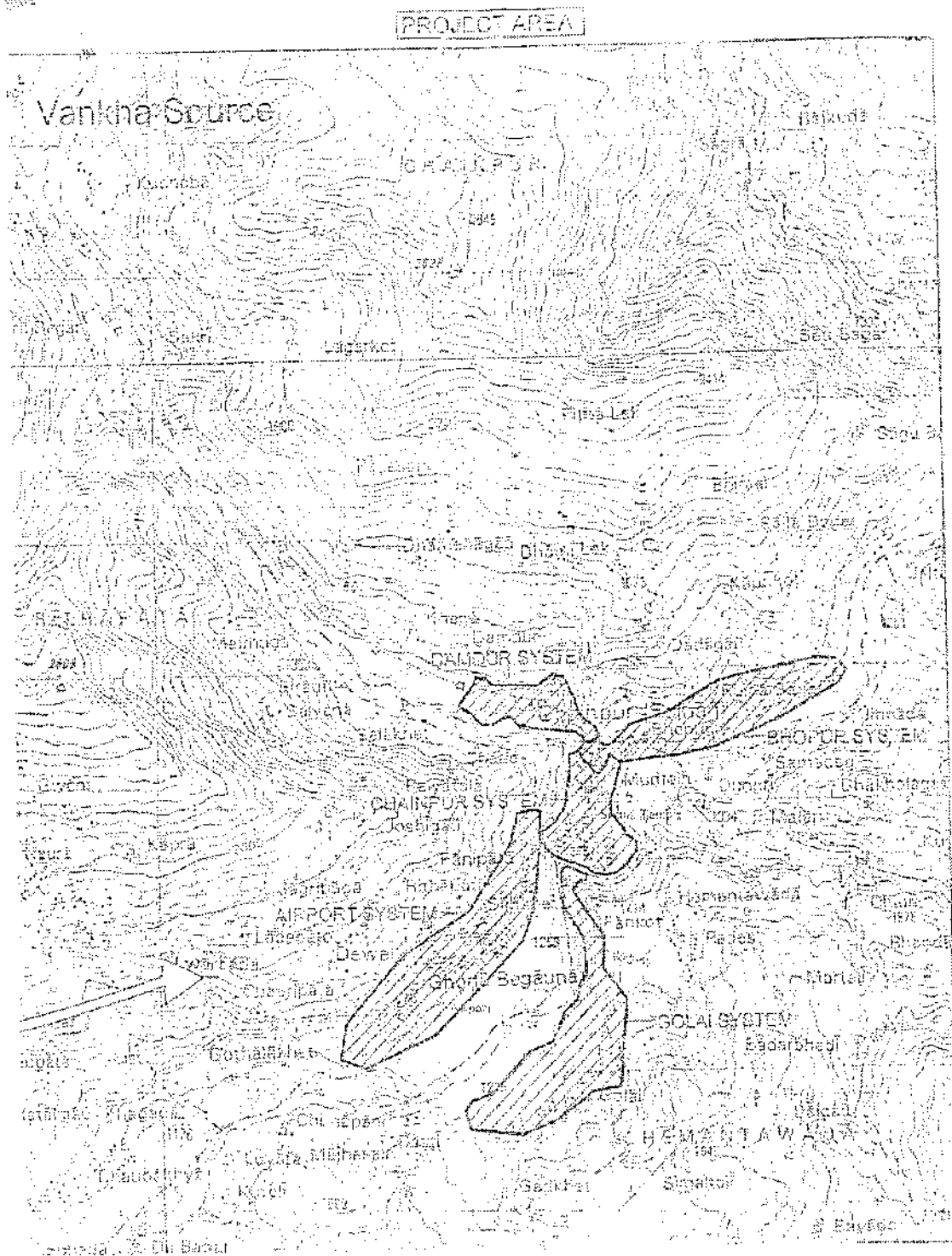


Figure 2-1: Proposed service area



2.3 Description of the Project

2.3.1 Location and Accessibility of the Project Area

Chainpur is situated in the Bajhang district of the Seti Zone in Far Western Development Region. It is situated in the basin of the Seti River at the confluence of the Seti River and Bauli Gaad River. It has a sub-tropical type of climate. Almost 80% of the rainfall occurs during the monsoon (June to September). The project area lies at 29° 33' North Latitude and 81° 12' East Longitude. The altitude of the town is 1325 m above mean sea level.

It is an ancient town and market centre of the district. It is the district headquarter and also the main market centre of the Bajhang district. The town was declared as Jaya Prithvi Municipality in May 2014. The project town is surrounded by Sunikot and Bhatekhola VDCs in the East, Daulichour in the North, Rithapata VDC in the West and Luyanta & Henmantabada VDCs in the South.

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Table 2-1: Major Settlements, Households and Total Population by Ward

Municipality	Ward No.	Major Tole / Settlement	HHs	Population		
				Permanent	Rental	Total
Jayaprithvi	3	Chaud, Dewal, Kholabada, Rithapata, Simkhet	202	1184	21	1205
	4	Chainpur, Damdur, Badi Wada, Bangala Tole, Bank Tole, Basanta Tole, Bista Tole, Bramada tole, Bypass Road, Campus Road, Chari Dhunga, Chauraha, Surma Devi Marga, KulaliGaun, Shanti Marg	766	4593	1192	5785
	6	Bhopur, RuinaBagar, Bhopur, Laitin Bazar	97	663	84	747
	10	BahunBada, BajalBada, Khati Wada, FulbariBada, Golai, Joshi Bada, Sinkedadha	212	1441	1	1442
Total			1277	7881	1298	9179

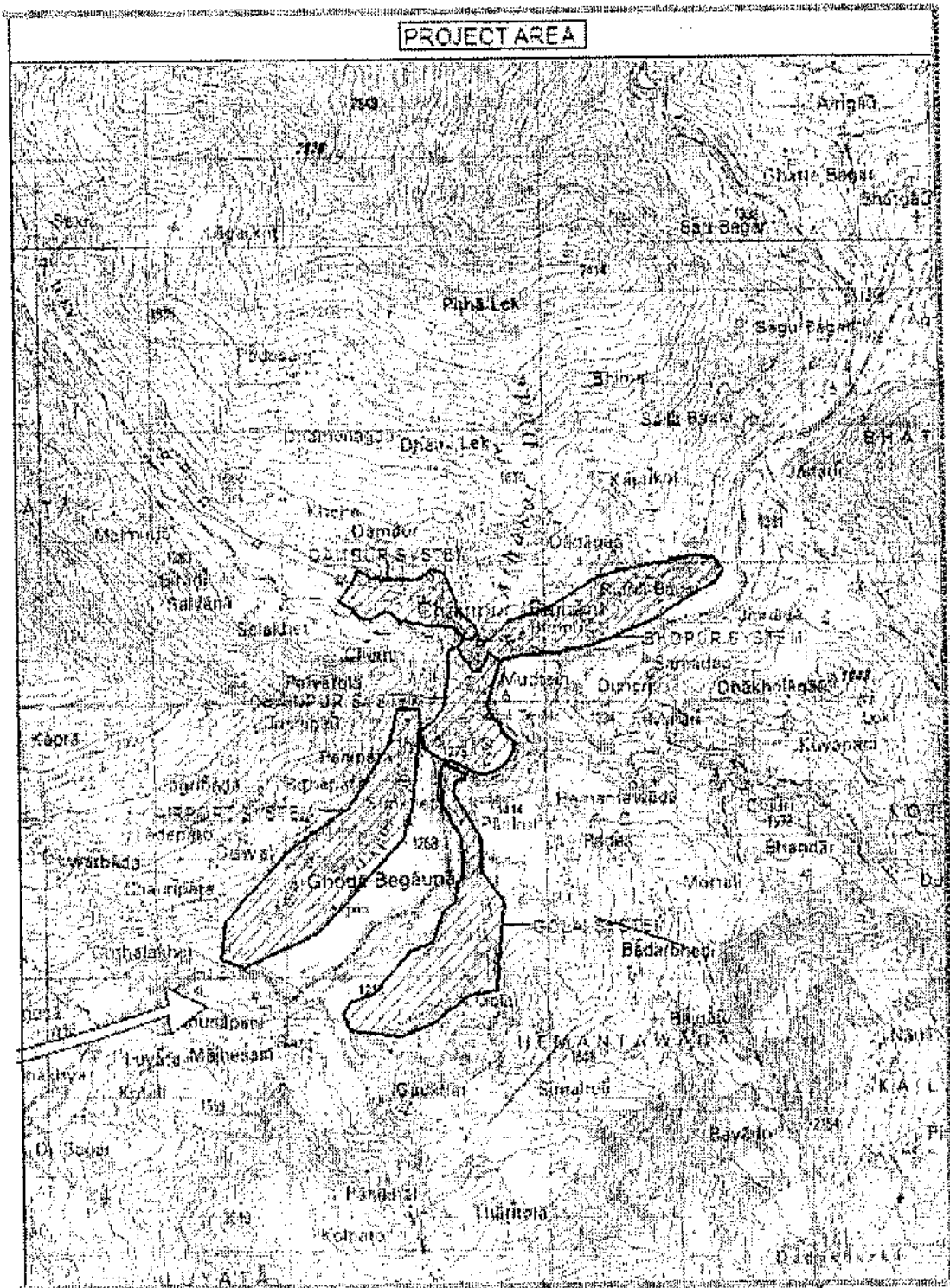


Figure 2-1: Proposed service area



2.3.3 Existing Environmental Conditions

2.3.3.1 Physical Environment

Topography, Geology and Climate:

Chainpur, Bajhang is situated in the mid-hill region. Geologically it is situated in the Mahabharata range which consists of grey to dark grey phyllite, quartzite and phyllitic schist with thick bedded, fine grained, grey to dark grey shale. The area also consists of grey, greenish-grey, gritty phyllite and phyllitic quartzite, metasandstone and conglomerate beds with white, massive quartzite and basic rocks.

It has a sub-tropical type of climate. The maximum temperature varies from 25-32° C in the summer and 2 to 12° C in the winter. The average rainfall is 1500 mm. Almost 80% of the rainfall occurs during the monsoon (June to September). The altitude of the project area varies from 1300 to 1700 m above mean sea level. (Source: Department of Mines and Geology)

2.3.3.2 Biological Environment

Vegetation

The dominant forest and fodder species reported in the project area are *Grewia oppositifolia* (Bhimal), *Celtis australis* (Khari), *Sapium insigne* (Khirro), *Bauhinia variegata* (Koiralo), *Sapindus mukorissi*, (Ritha), *Toona ciliata* (Tooni) and in the upper part *Prunus curasoides* (Paiyu), *Rhododendron arboreum* (Lali Gurans), *Alyrica esculenta* (Kaphal), *Alnus nepalensis* (Utis), *Pinus roxburghii* (Khote salla), *Quercus semecarpifolia* (Bajh), *Barberis aristata* (Chutro), Rasperry (Aiselu) etc.

NTFP

Non-timber forest products (NTFPs) are defined as any kind of product derived from forest species other than timber and fuelwood. The main NTFP species found in the project area are: *Girardinia diversifolia* (Allo), *Rubia manjith* (Majitho), *Gandheria fragrantissima* (Dhasingare), *Acorus calamus* (bojo) etc.

2.3.3.3 Socio-economic and Cultural Environment

Population and Demographic Characteristics

There are a total of 1277 HUs in the project area and the total population is 7881. Out of this, 4046 are males and 3835 are females. The average household size is 6.17.





Table 2-2: Population of the Concerned Wards of the Project Town

Municipality	Ward No.	HHs	Population			Average HH Size
			Male	Female	Total	
Jayaprithvi	3	202	597	587	1184	5.86
	4	766	2387	2206	4593	6.00
	6	97	318	345	663	6.84
	10	212	744	697	1441	6.80
Total		1,277	4,046	3,835	7881	6.17

Source: Socio-economic Survey, September 2015

2.3.4 Existing Water Supply

The existing Chainpur Water Supply System was constructed under WSSDO and handed over to WUSC in B.S 2065. The scheme covers part of the Municipality, which supplies water through about 638 house connections. However, coverage is less than 50 % of the total population of the proposed project area. The distribution system is very unsystematic. Distribution pipelines can be seen everywhere exposed on the street. Water leaking from the pipes is a common problem and water is distributed 2 hours a day. Due to the high in-migration ratio and increase of the rented population, WUSC is unable to serve enough water. The level of services in terms of quality, quantity and coverage is insufficient. There is a demand for piped water from community but WUSC is unable to provide more connections.

2.4 Salient Features

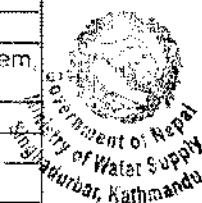
The detailed salient features of the water supply project in Chainpur are shown in table below;

Table 2-3: Salient Features of Chainpur Water Supply and Sanitation Project

S.N.	Items	Description
1	Name of the Project	Third Small Towns Water Supply & Sanitation Sector Project.
		Chainpur Small Town Water Supply and Sanitation Project, Chainpur - Bajhang
2	Type	Gravity type using spring water as source
3	Study Level	Detailed Engineering Design Report
4	Location Area	
	Region	Far Western Development Region
	Zone/Province	Seti/Province 7
	District	Bajhang
	VDC/Municipality	Chainpur VDC (Now Jay Prithvi Bahadur Singh Municipality)
	Wards	Wards 3,4,6,10
5	Available Facilities	
	Road	Seti Highway (connected to East-west highway in Attariya through Dhangadhi- Dadeidhura-Bajhang)

ToR for Initial Environmental Examination of Chainpur Small Town Water Supply and Sanitation Project

S.N.	Items	Description																					
		Highway)																					
	Nearest Airport	Chainpur																					
	Existing Water Supply System	Partially covered by piped water supply system, springs are used.																					
	Electricity	Available																					
	Communication	Available																					
	Health Services	Available																					
	Banking Facilities	Available																					
6	Source Characteristics																						
	Source Name and Type	Vankha Spring																					
	Source Location	Ward No 10																					
	Proposed Tapping yield (lps)	Vankha Spring : 26.8 lps (proposed)																					
7	Project Components																						
	Storage Reservoirs	<table border="1"> <thead> <tr> <th>Sub Systems</th><th>Reservoir sizes (m³)</th><th>Remarks</th></tr> </thead> <tbody> <tr> <td>Bhopur</td><td>60</td><td>Proposed Ground based</td></tr> <tr> <td>Damdur</td><td>25</td><td>Existing 38 Cum RCC Reservoir will be used</td></tr> <tr> <td>Chainpur Bazaar</td><td>450</td><td>Proposed Ground based</td></tr> <tr> <td>Airport Subsystem</td><td>120</td><td>Proposed Ground based</td></tr> <tr> <td>Golai Subsystem</td><td>100</td><td>Proposed Ground based</td></tr> <tr> <td>Total</td><td>755</td><td></td></tr> </tbody> </table>	Sub Systems	Reservoir sizes (m ³)	Remarks	Bhopur	60	Proposed Ground based	Damdur	25	Existing 38 Cum RCC Reservoir will be used	Chainpur Bazaar	450	Proposed Ground based	Airport Subsystem	120	Proposed Ground based	Golai Subsystem	100	Proposed Ground based	Total	755	
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Total	755																						
	Valve Chambers (Nos.)	Valve Chamber Type 1 (1500x900x1000) : 19 # Valve Chamber Type 2 (900 x900x1000) : 69 # Air Valve Chamber Type 1 (1500x900x1000) : 14 # Air Valve Chamber Type 2 (900 x900x1000) : 14 # Washout Chamber Type 1 (1500x900x1000) : 20 # Washout Chamber Type 2 (900x900x1000) : 53 #																					
	Community Stand Posts	Nil																					
	Designed Household connection	2.660																					
	Household Connection (Nos.)	1,277(during construction phase)																					

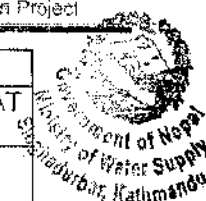




ToR for Initial Environmental Examination of Chainpur Small Town Water Supply and Sanitation Project

S.N.	Items	Description																			
	Total Length of pipe (m)	Transmission																			
		<table><tr><th>Description</th><th>Diameter (mm)</th><th>Length (m)</th></tr><tr><td>Source Vankha to Treatment Unit</td><td>250</td><td>2,213</td></tr><tr><td>Source Khara to Treatment Unit</td><td>50</td><td>600</td></tr><tr><td rowspan="3">Treatment Unit to Reservoirs</td><td>250</td><td>4,633</td></tr><tr><td>200</td><td>1,195</td></tr><tr><td>90</td><td>4,363</td></tr><tr><td colspan="2">Sub Total</td><td>13,004</td></tr></table>	Description	Diameter (mm)	Length (m)	Source Vankha to Treatment Unit	250	2,213	Source Khara to Treatment Unit	50	600	Treatment Unit to Reservoirs	250	4,633	200	1,195	90	4,363	Sub Total		13,004
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		Distribution																			
		<table><tr><th>Subsystems</th><th>Length of Pipes (m)</th></tr><tr><td>Bhopur</td><td>3,909</td></tr><tr><td>Damdur</td><td>1,983</td></tr><tr><td>Chainpur Bazaar</td><td>7,406</td></tr><tr><td>Airport Subsystem</td><td>5,174</td></tr><tr><td>Golai Subsystem</td><td>3,533</td></tr><tr><td>Sub Total</td><td>22,005</td></tr></table>	Subsystems	Length of Pipes (m)	Bhopur	3,909	Damdur	1,983	Chainpur Bazaar	7,406	Airport Subsystem	5,174	Golai Subsystem	3,533	Sub Total	22,005					
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Airport Subsystem	5,174																				
Golai Subsystem	3,533																				
Sub Total	22,005																				
Total : 35,009 m																					
	Electrical	Gravity system (only general lightings are arranged)																			
	Treatment Unit	Sedimentation Unit, Slow Sand Filter and Chlorination Unit																			
	Fire hydrants	16 numbers																			
8	Social Status																				
	Survey Year Population (2015)	7,881 (permanent) 1,293(floating)[Total 9,179]																			
	Base Year Population (2018)	8,596 (permanent) 1,417(floating)[Total 10,013]																			
	Design Year Population (2038)	15,430 (permanent) 2,544 (floating)[Total 17,974]																			
	Household Nos. (2015, 2038)	1,277 in 2015, and 2501 in 2038																			
	Average Family Size	6.17																			
9	Total Water Demand																				
	Survey year 2015	Total 1043.71 (m ³ /day) [12.08 lps]																			
	Base Year 2018	Total 1135.93 (m ³ /day) [13.15 lps]																			
	Design year 2038	Total 2312.76 (m ³ /day) [26.77 lps]																			

S.N.	Items	Description										
10	Total Cost of the Project (NRs.)	323.865 million with 15% contingencies & 13% VAT										
	Water Supply Sector	NRs 320.459 million										
	Sanitation Sector	NRs 3.406 million										
11	Cost Sharing Arrangement for water supply component (NRs)	NRs 320.459 million										
	1) GoN Grant @ 70%	Rs 224.321 million										
	2) WUSC Contribution											
	a) upfront cash contribution @ 5%	Rs 16.023 million										
	b) Loan through TDF @ 25%	Rs 80.115 million										
12	Cost Sharing Arrangement for Sanitation Component (NRs)	3.406 million										
	1) GoN / ADB Grant @ 85%	Rs 2.895 million										
	2) Local Body (WUSC, VDC & others) 15%	Rs 0.511 million										
13	Per capita Investment (for water supply sector including floating population) NRs	Survey Year : 34,912.19 Base Year : 32,004.29 Design Year : 20,768.57										
14	Monthly Tariff	<table><tr><th>Band</th><th>NPR per Cum</th></tr><tr><td>Minimum up to 6 Cum</td><td>31.00</td></tr><tr><td>More than 6 cum up to 10 Cum</td><td>47.00</td></tr><tr><td>More than 10 Cum up to 20 Cum</td><td>70.00</td></tr><tr><td>More than 20 Cum</td><td>105.00</td></tr></table>	Band	NPR per Cum	Minimum up to 6 Cum	31.00	More than 6 cum up to 10 Cum	47.00	More than 10 Cum up to 20 Cum	70.00	More than 20 Cum	105.00
Band	NPR per Cum											
Minimum up to 6 Cum	31.00											
More than 6 cum up to 10 Cum	47.00											
More than 10 Cum up to 20 Cum	70.00											
More than 20 Cum	105.00											
15	Project Status	Design Phase										
		Detailed Engineering Design (DED)										





2.5 Proposed Water Supply System and its Components

Chainpur Small Towns Water Supply sub-project has been conceptualized as a piped water supply system using spring water as sources.

