Initial Environmental Examination

Document Stage: Final
Project Number: 34304-043
July 2018

NEP: Kathmandu Valley Water Supply Improvement Project – Additional Financing – Repair and Maintenance of Leakage / Breakage in existing network during commissioning and testing of Integrated network to reduce Non-Revenue Water (Lot No. 1, 2, and 3)

Package No: KUKL/DNI/W/02/24

Prepared by the Kathmandu Upatyaka Khanepani Limited, Government of Nepal for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 18 June 2018)

Currency Unit	-	Nepalese Rupee (NPR)
NPR 1.00	=	$0.0092
$1.00	=	NPR. 108.85

ABBREVIATIONS

%	-	Percentage
ADB	-	Asian Development Bank
CRO	-	Complaint Receiving Officer
Di	-	Ductile Iron
DNI	-	Distribution Network Improvement
DSC	-	Design and Supervision Consultants
EIA	-	Environmental Impact Assessment
EMEP	-	Environment Mitigation Execution Plan
EMP	-	Environment Management Plan
EPA	-	Environment Protection Act
EPR	-	Environment Protection Regulation
GI	-	Galvanized Iron
GRC	-	Grievance Redress Committee
GRM	-	Grievance Redress Mechanism
HDPE	-	High Density Polyethylene
IEE	-	Initial Environmental Examination
KCN	-	Kathmandu Crystalline Nappe
KMC	-	Kathmandu Metropolitan City
KUKL	-	Kathmandu Upatyaka Khanepani Limited
KVWSIP-AF	-	Kathmandu Valley Water Supply Improvement Project Additional Financing
KVWSMB	-	Kathmandu Valley Water Supply Management Board
MCT	-	Main Central Thrust
MOSTE	-	Ministry of Science Technology and Environment
MT	-	Mahabharat Thrust
MWSDB	-	Melamchi Water Supply Development Board
NAAQS	-	National Ambient Air Quality Standards
NPR/NRs.	-	Nepalese Rupees
NRW	-	Non-Revenue Water
PID	-	Project Implementation Directorate
PMU	-	Project Management Unit
SPS	-	Safeguard Policy Statement
TOR	-	Terms of Reference

WEIGHTS AND MEASURES

km	-	kilometer
m	-	meter
msl	-	meter above sea level
$\mu g/m^3$	-	microgram per cubic meter
ft^2	-	square foot
km^2	-	square kilometer
PM_{10}	-	Particulate Matter less than 10 micrometers or less
$PM_{2.5}$	-	Particulate Matter less than 2.5 micrometer or less

NOTES

In this report, "$" refers to United States Dollars.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF PICTURES

I. INTRODUCTION

A. Background

1. Kathmandu Upatyaka Khanepani Limited (KUKL), a public company registered under the Company Act 2063, is an outcome of restructuring the Nepal Water Supply Corporation (NWSC) with a view to undertake and management of the water supply and sewerage system of Kathmandu Valley. It carries out the water supply and wastewater services under a License and Lease Agreement with Kathmandu Valley Water Supply Management Board for the period of 30 years.

2. The principal activities of KUKL are the following:

   (i) Production and distribution of water to people of Kathmandu Valley such as tube well development, water treatment plant improvement, transmission main improvement, distribution system improvement, bulk distribution system (BDS) and distribution network improvement (DNI) works.
   (ii) Customer meter reading;
   (iii) Repair and maintain Leaks in production and distribution lines including tap connection;
   (iv) Distribution of water through Tankers;
   (v) Bill collection of water and sewerage charges;
   (vi) Laboratory tests; and
   (vii) Repair and maintenance of Machines, tools and equipment used for production and distribution of water through electromechanical branch.

B. Project Description

3. The implementation responsibility has been transferred from MWSDB to a water utility operator named **Kathmandu Upatyaka Khanepani Limited (KUKL**), which operate the water service system within the Kathmandu Valley as per the operating license issued by **Kathmandu Valley Water Supply Management Board (KVWSMB).** KUKL is authorized to implement the infrastructure constructions and rehabilitations under **Project implementation directorate (PID).** The environmental assessment, mitigation prescriptions and monitoring plan given in EIA Report of 2000 are still valid as per the Joint ministerial decision of 2014. In addition to these, an ADB loan, the Kathmandu Valley Water Supply Improvement Project Additional Financing (3255-NEP: KVWSIP-AF) is envisaged to focus in five main components: (i) Repair of valves (gland packing, nuts and spindles); (ii) Replacement of valves; (iii) Repair of leakages in pipe joint; (iv) Repair of leakages in pipe crack/hole; and (v) Repair of leakages from house connections.

4. The main objective of this contract is to repair or maintain the damaged or leaked pipe or pipe fittings. It will develop better practices. The contractor has to repair/maintain the leaks within 24 hours of notification of the problems or complains with coordination with KUKL/ branch staff.

5. The scope of civil works are:

   (i) Leak Detection
   (ii) Earthwork in excavation
   (iii) Estimation of required materials
   (iv) Supply and installation of pipe fittings/ repair
   (v) Earthwork in filling of excavated point with required compaction
   (vi) Reinstatement of gravel road/ black topped road.

C. Working Hours

6. The construction work will be done. during normal working hours (9 am. to 5 pm).

D. Human Resources Requirement

7. During the implementation period, approximately 100 people will be employed. All of them will be employed on contract or daily wage basis until the completion of the project. The ratio of skilled to unskilled workers are estimated to be 1:2.

E. Plant and Equipment Used

8. Types of machines and equipment required for proposed construction are concrete mixer, excavator, loader, mixer machine, vibrator, jeep and trucks respectively. Minor tools required for fixing of curtains, carpets, furniture and painting works will be used during the construction period.

F. Workers Accommodation and Other Facilities

9. Since the nature of the work is minor and is located inside of Ring-road of Kathmandu, works will be carried out during the normal working hours, there is no need for workers camp and other site facilities. For water supply and sanitation, workers will use the existing office facilities so no separate facilities will be provided during the construction period.

G. Construction Schedule

10. The construction schedule for the proposed package is as follows:

Schedule of Work Execution
Name of Work: Repair & Maintenance of Leakage/breakage in Existing Networks during Commissioning and Testing of Integrated Network to reduce NRW (Lot No. 1, 2, & 3)

Sl. No	Description of Work	Month effective from the date of Start											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Mobilization	XXXXXXXX											
2	Fittings Supply Lot-1	XXX	XXXXXXXX						XXXXXXXX				
3	Leakage Identification and Repair		XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX
4	Testing and commissioning												XXXXXXXX

Signature of Contractor
Name of Signatory

Schedule of Work Execution
Name of Work: Repair & Maintenance of Leakage/breakage in Existing Networks during Commissioning and Testing of Integrated Network to reduce NRW (Lot No. 1, 2, & 3)

Sl. No	Description of Work	Month effective from the date of Start											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Mobilization	XXXXXXXX											
2	Fittings Supply Lot-2	XXX	XXXXXXXX						XXXXXXXX				
3	Leakage Identification and Repair		XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX
4	Testing and commissioning												XXXXXXXX

Signature of Contractor
Name of Signatory

Schedule of Work Execution
Name of Work: Repair & Maintenance of Leakage/breakage in Existing Networks during Commissioning and Testing of Integrated Network to reduce NRW (Lot No. 1, 2, & 3)

Sl. No	Description of Work	Month effective from the date of Start											
		1	2	3	4	5	6	7	8	9	10	11	12
1	Mobilization	XXXXXXXX											
2	Fittings Supply Lot-3	XXX	XXXXXXXX							XXXXXXXX			
3	Leakage Identification and Repair		XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX	XXXXXXXX
4	Testing and commissioning												XXXXXXXX

Signature of Contractor
Name of Signatory

Table 1: Construction Schedule for Proposed Package

H. Basis of Environmental Due Diligence

a) ADB's Safeguard Policy Statement, 2009

11. ADB's Safeguard Policy Statement (SPS), 2009 considers 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.

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

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

13. Loan Number 3255 NEP: Kathmandu Valley Water Supply Improvement Project – Additional Financing has been classified by ADB as Category B for environment per ADB SPS 2009. Thus, this initial environmental examination (IEE) report has been prepared.

b) Applicable National Laws, Policies, Acts, Regulations, Standards and Guidelines

14. **Environmental Protection Act, 1997 and Environmental Protection Regulations (EPR), 1999 (and amendments).** Under the Environmental Protection Act (EPA) and Environmental Protection Regulations (EPR), a proponent who is desirous of implementing any proposal shall have to submit such a proposal, accompanied by the report on Initial Environmental Examination or Environmental Impact Assessment of the proposal, to the concerned agency for the approval of such a proposal. The EPR elaborates provisions to prepare and submit the scoping report, terms of reference (TOR), and IEE/EIA report for approval and includes public consultation processes. As per the EPR, the Environmental Assessment report, in general, should include detail information on impacts and environmental protection measures, including implementation plan, monitoring and evaluation and environmental auditing. Public consultation

is a pre-requisite in all the prescribed projects. For this subproject, preparation of the Initial Environmental Examination is not required.[1]

15. **Child Labor 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 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".