The service area has an elevation difference of 300 m. Thus considering the topography, land use, settlement pattern 5 separate distribution schemes are proposed and are briefly described below:

1. **Chainpur Bazaar Sub-system:** This sub-system is the largest sub-system which serves the main bazaar of the service area for 697 households (4,166 permanent population). Rental population (1192) is also accounted for. Badi Tole, Badi Wada, Bagala Tole, Bagar, Baika Tole, Tole, Bista Tole, Bramada tole, etc are the major toles that are covered by this scheme.
2. **Bhopur Sub-system:** This will serve parts of wards # 6 and part of 4. The major settlements viz. Bhopur, Lalteen Bazaar, Ruinabagar etc are the main settlements that will be served by this sub-system. This sub-system is designed to serve a population of 1,345 people.
3. **Damdur Sub-system:** This scheme is proposed to serve part of ward 4 (north-west portion of the service area). This scheme will mainly serve Damdur settlement with a rural setting is located at a higher elevation. Presently there are 69 households with a population of 427. This scheme is designed to serve a population of 673. The existing 25 m³ ground based reservoir will distribute water to the community.
4. **Airport Sub-system:** This scheme is proposed to serve part of ward (south-west portion near the Airport). Few government offices and the Bajhang District Hospital are located in this sub-system. Chaud, Dewal, Kholabada, Simkhet etc are the major settlements served by this sub-system. Presently 202 households with 1184 permanent and 21 rental population are residing; and this scheme is designed to serve a population of 2,810. Proposed 120 m³ ground based reservoir will distribute water to the community.
5. **Golai Sub-system:** This scheme is proposed to serve part of ward 10 and is located south-east. Bada, Barvita, Fulbari Bada, Fulhali Bada, Golaie, Joshi Bada, Kholechau, Sinkedadha are the few major settlements. Presently there are 212 households with a permanent population of 1,428. This scheme is designed to serve population of 2,520. The proposed 100 m³ ground based reservoir will distribute water to the community.

2.5.1 Water Source

a. Source location, type and required yield:

Chainpur contains a number of stream and spring sources. Among them the following perennial and reliable sources were observed:

- a. Vankha khola (spring source), dry season discharge 67 lps
- b. Bire khola
- c. Balzade khola
- d. Khara khola

All the above mentioned sources are spring sources and perennial type. Vankha khola is the largest spring source. Other mentioned sources are lesser capacities (discharge ranging from 0.6 to 3 lps)

2.5.2 Water Quality and Treatment Units

The Nepal Environmental and Scientific Services (NESS) Laboratory was used to conduct chemical, bacteriological and physical tests of the proposed surface water. Samples from Vankha source were collected on December 2015 for conducting laboratory analysis to test for other physical and chemical parameters with respect to the Nepal Drinking Water Quality Standard (NDWQS) guidelines for potable drinking water. The following table exhibits the finding with respect to the NDWQS.

Table 2-4: Water Quality Assessment

S.N.	Parameters	Vanka Spring	NDWQS, Nepal
1.	pH at 13°C	6.5	6.5 – 8.5
2.	Electrical Conductivity, (umhos/cm)	184	1500
3.	Turbidity, (NTU)	<1	5
4.	Total Hardness as CaCO ₃ , (mg/l)	144	500
5.	Total Alkalinity as CaCO ₃ , (mg/l)	126	-
6.	Chloride, (mg/l)	<1	250
7.	Ammonia, (mg/l)	ND (< 0.05)	1.5
8.	Nitrate, (mg/l)	0.96	50
9.	Calcium, (mg/l)	27.30	200
10.	Iron, (mg/l)	0.12	0.3
11.	Manganese, (mg/l)	< 0.02	0.2
12.	Total Carbonate Alkalinity, (mg/L)		
13.	Bicarbonate Alkalinity, (mg/L)	124	
14.	*Carbonate Hardness, (mg/L)	126	
15.	*Bicarbonate Hardness, (mg/L)	154	
16.	Color, (Chromaticity Unit)	<0.05	
17.	Total Dissolved Solids (mg/l)	156	
18.	Taste	Unobjectionable	
19.	Odour	Unobjectionable	
20.	*Residual Chlorine, (mg/L)		
21.	Fluoride, (mg/L)	<0.05	0.5-1.5
22.	Sulphate, (mg/L)	<0.1	250
23.	Total Kjeldahl Nitrogen, (mg/L)		
24.	Aluminum, (mg/L)	N.D.(<0.01)	0.2



S.N.	Parameters	Vanka Spring	NDWQS, Nepal
25.	Arsenic, (mg/L)	N.D.(<0.005)	0.05
26.	Mercury (mg/l)	N.D.(< 0.0005)	
27.	Zinc, (mg/L)	<0.01	3
28.	Lead, (mg/L)	N.D.(<0.01)	0.01
29.	Copper, (mg/L)	N.D.(<0.01)	1
30.	Cadmium (mg/L)	N.D.(<0.003)	
31.	Chromium (mg/L)	N.D.(<0.02)	

2.5.3 Treatment Process

The water treatment process has been selected based on the raw water quality. The raw water quality of the proposed sources is similar in nature of samples tested. Hence, the treatment system consisting Sedimentation Unit, Slow Sand Filter and Disinfection unit is proposed to make the water safe for drinking purpose. The schematic diagram of the proposed treatment plant is shown in Figure 2-2:

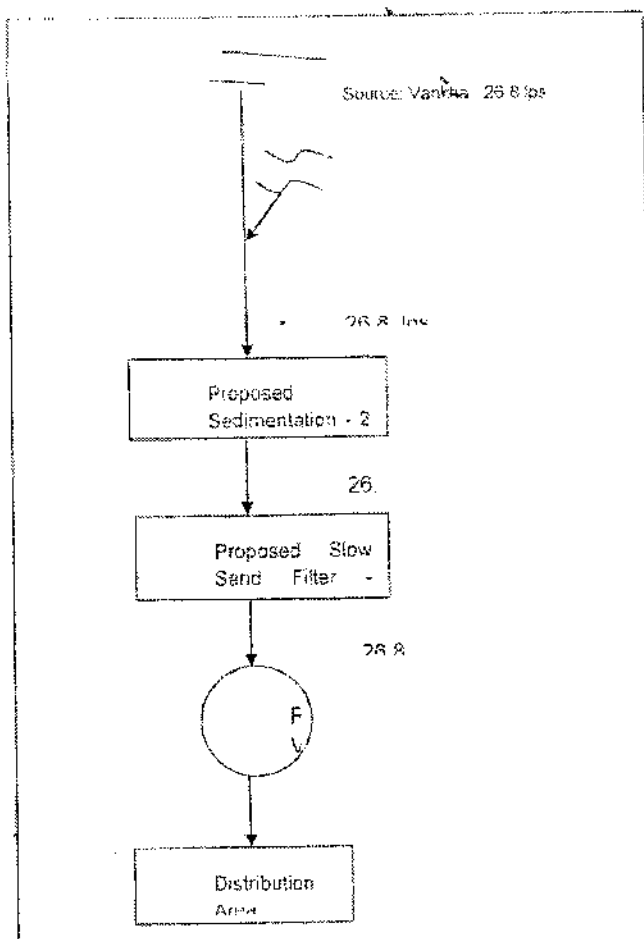
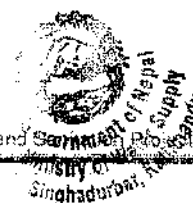


Figure2-2: Schematic Diagram of Proposed Treatment Process, Champur, Bajhang



2.5.4 Sedimentation Unit

The proposed sources are spring sources. Although the water quality of these sources is generally good during the dry season with low concentration of the suspended solids, its water quality may worsen during the rainy season with increase in the suspended solids and turbidity. Some of the minerals present in water as shown in Table 1 may be in the precipitated form. Sedimentation tank will remove the suspended solids including precipitated minerals. The horizontal flow rectangular sedimentation tank made of R.C.C. with 3 hours detention time is proposed. The proposed sedimentation tank is expected to remove 70% of the suspended solids. 2 units of sedimentation tanks are proposed.

2.5.5 Slow Sand Filter

Slow sand filter made of R.C.C. is proposed to remove fine suspended solids thus by reducing the turbidity of water. The slow sand filter is to be packed with sand and gravel as per the design specifications. The under drainage system is installed below the gravel support to collect the filtered water. The filtration rate of 0.20 m³/m²/hr has been adopted. The slow sand 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 slow sand filter due to biological action. Four Slow Sand Filter unit are proposed.

2.5.6 Disinfection

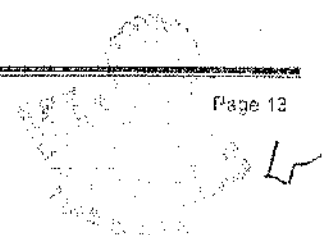
Although slow sand filter removes coliforms to certain extent, the water might still contain coliforms which might be harmful to human health. These coliforms are killed by disinfection process and make the water safe. The disinfection is proposed by the addition of bleaching powder in the reservoir.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

2.5.7 Transmission mains

Transmission mains of 13,004 m are estimated to convey water from source to distribution reservoirs of all the five. DI pipes are proposed for 250mm size. For other sizes PE (HDPE) pipes are proposed. Following table describes the length and sizes of the transmission mains required.

Table 2-5: Transmission main

S. No	Description	Diameter (mm)	Length (m)
1	Source Vankha to Treatment Unit	250	2,213
2	Source Khara to Treatment Unit	50	600
3	Treatment Unit to Reservoirs	250	4,633
		200	1,195
		90	4,363
Total			13,004



2.5.8 Storage Reservoirs

The total storage requirement for the system at the end of design period i.e. 2038 is calculated as 755 m³. The provision of this quantity has been fulfilled by providing additional ground reservoirs.

The reservoirs will be constructed of RCC and is designed as ground based tank as the terrain suggests.

The following table summarizes the requirement of reservoir tanks subsystem wise.

Table 2-6: Requirement of Reservoir

S.No	Sub Systems	Reservoir sizes (m ³)	Remarks
1	Bhopur	60	Proposed Ground based
2	Dandur	25	Existing 38 Cum RCC Reservoir will be used
3	Chainpur Bazaar	450	Proposed Ground based
4	Airport Subsystem	120	Proposed Ground based
5	Golai Subsystem	100	Proposed Ground based
Total		755	

2.5.9 Structural Designs

All the reservoirs are ground based RCC reservoir. The whole super structure is to be securely anchored with the foundation. In order to avoid unequal settlement of the foundation of an annular raft, foundation has been designed. The design of the tank has been conducted in the following sequences:

- Design of Roof dome and top ring beam.
- Design of cylindrical wall.
- Design of foundation.

Following gives the brief description design procedures:

- The thickness of dome slab has been adopted as 130mm with the live load of 150kg/m² and the rise of the dome is 1.2m. The top ring beam is necessary to resist the horizontal component of the thrust of the dome. The ring beam is designed for the hoop tension induced.
- The cylindrical wall is designed for hoop tension caused by the horizontal water pressure. The ring beam is designed for the induced hoop tension.
- The foundation consists of a circular slab.

Design Data

- Unit weight of concrete = 2400kg/m³
- Unit weight of water = 1000kg/m³
- Concrete grade M20 and Steel Fe 415
- Allowable compressive stress in bending = 70 kg/cm²
- Allowable direct compressive stress = 50kg/cm²
- Soil bearing capacity = 110 KN/m²

2.5.10 Distribution Network

The distribution system comprises of pipe network, which consists of mainly loops and branch in very few places. This network is analyzed using EPANET 2, a design analytical software tool. Distribution pipes are laid both sides of the all black-topped and major roads. Single line pipes are proposed in earthen and other roads. HDPE pipes are predominantly used. Pipe class & size lesser than 6 kgf and 50 mm is not proposed to use. Existing pipes will not be used as these are leaking and found substandard (class of 4 kgf). The total distribution pipe length of the proposed system is about 22,005 km.

Table 2-7: Distribution pipe network

S. N	Subsystems	Length of Pipes (m)
1	Bhopur	3,909.00
2	Damdur	1,983.00
3	Chainpur Bazaar	7,406.00
4	Airport Subsystem	5,174.00
5	Golai Subsystem	3,533.00
Total		22,005.00

2.5.11 House Connections

The system has been designed, predominantly as house to house connections and has been analyzed for a design capacity of providing a total of 2,660 house connections. However, initially during construction phase, only 1,277 house connections are provided to satisfy the need for the base year population.

2.5.12 Appurtenances

These will primarily comprise of valve chambers or connector boxes to house in flow control valves for controlling flow in the pipeline and to the community taps etc. Altogether 189 valve chambers are expected in the system as shown in the table 5.14. 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.

Table 2-8: Appurtenances

Valve Chamber (1500*900*1000)	Valve Chamber (900*900*1000)	Air Valve Chamber (1500*900*1000)	Air Valve Chamber (900*900*1000)	Washout Chamber (1500*900*1000)	Washout Chamber (900*900*1000)	Total Valve Chambers
19	69	14	14	20	53	189



2.5.13 Guard house

Three guard houses are proposed one located at the northern tip of the project area locating treatment units, and one in the reservoir for Chainpur bazaar sub-system and next in the Golai sub-system.

2.5.14 Office Building/ lab room

One office building consisting manager's room, cash counters, meeting hall, lab room etc is proposed.

2.5.15 Capital Cost of Water Supply and Sanitation Facilities

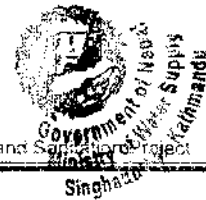
The total project cost for the proposed water supply and sanitation project has been estimated as Rs. 323,865,000. The cost has been based on district rate of Bajhang (FY 073/74).

2.6 Relevancy of the project proposal:

Any development project has some environmental implication, whether beneficial or adverse. Therefore, it is pertinent to identify the complications/changes apparent in the environmental condition along with the favorable or adverse impacts resulting from the activities associated with the project over the physical, biological, socio-economic and cultural environment of the project area. Similarly the assessment of the magnitude of the impacts is also equally important. The assessment techniques and methods to be adopted may however vary depending upon the nature of the project.

In recent years, environmentally sustainable development has become one of the major challenges faced by different development institutions. Accordingly, the GoN has introduced a variety of instruments into the country's development activities. IEE is one of the tools for the environmentally sustainable development.

Taking in view of the statutory requirement of GoN, adhered to for the environmental assessment of any development projects under EPA-2053 & EPR-2054, an IEE study is necessary and thus TOR is prepared. The Schedule 1 of EPR states to conduct IEE Study:



Threshold Limits for Conducting IEE

For Drinking Water Supply Project according to Environment Protection Rules, 2054 BS, First Revised (2055 BS) Schedule -1 (Clause G, Drinking Water), IEE is required for following condition:

Table 2-9: IEE conditions as per EPR

Particulars	Status for proposed Chainpur Town Project
1) Collection of rain- water in not more than 200 hectares, and use of water sources (springs and wetlands) located within the same area.	Not applicable
2) Surface water sources with not more than 1 cubic ft. safe yield and supply of not more than 50 percent of the water during the dry season.	Within Range (26.8 lps. i.e. 0.95 cu.ft./sec)
3) Processing of water at the rate of 10 to 25 liters per second.	Not applicable
4) Recharging up to 50 percent of the total aquifer for the development of underground water source.	Not applicable
5) Construction of not more than one kilometer long tunnels for carrying water	Not applicable
6) Displacement of not more than 100 persons for operating a water supply scheme.	Not applicable
7) Settlement of not more than 500 persons on the upper reaches of water sources	Not applicable
8) Supply of drinking water to population ranging between 5000 and 50000	Within Limits
9) Supply of drinking water to a population ranging between 10,000 and 100,000 upon connecting new sources.	Design population 17,974 (Within Limits)
10) Installation of more than 20 kilometers long electricity transmission lines for pumping or processing water and consumption of more than one MW of electricity.	Not applicable
11) River training and diversion activities over an area of more than one kilometer.	Not applicable
12) Operation of a drinking water supply system with inclusion of sewage disposal system with sewage treatment system	Not applicable
13) Extraction of ground water from sources which are located at point and non-point sources of biological and chemical pollution and/or their influenced areas	Not applicable
14) Operation of water supply project included in a multipurpose project utilizing a source of 25 liter per sec water. (Construction of Multiple Purpose Reservoir Required)	This is not a multipurpose project and is solely for water supply.



For Drinking Water Supply Project: IEE is required for the water supply scheme having population between 10,000 - 100,000. Population of the project falls in the strata. Further this is an upgrading of existing system. Service areas have been added and new sources are to be tapped. Further no people will be displaced with the construction / operation of the project. Thus the IEE study has to be carried out.

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 FI/OP, 2010).

2.7 Project Area Delineation

Project sites as well as environmental impacts that could be caused due to project construction and implementation on Physical, Biological & Socio-economic & Cultural aspects is defined as impacts component. Adverse and beneficial impacts are expressed on the basis of proximity of activity and magnitude of impact. Based on the environmental impacts of the project, the project-affected areas are classified in Table 2-10;

Table 2-10: Project Area Delineation

Category	Project Affected Areas	Reason
A Direct Impact Zone	Construction areas of project activities (Construction, camp facilities, excavation, stock piling)	Disturbances, loss of resources, some temporary changes and some permanent changes may occur
B Indirectly Impact Zone	Area that is within 200 m of periphery of the Direct Impact Zone	Disturbances and effects are likely

CHAPTER 3



3. PROCEDURES TO BE ADOPTED FOR THE STUDY

The IEE approach, methodology and procedure adopted to prepare a comprehensive IEE report will generally follow the provisions of the EPA & EPR and related national and sectoral guidelines. The IEE study will focus on impact identification, prediction and finally evaluating the extent and weightage of the impact. The consultant will follow the following methodology for preparation of the report:

Initial Environmental Examination report will be based on this Terms of Reference to be approved by the Ministry of Water Supply and Sanitation, GON. The general methodology to be used in the preparation of IEE report will be as follows:

3.1 Desk Study and Literature Review

A desk review will be carried out with the following steps:

- ✓ Collection and review of secondary information from various sources
- ✓ Initial interaction and consultation with the local community and district level stakeholders
- ✓ Delineation of geographical boundary of the influence area on the topographical map
- ✓ Preparation of sub-project specific checklist
- ✓ Collection and review of secondary sources of information from various sources

Secondary information will be collected through published and unpublished reports and interpretation of maps and photographs.

During the IEE report preparation, Consultancy's Environmental team meet, discuss and interact with concern staff of the Government of Nepal, DDC, and VDCs in the district head quarter and teachers, community based organization members and knowledgeable key persons of the surrounding areas within the Zone of Influence (Zoi) on:

1. Delineation of the geographical boundary of the Zone of Influence area on the topo-map
2. Preparation of a project specific checklist

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3.2 Field Study and site inspection

A checklist is prepared to collect physical, biological, socio-economic and cultural environment-related information in the field. In addition, a Zel household survey questionnaire will be used to collect socio-economic information of the households.

Physical and Chemical - Topography, Land Use, Air Noise and water Quality, Geology, Hydrology Soil type etc. Under chemical Environment: use of various chemicals including fuel, lubricants, oil, acids, cement etc.

Biological- Flora/Fauna, Endangered Species, NTFPs etc

Socio-Economic and Cultural - Population, Ethnicity, Existing Infrastructure, Health Facility, Public utilities, economic status, etc.

3.3 Data Analysis and Impact Quantification

- **Impact Identification**

In order to identify the impact a preliminary exercise to solicit information from planners, policy makers, project components, concerned authorities and the user community will be conducted. Similarly, the reports on hydrology and geo-hydrology, meteorology, geology and others related to the environment will also be reviewed.

- **Impact Prediction**

The consultant shall address the impact details by furnishing information on Physical, Biological, Socio-economic and Cultural Environments. A description of relevant parts of the project, using maps with appropriate scale and photographs and aerial photographs, where necessary, including the following information: location, alignment, alternatives, design, standards, pre-construction, construction and post -construction activities, work schedule, staffing and support facilities and services shall be determined.

- **Impact Evaluation**

To evaluate the occurrence of the impact, information on mitigation; costs associated with construction activities (during design, construction and operation and maintenance activities) shall be included.

3.4 Public Consultation Program and Public Notice:

Public consultation program in the project area will be organized to inform the broader communities and to collect the feedbacks and suggestions regarding the issues. This program mainly focus on the awareness about the project plans and programs, building of mutual consensus about the implementation of the project, identification of the key issues to be considered during IEE study and project design.

The proponent will affix a notice in the office of Jaya Prithvi Municipality and concerned ward offices, Office of the DDC, schools at project area, hospitals, health post requesting the concerned authorities and individuals to offer their written opinion and suggestions within fifteen days with regard to the possible impact of the implementation of the proposal on the environment. The notice will also be published in the national daily newspaper. Deeds of the fixing of notice from the concerned offices will be collected and included within the report.

3.5 Report Preparation:

The consultant will submit the IEE Draft report within 45 days after approval of TOR. The draft IEE report will be presented to WUSC, local body representative etc. The consultant will incorporate the comments and suggestion made by PMO and WUSC. The consultant will submit the final IEE report within 7 days after receiving comments from PMO.

The proponent shall submit fifteen copies of the proposal to the concerned Ministry (MoWSS) in accordance with Rule 10 of the EPR, 1997 for the approval of the proposal.

The approved ToR document will be shared with ADB for its inclusion in the IEE document to be submitted as per ADB format.





CHAPTER 4

4. POLICIES, LAWS, RULES, DIRECTIVES AND GUIDELINES

The consultant shall describe the pertinent regulations, standards that govern environmental quality, health and safety, protection of sensitive areas and endangered species etc. at international, regional, district, VDC and Ward levels. Nepal is a signatory to many international conventions, including those concerning habitat, biodiversity, cultural heritage protection. These issues shall be considered during IEE and their avoidance/mitigation measures shall be identified. The IEE should also be conducted in compliance with the following Laws, Acts, Rules & Regulation, Standard, Manuals, and Strategies & International Convention:

Law

- The Constitution of Nepal 2072 B.S. (2015 A.D.)

Acts

- Land Acquisition Act 2034 B.S. (1977 A.D.)
- Solid Waste Management and Resource Mobilization Acts 2044 (1987)
- Water Resources Act 2049 B.S. (1992 A.D.)
- Water Tax Act 2023 (1966)
- Soil and Water Conservation Act. (1995)
- Nepal Water Supply Corporation Act. (1989)
- Water Supply Management Board Act, (2000)
- Labor Act 2048 B.S. (1992 A.D.)
- Forest Act 2049 (1993 A.D.)
- Forest Regulations 2050 (1995 A.D.)
- Environment Protection Act 2053 B.S. (1997 A.D.)
- Local Self Governance Act 2055 B.S. (1999 A.D.)
- Drinking Water Regulations 2055 B.S. (1998 A.D.)
- Child Labor Prohibition and Regulation Act 2056 B.S. (2001 A.D.)
- Town Development Act 2045 B.S. (1988 A.D.)

Rules & Regulations

- Solid Waste (Management & Resource Mobilization), Rules. 2047 B.S. (1990 A.D.)
- Water Resources Regulations 2049 B.S. (1993 A.D.)
- Forest Regulation 2052 B.S. (1995 A.D.)
- Environment Protection Rules 2054 B.S. (1997 A.D. and its amendments)
- Drinking Water Regulations 2055 B.S. (1998 A.D.)
- Child Labor Prohibition & Regulation Act 2056 B.S. (2001 A.D.)
- Urban Water Supply & Sanitation Policy 2066 B.S. (2009 A.D.)

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Plans and Policies

- Rural Water Supply & Sanitation National Policy, Strategy & Action Plan 2060 B.S. (2004 A.D.)
- Three Year Interim Plan 2063 B.S. (2007 A.D.)
- ADB's "Safeguard Policy Statement (SPS)" 2066 B.S. (2009 A.D.)

Standards, Manuals, Strategies & Guidelines

- National IEE Guideline 2049 B.S. (1993 A.D.)
- National Drinking Water Quality Standards 2062 B.S. (2005 A.D.)
- Water Resources Strategy, 2059 (2002)





Chapter 5

5. REQUIRED TIME, ESTIMATED BUDGET AND SPECIALISTS REQUIRED FOR PREPARING THE REPORT

This includes the time schedule, estimated budget and appropriate human resources (experts) for conducting the IEE study.

5.1 Time Schedule

Considering the time limitations, the study has to be completed within about 9 weeks. The work schedule is presented in the Table 5-1.

Table 5-1: Proposed Work Schedule

Activity / Work	Weeks								
	1	2	3	4	5	6	7	8	9
Desk Study	■								
Preparation and Approval of TOR	■	■							
Public Notification			■						
Field Work				■	■	■			
Data Compilation/Evaluation						■	■		
Preparation of Draft IEE Report								■	
Submission of Final IEE Report									■

5.2 Estimated Budget

The total estimated cost for the Initial Environmental Examination (IEE) work of Chainpur Small Town Water Supply and Sanitation sub-project is approximately NRs. 500,000.00.

5.3 Human Resources Required

As the IEE requires different personnel for specific tasks, the following inter-disciplinary team will be required. A team leader will be required to co-ordinate the different tasks of the personnel involved. The Team will consist of:

1. Environmental Specialist
2. Civil Engineer
3. Water Supply and Sanitation Engineer
4. Socio-economist
5. Hydro-geologist

Three to four enumerators will also be required to help the team. The IEE team will also benefit from the inputs provided by the design team.



Chapter 6

6. ANTICIPATED IMPACTS OF THE PROPOSED PROJECT ON ENVIRONMENT

The impacts shall be identified for different phases of project activities i.e. project design, pre-construction, construction and post construction, Operation & Maintenance phase on the existing physical, biological and socio-economic resources. A distinction will have to be made between potentially significant positive and adverse impacts, direct and indirect impacts. The impacts shall be characterized as (i) low, high & medium in terms of magnitude, (ii) long term, short term & medium term in terms of duration and (iii) site specific, local & regional/national in terms of extent. As a part of the study, enhancement of the positive impacts shall also be carried out. The potential physical, biological and socio-economic impacts should be considered as follows:

6.1: Beneficial Impacts

Not only the adverse impacts or issues, there will be various beneficial issues and impacts due to the implementation of the project. These aspects will be evaluated in detail during IEE study. However, some of the anticipated beneficial impacts which will eventually enhance the life style of the residing population as a result of implementation of the project are as follows;

(a) Construction Phase

- i. Employment Generation and Increase in Income
- ii. Skill Enhancement

(b) Operation and Maintenance Phase

- i. Improvement in health and saving of time
- ii. Development of Market center
- iii. Appreciation of Land Value
- iv. Women Empowerment
- v. Quality of Life Values

6.2 Adverse Impacts/Issues

6.2.1 Pre-construction Stage

The pre-construction works involve 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. Some of the issues of pre-construction phase are:

- i. Social conflicts for any land requirements
- ii. Water use conflicts
- iii. Disturbance to vegetation and wildlife



6.2.2 Construction Stage

(a) Socio-economic Environment

i. Disturbance to the community activities

Construction activities particularly construction works in the roads may cause disturbances to the community activities, festivals and social events.

ii. Social Dispute and Dissatisfaction

There is possibility of influx of outside workforce and with them money from the construction work and unwanted communities can cause some strife with the local community. Use of public land for project infrastructures may also bring some remarks from the locals.

iii. Community health and safety

Accidental cases of local children near the work-sites, possibility of communicable diseases, and challenge on local sanitation status will be concerns related to project construction phase.

iv. Occupational health and safety (OHS)

Life and health of workers particularly of those involved in concreting, trench cutting, formwork and rebar fixing in overhead tank is of prime concern.

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(b) Physical Environment

i. Erosion and land surface disturbance

Top soil during construction may lead to erosion and caving thereby causing soil erosion, silt runoff, and unsettling of street surfaces. The activity as such will be a nuisance and discomfort to the road users and inhabitants. Formation of topsoil is very long natural process and is the most fertile portion of the soil.

ii. Damage to the Existing Facilities

During the construction time, while excavating the earth, existing water supply distribution pipe lines and telecommunication cable may get damaged in few places particularly in bazaar area in spite of great care.

iii. Impact on water bodies

There will be some impacts on water bodies located within project area during construction phase. Construction activities are likely to influence the surface water quality.

iv. Air and Noise pollution

The construction activity will comprise of construction, transmission and distribution pipelines, construction of storage reservoirs, transport and installation of pumps.

v. Vibration effects

Construction works are likely to have slight risk of cracks and damages to local infrastructures and private properties due to effects of vibration.

(c) Biological Environment

The project area falls under vegetated land, built-up area with agricultural land. Loss of vegetation cover, although limited, will be a concern to be addressed in this project.

i. Impact on Flora

The loss of vegetation cover and species diversity due to earthwork primarily at direct impact area of intake will be minimum, yet these need to be accounted for.

ii. Impact on Fauna

Movement, inhabitation and population dynamics of resident and migratory birds and reptiles at the project site may be affected during construction period due to various construction activities.

iii. Impact on aquatic life

Construction activities are related to the water bodies. These construction activities will physically disturb the water quality for certain period of time and may cause impact on aquatic life.



6.2.3 Post-Construction and Operation Phase

- i. Impacts on land resource and landscape aesthetics if decommissioning of construction facilities is not conducted in proper manner
- ii. Risk of health hazard if water supply system is not well maintained during leakages, and if disinfection is not well carried out

6.3 Prioritized Issues

Issues that are likely to occur during different phase of the construction have been prioritized as follows;

Table 6-1: Prioritized Issues

Project Phases and Environmental Issues	Physical	Biological	Socio-economic and Cultural
Pre-Construction Phase	Degradation of source areas through repeated access	Access and site clearance can affect the vegetation, especially at source and reservoir sites	Concerns of water rights
		Disturbance to wildlife	Issues of land requirement for project structures
Construction Phase	Disturbance to land-surface during construction of project components	Vegetation may be lost during construction of project components and during pipe laying works	Local festive and cultural activities, and social events may be disturbed due to construction activities
	Loss of top-soil	Disposal of spoil and waste onto water bodies may impact the aquatic lives	Social disharmony due to influx of outside workforce could be an issue
	In use roads, electrical poles etc may be disturbed due to laying of transmission and distribution pipelines	Illegal hunting by workforce, encroachment of wild habitats could take place	Competitive sense of employment opportunities among the locals and outside workforce could bring conflicts
	Drying of water sources could be an issue		Elderly and young ones, and the people travelling to work and market may face health and safety challenges, especially if quarries and ditches are not well managed
	Ambient air pollution due to		Health and safety of the workers, e.g. workers

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	use of vehicles and equipment, its associate noise and vibration effects		involved in construction of water tanks, pipe-laying may have injuries, etc
Post Construction and Operation Phase	If campsites and temporary facilities are not well decommissioned after the completion of construction works, this may impact on local land aesthetics	Discharge of slurry from treatment plants onto water bodies may negatively affect the aquatic lives	If the water supply system is not well operated and maintained, there may be chances of supply of polluted water to its users

6.4 Mitigation Measure

Suitable, cost effective and environmentally friendly mitigation measures shall be recommended during the preparation of IEE report for all the perceived impacts to minimize the environmental impacts of project implementation. In general the following area shall be covered while preparing mitigation measures:

- Project design and preparation phase
- Project construction phase
- Project operation and maintenance phase

Concerned agencies: TSTWSSSP, DWSS, WSSDO and local agencies, local administration office shall be consulted during the implementation of mitigation measures. National EIA Guidelines 1993 will be used for significance analysis of impacts.

Chapter 7

7. ALTERNATIVE ANALYSIS

Alternative analysis of the project shall be considered as an integral part of the IEE study, which involves alternative ways of achieving the objectives of a proposed project. The aim of alternative analysis will be to arrive at a development option, which shall be conducted during the study to minimize the possible negative environmental impacts. Alternative measures to the proposed project to meet the same project objectives will be described under the following aspects:

- No action option
- Alternative design
- Alternative location
- Alternative schedule and process

Alternatives in terms of potential environmental impacts, capital and operating costs and institutional training and monitoring requirements should be described. Costs and benefits of each alternative should be quantified (wherever possible); and incorporating the estimated costs of any associated mitigation measures. The no project option is always open.

The mitigation measures for adverse potential impacts due to location, design, construction and post-construction will have to be proposed during the preparation of the IEE report for all the perceived impacts to minimize the environmental impacts of project implementation after the prediction of extent, magnitude and duration of the impacts. Mitigation measures will have to be incorporated from the planning stage onwards. In general the following area shall be covered while preparing mitigation measures:

- a. Project design/pre-construction phase
- b. Project construction phase
- c. Project operation and maintenance phase

Concerned agencies like STWSSSP, DWSS, WUSC and local agencies, local administration, police office shall be consulted during the implementation of mitigation measures. The proponent is required to prepare the Environmental Management Plan (EMP) and these measures should be outlined in the EMP in order to implement the proposed measures during project implementation.

Alternative System Analysis

System alternatives need to be developed to assess the most cost effective, reliable and efficient system that can serve the design population. The system design for the sub-project can be done under two different scenarios. Optimization of a proposed water supply system can be done in terms of system layout, alternative technology, alternative materials or even alternative design parameters.





Chapter 8

8.0 MATTERS CONCERNING THE PREVENTION OF THE IMPACTS OF THE IMPLEMENTATION OF THE PROPOSAL ON THE ENVIRONMENT

The IEE team will study the mitigation measures for all the identified significant impacts and incorporate them in the report. The proponent will identify the most suitable of measures to prevent or to reduce significant adverse impacts. Measures to enhance beneficial project impacts will also be presented. The mitigation measures will deal separately for physical, biological, socio-economic and cultural environments in both the construction and operation phases. The proponent will be responsible for the implementation of environmental mitigation and enhancement program mentioned in IEE report.

The mitigation measures shall be specific and developed by applying a pragmatic approach that is technically and economically feasible, socially acceptable, and preferably of proven effectiveness. The cost required for each and every mitigation measure and enhancement measures will be estimated and incorporated in IEE report. Cost of mitigation and enhancement measures will be categorized in terms of construction and operation phases.

The enhancement and mitigation measures will be categorized in terms of the physical, biological, socio-economic and cultural environment for the construction and operation phases. A matrix of impact and mitigation measures shall also be included in the IEE report.

Chapter 9

9. MATTERS TO BE MONITORED WHILE IMPLEMENTING THE PROJECT



9.1 Environmental Management Plan

The project proponent has to develop an Environmental Management Plan (EMP) to systematically manage all the perceived environmental impacts of the project. It shall be therefore based on the mitigation measures for the project induced impacts. An Environmental Management Plan (EMP) has a dual purpose. It is designed to monitor the contractor's work during project implementation. It helps to check contractual compliance with specified mitigation measures. It also helps in making periodic checks on the actual environmental impacts of the Project over the years following completion of the works, and compares these with those impacts anticipated at the time of Project appraisal. The EMP therefore provides the necessary feedback required for correcting potentially serious Project deficiencies, and for planning of other projects. The EMP shall include the responsibilities of different stakeholders based on preliminary plans and schedules. This program shall include measures required during the project design, construction and operational phases and shall include recommendations on allocation of components of the EMP to the various parties involved. Feasible and cost-effective measures to prevent/mitigate/reduce significant negative impacts should be recommended in an Environmental Management Plan. The impacts and costs associated with implementing the measures will have to be detailed. The EMP will include proposed work programs, budget estimates, schedules, staffing and training requirements and other support services to implement the mitigating measures.

9.2 Environmental Monitoring Plan

The project will develop an Environmental Monitoring Program for the pre-construction, construction and post construction activities of the project. The program will evaluate: (i) the extent and severity of the adverse environmental impacts as compared to what was predicted, (ii) how effective the mitigating measures were and compliance with the regulations and (iii) the overall effectiveness of the EMP. The environmental monitoring of the project includes field supervision and reporting of project activities prior to and during the project construction and operation in order to ensure that the works are being carried out in accordance with the approved design and that the environmental mitigation measures are fully implemented in accordance with the EMP. A monitoring system will be developed involving (i) front line monitoring (ii) monitoring by the government line agencies or independent monitors



9.3 Information Disclosure, Public Consultation and Participation

Public consultation is the process of exchanging information with those persons and organisations with a legitimate interest in a project and/or who are likely to be affected by the project (stakeholders). It is a two-way process that informs and involves the community in developing a project, and informs the proponent about issues and concerns, which can then be addressed in project design. Information disclosure involves stakeholders in monitoring the development and implementation of a project and fosters openness in decision-making by presenting documents and other project materials for public scrutiny. The consultation and disclosure involves consultation with stakeholders at an early stage of project preparation, and throughout project implementation. As a minimum, stakeholders will be consulted regarding the scope of the environmental study before work has commenced in earnest, and should then be informed about the likely impacts of the project and proposed mitigation once the draft IEE report is under preparation. The report should record the views of stakeholders and indicate how these have been taken into account in project development. Information is disclosed through public consultation and more formally by making documents and other materials available and at a location in which they can be easily accessed by stakeholders. This normally involves making draft reports available (in the local language) at public locations in the community and providing a mechanism for the receipt of comments and making documents available more widely.

Public consultation and involvement should be given highest priority in the implementation of mitigation measures. Public consultation should take place and on the basis of decision of the consultation meeting, implementation of mitigation measures should be prioritized and should be carried out with the involvement of the local people.

Monitoring is one of the components of EMP. The results of monitoring should also be disclosed in the form of demonstration, charts, figures, graphs, and samples, etc., to the local people, school students and other interested stakeholders. In the process of compliance monitoring of the project construction, local people and construction workers should be consulted.

9.4 Grievance Redress Mechanism

A project-specific grievance redress mechanism (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. GRM will aim to provide a time-bound and transparent mechanism to resolve such concerns.

A Grievance Redress Committee (GRC) will be formed at the town/VDC/Municipality level, comprising the Chairperson of V/M/D WASH CC as the chairperson of GRC, and Secretary of concerned WUA or local bodies as the GRC secretary. The GRC members will comprise of (1) RPMO social development/environmental (as relevant) officer, (2) representative of affected persons, (3) DSMC's safeguards specialist (social/environment as relevant), (4) a representative of

reputable CBO/SHG/organization working in the project area¹, and (5) 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 DSMC 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 APs, civil society and eminent citizens can be invited as observers in GRC meetings. A three tier GRC will be operative as per PAM, TSTWSSSP.

The Social Development Officer at the Regional Project Management Office (RPMO) will be the focal person for facilitating the grievance redress at the local level.



¹ If the complaints are related with IP/Dalits/other vulnerable groups, specific NGO/CBO that actively involved in development of these communities should be involved.



Chapter 10

10. OTHER NECESSARY MATTERS AND THE REPORT

The IEE report shall be prepared as per this ToR document. The IEE report, whenever applicable, shall contain maps, graphs, photographs, tables and matrix. Letters obtained from the stakeholders in response to public notification, and the newspaper cut piece of public notification and no objection letter from district office will be included in the IEE report. The format of report will be in accordance with the format provided by PMO, STWSSSP. The IEE report should include the following:

1. **Name and Address of the Institution Preparing the Report**
2. **Summary of the Proposal**
 - 2.1 Background
 - 2.2 Need of the Sub-project
 - 2.3 Objectives of the Environmental Study
 - 2.4 Scope of IEE
 - 2.5 Relevancy of IEE
3. **The Proposal**
 - 3.1 The Study Area
 - 3.2 The Sub-project
 - 3.3 Existing Situations
 - 3.4 Size and magnitude of operation
 - 3.5 Proposed schedule of implementation
 - 3.6 Components of the project
 - 3.7 Land Requirements and compensation
 - 3.8 Construction and Operation Activities of the project
4. **Review of Acts/Rules, Plans/Policies, Guidelines and Standards**
 - 4.1 Policy and legal frameworks
 - 4.2 Conventions
 - 4.3 Other documents
 - 4.4 Relevant standards
5. **IEE Study Methodology**
 - 5.1 Desk Study and Impact Area Delineation
 - 5.2 Field Work
 - 5.3 Data Processing
 - 5.4 Consultation and Information Disclosure
6. **Description of the Environment**
 - 6.1 Physical Resources
 - Topography, Geology and Soils
 - Land Use
 - Climate
 - Water Resources
 - Air quality
 - Noise levels



6.2 Ecological Resources

Flora

Fauna

Aquatic lives

6.3 Social and cultural resources

Households and Population

Caste and Ethnicity

Educational facilities

Occupation

Economic Characteristics

Existing water supply conditions

Existing sanitation conditions

Existing health conditions

Cultural heritage

Other Infrastructures

7. Anticipated Environmental Impacts and Mitigation Measures

7.1 Beneficial Impacts and Augmentation Measures

i. Construction Phase

ii. Operation and maintenance phase

7.2 Adverse Impacts and Mitigation Measures

i. Pre-construction Phase

ii. Construction Phase

(a) Physical Environment

(b) Biological Environment

(c) Socio-Economic and Cultural Environment

iii. Operation and Maintenance Phase

7.3 Indirect, Induced and Cumulative Impacts

7.4 Evaluation of Impacts

7.5 Implementation of Mitigation Measures

8. Analysis of Alternatives With and Without Project Situations

9. Environmental Management Plan (EMP)

6.2 Environmental Management Plan

6.3 Monitoring & Reporting

6.4 Implementation Arrangements

6.5 Information Disclosure, Consultation and Public Participation

6.6 Grievance Redress Mechanism

10. Conclusions and Recommendations



LITERATURE REVIEWED

- ADB. 2003. *Environmental Assessment Guidelines*.
- Constitution of Nepal (2015)*. Ministry of Law, Justice and Parliamentary Affairs, Law Books Management Board, Kathmandu
- District Development profile of Nepal 2010/11 with VDC Profile, A Socio-Economic Development*
- District Health Office, Bajhang, 2062/63*
- Environment Protection Act, (1997)*. Ministry of Science, Technology and Environment Kathmandu
- Environment Protection Rules, (1997)*. Ministry of Science, Technology and Environment, Kathmandu
- Environment Statistics of Nepal, CBS, 2011*
- Environmental Impact Assessment Guidelines, (1993)*. National Conservation Strategy Implementation Project, National Planning Commission, His Majesty's Government, Nepal
- Feasibility Study of Chainpur Water Supply and Sanitation Project, 2015*
- Ministry of Population and Environment, 1999. Environment Protection Act, 1997 and Environment Protection Rules, 1999, (Amendment, 1999)*. Ministry of Law, Justice and Parliament Affairs, Nepal
- Municipality profile and baseline information of Jaya Prithvi 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