16. **Labor Act, 1992.** The Act emphasizes on occupational health and safety of workers and stipulates provision of necessary safety gears and adopting necessary precautionary measures against potentially hazardous machine/equipment in the workplace. It also stipulates to make arrangements such as removal of waste accumulated during production process and prevention of dust, fume, vapor and other waste materials, which adversely affect the health of workers.

17. **Solid Waste Management and Resource Mobilization Act, 1987 and Solid Waste (Management and Resource Mobilization Rules), 1990.** As solid waste has direct impact on water supply system, discharge of solid waste in either public or private places have been prohibited under this Act. The rules entrust Solid Waste Management and Resource Mobilization Centre, established under the Act, to provide necessary service to individual or institution in managing solid waste.

I. Name and Address of the Individual Institution Preparing the Report

18. The project proponent Kathmandu Upatyaka Khanepani Limited 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 Unit, Kathmandu Upatyaka Khanepani Limited

Address of the Proponent: Tripureshwor, Kathmandu, Nepal

Phone: +977- 1- 4262202, 4262205

Fax: 977 1 4259824, 4262229

J. Institutional Responsibility for Preparing Environmental Management Plan Report

19. Project Management Unit (PMU) team studied the proposed area for the preparation of this report.

[1] Environmental Protection Regulation clause 3, Schedule 1 G, 2053 BS

II. DESCRIPTION OF THE SUBPROJECT

A. Salient features of the Subproject

20. Table 2 provides salient features of the subproject. The detailed description is available in the technical specification section of the bid and contract documents. The civil works will involve small areas (not more than 10,000 ft^2) and on existing infrastructure to improve current conditions.

Table 2: Salient Features of the Proposal

1	**Name of the Project**	Maintenance of Leakage in existing network during commissioning and testing of integrated network to reduce NRW
2	**Cost of the project**	Lot 1 : Rs. 73,771,235.58 Lot. 2 : Rs. 67,801,057.92 Lot 3 : Rs. 46,471,325.42
3	**Contract**	KVWSMB/ICS/03-B
4	**Project**	Loan 3255 NEP: Kathmandu Valley Water Supply Improvement Project - Additional Financing
5	**Project Location**	Water distribution area within the ring road of Kathmandu city and Lalitpur Metropolitan city (Service area of KUKL Branches)
6	**Project area of Lot.1**	Service area within the ring road of Mahankalchaur, Baneswor and Tripureswor Branch
7	**Project area of Lot. 2**	Service area within the ring road of Maharajgunj, Chhetrapati and Kamaladi Branch
8	**Project area of Lot. 3**	Service area within the ring road of Lalitpur Branch
9	**District**	Kathmandu and Lalitpur
10	**Benefit Area of the project**	Benefit within the ring road of Kathmandu and Lalitpur Metropolitan city
11	**Project completion period**	One Year

a) Engineering Design

21. The planning and engineering design follows all the rules, regulations and directives set forth by respective government agencies of Nepal and all prevailing international and national code of practices wherever applicable.

B. Materials Used

22. The major work in this project will be replacing the faulty valves and replacement of damaged pipes, fittings and accessories. Thus, different types of pipes like, DI, GI, and HDPE pipes and fittings will be used. If needed to construct the valve chambers, concrete and reinforcement will also be used. In order to reinstate the existing infrastructures, asphalt concrete, stones, bricks, reinforced concrete may be used where ever it will be applicable. Sand and earth from other sources also may be used for packing and cushioning of pipes and valves in some of the locations.

C. Waste Generation

23. There will be minimum amount of waste generated during the implementation of the project. Majority of the work involves, excavation, repair of pipes and fittings, refilling of excavated trenches and reinstatement of area to pre-construction scenario. Thus, the waste generated during excavation will be used the refill the trench. The old pipes and fittings removed from the particular sites will be stored in the yard prescribed by KUKL and will be disposed as per government rules and regulations.

24. The solid wastes whether biodegradable and non-biodegradable that will be generated from the proposal implementation will be disposed-of properly. Most biodegradable wastes will be disposed to municipal dumping yards and non-biodegradable wastes (like debris and other concrete wastes) which cannot be disposed in municipal yards will be used to fill the low-lying area of KUKL premises.

25. The KUKL shall coordinate with Kathmandu Metropolitan City (KMC) for the disposal of wastes. The effective measures like provision of dustbins and waste storing areas will be assigned within the work area as a temporary storing. The wastes which can be put into the municipal trucks will be done in regularly during the scheduled pickups by the trucks. Other debris will be transported to the KUKL premises and disposed-off causing minimal impact to the environment.

D. Requirements of Project Implementation

26. The expected total investment for the proposal is NPR. As follows:

Lot 1 : NPR. 73.77 Million

Lot 2 : NPR 67.80 Million

Lot 3 : NPR 46.47 Million

III. BASELINE ENVIRONMENT CONDITION

A. Physical Environment

27. **Topography and Land Use.** The present proposal is to repair and maintenance of leakage breakage of pipes, valves and fittings which are within the ring-road of Kathmandu, and Lalitpur Metropolitan City. The elevation of the project site lies at 1250 - 1350 msl. There are no unique, fragile or difficult topography, elevations and slope characteristic to this area. Existing land used around the proposal site is completely built up area. As it lies within the urban area, other form of land use such as farmland, forest or protected areas are not identified.

28. **Climate**: Kathmandu has a temperate monsoon climate. It has a hot and mild summer and cool winters with temperature around freezing point during January. It has dry and warm season from Mid-April to Mid-June and rainy season during mid-June to Mid-October, dry, cold season during Mid-October to Mid-January and cold and wet season from Mid-January to Mid-April. Climatic condition will be considered in the design of the building. Annual air temperature, sunshine hour wind speed humidity rain fall has been considered in the design. Especially; the orientation, solar chart and wind control to reduce discomforts shall be taken into account in the design.

29. **Geology.** The Kathmandu valley is a large intermontane basin carried above the Himalayan major detachment and it is the largest basin situated in the Lesser Himalaya of Nepal. It

occupies the central portion of the nearly elliptical Kathmandu Crystalline Nappe (KCN) towards the northern margin. It is limited southward by the Mahabharat Range, which forms the hanging wall of the Mahabharat Thrust (MT), and northward by the Shivapuri range, which belongs to transported sheet of the Higher Himalayan crystalline towards south along the Main Central Thrust (MCT). This basin lies on the basement of crystalline rocks and Precambrian to Paleozoicmeta sedimentary formations. It covers a part of the Mahabharat Synclinorium. It extends for about 30 km in the east-west direction and about 25 km in the north-south direction and has an almost circular shape. A lake is known to have filled most of the basin from Pliocene to Pleistocene age. The basin is filled with a very thick (more than 650 m) sequence of fluvio-lacustrine sediments (Moribayashi and Maruo, 1980) that covers about 400 km^2 area. The drilling data shows that the thickness of sediment at Hyumat Tole at Kalimati, Bhrikutimandap, Bansbari, Gausala and Katunje are 504 m, 550 m, 79 m, 113 m, and 160 m, respectively. In this centripetal drainage basin, sediments were derived from the crystalline (schist, gneiss, pegmatite) and meta sedimentary (phyllite, siltstone, shale, meta sandstone and limestone) rocks. The semi consolidated sediments filling the basin mainly consist of muds, silts, sandy loam, fine to coarse sands, and gravel to cobble conglomerates.

30. The project site lies at the interface of Kalimati Formation and Gokarna formation consisting of slightly consolidated sediments. It also consists of light to brownish grey, fine laminated and poorly graded silty sand with intercalation of clay of variable thickness. The thickness of the formation is as thick as 300 m at places.

31. **Hydrology.** The annual basin rainfall in the project area averages about 1900 mm of which 80% rain falls between June and September during the monsoon. Bagmati River and its tributaries, originating in the Mahabharat hills undergoes considerable seasonal fluctuation. This affects water availability during the winter months. There are almost 20 small rivers and rivulets in Kathmandu Valley. The project area lies in Bagmati river watershed, one of the major rivers in the Kathmandu valley.

32. **Air Quality.** The major sources of air pollution in the site are vehicular emissions, dust particles from unpaved footpaths. According to the Ministry of Science, Technology and Environment (MOSTE), vehicular emissions have become the main source of air pollution in the Kathmandu Valley. An inventory of emission sources by the MOSTE has shown that vehicular emission covers 43% of the total PM_{10} concentration in the valley. The National Ambient Air Quality Standard Value (NAAQS) for PM_{10} has been set as 120 $\mu g/m^3$ Annual average concentration of PM_{10} for residential area was 149 $\mu g/m^3$ in 2003 and it reduced to 117 $\mu g/m^3$ in 2006 NAAQS.

33. **Solid Waste Management.** Solid waste generation in the project area is high and the door to door collection system is in practice, daily solid waste generation in this ward is 22.08 cu. m. however, a systematic solid waste management system is an urgent need of the community. Solid waste generated during operation of office building will be collected in fixed place designated within the building and disposal will be made as per municipal solid waste management system.

34. **Electricity and Telecommunication and Water Supply.** There is facility of electricity, drinking water, telephone and toilet in all the project locations. However, since the work duration is short time, potable drinking water will be supplied through water jars to the workers. Construction activities may require, electricity for cutting and welding purposes, portable diesel/petrol generators will be used. Contractor will prepare a make shift temporary toilet at the nearby location or use the public toilets wherever is available. They can also request for nearby restaurants for access to toilets where the works of repair will be carried out.

35. **Road.** There is all weather access road in all the locations within the project area.

B. Biological Environment

36. **Vegetation.** As project site lies in the heart of city, there is no forest in the periphery and the floral diversity is not significant in the area. Clearance of vegetation is not required in the project site.

37. **Terrestrial Fauna and Birds.** As the area is surrounded by settlements form all directions, fauna diversity is not significant in the area.

C. Socio-economic and Cultural Environment

38. **Settlement Pattern.** Population in the ward is densely distributed. 90% buildings of this area are constructed with reinforced cement concrete and brick structure.

39. **Occupation and Economic Status.** The major professions of the people in the ward are: service, business, foreign employment etc.

40. **Education.** Literacy rate in the given ward is considered very high as compared to national average literacy rate.

41. **Culture and Religious Places.** The majority of the people's multi-ethnic inhabitants follow the Hindu faith. Most of the people belong to the Newar community, and the feeling of religious tolerance and mutual cooperation runs high. Many temples were built in the valley from the time of King Rana Bahadur Shah. There are important religious edifices on the bank of the Bagmati River that forms the ward's southern boundary. Among them, Kalmochan Ghat and Mahadev temple built by Tripura Sundari stand out. (Source: KMC, 2005, Ward Profile).

IV. POTENTIAL ENVIRONMENT IMPACTS

42. The impacts have been identified mainly for two stages i.e. project construction stage and post construction i.e. operational and maintenance stage on the existing physical, biological and socio-economic and cultural resources. There is no major impact on environment due to implementation of this proposal.

A. Construction Impacts

a) Impacts on Social, Economic and Cultural Environment

43. **Arrival of Workers during Construction Stage.** The project will provide employment for about 50 (skilled as well as unskilled) during the construction phase. The increases in site population will increase the pressure on the social infrastructures and restaurants. Due to influx of workers, conflict may also arise in the community. The magnitude of impact will be short term, local and insignificant.

44. **Conflict between Local and Outside Workers.** Social conflict may arise during construction phase. Workers and the technician will be harmonized and reside in such a way that their works and activities do not affect in the local environment and communal harmony. The impacts will be the insignificant, short term in duration and site specific.

45. **Occupational Health and Safety Issue.** Construction approach of the proposal is labor intensive. Labors involved in construction activities are exposed to different kinds of occupational risks. Lack of awareness to the use of safety equipment could be the main causes of injuries. Similarly, transmissible diseases such as cholera, diarrhea and respiratory diseases

are of high risk due to unhygienic food and heavy work as well as involvement in alcoholism. The impact will be moderate and can be mitigated through proper consultation.

46. **Labor and Wage Issues.** One of the major impacts that will arise is the managerial decision like wage and working time issues that may cause the controversy among the labor and also local people. The way how manager mobilizes their labor and from where the manager hires the labor may causes the conflict. This may cause delay in the construction work and strike too. The impacts will be moderate, short term in duration and site specific.

47. **Nightlife Disturbances.** Almost all construction activities as far as possible will be carried out in day time. Therefore, this impact is not significant in this area. If the site area falls in the high traffic volume area, there will be a need to perform the repair activities during the night time. If the work will be carried out during night, the local people will be pre-informed about the activities and the area will be cordoned off from unauthorized access during the time of works. As far as possible, the noise levels will not be more than prescribed limits. Every care will be taken to avoid disturbance due to noise pollution in the nearby areas during night time construction. Impact on Nightlife disturbances are intermittent, short term and low in magnitude.

48. **Health and Sanitation Issues.** Health and sanitation facility is in place in the construction site. This might help water and airborne diseases susceptible to workforce working in the site. This impact is of medium magnitude, local and short term in nature.

49. **Social Security.** Workers are expected to be brought in the construction site from other areas. This activity might increase the crime rate and illegal activities in the area. As the labor groups have a tendency to drink alcohol and engage in anti-social activities increasing crime rate and social conflict. This may have a serious long-term impact for the people living nearby as the trend could be followed by the locals even after the completion of construction work. The impact is direct, of low magnitude, local and short-term in nature.

50. **Pressure on Public Utilities.** Increased number of people will over use limited resources so there may be shortage of public utilities for local people. All the workers tend to get their basic needs from the local area which has limited supply. Therefore, it may be difficult to sustain the workforce unless an alternative is properly found. This impact is of low magnitude, local and short term in nature.

51. **Issue regarding the Pedestrian Transport Movement via Adjacent Road.** The project area is located within the premises of KUKL and hence no impact to pedestrians' movement.

52. **Aesthetic Value.** The aesthetic value of the construction place will not be appealing to eyes during construction stage. There will be pile of construction materials, unfinished construction works and pile of construction waste in the site which will lower aesthetic value of the site. The impacts shall be the insignificant, short term in duration and site specific.

b) Impacts on Physical Environment Change

53. **In land use and landscape disturbances.** The conversion of the barren land into built up area would not have significant impact on the land use. There is no possibility of soil erosion and landslide as well. The impacts to land use due to construction activities of the proposed project will not be significant.

54. **Earthwork Excavation and Spoil Disposal.** Earthwork generates spoil that needs to be properly disposed-off the site. This waste along with other construction waste needs to be properly managed. If not properly managed, the waste can cause water pollution, damage

irrigation canals, destroy current vegetation and also increase soil erosion if not managed properly. The impacts to land use due to excavation and spoil disposal during the construction of the proposed project will not be significant.