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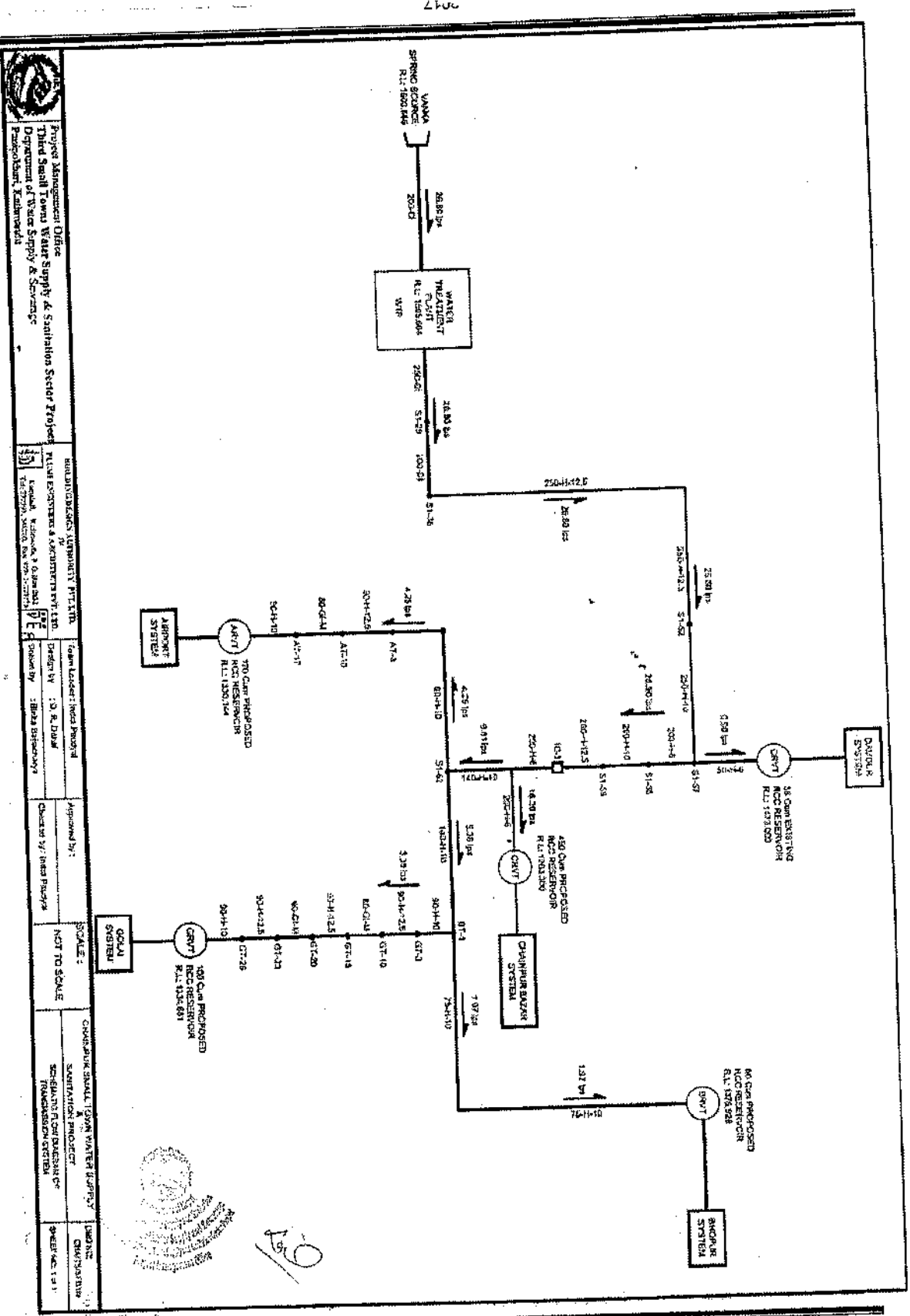
ToR for Initial Environmental Examination of Chainpur Small Town Water Supply and Sanitation Project



ANNEX I

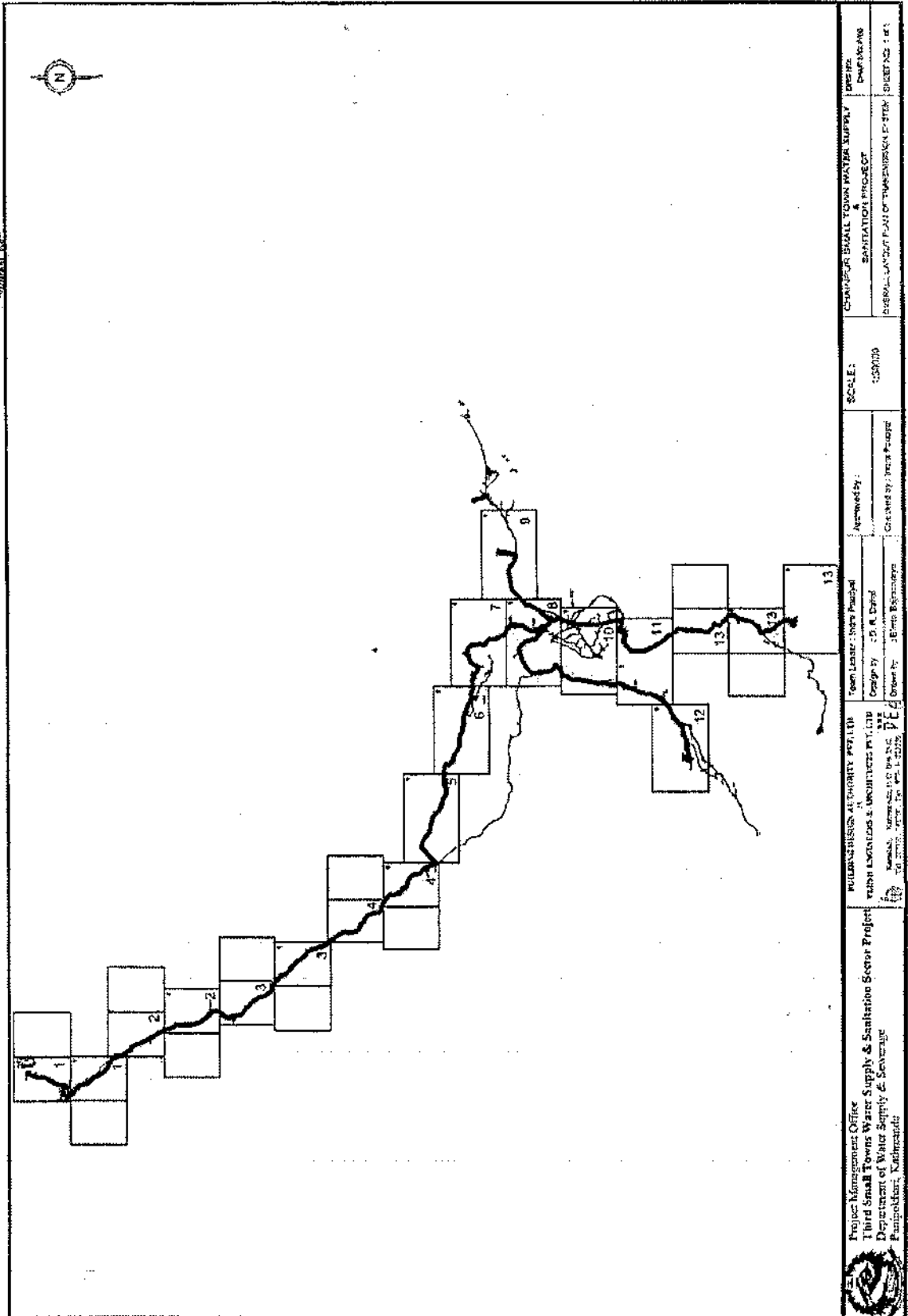
Schematic Layout Plan for the Proposed Project

TOF for Initial Environmental Examination of Chainpur Small Town Water Supply and Sanitation Project



		Project Management Office Third Small Town Water Supply & Sanitation Sector Project Department of Water Supply & Sewerage Kathmandu, Nepal	
BUILDING/STRUCTURE/PROPERTY/PLANT/... IN TOWN/AREA/LOCALITY/... (Name, Address, Phone No., etc.)		Form No.: ... Date: ... Drawn by: ... Checked by: ... Approved by: ...	
SCALE: ... NOT TO SCALE		CHAINPUR SMALL TOWN WATER SUPPLY & SEWERAGE PROJECT SANITATION PROJECT PREPARED BY: ... DATE: ...	

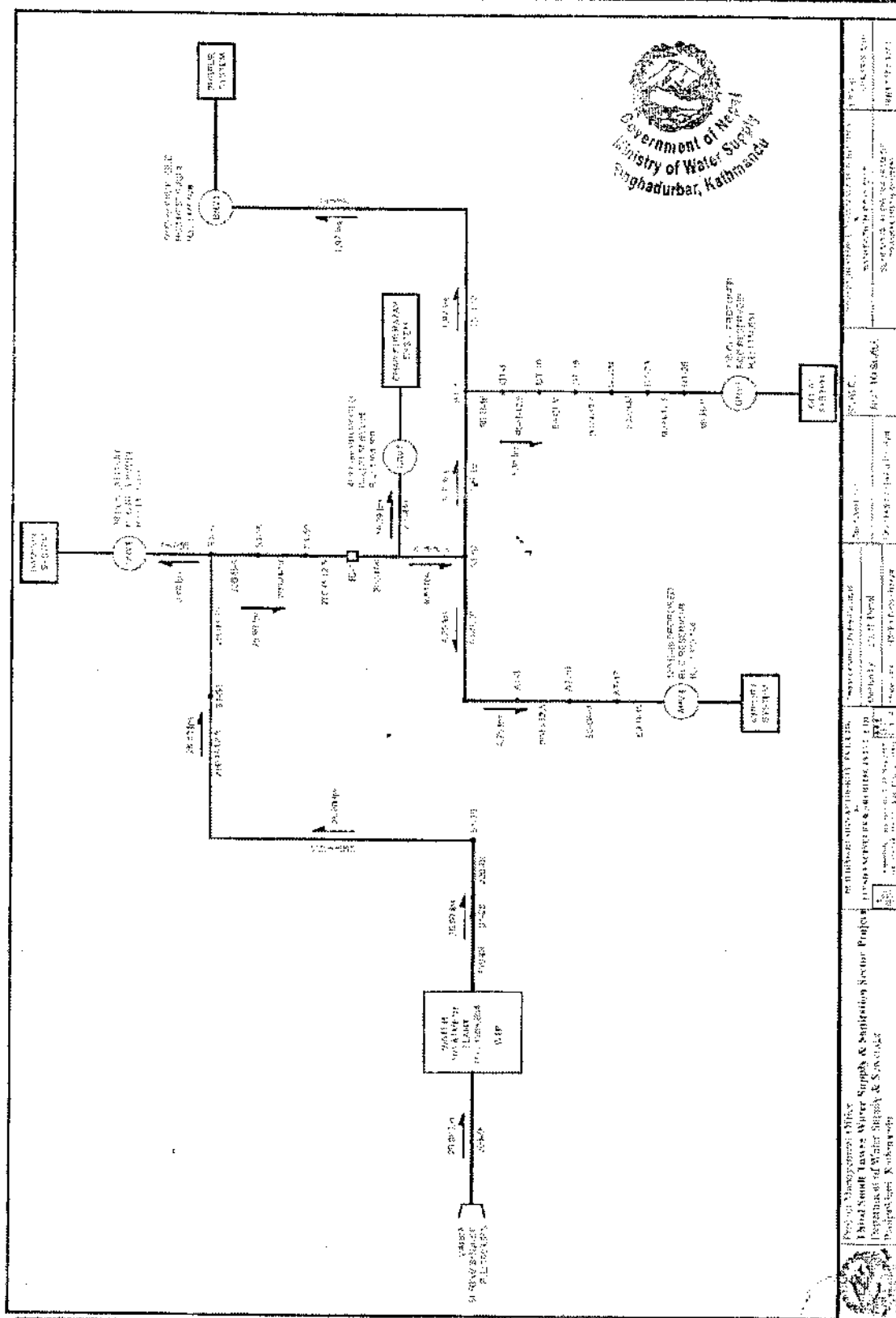
ToR for Initial Environmental Examination of Chainpur Small Town Water Supply and Sanitation Project

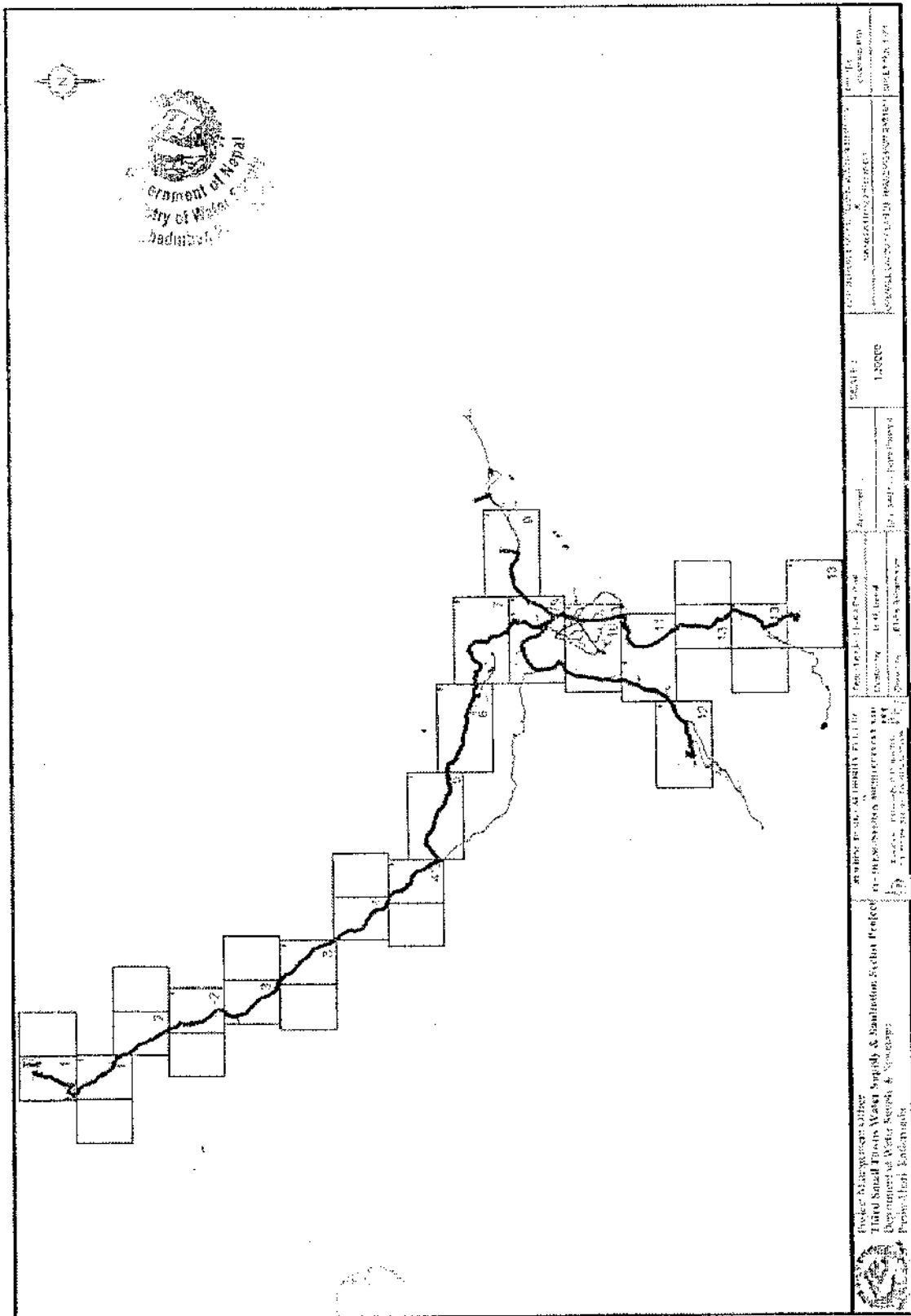


BDA-PEA JV



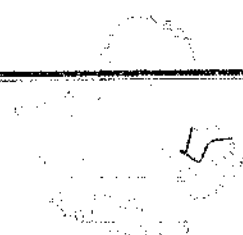
Government of Nepal
Ministry of Water Supply, Sewerage and Sanitation
Kathmandu





Government of Nepal
Ministry of Water Supply
Singhadurbar, Kathmandu

ANNEX II
ADB's REA Checklist





ADB's Rapid Environmental Assessment (REA) Checklist for Chainpur Sub Projects 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: Third Small Towns Water Supply and Sanitation Sector

Subproject:

Chainpur Water Supply and Sanitation Subproject

Screening Questions	Yes	No	Remarks
A. PROJECT SITING			
IS THE PROJECT AREA			
▪ DENSELY POPULATED?			
▪ HEAVY WITH DEVELOPMENT ACTIVITIES?			
▪ ADJACENT TO OR WITHIN ANY ENVIRONMENTALLY SENSITIVE AREAS?			
• CULTURAL HERITAGE SITE			
• PROTECTED AREA			
• WETLAND			
• MANGROVE			
• ESTUARINE			

Screening Questions	Yes	No	Remarks
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?			
social conflicts arising from displacement of communities ?			
conflicts in abstraction of raw water for water supply with other beneficial water uses for surface and ground waters?			
unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)?			
delivery of unsafe water to distribution system?			
inadequate protection of intake works or wells leading to pollution of water supply?			
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?			
inadequate disposal of sludge from water treatment plants?			
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.			
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?			



TER ToR for Initial Environmental Examination of Chennai Smart Town Water Supply and Sanitation Project

Screening Questions	Yes	No	Remarks
• 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?			
• increased road traffic due to interference of construction activities?			
• 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?			
• delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals?			
• 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			
• increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant			
• 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?			
• 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?			
• 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?			



Preliminary Climate Risk Screening Checklist for Sample Sub Project Towns

	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		
	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.)		
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 meteorological parameters) affect the selection of project inputs over the life of project outputs (i.e. construction materials)		
Performance of Project Outputs	Would climate/weather conditions and related extreme events likely to affect the performance throughout their design life time?		

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



ANNEX III

Environmental Checklists & Socioeconomic Questionnaires for the IEE Study



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 pipeline 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

A handwritten signature in black ink is written over a circular official stamp. The signature is stylized and appears to be 'L. K. Singh'. The stamp is partially obscured by the signature.

CHECKLIST OF PLANT RESOURCES

Date:

[illegible]

Note: _____

Date:

[illegible]

Notes:

CHECKLIST OF BIRDS

Date:

[illegible]

Note: _____

Household Survey Questionnaire

१. परिचय

१.१ अन्तर्गतका हिते व्यक्तिको नाम लेख्नुहोस्

(क) जिल्ला:

(ख) गा.वि.स.

(ग) टोल स्थान:

(घ) वार्ड नं.:

१.२ पारिवारिक विवरण

(क) घरमूलाको नाम: श्रीमान् र श्रीमती

(ख) जाति: (ग) उमेर: (घ) लिंग: ☐ पुरुष ☐ महिला

(ङ) वैवाहिक स्थिति: (च) धर्म: (छ) व्यवसाय (घरमुलाको):

(ज) दसैको वर्ष: (झ) शिक्षा:

(ञ) कुल परिवार संख्या

उमेर समूह	पुरुष	पेशा	महिला	पेशा	जम्मा
०-५ वर्ष					
६-१० वर्ष					
११-१५ वर्ष					
१६-२५ वर्ष					
२६-५० वर्ष					
५० भन्दा माथि					
जम्मा					

१.३ विद्यालय जाने उमेरका बाल बालिका (६-१५ वर्ष):

जम्मा	विद्यालय गएका		विद्यालय नगएका	
	पुरुष	महिला	पुरुष	महिला

२. साक्षरता : (तपाईंको परिवारमा)

लेखपढ गर्न सक्ने	एस.एल.सी. उत्तिर्ण	स्नातक	स्नातकोत्तर	जम्मा
महिला				
पुरुष				
जम्मा				

३. कृषि (भु-उपयोग)

३.१ तपाईं वा परिवार सदस्यको नाममा गा.वि.स.र वडा भित्र जग्गा छ र

छ ☐ छैन ☐

३.२ यदि छ भने कति छ ? योपनीमा भन्नुहोस् :

क.स.	स्वामित्व	खेत	बारी	खरबारी	वन	कैफियत
१	आफ्नो					
२	भण्डारको					



ToR for Initial Environmental Examination of Chainpur Small Town Water Supply and Sanitation Project

क्र.सं.	स्वामित्व	खेत	वारी	खरवारी	वन	कैफियत
३	कमाई भागको					
४	कमाउन दिएको					
५	जग्गा					

३.३ गा.वि.स. बा वडा बाहिर कुन टाउँमा जग्गा छ ?

क्र.सं.	ठाउँको नाम	खेत	वारी	खरवारी	वन	कैफियत

३.४ तपाईंको जग्गा आधामतः भित्र पट्टे र ५ एमिटर कम नमेलनपछि तत्पत्र अफाउन्डमेन्ट वा उच्चयक्षेत्रत धर्ममन्त्रन न
[वर्गिक]

- | | |
|---|--|
| घर | खेत |
| ☐ लम्बाई (फिटमा) | ☐ पाखो वारी |
| ☐ चौडाई (फिटमा) | ☐ जग्गा |
| ☐ झाना | ☐ अन्य |
| ☐ सल्या | |
| ☐ कोष | ☐ अन्तर्जी मूल्य (चलनचल्नीमा) नेर |

(क) आयोजना क्षेत्र भित्र तपाईंको कतिवटा घर र गोठ छन् ?