55. **Stockpiling of Construction Materials.** Stockpiled construction materials may be washed away by rainwater causing ground water pollution and deposition of solid materials like soil and plastic sheets/metallic sheet etc. to the nearby sewerage. There will be provision for their management and stopping them to move to those places hence the environmental impacts due to stockpiling of construction material shall be short term, local and insignificant.

56. **Disturbances to Surrounding due to Increase in Vehicular Movement in the Locality due to Transportation.** Vehicles such as small truck, mini-truck, will come to the Proposed site. The existing road is well conditioned and wide enough. The impacts due to transportation to access road are insignificant. Few heavy vehicles arrive during the construction phase after 8 pm hence no effect to the local traffic system and neighbor. Care and appropriate measures shall be taken not to affect the neighboring houses. This impact will not be significant.

57. **Groundwater Extraction.** As there is no ground water extraction there is no impact on ground water table.

58. **Drainage System.** During the construction period wastewater is generated by workers as well as constructing work. The impact will be insignificant, local and short term in nature.

59. **Air and Noise Pollution.** During the proposal construction phase vehicles and construction materials movement will release dust, smoke and particulate matters. The impacts from such effect are likely to degrade human health, particularly of the labor engaged in building construction and people living in the vicinity. They may cause respiratory disease. Dust and smoke generation will be maintained under tolerable limits. All these effects will be temporary and will last till construction period only. The magnitude of the environmental impact shall be low, local, short term and insignificant.

60. **Solid Waste Management Including Demolition Waste.** The debris generated during construction and solid waste produced by the workers need to be disposed in appropriate locations. Inadequate spoil disposal may often cause unpleasant odor and disturbance in nearby settlement and roads. The impact will be generally being low in magnitude, short term and site specific in extent.

61. **Vibration Impacts during Implementation.** During the implementation of the project slight vibration may be felt. This vibration may cause the impacts to the other local neighboring building and structures. The impacts may be local and short term within the period of construction stage and is insignificant.

62. **Impact on Cultural, Religious and Historic Sites.** This project will not have any impact on religious and historical sites.

c) Impacts on Chemical Environment

Change in water and soil quality by the use of oil, paints, etc.

There will be need of different types of chemicals like's paints and petroleum products. Improper management of these chemicals will affect the health of worker and surrounding area. The chemical impact will be low in magnitude, site specific in extent and short term in duration.

d) Impacts on Biological Environment

63. **Loss of Open Space and Vegetation.** There is no any sort of ecologically important species within the construction area. Therefore, there isn't any harm in the ecology.

B. Operations Impacts

a) Socio-Economic and Cultural Impact

64. **Social Security.** There will be insignificant impact on social security. This impact will be minor, local and short term in nature.

65. **Change in Social Value and Conflict.** The facilities will be used for official purpose and the impact on change in social value and conflict will be low, local and hence insignificant.

66. **Health and Safety Impact.** The proponent will arrange daily cleaning of the project premises and the healthy living environment shall be created inside the project periphery. The magnitude of the impact shall be moderate, the extent shall be local and the duration shall be short term.

67. **Pressure on Public Utilities.** There will be insignificant impact on pressure on public utilities. The magnitude shall be minor, local and short term.

b) Impacts on Physical Environment

68. **Change in Water Table/Water Quality.** Since there is no drawing of water, there will not be any change in water table and water quality.

69. **Water Demand and Supply.** The whole area shall be supplied water from KUKL. There will be sufficient water. The impact will be low in magnitude, local and short term in duration.

70. **Pressure on Public Utilities (Water Supply, Electricity, Telephone etc.).** There will be no addition in demand of such facilities and hence there will be no impact on such utilities.

71. **Visual Disruption to Existing Landscape and Obstruction of Sunlight.** The project site shall be repaired for existing leaks on the road surfaces, thus it will be aesthetically pleasing after the completion of the works. Therefore, there will be no impact.

72. **Air and Noise Pollution including Indoor Air Pollution.** The project does not have any foreseen air pollution issues. However, during operation of generators sound pollution will be an issue. This impact is low in magnitude, local and short term in duration.

73. **Fire Hazard and Other Emergency Response System.** There is always higher risk of fire hazard and other emergencies. Kathmandu being very prone to earthquakes, will require efficient emergency response system. This impact is unforeseen in nature, however necessary emergency preparedness will be followed.

74. **Uninterrupted and Efficient Power Supply.** This project area has 24 hours supply of power hence there will be no impact.

75. **Movement of Vehicles and Parking.** This project area will have frequent traffic flow during office hour. This may create traffic congestion in the entrance and exit points. This impact will be of medium significance, local and short term in duration.

76. **Surface Runoff and Drainage Systems.** Since there are adequate drainage facilities within the proposed construction area there is no impact due to surface runoff and drainage.

77. **Vibration Impacts.** During the construction period there may be some physical activities which may cause create vibration. The vibration that may cause from the construction activities could create the impacts to the associated buildings and houses. The impacts will be short term, low Magnitude and short-term nature.

78. **Solid Waste Management.** The forms of solid wastes would be biodegradable and non-degradable which will be generated from the proposal implementation. The degradable solid waste may spread different types of diseases if allowed to decay at the open space for a long time.

79. The collected waste will be finally disposed in the Municipal waste disposal system only the waste which cannot be reused or recycled. The reusable and recyclable waste from the office building shall be encouraged to sell to the local scrapers. The magnitude of the impact is moderate, extent is local and the extent is short term.

80. **Hazardous Waste Management.** There is no use of hazardous substances for the project.

81. **Change in water quality and soil quality by the use of oil, paints etc.** The proposal requires different types of chemicals like paints and petroleum products. Improper management of these chemicals will affect the health of employees working in the building and surrounding area. Also, during operation phase, wastewater will be generated. If it's not properly taken care of, that will degrade water quality of surrounding area. The chemical impact will be low in magnitude, site specific in extent and short term in duration.

c) Impacts on Biological Environment

82. There is no any impact on flora and fauna existing as listed in nearby proposal location. However, greenery area developed will have varieties of flowers, grasses and trees. However, the garden management will be done within the premise of the KUKL with ornamental and ecologically important species.

V. ENVIRONMENTAL MANAGEMENT PLAN

83. Selection of environmental mitigation measures/environmental protection measures largely depends on the nature and type of environmental impacts evaluated. This will provide measures that augment the beneficial impacts and avoid or mitigate or compensate the adverse impacts to improve the socio-economic condition of the people. It has the objectives of improving the condition of the environmental resources.

84. The following are the recommended mitigation measures to be adopted for construction and operation phase.

A. Mitigation Measures – Construction Stage

a) Impacts on Socio-Economic and Cultural Environment

85. **Influx of Workers from Outside.**

(i) Workers will be hired according to the intensity of works and need of the work;
(ii) Conflict between local and outside workers;
(iii) Workers will not be allowed to be involved in alcoholism and gambling;
(iv) Occupational Health and Safety;
(v) Awareness to safe working procedure;
(vi) Use of safety equipment e.g. helmet, gloves, boots, mask, earplugs, net, safety belt etc.;
(vii) Awareness to contagious and communicable diseases;
(viii) First aid box will be in proper condition;
(ix) Workers will have insurance facility in case of on job injuries;
(x) Labor and wage issue;
(xi) Equal opportunity to all workers and all workers will be equally treated.
(xii) Workers wage will be pre-determined so that conflict does not arise during construction stage.
(xiii) Child labor will not be used during construction.
(xiv) Nightlife disturbances;
(xv) No impact foreseen therefore no mitigation is suggested.

86. **Health and Sanitation Issues.**

(i) Regular cleaning of the place will be done
(ii) Unwanted water accumulation in the construction site will be avoided
(iii) Proper drinking water and sanitation facility will be provided at site

87. **Social Security.**

(i) Noisy works will be done during the day time.
(ii) Works will be covered so as not to advance the pollutants of air and noise.
(iii) Gambling, alcoholism, will be strictly prohibited inside the proposal area.
(iv) Workers will not be allowed to enter/leave the site without authorization in the dark hours.
(v) Construction area will be cordoned and access will be provided to people other than the project personnel and workers.