घर गोठ

क्र.सं.	फिसिम	क्षेत्रफल
घर १		
घर २		
घर ३		

(१) कच्ची-खरले छाएको (२) पक्की (दुहा, ईटाको पछाल र ढलान भित्रको वा टिनको छापी)

	संख्या	क्षेत्रफल
गोठ		
अन्य (खलाउने)		

३.५ (क) तपाईंको आयोजना क्षेत्र भित्र गर्ने जमिनमा कुन कुन फसल लगाउनु हुन्छ ?

क्र.सं.	खाद्यान्न वाली	वाली लगाएको क्षेत्रफल	उत्पादन परिणाम
१. खाद्यान्न वाली			
	धान		
	गहुँ		
	मकै		
	जौ		



ToR for Initial Environmental Examination of Chainpur Small Town Water Supply and Sanitation Project

नगर गेडागुडी	
अन्य	
२. नगदे बाती	
आस	
मोह	
तखवरी	
अन्य	

(ख) उक्त जग्गामा लगाएको फलफूल र अन्य बोट बिरुवाको विवरण प्रस्तुत

क्र.सं.	बोटबिरुवा	बिरुवा संख्या		जम्मा
		फल लागेको	फल नलाएको	
१	फलफूल			
२	बनगती			
३	सुन्तला			
४	बाप			
५	मैवा			
६	अमरु			
७	मिर्चनी			
८	कटहर			
९	केरा			
१०	सार			
११	नारियानी			
१२	शारदखडा			
१३	अन्य			
१४	हाल बास			
१५	पाखुरी			
१६	काँडा			
१७	बडहर			
१८	सुन्तला			
१९	टाकी			
२०	गिदरी			
२१	अन्य			
२२	इल्यानको लागि प्रयोग गर्ने बोट बिरुवा			
२३	काठमा प्रयोग हुने बोटबिरुवा			
२४	बास लगाएको			

३.६ के तपाईंको जग्गामा भएको गत वर्षको उत्पादनले तपाईंको परिवारलाई खान पर्याप्त भयो र

भयो

भएन

३.७ यदि अपर्याप्त भयो भने कति महिनाको लागि पुगेन र महिना

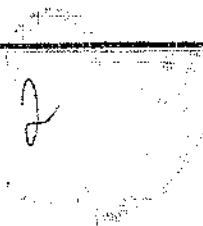
(क) तिन महिना

(ख) छ महिना

(ग) नौ महिना

(घ) बाह्र महिना

३.८ आफ्नो उत्पादित खाद्यान्न अपर्याप्त भएको बेलामा आफ्नो परिवारलाई कसरी खुवाउनु हुन्छ ?





TOE for Initial Environmental Examination of Chainpur Small Town Water Supply and Sanitation Project

- क. कृषि क्षेत्र
ख. नोकरीबाट सार्ने आम्दानीबाट
ग. व्यापारीको आम्दानीबाट
घ. भारी बोकेर भएकी आम्दानीबाट
ङ. दैनिक मजदुरबाट भएको
च. अन्य

३.१ पशुपालन सम्बन्धी :

तपाईंको घरमा कुनै / कस्तो पशु पशुपक्षी पाल्नु भएको छ / र

क्र.सं.	पशुपक्षी	संख्या
१	गाई	
२	गाँस	
३	भैँसी	
४	बाख्रा	
५	ब्राँड	
६	पाडा	
७	पाँडे	
८	राँगा	
९	घोडा	
१०	आखा	
११	बाख्रा	
१२	खसी	
१३	पाठा, पाडी	
१४	सुँगुर, चंगुर	
१५	राँस	
१६	कखरा	
१७	अन्य (खुलाउने)	

४. घर परिवारको वार्षिक औषत आम्दानी :

श्रोत	वार्षिक आम्दानी (रु.)	श्रोत	वार्षिक आम्दानी (रु.)
कृषिबाट		अन्य श्रोतहरू	
व्यापार		नोकरी, सेवा	
नगदेवाली		जग्गा मजदुरी र भरोसा	
फलफूल		निवृत्तिभरण	
जग्गा (१)		व्यापार	
पशुपालनबाट		घरेलु उद्योग	
दुग्ध उत्पादन		पञ्चायत सेवा	
अण्डा कखरा हाँस बिक्री		माछा बिक्री	
बाख्रा/बाख्री/सोरु/बिक्री		अन्य	
भैँस/राँगा बिक्री		जग्गा (२)	
घोडा/खसी/भैँडा/बाख्रा			
बिक्री			
सुँगुर/चंगुर बिक्री			
कखरा/हाँस बिक्री			
जम्मा (२)			
जम्मा आय (१+२)			

५. घर परिवारको वार्षिक औषत खर्च :

विवरण	जम्मा रकम (रु.)	विवरण	जम्मा रकम (रु.)
चामल		चिया	
आलु		वाउरा	
मकै		मिजली	
नरकारी		माइनेम	
दूध/धारी		आपान	
माछा/मासु		शाला	
तेल/छ्य		कपडा	
मर-मसला		बाटपत्र	
नून		अन्य	
चिनी			
		जम्मा खर्च	

६. पानीको आपूर्ति

(क) नगाईने यस खोलाको पानी उपयोग गर्नु हुन्छ कि हुदैन र
रुई ☐ माईने ☐

(ख) बाँध खोलाको पानी प्रयोग गर्नु हुन्छ भने कुन प्रयोजनको लागि प्रयोग गर्नुहुन्छ र
सिँचाई ☐ नुहाउने, कपडा धुने ☐
बिउने ☐ अन्य ☐

७. स्वास्थ्य सम्बन्धि:

(क) नगाईको परिवारमा कुनै सदस्य विगत वर्षमा बिरामी भएका छिए र
थिए ☐ थिएनन् ☐

(ख) यदि थिए भने निम्न विवरण दिनुहोस् र

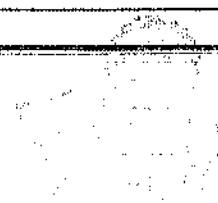
क्र.सं	नाता	पुरुष	महिला	उमेर	रोग
१					
२					
३					
४					

(ग) रोगको प्रकार:- दिमागखावा, आउं, टाइफाइड, हैजा, मलेरिया, टीबी, जन्टीया, छाता सम्बन्धी, निमोनिया, दम, रक्तचाप, एड्स र यीन रोग, अन्य)

(घ) बिरामी पर्दा सर्वप्रथम कहाँ जानुहुन्छ र

(ङ) त्यहाँ निको नभए-कहाँ जानुहुन्छ र कससँग उल्लेख गर्नुहोस् ।

क्र.सं	जाने ठाउँ	रहेको स्थान	दूरी (कि.मी.)
१	अस्पताल		
२	हेल्थपोस्ट		



३	हेमन्त मेन्डर		
४	आवधोदक शोधशाला		
५	निर्वाह विनिर्माणक शोधशाला		
६	धामी भर्तृकी		
७	अन्य		

८. महिलाको अवस्था:

(क) घरको वर्गीकरण

क्र.सं.	कामको विवरण	हिस्सा प्रतिशतमा	
		पुरुष	महिला
१	खनसोत		
२	मल गल्ने		
३	जोमन ल्याप्ट		
४	गोबर		
५	गोबरमैया		
६	सिन्धु		
७	काटने		
८	बोक्ने र बल्काउने		
९	अन्य प्रसोधन (कुराई पिसाई)		
१०	घाँस बाड्ने		
११	गोठाला		
१२	मेलापान		
१३	छाना पकाउने		
१४	पासी पारेने		
१५	वस्त्रावच्छी र बुढावुढी हेरविचार		

(ख) सम्पत्तिमा अधिकार

क्र.सं.	कामको विवरण	हिस्सा प्रतिशतमा	
		पुरुष	महिला
१	घर		
२	जग्गा		
३	पशु		
४	गरमाहना		
५	उद्योग घराना		
६	अन्य		

(ग) निर्णय प्रक्रियामा अधिकार

क्र.सं.	कामको विवरण	हिस्सा प्रतिशतमा	
		पुरुष	महिला
१	बानी रोक्ने		



ToR for Initial Environmental Examination of Chainpur Small Town Water and Sanitation Project

क्र.सं.	कामको विवरण	हिस्सा प्रतिशतमा	
		पुरुष	महिला
२	पशु खर्चोबिचकी		
३	गराहना खर्चोबिचकी		
५	अन्न खर्चोबिचकी		
६	कमप्लेक्स खर्चोबिचकी		
७	पशुजन्य पदार्थ खर्चोबिचकी		
८	काठ दाउगा खर्चोबिचकी		
९	बिज्ञावारी		
१०	परिवार नियोजन		
११	औराछोरी पढाई ल्याई		
१२	अन्य		

९. मुधाब्जा सम्बन्धी:

(क) तपाईंको घर र जग्गाको मुधाब्जा के मा चाहनु हुन्छ ?

नगर ☐ जग्गाको सह जग्गा ☐ अन्य ☐

(ख) यदि तपाईंले मुधाब्जा नगदमा पाउनु भयो भने उक्त मुधाब्जा रकम के मा प्रयोग गर्नु हुन्छ ?

जग्गा किन्ने ☐ घर बनाउने ☐ खाना तिर्ने ☐
व्यापार गर्ने ☐ अन्य ☐

१०. प्रस्ताव कार्यान्वयन गर्दा के कस्तो प्रभाव पर्न सक्छ सो सम्बन्धी राय सुझाव छ ?
सकारात्मक: नकारात्मक:

ANNEX 2: SAMPLE FORMS, FORMATS AND REPORT TEMPLATE



ANNEX A:**RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST FOR CHAINPUR SUB PROJECT AND PRELIMINARY CLIMATE RISK SCREENING CHECKLIST****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

Project:

Chainpur Town Water Supply and Sanitation Project

Screening Questions	Yes	No	Remarks
A. Project Siting			
Is the project area			
Densely populated?	√		It is densely populated in the market areas where the population density is as high as 62.47/ha, and the density is low in other places (around 25/ha)
Heavy with development activities?		√	There are no large scale interventions, however regular local level development works are ongoing
Adjacent to or within any environmentally sensitive areas?			
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?		√	No nearby sources of pollution are present. However, erosion could be a concern if intake works not well carried out. But design has addressed this concern.



Screening Questions	Yes	No	Remarks
impairment of historical/cultural monuments/areas and loss/damage to these sites?		√	No such loss is anticipated
hazard of land subsidence caused by excessive ground water pumping?		√	NA
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?		√	The source is already registered in the name of WUSC.
unsatisfactory raw water supply (e.g. excessive pathogens or mineral constituents)?	√		Basic water treatment is proposed. WSP is also planned. 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. WSP has been planned. EMP recommends continuing training of WUSC in water quality monitoring, as prescribed in the NDWQS Directives.
inadequate protection of intake works or wells, leading to pollution of water supply?	√		Design proposes housing for intake, as well as perimeter fencing of the entire land area of the intake & associated facilities.
over pumping of ground water, leading to salinization and ground subsidence?		√	NA
excessive algal growth in storage reservoir?		√	EMP provides mitigation measures.
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?	√		Transmission main pipe lines of 13 Km length are proposed within existing public road RoWs/unused government and public land.
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?		√	Chlorine Use Guidelines will be prepared, taught and implied
dislocation or involuntary resettlement of people?		√	No any such case
disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		√	No such disparities or challenges are there
noise and dust from construction activities?	√		Site specific and short term impacts of noise and dust are foreseen. EMP provides mitigation measures.

Screening Questions	Yes	No	Remarks
increased road traffic due to interference of construction activities?	✓		Traffic Management Plan will be prepared, shared and implemented
continuing soil erosion/silt runoff from construction operations?	✓		Low scale impacts of the nature are foreseen in construction sites.
delivery of unsafe water due to poor O&M treatment processes (especially MOWS 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. WSP is proposed
delivery of water to distribution system, which is corrosive due to inadequate attention to feeding of corrective chemicals?		✓	
accidental leakage of chlorine gas?		✓	
excessive abstraction of water affecting downstream water users?		✓	Safe yield of 23.41 lps; no impacts on downstream
competing uses of water?		✓	
increased sewage flow due to increased water supply	✓		Most of the communities have septic tanks leading to soak pits. EMP provides mitigation measures.
increased volume of sullage (wastewater from cooking and washing) and sludge from wastewater treatment plant	✓		There is no wastewater collection & treatment system. EMP provides mitigation measures.
large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?	✓		The impacts will be of small scale and temporary in nature
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 Towns

Screening Questions	Score	Remarks
Location and design of project	0	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	Investments in the sample sub project will not likely be affected by climate change and extreme weather events due to the siting of project. For example all pipes will be constructed below ground no investments will be sited in flood plains etc.
	0	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.)
Materials and maintenance	0	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)
Performance of Project Outputs	0	Would climate/weather conditions and related extreme events likely to affect the performance throughout their design life time?
		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



ANNEX B: RELEVANT ENVIRONMENTAL QUALITY STANDARDS

B.1 Ambient Air Quality Standards

Parameter	Averaging Period	Nepal's Ambient Air Quality Standard ($\mu\text{g}/\text{m}^3$) *	WHO Air Quality Guidelines ($\mu\text{g}/\text{m}^3$) **	
			Global Update 2005	Second Edition ^A 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	60	-	-
	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.

^A 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 _{2,eq} 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	µS/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 ^A	1.5
	Lead	mg/l	0.01	0.01
	Ammonia	mg/l	1.5	none established
	Chloride	mg/l	250	none established
	Sulphate	mg/l	250	none
Chemical	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 ^{AA}
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.

^A These standards indicate the maximum and minimum limits.^{AA} From WHO (2003) Chlorine in Drinking-water, which states that this value is conservative.

Parameter with WHO guideline value as more stringent than national 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.



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ANNEX C: 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 it includes as attachment/note/letter, please tick here: ☐ Yes ☐ No 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 D: 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

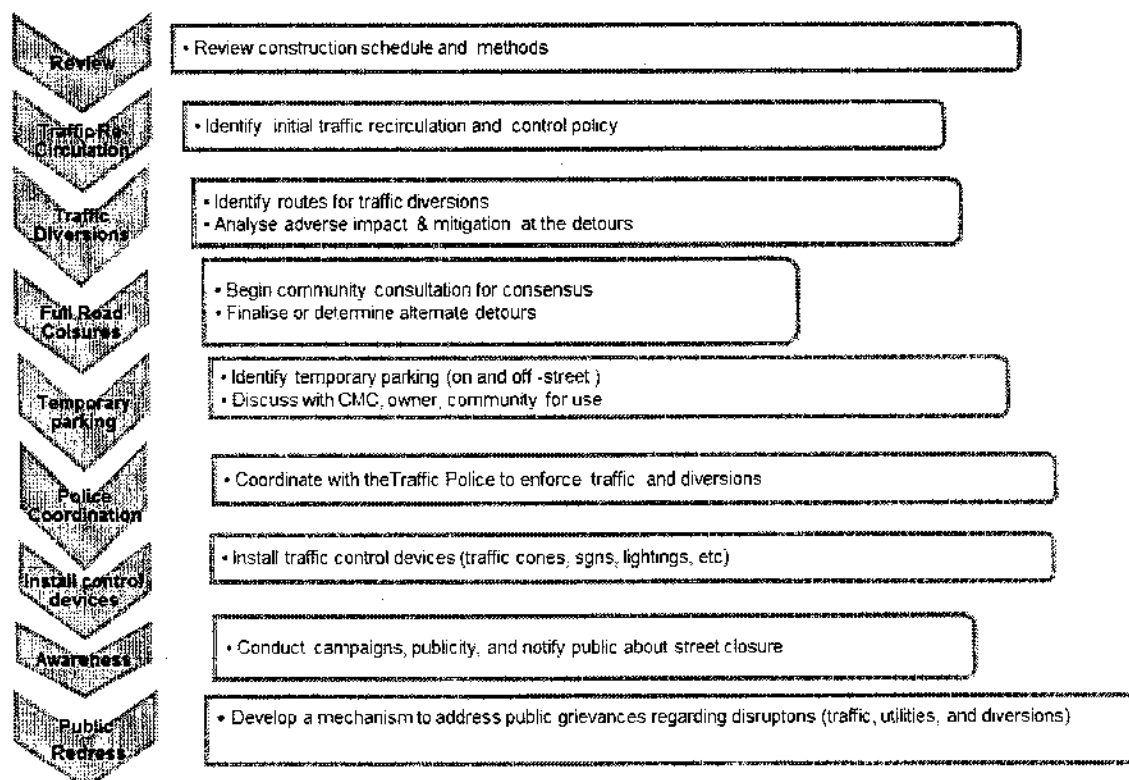
Apart from the capacity analysis, a final decision to close a particular street and divert the traffic should involve the following steps:

- 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 E: 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
- Manage 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, MOWS 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 F: 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

N o.	Sub-Project Name	Status of Sub-Project				List of Works	Progress of Works
		Design	Pre- Constructio n	Constructio n	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 ($\mu\text{g}/\text{m}^3$)	SO2 ($\mu\text{g}/\text{m}^3$)	NO2 ($\mu\text{g}/\text{m}^3$)

Site No.	Date of Testing	Site Location	Parameters (Monitoring Results)		
			PM10 ($\mu\text{g}/\text{m}^3$)	SO2 ($\mu\text{g}/\text{m}^3$)	NO2 ($\mu\text{g}/\text{m}^3$)

Water Quality Results

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

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

Noise Level 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 G: SAMPLE ENVIRONMENTAL SITE INSPECTION REPORT

Project Name
Contract Number

NAME: _____
TITLE: _____
LOCATION: _____

DATE: _____
DMA: _____
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

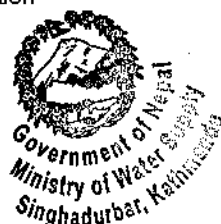
Sign off

Name

Name

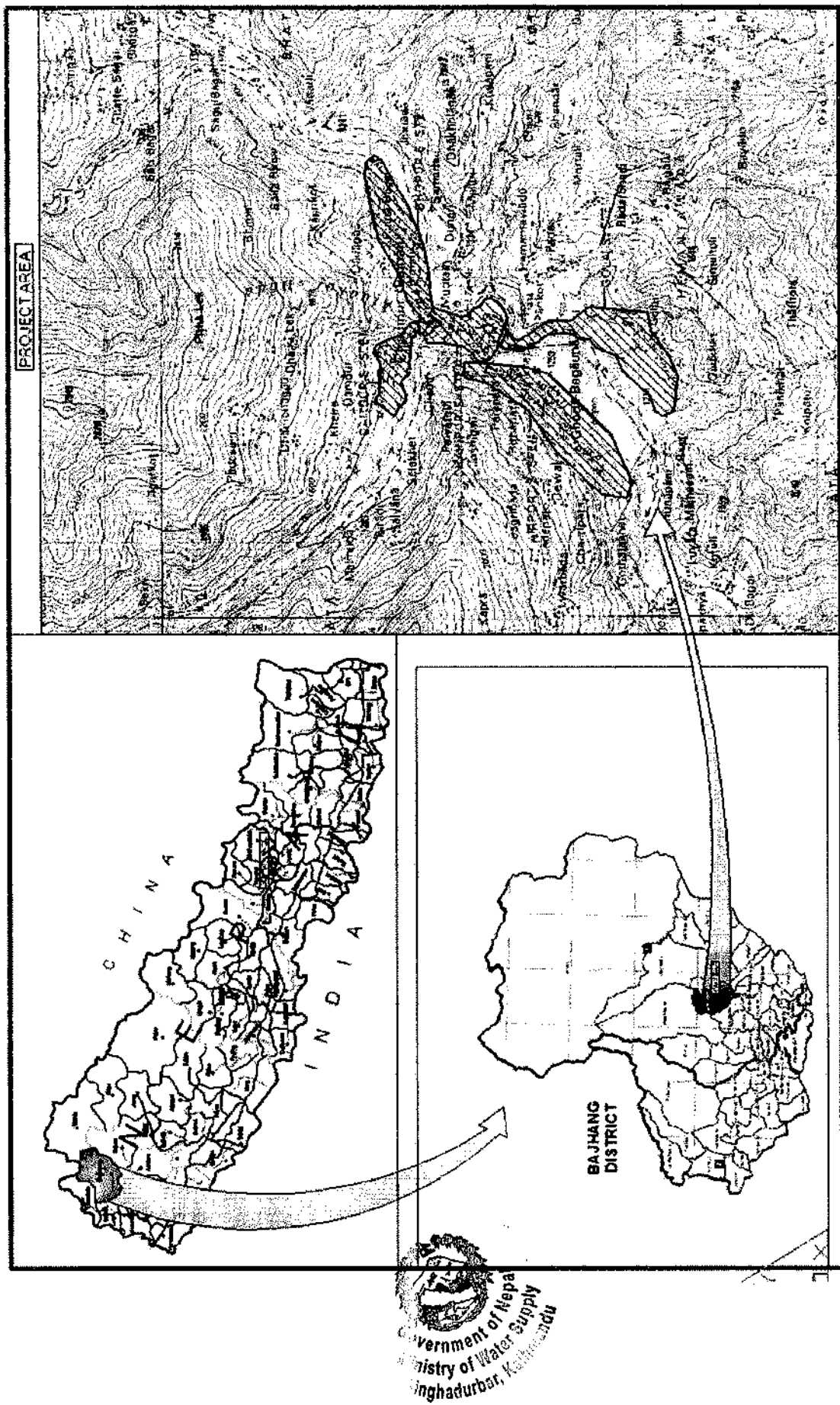
Position

Position



ANNEX 3: PROJECT LOCATION, SERVICE AREA AND SCHEMATIC MAP







Google Map with Project Component Sites (Map 2)

ANNEX 4: PUBLIC NOTICE, MUCHULKA, PUBLIC CONSULTATION & RECOMMENDATION LETTER



[illegible]

Public Notice

सूचना दियी गयी है।

[illegible]

गणेशदास नारायणदास के माता/पिता

अथर्ववेद शास्त्रार्थ १९६३-६४ काशी हिन्दू विश्वविद्यालय

जमहुरी, गणतन्त्र, लोकतन्त्र - ये सब एक ही बात हैं।

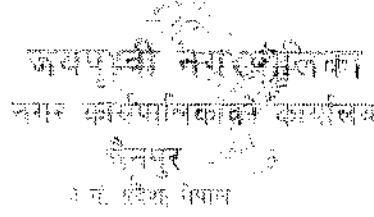
चेन्नई - कन्नूर - दीरहा

उपहृष्टः गार्ग्यः ॥ १० ॥ एकमात्रम्

संस्कृत विभागाध्यक्ष कायान्वये



Recommendation Letter from JayPrithvi Municipality



फोन नं. ०९२-४२१०६४
फाक्स नं. ०९२-४२१०६४

पत्र संख्या : ०७४/०७४

मिति : २०७४/०३/०३

च.नं. : ९६३

विषय: सिफारिस सम्बन्धमा

श्री खानेपानी मन्त्रालय,

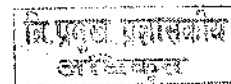
सिंहदरबार, काठमाडौं ।

उपरोक्त सम्बन्धमा त्यस मन्त्रालय अन्तर्गत प्रदेश नं. ७ को बझाङ जिल्ला स्थित जयप्रथ्वी नगरपालिकामा संचालन हुने चैनपुर खानेपानी तथा सरसफाई आयोजना (यसमा नं. ९, १०, ११) को प्रारम्भिक वातावरणीय परिक्षण (Initial Environmental Examination) प्रतिवेदन तयार गर्ने क्रममा सो आयोजनाबाट भौतिक, जैविक सामाजिक आर्थिक एवं सांस्कृतिक पक्ष तथा प्रणालीहरूमा के कस्ता असरहरू पव्छन् वा पर्ने सम्बन्धमा सो बारे लिखित राय सुझाव को लागि मिति २०७४-०२-०४ मा प्रकसित १५ (पन्ध्र) दिने सूचना यस नगरपालिकामा र सार्वजनिक स्थानहरूमा हाँस गरिएको र सो अवधि निम्न सो कार्यालयमा कुनै विरोध पर्ने नआएको कारण उक्त आयोजना संचालनबाट वातावरणीय क्षेत्रमा कुनै प्रतिकूल प्रभाव पर्ने देखिएको व्यहोरा समेत सिफारिस गरिन्छ ।



२०७४/०३/०३

(श्री व. बज्ज)



25

१७ जेठ २०७३

2014

20

१० डि. ३०२ मि. ८

510

॥ श्रीगणेशाय नमः ॥

10/1/86

छलफलका विषय तथा सम्पत्ति सहायक

१. यस आयोगका विभिन्न कार्यहरु, ती कार्यहरु सञ्चालन गर्ने स्थानहरु र ती कार्यहरुको प्राप्तीका चारैतर्फ सरकारद्वारा जानकारी दिइयो ।

२. आयोजनाबाद प्राप्त हुने फाइदाहरू सफा सुरक्षित खानेपानी, स्वास्थ्य अवस्थामा सुधार, पानी संकलनमा लाग्ने समय बच्ने, स्थानीय रोजगार, आदी। ज्ञा वारेमा एवम् आयोजनाको तयारी तथा निर्माण सम्बन्धी कार्यहरू बाट विभिन्न समयमा स्थानीय वातावरणका शैतिक, नैतिक तथा आर्थिक-सामाजिक प्रयत्नहरू गर्न सक्ने अवसरान्तरक अवसरहरूका बारे पनि जानकारी दिई छलफल गरियो ।

३. निर्माण कार्य संचालन भेदा हून सकने भूखण्ड, हरियालीमा आउने सकने प्राय, खोलानालाभा हुन सकने प्रदूषण, कामदारको सुरक्षा, सम्भावित वातावरणीय प्रदूषण जस्ता विषयमा जानकारी तथा छलफल भयो।

- ४ स्थानीय सरोकारवालाहट के उल्लेख गरेका विषयहरू / सरोकारवालाहट बाट प्राप्त सफायाहरू

क. सर्वे उपस्थित स्थानेपानी समीक्षा समूह, पत्र मध्य २ अना
समीक्षावाला प्र. प्र. सिध. कक्षा सन्यासना जर्न वारे पुनर्जाती २
कार्यवाही पूर्ण सप्ता सप्ता जर्न प्रवित्तवाही ।

का कार्य सञ्चालनका क्रममा हुन जाने भनी छत्र विधायन दायित्व
प्रकार हरी दाँतपुरीको व्यवस्था गरिनुपर्ने सुझाव ।

वा. सर्व प्रतिनिधित्व (राजधानी समिति, पञ्च पञ्च, कन्सल्टेन्ट, जन प्रतिनिधी
३ अन्य असेसरावली) द्वारा एक आपसमा सहयोगको भावना रम्यो काम सम्पन्न
जीवित्तु सम्पन्न।

ઇ) નામ સંચાલનના પ્રમાણ ધારાધારાના કારણે સમગ્ર દેશમાં ન્યૂનીકરણ
 ગરીબો સમગ્ર ગરીબોને મુશ્કેલી

३) स्थानीय राजागणको व्यवस्था उल्लिखन

च) कार्य संचालनक) स्थानिक सभै सार्वजनिक स्थल भाषान कोमका
दौतान कुनै विवाद नैहो वाधाह नउपनै शुभछ ।

[Handwritten signatures and stamps are visible at the bottom of the page.]



आज मिति २०७२ बसन्त आषाढ १ गते आइतबार का दिन चैनपुर
लेखी नाना शहरी स्वनिधानी तथा सरसफाइ उपमहानगर समितिमा
आयोजना गरिएको प्रारम्भिक वातावरणीय परिक्षण (IEE) आयोजनाको
क्रममा यस आयोजनाबाट पर्ने संपत्ति प्रभावहरू तथा यसका संरक्षण
पक्षहरूको बारेमा प्रारम्भिक जानकारी BDA-PEA, J.V र स्थानीय
सरोकारवाला बिच निम्नानुसार छलफल कार्यक्रम संचालन भएको छ।

उपस्थित

१) अध्यक्ष	श्री बालेन्द्र अधिकारी ९८३८४०६३०५	हस्ताक्षर
२) सहसचिव	श्री प्रेम ज्ञाना घिमाल ९८४८३३६३८	हस्ताक्षर
३) कोषाध्यक्ष	श्री जुता जोशी ९०४१००२५९२ (आजात)	हस्ताक्षर
४) सचिव	श्री केशव खड्का ९४४९०४९९६४	हस्ताक्षर
५) "	श्री कविन्द्र अधिकारी ९८३८८९९८३	हस्ताक्षर
६)	श्री कुवाँरा व. वस्ने ९८४८४३२२२४	हस्ताक्षर

गोपनीयता

१) प्रमुख अतिथि श्री. पी. मन्त्रालय श्री विरेन्द्र व. खड्का	हस्ताक्षर
२) अतिथि श्री. पी. पी. ड. व. म. अध्यक्ष श्री केशव खड्का	हस्ताक्षर
३) " " १० " " श्री केशव अधिकारी	हस्ताक्षर
४) " " ११ " " श्री केशव व. खड्का	हस्ताक्षर
५) श्री श्री अधिकारी	हस्ताक्षर
६) श्री श्री अधिकारी	हस्ताक्षर
७) श्री श्री अधिकारी	हस्ताक्षर
८) श्री श्री अधिकारी	हस्ताक्षर
९) श्री श्री अधिकारी	हस्ताक्षर
१०) श्री श्री अधिकारी	हस्ताक्षर
११) श्री श्री अधिकारी	हस्ताक्षर
१२) श्री श्री अधिकारी	हस्ताक्षर
१३) श्री श्री अधिकारी	हस्ताक्षर
१४) श्री श्री अधिकारी	हस्ताक्षर

BDA/PEA JV

१४१३२०३३९



सुझावहरू

२/ यस आयोजनाको परिमार्जन अन्तिम डिजाइन र लागत बजेट
को विषयमा छलफल गरिनेमा जानकारी दिइएको छ ।

३/ योजनाबद्ध संरक्षण रैन २०२४ बमोजिम २६६ अक्षयन का
कम्पमा २०६४ जेठ ४ गते प्रकाशित सार्वजनिक सूचना से को
नुसार २ सरकारी कार्यालय रंग सार्वजनिक घण्टा हरिमा
जानकारी गराइयो ।

३/ यस अघाडी नगरपालिका का प्रमुख श्री विरेन्द्र को
बुझाओ भएर यस आयोजना प्रस्ताव, प्रभावता र ठेकाउका
विषयको प्राविधिक जानकारी सुनिश्चित हुनुपर्ने सुझाव दिनु
भयो ।

४/ यस ज.स.पा. वडा नं. १० का अध्यक्ष श्री केशव को विरेन्द्र
को बुझाओ भएर नगर कार्यालय रंग संरक्षण जहाँ उपयुक्त
देखिने डिजाइनमा समीक्षा हुनुपर्ने सुझाव दिनु भयो ।

४/ यस ज.स.पा. वडा नं. ११ का अध्यक्ष श्री विरेन्द्र को बुझाओ
भएर नगर कार्यालय रंग संरक्षण जहाँ उपयुक्त देखिने डिजाइनमा
समीक्षा हुनुपर्ने सुझाव दिनु भयो ।

५/ सार्वजनिक शौचालय संरक्षण दिगो हुनुपर्ने र यसका लागि
सुनिश्चित गर्न सार्वजनिक कार्यालय (३) विभिन्न वडा) व्यवस्था गर्न
सकिने छैन भने यस प्राप्त भयो ।

यस आयोजना निर्माण र संरक्षणका क्रममा वातावरणीय
क्षेत्रमा नदिन र कामको गुणस्तरका लागि वातावरणीय तथ्यांक
योजना कार्यन्वयन गरिने र संयुक्त अनुगमन गर्ने विषयमा चर्चा
र सहमती भयो ।

(Handwritten signatures and initials)



आवृत्ति २०७२/०३/०३ गतेको दिने चयनपत्रको नयाँ को
 ला नं. १०, फुलवारी टोलमा चैनपुर रक्षापट्टी तथा
 सरसफाई आयोजनाको प्र. कानुनीय परिक्षा (I.E.E)
 कार्यप्रणालीको रूपमा यस आयोजनाको प्रगतिको
 कार्यालय र प्रतिष्ठान मालिकाको कोषा निम्नतर्फको
 नामको निर्देश दिएको छः

क्रम	नाम / ठेगाना	मो. नं.	सम्पर्क
१	छिजेमती नेपाली विमती		
२	सुविता श्रेष्ठ		अक्ष
३	केही नदी		के. ३
४	राधा नदी		राधा
५	जानु नदी		मान
६	विद्या		वि. नदी
७	हरिता		हरिता
८	पुनी नदी		पुनी नदी
९	प्रमिता नदी		प्रमिता नदी
१०	निशिता नदी		विमला
११	मालती नदी		मालती
१२	मनिसा नदी		मनिसा
१३	सुविता नदी		सुनीत
१४	विकास नदी नेपाली		विकास
१५	कमल नदी		कमल
१६	विद्या नेपाली		विद्या
१७	सुविता नदी		सुविता
१८	सुविता नदी		सुविता
१९	सुविता नदी		सुविता
२०	सुविता नदी		सुविता

RECOMMENATION LETTER



जयपृथ्वी नगरपालिका
नगर कार्यपालिकाको कार्यालय
चैनपुर
७ नं. बस, सप्तरी

फोन नं. ०१२-४२९०६४
फ्याक्स नं. ०१२-४२९०६४

पत्र संख्या : ०७४/०७५

मिति : २०७५/०३/०३

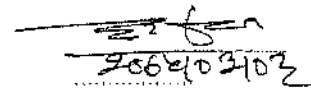
च.नं. : ९७६

विषय: सिफारिस सम्बन्धमा

श्री खानेपानी मन्त्रालय,

सिंहदरबार, काठमाडौं ।

उपरोक्त सम्बन्धमा त्यस मन्त्रालय अन्तर्गत प्रदेश नं. ७ को बझाङ जिल्ला स्थित जयपृथ्वी नगरपालिकामा संचालन हुने चैनपुर खानेपानी तथा सरसफाई आयोजना (पछा नं. ९, १०, ११) को प्रारम्भिक वातावरणीय परिक्षण (Initial Environmental Examination) प्रतिवेदन तयार गर्ने क्रममा सो आयोजनाबाट भौतिक, जैविक सामाजिक आर्थिक एवं सांस्कृतिक पक्ष तथा प्रणालीहरूमा के कस्ता असरहरू पर्दछन् वा पर्ने सक्दछन् सो बारे लिखित राय सुझाव का लागि मिति २०७५/०२/०४ मा प्रकाशित १५ (पन्ध्र) दिने सूचना यस नगरपालिकामा र सार्वजनिक स्थानहरूमा टाँस गरिएको र सो अवधि भित्र यो कार्यालयमा कुनै विरोध पर्ने नआएको कारण उक्त आयोजना संचालनबाट वातावरणीय क्षेपमा कुनै प्रतिकूल प्रभाव पर्ने देखिएको व्यहोरा समेत सिफारिस गरिन्छ ।


२०७५/०३/०३

(शेर ब. बिष्ट)

नि.प्रमुख प्रशासकीय
अधिकृत



ANNEX 5: WATER QUALITY TEST REPORT

NS Lab Accreditation No.: 08895-66
 VATIPAN No.: 300124300
 Regd. No.: 9180952/053

"Training For Success"

Tel : 977-1-4475674
 Fax No 977-1-4479642



Water

Engineering & Training Centre (P.) Ltd.

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

Name of Sender: BDA-PEA JV		Source: River Water (Seti River)			
Sample No: 3910/2074/075		Analyzed date: 07/05/2018-13/05/2018			
Date of Receipt: 07/05/2018		Location: Bajhang			
Project: Third Small Town Water Supply & Sanitation Project		Sampled by: WUSC, Chainpur, Bajhang			
Parameters	Units	WHO GV	NDWQS	Result	Methods used
PHYSICAL					
Color	Hazen	15	5 (15)	<5.0	2120 B, APHA, 21 ST EDITION
Turbidity	NTU	5	5 (10)	18.0	2130 B, APHA, 21 ST EDITION
Conductivity	µS/cm	-	1500	164.0	2510 B, APHA, 21 ST EDITION
pH	-	6.5-8.5	6.5-8.5*	7.6	4500-41 ST B, APHA, 21 ST EDITION
Lab Temperature	°C	-	-	25.1	2550 B, APHA, 21 ST EDITION
Taste	TFN	-	Not Objectionable	N. O.	2160 B, APHA, 21 ST EDITION
Odor	TON	-	Not Objectionable	N. O.	2150 A, APHA, 21 ST EDITION
Total Dissolved Solid	mg/l	1000	1000	103.0	2540 C, APHA, 21 ST EDITION
CHEMICAL					
Total Hardness	mg/l as CaCO ₃	500	500	92.0	2340 C, APHA, 21 ST EDITION
Carbonate Hardness	mg/l	-	-	68.0	Calculation
Calcium	mg/l	-	200	23.2	3500 - Ca B, APHA, 21 ST EDITION
Total Alkalinity	mg/l as CaCO ₃	500	-	68.0	2320 B, APHA, 21 ST EDITION
Bicarbonate Alkalinity	mg/l as CaCO ₃	-	-	68.0	2320 B, APHA, 21 ST EDITION
Chloride	mg/l	250	250	1.9	4500-Cl ⁻ B, APHA, 21 ST EDITION
Ammonia	mg/l	1.5	1.5	0.06	4500-NH ₃ C, APHA, 17 TH EDITION
Nitrate	mg/l as NO ₃	50	50	1.6	4500-NO ₃ -B, APHA, 21 ST EDITION
Fluoride	mg/l	1.5	0.5-1.5	0.2	4500F-D, APHA, 21 ST EDITION
Sulphate	mg/l	-	250	112.0	4500-SO ₄ , APHA, 21 ST EDITION
Iron	mg/l	0.3	0.3 (3)	2.0	3111 B, APHA, 21 ST EDITION
Manganese	mg/l	0.5	0.2	0.07	3111 B, APHA, 21 ST EDITION
Arsenic	mg/l	0.01	0.05	<0.005	3114, APHA, 21 ST EDITION
Cadmium	mg/l	0.003	0.003	<0.003	3111 B, APHA, 21 ST EDITION
Mercury	mg/l	0.001	0.001	<0.001	3112 B, APHA, 21 ST EDITION
Chromium	mg/l	0.05	0.05	<0.05	3111 B, APHA, 21 ST EDITION
Lead	mg/l	0.01	0.01	<0.01	3111 C, APHA, 21 ST EDITION
Copper	mg/l	2	1	<0.01	3111 C, APHA, 21 ST EDITION
Aluminium	mg/l	-	0.2	<0.01	3500-Al B, APHA, 21 ST EDITION
BIOLOGICAL					
E. coli	CFU/100ml	Nil	Nil	300	9222 B, APHA, 21 ST EDITION

APHA: American Public Health Association. Standard Methods for the Examination of Water & Waste Water.

WHO GV: World Health Organization Guideline Value, 2006 Update. NDWQS: National Drinking Water Quality Standard, 2062 (Nepal).

Comment: Turbidity is high and fluoride content is found below NDWQS limit with presence of Iron. The sampled water is contaminated with E. coli.

Analyzed by

Checked by

Authorized Signature

- Note: 1. The result refer only to the parameters tested of the samples provided to our laboratory or collected by us for analysis as specified. Endorsement of the product is neither inferred nor implied.
 2. Any duplication of this report can not be used as evidence in the court of law and should not be used in any advertising media without prior written permission to us.
 3. The total liability of our company for the product is limited to the leveled amount only.