88. **Pressure on Public Utilities.**

(i) Construction activities will import raw materials from wholesalers preferably outside of the locality if it is to pressure local supply.
(ii) Construction site will have temporary toilets and bathrooms and also separate drinking water facility inside the sites.

89. **Aesthetic Values.**

(i) Raw materials required will be brought and bought at the time of its utility
(ii) Construction site will be enclosed with opaque barriers.

b) Impacts on Physical Environment

90. **Change in Land use and Landscape Disturbances.**

(i) Equipment will be handled properly
(ii) Haphazard disposal will be strictly prohibited

91. **Earthwork Excavation and Spoil Disposal.**

(i) The residual construction materials will be reused for other construction purposes
(ii) Proper store of grease, paints and other construction materials
(iii) Reuse the solid waste.

92. **Stockpiling of Construction Materials.** The unnecessary piling of construction materials would disturb the scenic beauty and landscape of the local environment. For this, following mitigation measures will be carried out:

(i) Construction materials will be kept in appropriate and designated places
(ii) Haphazard disposal of construction materials will be strictly prohibited
(iii) Construction materials will be arranged in a way for the betterment of aesthetic beauty
(iv) The residual construction materials will be reused for other construction purposes
(v) Grease, paints and other construction materials will be stored properly.
(vi) Disturbances to surrounding due to increase in vehicular movement in the locality due to transportation
(vii) Movement of heavy vehicles will only be done during night time (after 8 p.m. and before 7 a.m.)
(viii) Vehicles coming and going out of the project site will be assisted by guards to the main road.
(ix) Groundwater extraction
(x) Rainwater harvesting technology will be applied to reduce the ground water depletion.
(xi) Drainage system
(xii) Waste water will not be allowed to discharge in open area
(xiii) Waste water will be treated to the effluent standard before disposal
(xiv) Urination and defecation in open areas and water-bodies will be controlled
(xv) The drain water will be treated before discharging into the sewerage system.

93. **Air and Noise Pollution.**

(i) Green sticker vehicles will be encouraged for construction material transportation.
(ii) Maintenance of the exhaust emission equipment materials will be regularized for vehicles as well as equipment.
(iii) Water will be sprinkled continuously to avoid dust emission from the stockpiling of bricks, aggregates.
(iv) Poly sheets will be used to cover the materials (cement, soil, sand etc.) during transportation.
(v) Cement bags, soil, sand will be kept inside the temporary building and will be covered.
(vi) Vehicles like dozers, mixer, vibrator and marble cutting machine will be operated only during day time as far as possible
(vii) Construction activities will not be performed during nighttime as far as possible
(viii) Old equipment will not be used
(ix) Earplug will be provided to the worker involved in equipment operations

(x) Solid waste management including demolition waste
(xi) Haphazard disposal of construction materials will be strictly prohibited
(xii) Waste Container will be kept inside the construction site for segregation of waste which will be given to door to door waste collection organization.
(xiii) Impact on cultural, religious and historical sites
(xiv) Access road will be repaired if any damage is occurred by the project activity
(xv) Transportation of construction material will be done at morning or evening off time of office hours
(xvi) Large vibration producing machine shall not be used
(xvii) If the vibration causes any damages to the neighboring building and structures the contractor shall be paid compensation.

c) Impacts on Chemical Environment

94. Change in water quality and soil quality by the use of oil, paints, bitumen, etc.

(i) Wastewater will be properly channelized to the sewerage system.
(ii) Leadless paint will be used as far as possible.

d) Impacts on Biological Environment

95. **Loss of Open Space and Vegetation.** Plantation will be done around the building in the form of gardens if applicable.

B. Mitigation Measures – Operation Stage

96. Impacts on Socio-Economic and Cultural Environment Social Security

(i) Building will be guarded by security guards 24 hours a day;
(ii) CCTV cameras will be installed in the lifts, entrance and corridors.

97. **Change in Social Values and Conflict.** No mitigation measures recommended.

98. **Health and Safety Issues.**

(i) Safety evaluation will be properly done after finishing works is completed
(ii) Organize health and hygienic program for the workers
(iii) Offices will be advised to keep first aid kits
(iv) Regular clean the business complex
(v) Hospital is within 15 minutes distance from the building therefore, any serious health problems can be treated in nearby hospitals.

99. **Pressure on Public Utilities.**

(i) Canteen will be established within the construction area;
(ii) Drinking water facilities will be available.

a) Impacts on Physical Environment

100. **Change in Water Table/ Water Quality.**

(i) Rainwater harvesting technology will be applied to reduce the ground water depletion;
(ii) Rechargeable pits will be constructed to recharge ground water;
(iii) Excessive water will not be extracted;

(iv) Permission will be taken from the Underground Water Development Board to install deep boring.

101. **Visual Disruption to Existing Landscape and Obstruction of Sunlight.** Proper setback is ensured in the design.

102. **Air and Noise Pollution Including Indoor Air Pollution.** Generators will have silencer installed and will be kept inside a separate room.

103. **Fire Hazard and Other Emergency Response System.**

(i) Electrification will be properly done and earthing will be done for the precaution measures.
(ii) Fire extinguisher will be placed at required locations.

104. **Uninterrupted and Efficient Power Systems.**

(i) 24 hours electricity supply will be provided
(ii) Generator backup in case of power cut

105. **Movement of Vehicles and Parking.**

(i) Roadside and haphazard parking will not be allowed
(ii) Traffic signs will be placed inside and around the area.
(iii) Separate entrance and exit outlets for vehicles will be constructed

106. **Waste Water Management.** The drain water will be treated before discharging into the sewerage system.

107. **Solid Waste Management.** Both bio-degradable and non-bio-degradable will be segregated. Reduce, reuse, recycle (3R) principle will be followed for the management of the solid waste.

(i) Waste segregation and disposal mechanism will be established by providing different colored dustbins marking degradable and non-degradable waste;
(ii) Recyclable solid waste will be sold;
(iii) Non-degradable waste will be recycled to some extent;
(iv) Coordinate with KMC authority for final disposal of solid waste; and
(v) Keep required number of container inside the premises.

b) Impacts on Chemical Environment

108. Change in water quality and soil quality by the use of oil, paints, etc.

(i) Grease, and oils will be properly disposed; and
(ii) Nothing will be allowed to throw in the open spaces. Separate dustbin will be kept in the project site.

C. Relevant Provisions in the Bid and Contract Documents

109. In addition to the above mitigation measures, the following requirements are included in the bid and contract documents.

110. **Site Safety.** There is a particular responsibility placed upon the contractor to take special precautions for public safety and to minimize the scale and extent of disruption to public and commercial life. The contractor shall ensure that the works are carried out in a safe manner,

according to internationally accepted guidelines on safe working procedures and to the satisfaction of the Engineer. The following requirements shall be complied with by the Contractor:

a) Excavation - The trenches have to be taken in a single step as the width available will not permit stepping of trenches. The contractor should mobilize excavation machinery suitable for taking deep trenches, at the same time ensuring that the machinery provided are less than 2.4 m wide.

b) All excavations shall be adequately supported to avoid collapses and effective safety barriers shall be erected with warning signs and devises around all open excavations to the satisfaction of the Engineer.

   Struts and walling shall not be used as ladders and for the purpose of access to the base of excavation the contractor shall provide proper ladders which shall be suitably secured.

   Reflective wearing shall be worn by all workmen on or close to a highway and, where necessary, temporary road signs and cones shall be provided to ensure a safe working area.

   While excavating along the road reserve, sufficiently strong and wide timber bridges shall be provided for pedestrian crossings.

   As far as possible the excavations in front of entrances shall be backfilled the same day. Sufficient written notice shall be given to the residents who may be affected by the excavation.

c) Protective Clothing - The contractor shall ensure that all personnel on site are supplied with the necessary protective clothing such as safety helmets, goggles, face masks, ear muffs, gloves, boots, depending on the operations being performed.

d) Scaffolding - Suitable and sufficient scaffolds shall be provided and properly maintained for all work that cannot safely be carried out from the ground or from part of the structure or from a ladder.

   Every scaffold shall be of good construction, of suitable and sound material and of adequate strength for the purpose for which it is used. Unless designed as an independent structure, every scaffold shall be rigidly connected to a part of the structure which is of sufficient strength to afford safe support. Protective headgear shall always be worn.

e) Lifting Device - Every rope, chain, pulley, bloc, hook, winch, crane or other lifting gear used for raising or lowering pipes of as a means of suspending them shall be of good construction, sound material, adequate strength and free from defects. They shall be properly maintained and tested at regular intervals by a competent person, who shall be to the approval of the Engineer.

f) In addition to the listed equipment in general application of the specification, the equipment which shall be made available shall include but not limited to following:

   (i) Lifting harness with ropes
   (ii) Hand-lamps with spare batteries
   (iii) First aid kit.
   (iv) Protective head gear.
   (v) Rubber Gloves.
   (vi) Breathing apparatus.

g) Throughout the period of the Contract, the contractor shall provide safety helmets and high reflectivity jackets to all Consultant's staff and visitors. Barriers must be provided to all

excavations for the safety of the public and flagmen must be used for all items of plant for the safety of the operatives, supervision staff and members of the public.

111. The contractor shall at all times in the conduct of his work and that of his Subcontractors adhere to the established rules and regulations concerning all safety matters at Site such as the recommendations contained in the "Manual of Accident Prevention in Construction", published by the Associated General Contractors of America, Inc., or other internationally recognized recommendations to the extent that such provisions do not conflict with the applicable laws. This is especially important wherever it is necessary to enable the free passage of the public through the site.

112. The contractor's safety officer/site manager shall have the qualification and the authority to issue instructions to the contractor's personnel regarding protection measures to prevent accidents.

113. The contractor shall provide the public with adequate information on all risks with respect to the construction works. If the general public sustains any kind of bodily injury or death, the contractor shall be responsible for providing all necessary medical care and compensation.

114. During construction, the contractor shall erect, maintain and subsequently remove sufficient barricades, guards, lighting, sheeting, shoring, temporary sidewalks and bridges, danger signals as well as temporary covering of potential accident areas.

115. If and where required the contractor shall erect and maintain suitable and approved temporary fencing, to BS 1722 Part 1 Type PLC 180 A or better, to enclose such areas of construction and areas of land occupied by the contractor within the Site as may be necessary to implement his obligations under the Contract. Where temporary fencing has to be erected alongside a public road, foot-path, etc., it shall be of the type required by and shall be erected to the satisfaction of the authority concerned.

116. All open excavations shall be protected sufficiently to keep out livestock, and ensure the safety of workmen, KUKL employees and members of the public and be in accordance with the directives of the police and the other local regulations.

117. The contractor shall be responsible for ensuring that all persons working in the vicinity of powerlines are aware of the relatively large distance that high voltage electricity can "short" to earth when cranes or other large masses of steel are in the vicinity of power lines.

118. Where work is to be carried out in the proximity of buildings or other structures, the contractor shall take all necessary precautions, including shoring and strutting, where necessary, to ensure the safety of the structures that are at risk.

119. The contractor shall be responsible for all damages or injury which may be caused on any property by trespass by the contractor's or his Subcontractor's employees in the course of their employment, whether the said trespass was committed with or without the consent or knowledge of the contractor.

120. **Safety of Materials Supplied to The Site.** The contractor will be responsible for safety of the material supplied and kept in joint custody of the employer and the contractor till completion of contract. The contractor shall at his own expense arrange for the safety of his labor / supervisor staff employed by him directly or indirectly for performing the work, as per statutory requirement. The contractor shall report any accident or unusual occurrence with the work at site that take place to employer immediately with the action, which he might have taken.

121. **Safety Equipment.** The contractor shall provide the engineer with the safety equipment set listed below in each site office. The contractor shall replace each item after it wears out and becomes unsuitable for use.

a)	Safety helmets	15 nos.
b)	Garden Umbrellas to be used at site	12 nos.
c)	Rain coat	12 nos.
d)	Rubber boot	12 pairs
e)	Safety boots and gloves	12 pairs
f)	Flashlights	12 nos.

122. **Temporary Wayleaves and Access.** The contractor shall be responsible for obtaining temporary wayleaves. The cost of obtaining wayleaves, including crop compensation, for temporary working areas, additional working easement and for any additional areas, required by the contractor in connection with the Works as well as for the access to all of these shall be borne by the contractor himself. The contractor shall arrange for the serving of any Statutory Notices as per Clause 1.6 in connection with any temporary working area and shall give to the occupier of each such area seven days' notice of his intention to enter and shall ensure that his methods of working cause the minimum of disturbance to the land and to its owners and occupiers.

123. The contractor shall at all times provide proper facilities for access and inspection of the Works by the Engineer, his assistants, inspectors, agents and representatives of public agencies having jurisdiction.

124. The extent of each temporary working area and the period of time for its occupation shall be such as the engineer considers necessary having regard to the contractor's reasonable requirements which shall be submitted together with the Work Program to the Engineer.

125. The contractor shall reinstate any temporary working areas to the condition prevailing prior to his initial entry as soon as possible after the work in those areas has been completed so as to keep the period of occupation to a minimum. The contractor shall in any event restore the areas to a tidy and workmanlike condition. Boundary walls, fences and other structures that have been damaged, removed or otherwise interfered with by the contractor shall be restored to a condition at least equivalent to their original condition.

126. **Access to Adjoining Property.** If the contractor's work will cause unavoidable interference with access to adjoining property, the contractor shall first give 7 days' notice to the occupier of such property and shall provide temporary means of access for vehicles, animals and pedestrians.

127. Convenient access to driveways, houses and buildings adjoining the work shall be maintained and temporary approaches to intersecting streets and alleys shall be provided and kept in good condition by the contractor.

128. As soon as a section of surfacing, pavement, or a structure has been completed, it shall be opened for use by traffic at the request of the engineer.

129. The contractor shall not prevent the free access to public water valves, water hydrants, or utility valves.

130. **Permanent Right-of-Way.** The employer will make all statutory arrangements necessary for obtaining the final possession of the site and the permanent right-of-way in the shortest possible time.

131. **Camp for contractor's Staff.** The contractor shall provide adequate temporary accommodation with all necessary amenities and facilities for his staff and labor. The location and type of accommodation whether pre-fabricated or in-situ buildings or rental is the contractor's choice.

132. During the whole period of existence, from setting up through operation to final removal upon completion of the works, the contractor shall be fully responsible for constantly carrying out all measures necessary for safeguarding the natural environment affected by his camp or camps.

133. He shall cause the least possible interference with existing amenities, whether man-made or natural. No trees shall be felled except as authorized by the engineer

134. Latrine and ablution facilities and first-aid services shall be provided in sufficient type and numbers to the satisfaction of the engineer and shall be maintained in a clean and sanitary condition at all times.

135. On completion of the works or as soon as the facilities provided by the contractor are no longer required, the contractor shall remove such facilities and clear away all surface indications of their presence. Each camp area shall be reinstated to the satisfaction of the engineer.

136. **Contractor's Offices, Stores and Services.** The contractor shall provide, erect, construct, maintain, and subsequently remove proper offices, stores, workshops, laboratories, storage, and parking areas for his own use. Such facilities shall be sufficiently sized and equipped to enable him to manage his operations and those of his Subcontractors in a professional manner and to enable him to carry out all his obligations under the contract.

137. Sheds for storage of materials that may deteriorate or corrode if exposed to the weather shall be weatherproof, adequately ventilated and provided with raised floors. No material or equipment shall be placed directly on the ground.