132, Ratopul, P O Box # 8975 EPC 5205, Kathmandu, Nepal. E-mail : wetcp@info.com.np, wetcp1@gmail.com



ANNEX 6: SURVEY QUESTIONNAIRE

Household Survey Questionnaire**१. परिचय**

१.१ अन्तर्वाता दिने व्यक्तिको नाम ठेगाना:

(क) प्रदेश/जिल्ला:

(ख) नगरपालिका:

(ग) टोल रस्थान:

(घ) बाई नं.:

१.२ पारिवारिक विवरण

(क) घरमुलिको नाम: श्रीमान् र श्रीमती

(ख) जाती: (ग) उमेर: (घ) लिङ्ग: ☐ पुरुष ☐ महिला ☐

(ङ) वैवाहिक स्थिति: (च) धर्म: (छ) व्यवसाय (घरमुलीको):

(ज) बसेको वर्ष: (झ) शिक्षा :

(ञ) कुल परिवार संख्या

उमेर समुह	पुरुष	पेशा	महिला	पेशा	जम्मा
०-५ वर्ष					
६-१० वर्ष					
११-१५ वर्ष					
१६-४५ वर्ष					
४५-६० वर्ष					
६० भन्दा माथि					
जम्मा					

१.३ विद्यालय जाने उमेरका बाल बालिका (६-१५ वर्ष)

जम्मा	विद्यालय गएका		विद्यालय नगएका	
	पुरुष	महिला	पुरुष	महिला

२. साक्षरता : (तपाईंको परिवारमा)

	लेखपढ गर्न सक्ने	एस.एल.सी. उत्तिर्ण	स्नातक	स्नातकोत्तर	जम्मा
महिला					
पुरुष					
जम्मा					

३. कृषि (भु-उपयोग)

३.१ तपाईं वा परिवार सदस्यको नाममा गा.वि.स.र वडा भित्र जग्गा छ र

छ ☐ छैन ☐

३.२ यदि छ भने कति छ ? रोपनीमा भन्नुहोस् :

क्र.सं.	स्वामित्व	खेत	बारी	खरवारी	वन	कैफियत
१	आफ्नै					
२	सगोलको					
३	कमाई आएको					
४	कमाउन दिएको					
५	जम्मा					

३.३ गा.वि.स. वा वडा बाहिर कुन ठाउँमा जग्गा छ र

क्र.सं.	ठाउँको नाम	जग्गा				कैफियत
		खेत	बारी	खरवारी	वन	

३.४ तपाईको जग्गा आयोजना भित्र पर्छ र १ एभिकम नभलतप्यल तजभ अकउयलभलत या उचयवभअत धजभचभ जज बाकि०

- | | |
|---|---|
| <u>घर</u> | <u>खेत</u> |
| ☐ लम्बाई (फिटमा) | ☐ पाखो बारी |
| ☐ चौडाई (फिटमा) | ☐ जंगल |
| ☐ छाँना | ☐ अन्य |
| ☐ तल्ला | |
| ☐ कोष | ☐ अन्दाजी मूल्य (चलनचल्तीमा) नेरु. |

(क) आयोजना क्षेत्र भित्र तपाईको कतिवटा घर र गोठ छन्।
घर गोठ

क.सं.	किसिम	क्षेत्रफल
घर १		
घर २		
घर ३		

(१) कच्ची-खरले छाएको (२) पक्की (दुह्रा, ईटाको पर्खाल र ढलान फिगटी वा टिनको छानो)

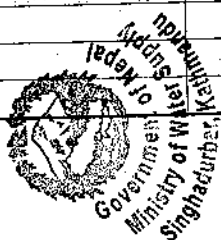
	संख्या	क्षेत्रफल
गोठ		
अन्य (खुलाउने)		

३.५ (क) तपाईको आयोजना क्षेत्र भित्र पर्ने जमिनमा कुन कुन फसल लगाउनु हुन्छ र

कंस	खाद्यान्न वाली	वाली लगाएको क्षेत्रफल	उत्पादन परिणाम
१. खाद्यान्न वाली			
	धान		
	गहु		
	मकै		
	कोदो		
	दाल गोडागुडी		
	अन्य		
२. नगदे वाली			
	आलु		
	तोरी		
	तरकारी		
	अन्य		

(ख) उक्त जग्गामा लगाएको फलफूल र अन्य बोट विरुवाको विवरण दिनुहोस र

कंस.	बोटविरुवा	विरुवा संख्या		जम्मा
		फल लाएको	फल नलाएको	
१	फलफूल			
२	कागती			
३	सुन्तला			



क्र.सं.	बोटविरुवा	विरुवा संख्या		जम्मा
		फल लाएको	फल नलाएको	
५	आँप			
६	मेवा			
७	अम्रवा			
८	लिच्ची			
९	कटहर			
१०	केरा			
११	आरु			
१२	नाल्पाती			
१३	आरुबखडा			
१४	अन्य			
१५	डाले घाँस			
१६	पाखुरी			
१७	काभ्री			
१८	वडहर			
१९	खनायो			
२०	टाकी			
२१	गिदरी			
२२	अन्य			
२३	इन्धनको लागि प्रयोग गर्ने बोट विरुवा			
२४	काठमा प्रयोग हुने बोटविरुवा			
२५	बाँस निगालो			

३.६ के तपाईंको जग्गामा भएको गत वर्षको उत्पादनले तपाईंको परिवारलाई खान पर्याप्त भयो र

भयो

भएन

३.७ यदि अप्र्याप्त भयो भने कति महिनाको लागि पुगेन र महिना

(क) तिन महिना

(ख) छ महिना

(ग) नौ महिना

(घ) बाह्र महिना

३.८ आफ्नो उत्पादित खाद्यान्न अप्र्याप्त भएको बेला आफ्नो परिवारलाई कसरी खुवाउनु हुन्छ ?

क. ऋण गरेर

ख. नोकरीबाट भएको आम्दानीबाट

ग. व्यापारीको आम्दानीबाट

घ. भारी बोकेर भएको आम्दानीबाट

ड. दैनिक मजदुरबाट भएको

च. अन्य

३.९ पशुपालन सम्बन्धी :

तपाईंको घरमा कति / कस्ता पशु पक्षीहरु पाल्नु भएको छ र

क्र.सं.	पशुपक्षी	संख्या
१	गाई	
२	गोरु	
३	भैसी	
४	वाछी	
५	वाछि	
६	पाडा	
७	पाडि	
८	राँगो	
९	घोडा	



क.सं.	पशुपंक्षी	संख्या
१०	वाखा	
११	बोका	
१२	खसी	
१३	पाठा/पाठी	
१४	सुंगुर/बंगुर	
१५	हांस	
१६	कुखुरा	
१८	अन्य (खुलाउने)	

४. घर परिवारको वार्षिक औषत आम्दानी :

श्रोत	वार्षिक आम्दानी (रु.)	श्रोत	वार्षिक आम्दानी (रु.)
कृषिबाट		अन्य श्रोतहरु	
खाद्यान्न		नोकरी, सेवा	
नगदेवाली		ज्याला मजदुरी र भरीया	
फलफूल		निवृत्तिभरण	
जम्मा (१)		व्यापार	
पशुपालनबाट		घरेलु उद्योग	
दुग्ध उत्पादन		पेशागत सेवा	
अण्डा कुखुरा हाँस बिक्री		माछा बिक्री	
वाछ्रा/वाछ्री/गोरु/विक्रि		अन्य	
भैसि/राँगो बिक्रि		जम्मा (३)	
बोका/खसी/भेडा/वाखा बिक्रि			
सुंगुर/बंगुर बिक्रि			
कुखुरा/हाँस बिक्रि			
जम्मा (२)			
जम्मा आय (१+३):			

५. घर परिवारको वार्षिक औषत खर्च :

विवरण	जम्मा रकम (रु.)	विवरण	जम्मा रकम (रु.)
चामल		चिया	
द्याल		दाउरा	
मकै		बिजुली	
तरकारी		महिले	
दुध/दही		औषधि	
माछा/मासु		शिक्षा	
तेल/ध्यू		कपडा	
मर-मसला		चाडपर्व	
नुन		अन्य	
चिनी			
		जम्मा खर्च	

६. पानीको आपूर्ति

(क) तपाईंले यस खोलाको पानी उपयोग गर्नु हुन्छ कि हुदैन रु
गर्छु ☐ गर्दिन ☐

(ख) यदि खोलाको पानी प्रयोग गर्नु हुन्छ भने कुन प्रयोजनको लागि प्रयोग गर्नुहुन्छ रु
सिँचाई ☐ नुहाउने, कपडा धुने ☐
पिउने ☐ अन्य ☐

७. स्वास्थ्य सम्बन्धि:

(क) तपाईंको परिवारमा कुनै सदस्य विगत वर्षमा विरामी भएका थिए



थिए ☐

थिएनन् ☐

(ख) यदि थिए भने निम्न विवरण दिनुहोस् रु

कस	नाता	पुरुष	महिला	उमेर	रोग
१					
२					
३					
४					

(रोगको प्रकार:- दिसापखाला, आउं, टाइफाईड, हैजा, मलेरिया, टीबी, जन्डीस, छाला सम्बन्धी, निमोनिया, दम, रक्तचाप, एड्स र यौन रोग, अन्य)

(ग) विरामी पर्दा सर्वप्रथम कहाँ जानुहुन्छ

(घ) त्यहाँ निको नभए कहाँ जानुहुन्छ रु कमश उल्लेख गर्नुहोस ।

क.सं	जाने ठाउँ	रहेको स्थान	दूरी (कि.मी.)
१	अस्पताल		
२	हेल्थपोस्ट		
३	हेल्थ सेन्टर		
४	आयुर्वेदिक औषधालय		
५	निजि क्लिनिकर औषधी पसल		
६	धामी भाकी		
७	अन्य		



८. महिलाको अवस्था:

(क) श्रमको वर्गिकरण

क.सं	कामको विवरण	हिस्सा प्रतिशतमा	
		पुरुष	महिला
१	खनजोत		
२	मल राख्ने		
३	जमिन तयारी		
५	रोप्ने		
६	गोडमेल		
७	सिंचाई		
८	काट्ने		
९	बोक्ने र थन्काउने		
१०	अन्न प्रसोधन (कुटाई पिसाई)		
११	घाँस दाउरा		
१२	गोठालो		
१३	मैलापात		
१४	खाना पकाउने		
१५	पानी पधेरो		
१६	बच्चाबच्ची र बुढाबुढी हेरविचार		

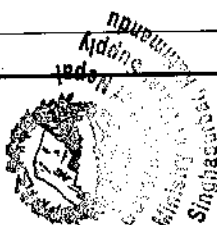
(ख) सम्पत्तिमा अधिकार

क.सं	कामको विवरण	हिस्सा प्रतिशतमा	
		पुरुष	महिला
१	घर		
२	जग्गा		
३	पशु		
५	गरगहना		
६	उद्योग धन्दा		
७	अन्य		

(ग) निर्णय प्रक्रियामा अधिकार

क.सं	कामको विवरण	हिस्सा प्रतिशतमा	
		पुरुष	महिला
१	वाली रोप्ने		
२	पशु खरीदविक्री		
३	गरगहना खरीदविक्री		
५	अन्न खरीदविक्री		
६	फलफूल खरीदविक्री		
७	पशुजन्य पदार्थ खरीदविक्री		
८	काठ दाउरा खरीदविक्री		
९	विहावारी		
१०	परिवार नियोजन		
११	छोराछोरी पढाई लेखाई		
१२	अन्य		

९. मुखाब्जा सम्बन्धी:



(क) तपाईको घर र जग्गाको मुआब्जा के मा चाहनु हुन्छ

नगद ☐

जग्गाको सट्टा जग्गा ☐

अन्य ☐

(ख) यदि तपाईले मुआब्जा नगदमा पाउनु भयो भने उक्त मुआब्जा रकम के मा प्रयोग गर्नु हुन्छ

जग्गा किल्ले ☐

घर बनाउने ☐

ऋण तिर्ने ☐

ब्यापार गर्ने ☐

अन्य ☐

१०. प्रस्ताव कार्यान्वयन गर्दा के कस्तो प्रभाव पर्ने सक्दछ सो सम्बन्धी राय सुभाब छ

सकारात्मक:

नकारात्मक:



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: 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

Field Study: June 2018

SN	Name of plants	Remarks
1	Bhimal (<i>Grewia oppositifolia</i>)	
2	Khari (<i>Celtis australis</i>)	
3	Khirro (<i>SaRPMOm insigne</i>)	
4	Koiralo (<i>Bauhinia variegata</i>)	
5	Ritha (<i>Sapindus mukorissi</i>)	
6	Tooni (<i>Toona ciliate</i>)	
7	Paiyu (<i>Prunus cerasoides</i>)	
8	Laligurans (<i>Rhododendron arboretum</i>)	
9	Kaphal (<i>Myrica esculenta</i>)	
10	Uti (<i>Alnus nepalensis</i>)	
11	khote salla (<i>Pinus roxburghii</i>)	
12	Bajh (<i>Quercus semecarpifolia</i>)	
13	Chutro (<i>Barberis aristata</i>)	
14	Aiselu (Ruspberry)	
15	Khari (<i>Celtis australis</i>)	
16	Malu (<i>Bauhinia vahili</i>)	
17	Sindure (<i>Mallotus philippensis</i>)	
18	Allo (<i>Girardiana diversifolia</i>)	NTEP
19	Majitho (<i>Rubia manjith</i>)	NTEP
20	Dhasingare (<i>Gaultheria fragrantissima</i>)	NTEP
21	Bojho (<i>Acorus calamus</i>)	NTEP



CHECKLIST OF FAUNA

June 2018

S.N.	Wild Animals	Remarks
Mammals		
1	Leopard (<i>Panthera pardus</i>)	
2	Barking deer (<i>Muntiacus muntjak</i>)	
3	Porcupine (<i>Hystix indica</i>)	
4	Jackal (<i>Canis aureus</i>)	
5	Monkey (<i>Macaca mulatta</i>)	
6	Jungle Cat (<i>Felis chaus</i>)	
Reptiles		
1	Lizard (<i>Calotes versicolor</i>)	
2	Common monitor lizard (<i>Vranus bengalensis</i>)	
3	Green pit viper (<i>Trimeresurus albolabris</i>)	
4	Water snake (<i>Natrix stolata</i>)	
Birds		
1	<i>Lophura lencomelana</i> (kalij pheasant)	
2	<i>Lophophorus</i> (Danphe)	
3	<i>Columba livia</i> (Pigion)	
4	Black shouldered Kite (<i>Elanus caeruleus</i>)	
5	Hen Harrier (<i>Circus cyaneus</i>)	
6	Great barbet (<i>Meghalaima virens</i>)	
7	Jungle Myna	



CHECKLIST OF FAUNA

June 2018

S.N.	Wild Animals	Remarks
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6	Great barbet (<i>Meghalaima virens</i>)	
7	Jungle Myna	



Checklist for Socio-economic Environment

A. Consultative Meeting in affected Wards

Focus Group Discussion, Rapid Rural Appraisal or Participatory Rural Appraisal method shall be applied to gather the community concern regarding the development of the Project

Process:

- 1. The IEE team will present the development of the project focussing on:**
 - a. Location of the project to the communities
 - b. Explain the subsidiary facilities required for the construction of the project
 - c. Explain how the local people will be affected during construction and in operation period
 - Land and property acquisition of permanent project occupied areas
 - Obstruction of irrigation canals, foot trails, suspension bridge etc. during construction
 - Construction related risks
 - Vehicular movement and related risks
 - Job and employment opportunities
 - Influx of outside people and social and cultural risks
 - Improvement of access and related benefits to education, health, and economy
- 2. Discussions on the proposal with the locals – Question and Answer**
- 3. Seek following information from the locals**

About Project:

- a. Willingness to cooperate in the land acquisition process and willingness to give land and property for the for project
- b. Willingness to give land on compensation for permanent area occupied
- c. Envisaged mode of compensation for the land and property
 - Cash compensation
 - Land to land
 - Some other methods (if any)
- d. Approximate current value of land in the municipality in the project sites
- e. Availability of labour for construction from the municipality, approximate number of labour force available for such works
- f. What type of arrangement needed for obstructed infrastructures during construction
- g. Willingness to give land for temporary use
- h. Mode of compensation to the temporarily occupied land and conditions

About People

- a. Demographic Feature of the project area along with male and female population
- b. The major ethnic groups in the close proximity of the project sites and their demography along with male and female population
- c. Relationship between the ethnic groups
- d. Any cultural difference between the ethnic groups
- e. Economic status of people (In general, by ethnicity)
- f. Major Health problems of the area (Frequently observed disease, among child, old, young, women)
- g. Education status of people (In general, by ethnicity)
- h. Health status of people (In general and by ethnicity)
- i. Occupational status of people (in general, by ethnicity)
- j. Any in migration and out migration in the last five years and reasons for migration



Checklist for Socio-economic Environment

About Project:

- a. Willingness to cooperate in the land acquisition process and willingness to give land and property for the for project
- b. Willingness to give land on compensation for permanent area occupied
- c. Envisaged mode of compensation for the land and property
 - Cash compensation
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About People

- a. Demographic Feature of the project area along with male and female population
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- h. Health status of people (In general and by ethnicity)
- i. Occupational status of people (in general, by ethnicity)
- j. Any in migration and out migration in the last five years and reasons for migration

About Agriculture

- a. What is the current season wise intercropping practice in the area
- b. What is the production per unit of the land for each crops
- c. What are the fertilisers used currently by the farmers and what is the approximate quantity of use in a year by an average farmer household
- d. Do you use pesticide? Name the types of pesticide used and quantity used by a farmer household.
- e. Food security and food sufficiency (is the local production sufficient to feed area people, if not sufficient the mode of coping)
- f. What potential exists for vegetable and horticulture or other agro-based economic opportunity; Non-Timber Forest Products

About development

- Name the primary schools in the Municipality – students and teachers number
- Name the Middle schools in the Municipality – students and teachers number
- Name the Secondary schools in the Municipality – students and teachers number
- Name the higher secondary schools in the Municipality – students and teachers
- Name the health posts in the Municipality – number of health workers
- Telephone numbers in the Municipality
- Name the post office in the Municipality
- Name the industries in the Municipality – number of workers



- Water supply system and coverage (mode of water fetching for household use)
- Energy Use and types of energy use
- for cooking (average consumption per household)
- for lighting (average consumption per household)

Tourism & Market Development Opportunities:

- Tourism development opportunities (reasons)
- Market development opportunities (reasons)

About Development Needs

- What are the first five development needs of the municipality
- What is expected by the people from the project (at the minimum)

About Gender

- Educational status of women compared to man counterpart and reason
- Social status of women
 - in household decision making
 - in household works
 - in land and property
 - livestock
 - in social organisation
- How the status of women could be upgrade



ANNEX 9: PHOTOGRAPHS





ANNEX 9: PHOTOGRAPHS

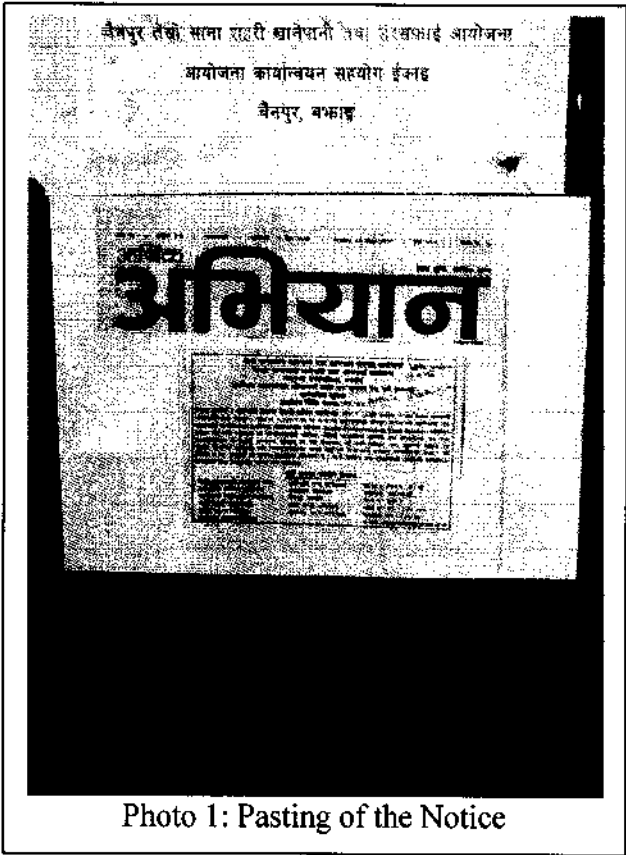


Photo 1: Pasting of the Notice

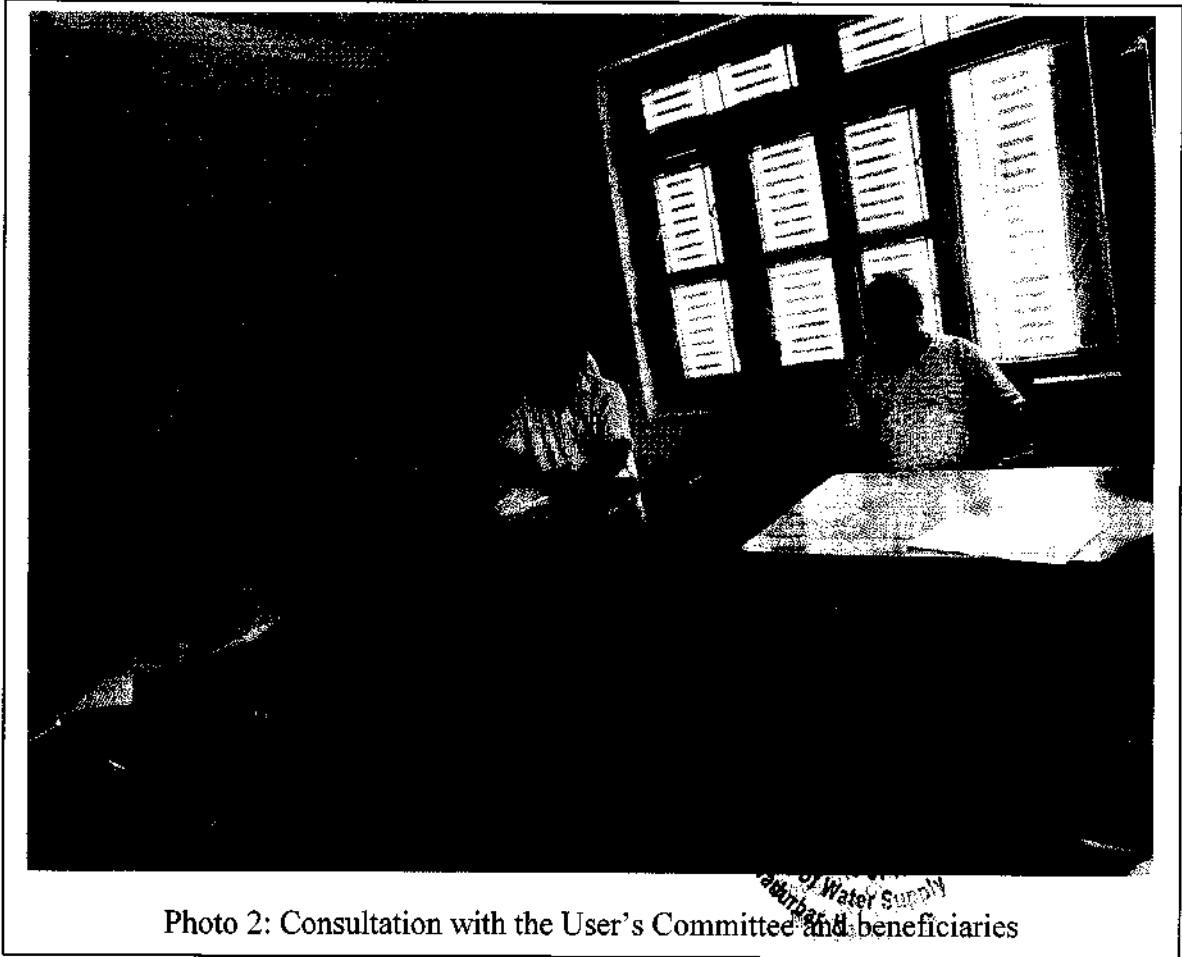


Photo 2: Consultation with the User's Committee and beneficiaries



Photo 3: Proposed site for User's Committee's building construction, Bhopur, Ward 11

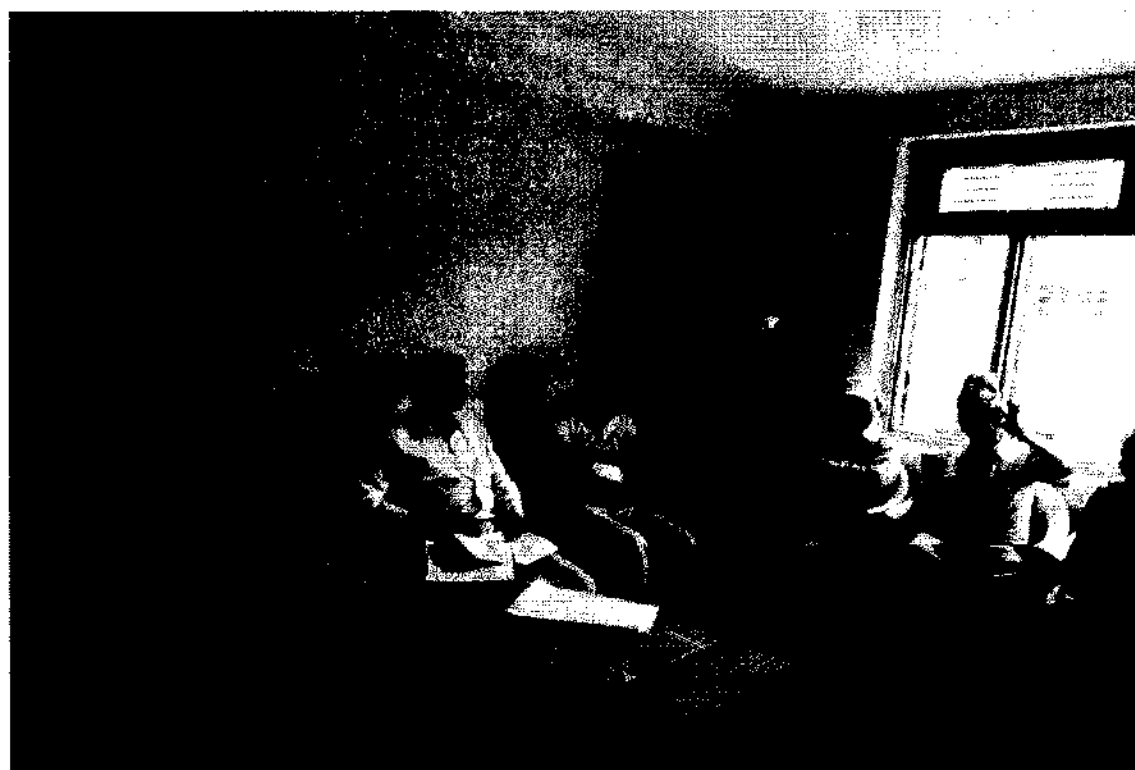


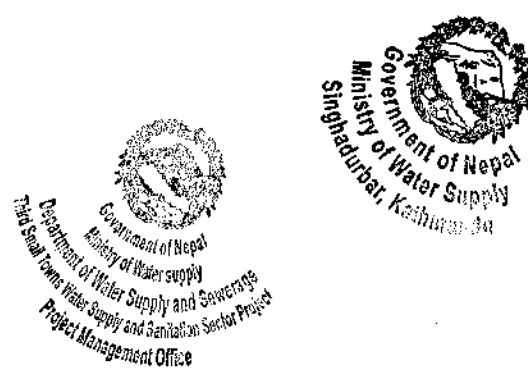
Photo 4: Interaction with User's Committee and Beneficiaries

ANNEX 10: COMMENTS INCORPORATION MATRIX

(Based on comments on IEE Report presented on 4th February 2019, and comments received on 11th February 2019)

SN	Comments by Expert (Sociologist DWSSM - Kamal Adhikari)	Response/Updates
1	Executive summary: More focus to be given on field findings	Field findings have been added in the executive summary
2	Introduction: Correct spelling	The spelling has been corrected
3	Survey: December 2015 (why old data - are these data and issues remain pertinent now??)	This is the design year survey. However, required information have been updated
4	The amount of money that is earned by the wages will directly enhance various economic activities and enterprise development with multiplier effect: What potential activities and multiplier effects?	This local multiplier effect has been illustrated in sub-heading 4.1.1 (i); Page 32
5	Skill enhancement: Who will be benefited?	The locally available unskilled/semi skilled workers will be benefited from this (sub-heading 4.1.1 - ii)
6	Women empowerment: What researchers found and what women perceived?	The benefits indicated are the understandings of the study team, as reflected also by the local women during the field study; sub-heading 4.1.2 iv; Page 33
7	Sustainability issue: Environmental (Impact of climate change), social (ownership and affordability), institutional (capacity and policy compliance) and management (business of WUSC)	Impact of climate change is assessed in the REA Checklist (Annex 2) The WUSC have collected upfront cash which is 5% of the total project cost - this shows the ownership The affordability is shown by the willingness to pay survey The sustainability aspects have been discussed in sub-heading 3.17; Page 31
8	BLD - to be annexed	The summary of baseline study has been provided under section 3.9.3
9	Important: Robust monitoring mechanism - assess if commitments on plan are complied	Monitoring mechanism has been discussed in sub-headings 7.4 & 7.8

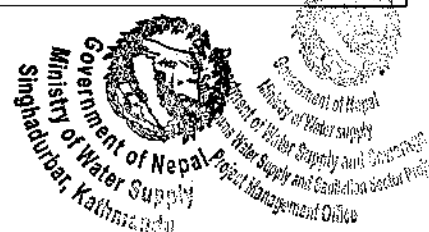
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Engineer



2

SN	Comments by MoFE (Jwala Shrestha, Head - EA Section)	Response/Updates
1	In executive summary, mention the specific threshold of schedule 1, H clause	The corrections have been made
2	Replace 'Province 7' with 'Sudurpaschim province'	This has been corrected in Page 1, Page 5 & Page 13
3	Add about collection of baseline in objectives of IEE	This has been incorporated in sub-heading 2.5; Page 4
4	Desk study - specify the documents reviewed 'relevant' 'general'	The specific documents studied have been mentioned in sub-heading 3.8.1; Page 11
5	Methodology section is weak - elaborate it, it is too generic	More specific information have been provided in the section 3.8
6	3.8.5 consultation, information, dissemination add about collection of recommendation letter	This has been incorporated in first paragraph of Page 13
7	Update labor act, labor rules, remove guidelines for removal for national priority project 2074 (forest act relevant or not?)	Labour Act has been updated in Table 7 (Page 20) Guidelines for removal for national priority project 2074 has not been included in the report; Yes, the Forest Act is relevant
8	Whether this project include Sanitation facility or not, if yes mention in detail	Yes, the details have been mentioned in Salient Features (Table 2); Page 6
9	Specify the 'designated site' as mentioned in mitigation of water management. Mention that 'open burning of waste is completely prohibited'	This has been specified in 6.2 - A (v); Page 43 Prohibition of open burning has been mentioned in 6.2 - A (iii); Page 42
10	Impacts due to stockpiling of material is missing	This has been mentioned in sub-headings 4.2.2 - A (i) Page 34; & 4.2.2 - C (i) Page 35; and mitigations discussed accordingly in Chapter 4
11	Also mention about the source of construction materials. Does quarry site and crusher plant fall under the scope of this study? If yes, then specify the location along with coordinates	Construction materials will be bought from nearby crushers, and through certified suppliers. Quarry sites and crusher plants operated nearby will be used as supply source of construction materials. The project does not need its own quarry site or crusher plant.
12	Include MoFE in monitoring authority	MoFE has been asked as a monitoring authority in section 7.8 (Page 78)
13	Explain the basic if DIA and IIA	This has been explained in section 3.4; Page 9
14	In energy to be used section, also include power backup	This has been explained in section 3.6; Page 9
15	Table 16, update the name of institution (Department of Forest and Soil Conservation)	This has been corrected in page 47
16	Make table 16 (mitigation measure) consistent with the impact and migration chapter	The table has been updated; Page 47 - 52
17	Add a column of cost in table 16 for mitigation	A column for costs of mitigations have been added in the table
18	Add a statement that pipe will be laid in coordination with Division Road Office	This has been updated in Table 16; Page 49

[Signature]
Engineer



SN	Other Comments by MoWS	Response/Updates
1	Normally Pressure filter gets clogged in high turbidity. So, do the comparative study of conventional slow sand filter and pressure filter	This has been discussed in 5 th Paragraph of sub-heading 5.4; Page 40
2	Provision of facility of free water supply to backward and ultra poor community should be included in the report to avoid inevitable social conflict	The provision of subsidy for backward and ultra-poor community is the right of the decision of the WUSC However, this has been proposed in sub-heading 4.1.2 - v; Page 33
3	Mitigation cost should be more descriptive and categorized to the special impacts	Specific mitigation costs have been proposed in Table 21; Page 74-76



[Signature]
Engineer



SN	Comments by Expert (Environmental Engineer, Bhairaja Manandhar)	Response/Updates
1	"Core area" and "Surrounding area" should be used instead of "DIZ" and "IIZ" respectively as impact areas. It's because an indirect impact is basically an induced one due to an inter-connection among two or more environmental components located at the same site.	'Core area' and 'surrounding area' have been mentioned as a clarifying statements in sub-section 3.4; Page 9
2	DIZ/core area should have covered the sites of construction/operation of structural components of the project besides the service area. The sub-chapter of impact area delineation should have better been placed under the chapter of Study Methodology	In this project, all the structural components of the project are within the service wards. As suggested by the PMO, the sub-chapter was re-structured as per the Schedule 5 of EPR pertaining to Rule 7 – EPR 1997
3	In section 3.4, the statement "Thus the areas within 200m of DIZ are delineated as Indirect Impact Zone" is confusing and misleading and hence needs a revisit	The sentence has been re-written (Page 9)
4	Under "Approach & Methodology", in-situ measurement and sampling/laboratory analysis were carried out, if any, for baseline information collection and methods of impact quantitative prediction used should be mentioned as well	Sampling and laboratory analysis of water samples has been indicated in Page 11 under heading "Methods Adopted during Study", sub-heading 3.8.2 The methods of impact quantitative prediction used have been discussed in sub-heading 3.8.4, Page 12
5	Salient features should have mentioned all other sources of water supply to be used for the proposed project as indicated in section 3.14 (a)	The mentioning of Sump well at the bank of Seti River as source is sufficient (Page 5), because the mentioning of other sources in section 3.14 (a) has been corrected
6	In "water quality assessment/Treatment facilities" under section 3.14, unit for the expected turbidity in the rainy season is missing	The correction has been made with "NTU" in page 28
7	The Chapter on Description of Proposal should also present (i) a brief description of all temporary construction support facilities, (ii) a brief description of all project components, and (iii) a list of project construction and operation activities	(i) Temporary facilities are described in sub-heading 3.14: d - ix, in Page 30 (ii) Details of project components is provided in sub-heading 3.14: d, in pages 28 - 30 (iii) List of project construction and operation activities are given in sub-heading 3.16
8	In Figure 2, legends for red and blue coloured lines and that for hatched area are missing	Figure 2 has been updated; Page 10
9	In the chapter on Description of Existing Environment (Physical Resources), information on the altitudinal variation and soil composition are missing	Altitudinal variation and soil composition have been added in third paragraph of sub-heading 3.9.1 in Page 13
10	In the description of surface water under section 3.9.1, existing potential sources, mainly anthropogenic, of water pollution should have better been indicated. In the same section, it should be clearly mentioned whether the measured ambient noise levels are instantaneous or otherwise.	Existing potential sources of water source has been discussed in sub-section 3.9.1; Page 13 Method of noise level monitoring has been discussed in sub-section 3.9.1; Page 14

Singhaadurbar, Kathmandu
Ministry of Water Supply
Government of Nepal

Engineer

Project Management Office
Department of Water Supply and Sanitation
Ministry of Water Supply
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11	Adverse impact of continuous operation of pumps in the operation phase of project implementation seems to have been overlooked	The concern has been discussed in sub-heading 4.3.4 in Page 36
12	In section 6.2 (A-i), the word 'properly' needs to be explained	This sub-heading has been revised in Page 42
13	A simple checklist or a simple interaction matrix should have been used as a standard tool for identification of issues/impacts during preparation of the ToR itself	The suggestion has been agreed, incorporated
14	Adverse impact on current land-use in terms of anticipated land-use change within the core area should have been explained	This has been addressed in sub-heading 6.4; Page 46
15	Impacts due to mismanagement of SW generated by dismantled temporary facilities/structures have not been considered	The issue has been mentioned in sub-heading 4.2.2 - A (v), and its measures discussed in sub-heading 6.2 - A (v).
16	MMs for preventing water and soil contamination due to accidental leakage/spillage of stored fuel/chemicals do not feature in the list of MMs	The measures have been discussed under sub-heading 6.2 - A (iv); Page 43; (also in Table 16; Page 48)
17	Supply of potable drinking water and clean fuel for cooking to the workers during the construction phase of project implementation should have been included as part of OHS/mitigation measures	The context have been added in sub-heading 6.2 - C (iv); Page 44
18	For prevention of damage to existing public service facilities, consultation with concerned utility companies during the pre-construction phase for ensuring alignment of water supply transmission and distribution pipeline, which is non conflicting with the existing network of public facilities, could be a more effective mitigation measures	This pre-construction aspect has been included in 2 nd Row of Table 15; Page 41
19	Monitoring parameters should be selected based on source oriented monitoring approach rather than sink based monitoring approach	Source oriented monitoring approach has been detailed in section 7.4; Table 18; Page 69-70

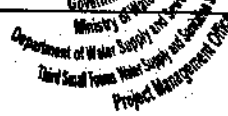




Government of Nepal
Ministry of Water Supply and Sanitation
Department of Water Supply and Sewerage
Second/ Third Small Towns Water Supply and Sanitation Project
PROJECT MANAGEMENT OFFICE

Panipokhari, Kathmandu

Ref. No.: 390/0751076



11 February 2019

Mr. Mohan Bahadur Karkee
Team Leader

Western Regional Design Supervision and Management Consultants (WRDSMC)
Kathmandu, Nepal

Subject: Comments on IEE Report of Chainpur Town Water Supply and Sanitation Project, Bajhang

Dear Mr. Karkee,

The Ministry of Water Supply has given comments on the IEE report of Chainpur Town Water Supply and Sanitation Project, Bajhang.

You are requested to address these comments and submit 3 copies of the revised IEE Reports to PMO at the earliest.

The Ministry's comments on the report is attached herewith.

B. Nath

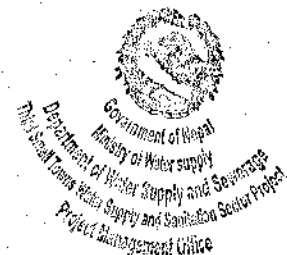


Bidya Nath Bhattarai

Project Director

Project Director

K. P. Jee
Engineer



Comments on IEE Reports (Urban Towns Water Supply & Sanitation Sector Project, Chainpur Water Supply and Sanitation Projects)

Overall, the IEE report of Chainpur is satisfactory. However, following issues need to be addressed in the final report:

1. Chainpur:

- **Executive summary:** More focus to be given on field findings.
- **Introduction:** Correct spelling
- **Survey:** December 2015 (why old data-are these data and issues remain pertinent now ??)
- **The amount of money that is earned by the wages will directly enhance various economic activities and enterprise development with multiplier effect:** What potential activities and multiplier effects?
- **Skill enhancement:** Who will be benefited?
- **Women empowerment:** What researchers found and what women perceived?
- **Sustainability issues:** Environmental (impact of climate change), social (ownership and affordability), institutional (capacity and policy compliance) and management (business of WUSCs).
- **BLD** -to be annexed

Important: Robust monitoring mechanism-assess if commitments on plan are complied

Comments Submitted by:

Kamal Adhikari

Sociologist/DWSSM

Mobile Phone: 9851138502

Email: kamal.shivapur@gmail.com

Comments from Jwala shrestha(SDE, Ministry of Forests and Environment)

Comments on IEE of Chainpur Samll Town Water Supply and Sanitation Project Bajhang

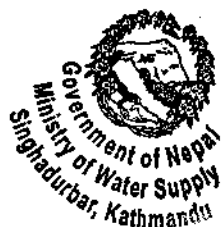
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4. Desk study -specify the documents reviewed 'relevant' 'general'
5. Methodology section is weak- elaborate it, it is too generic.
6. 3.8.5 consultation, information ,dissemination add about collection of recommendation letter.
7. Update labor act, labor rules, remove guidelines for removal of trees from government land 2017, replace it with working procedure for national priority project 2074 (forest act relevant or not?)
8. Whether this project include Sanitation facility or not, if yes mention in detail.
9. Specify the 'designated site' as mentioned in mitigation of waste management.Mention that 'open burning of waste is completely prohibited'
10. Impacts due to stockpiling of material is missing



11. Also mention about the source of construction materials. Does quarry site and crusher plant fall under the scope of this study? if yes then specify the location along with coordinates.
12. Include MOFE in monitoring authority
13. Explain the basic if DIA and IIA
14. In energy to be used section, also include a power backup.
15. Table 16, update the name of institution (Department of Forest and Soil Conservation)
16. Make table 16 (mitigation measure) consistent with the impact and migration chapter
17. Add a column of cost in table 16 for mitigation.
18. Add a statement that pipe will be laid in co-ordination with Division Road Office

Other Comments

1. Normally Pressure filter gets clogged in high turbidity. so, do the comparative study of conventional slow sand filter and pressure filter.
2. Provision of facility of free water supply to backward and ultra poor community should be included in the report to avoid inevitable social conflict.
3. Mitigation cost should be more descriptive and categorized to the specialized impacts.



[Signature]
Engineer



**Comments on
the IEE Report of Chainpur Town Water Supply & Sanitation Project**

1. Core area and surrounding area should be used instead of DIZ and IIZ respectively as impact areas. It's because an indirect impact is basically an induced one due to an inter-connection among two or more environmental components located at the same site.
2. DIZ/core area should have covered the sites of construction/operation of structural components of the project besides the service area. The sub-chapter on *impact area delineation* should have better been placed under the chapter of Study Methodology.
3. In section 3.4, the statement "Thus, the areas within 200m of DIZ are delineated as Indirect Impact Zone." is confusing and misleading and hence needs a revisit.
4. Under Approach & Methodology, in-situ measurements and sampling/laboratory analysis were carried out, if any, for baseline information collection and methods of impact quantitative prediction used should be mentioned as well.
5. Salient features should have mentioned all other sources of water supply to be used for the proposed project as indicated in section 3.14 (a).
6. In "Water Quality Assessment/Treatment Facilities" under section 3.14, unit for the expected turbidity in the rainy season is missing.
7. The chapter on Description of Proposal should also present (i) a brief description of all temporary construction support facilities (ii) a brief description of all project components and (iii) a list of project construction and operation activities.
8. In Figure 2, legends for red and blue colored lines and that for hatched area are missing.
9. In the chapter on Description of Existing Environment (Physical Resources), information on the altitudinal variation and soil composition are missing.
10. In the description of surface water under section 3.9.1, existing potential sources, mainly anthropogenic, of water pollution should have better been indicated. In the same section, it should be clearly mentioned whether the measured ambient noise levels are instantaneous or otherwise.

11. Adverse impact of continuous operation of pumps in the operation phase of project implementation seems to have been overlooked.
12. In section 6.2 (A, i), the word "properly" needs to be explained.
13. A simple checklist or a simple interaction matrix should have been used as a standard tool for identification of issues/impacts during preparation of the ToR itself.
14. Adverse impact on current land-use in terms of anticipated land-use change within the core area should have been explained.
15. Impacts due to mismanagement of SW generated by dismantled temporary facilities/structures have not been considered.
16. MMs for preventing water and soil contamination due to accidental leakage/spillage of stored fuel/chemicals do not feature in the list of MMs.
17. Supply of potable drinking water and clean fuel for cooking to the workers during the construction phase of project implementation should have been included as part of OHS/mitigation measures.
18. For prevention of damage to existing public service facilities, consultation with concerned utility companies during the pre-construction phase for ensuring alignment of water supply transmission and distribution pipeline, which is non conflicting with the existing network of public facilities, could be a more effective mitigation measure.
19. Monitoring parameters should be selected based on source oriented monitoring approach rather than sink based monitoring approach.

B. R. Manandhar

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Expert, EIA/JEE Report Suggestion Committee, MoWS, GoN

K. R. P. J. C.
Engineer