138. Within his offices, a meeting room shall be available for site meetings with the engineer and the employer.

139. These contractor's facilities shall be subject to the same stipulations regarding sitting, interference with amenities and environmental protection as the contractor's camp.

140. **Contractor's Construction Equipment.** When working in built-up areas, the contractor shall provide and use suitable and effective silencing devices for pneumatic tools and other Equipment that would otherwise cause a noise level exceeding 55 dB (A) (Guidelines for Community Noise, WHO, 1999) during drilling, excavation and other work. Alternatively, he shall, by means of barriers, effectively isolate the source of any such noise in order to comply with above requirement.

141. **Water Supply.** The contractor shall make his own arrangements for the supply of water for his camp, office and other temporary buildings as well as for the execution of the Works. Temporary water connection may be arranged with nearby local system if any exist, at established rates. When using other sources of water such as stone spouts, etc. the contractor shall have due regard to and coordinate with other users, particularly with the local communities. Water for drinking purposes shall be of drinking water quality and shall be tested for proper disinfection.

142. **Sanitation.** The contractor shall maintain the Site and all working areas in a hygienic condition. In all matters of health and sanitation he shall comply with the requirements of the local Health or other competent authority.

143. **Sewage and Waste Disposal.** The contractor shall make provision for the discharge or disposal of from his camp, offices, and the Works of all wastewater as well as of all liquid and solid waste products however arising. The methods of disposal shall be to the satisfaction of the engineer and of any authority or person having an interest in any land or watercourse over or in which water and waste products may be so discharged and shall not in any manner be disposed of untreated to the environment.

144. **Energy Supply.** The contractor shall install, operate, maintain and subsequently remove temporary supplies of electricity for power, heating, cooling, lighting and ventilation of all camps, offices, stores, laboratories and other temporary buildings used by the contractor in addition to all electricity requirements in connection with the construction, testing and defects correction of the works.

145. The contractor shall ensure that all proposed electrical installations comply with the requirements of the Nepal Electricity Authority and shall be responsible for and shall bear all costs associated with obtaining the written approval of that authority for such installations and their operation.

146. Prior to placing orders for transformers, conductors, cables and associated equipment, the contractor shall ensure by enquiry with the Nepal Electricity Authority that his proposed equipment is suitable for use with the existing or proposed medium/high tension electricity supply lines.

147. **Pollution.** The contractor shall take all reasonable measures to minimize any dust nuisance, sound pollution, pollution of streams and inconvenience to or interference with the public (or others) as a result of the execution of the Works.

148. **Supply of Fuel, Lubricants, etc.** The contractor shall be responsible for arranging and ensuring that adequate supplies of petrol, diesel oil, motor oil, kerosene, lubricants and other petroleum products are available at all times to meet his requirements for the purpose of or in connection with the Contract; the contractor's particular attention is drawn to this requirement as from time to time shortages and interruptions in the supply of fuel oils, etc., may occur. The contractor is required to store fuel to cover a minimum of 15 days of its requirements. It should provide additional stored fuel if supply conditions require so. The contractor is not allowed to purchase and use firewood.

149. With regard to the transportation, storage and handling of all his fuel requirements, including all electrical connections, he must strictly comply with all relevant safety codes and regulations.

Particular care is to be taken to avoid pollution due to spillage of fuel and oils. They shall be stored within a bunded area, all equipment drive by diesel or petrol engines shall be installed on a drip tray, waste oils shall be disposed of in a proper manner.

150. **First Aid.** The contractor shall make his own arrangements for treatment of casualties on the Site. First-aid kits or units shall be provided. The contractor shall be responsible for the construction of such first-aid units and their management and operation and rapid removal by ambulance of injured or sick employees to nearby hospitals. The first-aid service shall cover the contractor's own personnel as well as that of the employer, the engineer, and all subcontractors while working on the Site.

151. **Fire Protection.** No naked fire shall be used by the contractor on or about the Site without the permission of the engineer in writing. If in the engineer's opinion the use of naked fire may cause a fire hazard, the contractor shall at no extra cost to the employer take such additional precautions and provide such additional firefighting equipment as the engineer considers necessary. The term "naked fire" shall be deemed to include electric arcs and oxyacetylene or other flames used in welding or cutting metals. Compliance with the requirements of the engineer shall not relieve the contractor of any of his obligations under the contract.

152. **Contractor's Canteen.** The contractor shall provide adequate eating facilities for his employees and workmen.

153. **Protection of Overhead and Underground Services.** The contractor will be held responsible for any damage to known services (i.e. overhead services that are visible within the Site and underground services shown on the drawings) and he shall take all necessary measures to protect them. All work or protective measures shall be subject to approval of the engineer. In the event of a service being damaged he shall inform the engineer and the authority concerned, the contractor shall not repair any such service unless instructed to do so.

154. Where the authority concerned elects to carry out on its own account any alterations or protective measures, the contractor shall co-operate with and allow such authority reasonable access and sufficient space and time to carry out the required work.

155. **Signboards.** Signboards shall be as per drawing. The signboards shall be placed at each site office of each lot and at both end of each work stretches of the Contract, in English and Nepali, at least following information should be mentioned in each signboard:

(i) the name of the project and section number;
(ii) the names and addresses of the Employer, the contractor and the engineer with contact number;
(iii) the name and short description of the project;
(iv) the amount of the contract price; and
(v) the starting and completion dates.

156. They shall be of durable construction capable of withstanding the effects of the climate until the end of the Defects Liability Period.

157. The contractor shall keep the signboards in good repair for the duration of the contract and shall remove them on completion of the contract.

158. Besides these signboards, the contractor shall not, except with the written authority of the engineer, exhibit or permit to be exhibited on the Site any other form of advertisement.

160. **Site Roads, Loading and Turning Areas.** The contractor shall provide and maintain such access to the various sections of the Works as he requires for the proper execution of the work. Existing roads shall be upgraded for the construction transport purposes and site roads, loading and turning areas shall be so arranged as to minimize inconvenience to adjoining landowners or occupants and to the general public. The site roads shall be of gravel or equivalent material providing a hard surface for vehicles. Temporary roads, loading and turning areas shall be removed when they are no longer required and the location reinstated to the satisfaction of the engineer, and damage to existing roads or bridges shall be repaired and reinstated to the satisfaction of the engineer.

159. **Site Drainage.** The contractor shall keep each section of the works well drained until the engineer certifies that it is substantially complete and shall ensure that, so far as is practicable, all work is carried out in the dry. Site areas shall be kept well drained and free from standing water except where this is impracticable having regard to methods of Temporary Works properly adopted by the contractor.

160. The contractor shall provide, operate and maintain in sufficient quantity such pumping equipment, well points, pipes and other equipment as may be necessary to minimize damage, inconvenience and interference and shall construct, operate and maintain all temporary coffer-dams, sumps, ditches, drains and other temporary works as may be necessary to remove water from the Site while construction is in progress. Such temporary works and construction equipment shall not be removed without the approval of the engineer.

161. Notwithstanding any approval by the engineer of the contractor's arrangements for the removal of water, the contractor shall be responsible for the sufficiency thereof and for keeping the works safe at all times and for making good at his own expense any damage to the works.

162. The contractor shall be responsible to keep the site clear of water at whatever pump rate is found necessary.

163. The contractor’s site drainage facilities shall not cause pollution in any local watercourses, he shall be responsible for any legal action resulting from pollution events.

164. **Cleaning-Up of Site.** Before application is made for the employer to accept any substantially completed section of the works, all items shall be complete, ready to operate and in a clean condition. All trash, debris, unused building materials and temporary facilities shall have been removed from the site. Tools and construction equipment not needed during the subsequent defects liability period for repair and adjustment shall not remain on the site. The temporary walkways, parking areas and roadways shall be completely swept and broomed.

165. **Detours and Traffic Control.** The contractor shall program his work in such a way that, wherever the temporary closure of street sections to public thoroughfare cannot be avoided, the duration of traffic diversion can be kept as short as possible. No streets shall be closed and no detours shall be introduced and no traffic diverted until the contractor's proposals have been approved by the engineer and the appropriate government authorities, such as the roads department.

166. Where work is to be carried out in public roads, the contractor shall give notice to the engineer sufficiently in advance of the date on which he wishes to commence such work.

167. The contractor shall be responsible for obtaining the permission of the engineer, road department and the police for activities he intends to carry out in public roads. Two copies of the contractor’s proposals to the relevant authorities shall be submitted to the engineer. One copy of all obtained approvals shall be submitted to the engineer.

168. The contractor's attention is drawn to the fact that processing of the documentation required by the local authorities prior to the cutting of existing public roads takes approximately 30 days. During the monsoon period (June to August) no road cuttings are normally allowed.

169. Detours shall be selected in such a way that the inconvenience to the affected traffic as well as to the inhabitants of the affected areas is kept to a minimum.

170. The contractor shall furnish, install and maintain at all times during the execution of the Works all necessary traffic signs, barricades, lights, signals and other traffic control devices, including flagging and other means of guiding traffic through the work zone. Traffic control shall be managed in accordance with prevailing rules and regulations, and with the approval and to the satisfaction of the engineer.

171. All devices mentioned above shall be in conformity with the requirements of the roads department. All traffic signs and control devices to be furnished and installed by the contractor shall be approved by the engineer for their location, position, visibility, adequacy and manner of use under specific job conditions.

All traffic control devices necessary for the initial stage of construction shall be properly placed and operational before any construction is allowed to start. When work of a progressive nature is involved, the necessary signs shall be moved concurrently where they are needed.

172. If the engineer determines that proper provisions for safe traffic control are not being provided or maintained, he may restrict construction operations affected by such defective signs or devices until such provisions are established or maintained or may altogether order suspension of the Work until a proper traffic control is achieved. In case of serious or willful disregard by the contractor of the safety of the public or his employees, the engineer may take necessary steps to rectify the situation and deduct the cost thereof from money due or becoming due to the contractor. The contractor shall be responsible for all resulting delays.

173. The contractor shall designate or otherwise employ personnel to furnish continuous surveillance of the traffic control operations. The designated personnel shall be available day and night to respond to calls involving damage due to vandalism or traffic accidents.

174. At sections where traffic is in operation and when ordered by the Engineer, the movements of the contractor's equipment from one place of work to another shall be subject to traffic control. During rush hours movement of larger vehicles, such as trucks, cranes, dumpers, etc. through main thoroughfare are not permitted by the police. Spillage resulting from hauling operations along or across the road way shall be removed immediately at the contractor's expense.

175. The cost of detours and traffic control is deemed to be included in the rates for road reinstatement.

176. **Protection of Adjoining Property – Land.** The contractor shall control the movement of his crews and equipment on the working easement including access routes approved by the engineer so as to minimize damage to crops and property and shall endeavor to avoid marring the lands. Ruts and scars shall be obliterated and damage to land shall be corrected and the land shall be restored as closely as possible to its original conditions before final taking-over of the Works.

177. The contractor shall be responsible directly to the tenant / land owner for any excessive or avoidable damage to crops or lands resulting from his operations whether on lands adjacent to right-of-way or on approved access road and deductions will be made from payment due to the contractor to cover the amount of such excessive or avoidable damage if adequate compensation is not paid by the contractor, in the opinion of the engineer.

178. **Protection of Adjoining Property – Buildings and Other Structures.** The contractor shall be responsible and take all measures in order to protect adjoining property including buildings, electrical and telephone poles, bridges and culverts, retaining walls, compound walls and fences, and other structures. Prior to the commencement of the activities, the contractor shall

assess the probability and extent of unavoidable damages, if any, to the building and properties and submit his assessment to the Engineer. The engineer may make his own opinion and if required may order arrangements for protection or repair of such likely unavoidable damage in which event the contractor shall complete the activities.

179. **Reinstatement Upon Completion.** Temporary facilities shall be provided by the contractor, only for as long as required after which he shall dismantle and remove the same from their place of use as speedily as possible. Reusable components shall be safely stored by the contractor in his yard. The place of use shall be cleared and reinstated immediately to at least the condition existing before the temporary facilities were provided, and to the satisfaction of the Engineer.

D. Environmental Monitoring Program

180. The environmental monitoring program shall be implemented in such a way that the contractor is monitored during the construction phase. EMP also requires regular monitoring of the actual environmental impacts during project operations over the years following project completion. These impacts that have been monitored should be compared with the anticipated impacts at the time of the preparation of the project and the effectiveness of the mitigation measures taken.

181. To promote monitoring activities as an integral part of the project, types of monitoring its indicators schedules and responsible agencies are given below:

a) Base Line Monitoring

182. Baseline monitoring aims to identify collect and verify the additional environmental base line data, which is scientific or sociological in nature and needed to augment information on baseline conditions initially generated during IEE. In case of the Water Supply Project most of the baseline data have already been collected and there is very little chance for its change till the implementation phase. Hence it will not be necessary to conduct it unless some striking new scenarios in terms of physical or socio- economic conditions emerge.

b) Compliance Monitoring

183. Compliance monitoring is essential to encourage and promote the proponent to comply with the requirements as listed in the mitigation measures and any condition set forth during the project approval. Hence it is desirable to ensure the integration of mitigation measures in the document, if any, which should fully reflect the environment obligation to be complied with by the proponent or the contractor.

c) Impact Monitoring

184. Impact monitoring is necessary to know the actual level of impact in the field during construction and operation of the project as the environmental impacts are predicted based on value judgment through with some valid assumptions.

185. The Monitoring Plan will be designed in a way that the contractor is monitored to ensure that the mitigation measures are followed during the construction period. It also requires regular and periodic monitoring of the actual environmental impacts during the project operation over the years following project completion. A detailed monitoring plan giving the mechanisms of monitoring for the environmental impact and the mitigation measures are given below.

Table 3: Anticipated Impacts and Mitigation Measure–Construction Environmental Monitoring Plan

Predicted Impacts	Indicators	Location	Monitoring Method	Monitoring Frequency	Responsibility
Physical Parameters					
Disturbance to the land system and soil erosion	Excavation technique Soil disposal area Stacking of soil	Construction site	Direct observation and record inspection	Daily during construction	Contractor / Project Management Unit (PMU)
Quarrying	Quarrying activity Local aesthetics	Quarry site	Direct observation and contractor records	Once	Contractor/ PMU
Air and Noise pollution	Use of equipment and vehicles Quality of fuel Sprinkling of water Use of mufflers	Construction and Operation site	Record inspection	Weekly	PMU
Biological Parameters					
Loss of vegetation	Cleared area No of trees	Construction site	Observation and record inspection	Weekly	Contractor/ PMU
Socio-economic Parameters					
Problems from outside workforce	Behavior of the workers Uses of alcohol Records of fights	Project area	Record inquiry Local survey Communication with people	Monthly and as needed	Contractor/ PMU
Disturbance to the local people	Use of signboards, notice board Disposal area	Project area	Record inquiry Communication with people	Weekly	Contractor/ PMU
Occupational Health and Safety	Type and number of accidents First aid and emergency services	Construction site	File record	Daily	Contractor/ PMU

E. Environmental Monitoring Cost

186. The Monitoring cost has been estimated for one year of construction period. The monitoring will be conducted on the physical, biological and socio-economic aspects. So, the cost has covered all these parameters.

187. During the post construction phase, monitoring will be done on water quality, the maintenance system and outbreak of diseases.

188. Most of the monitoring cost for the proposed project is related to the expenses for experts for observation and monitoring during construction and operation phases of the project. The following monitoring costs are to be incurred by the project.

Table 4: Monitoring Costs

S. No.	Impacts	Cost	Remarks
2.1	Monitoring of air quality and noise level in the project area	15,000	
2.2	Water sample tests	50,000	
2.3	Temporary Reinstatement of damaged infrastructure for items not covered in BOQ.	400,000	
2.4	Slope stability works, Jute net for Damping of stockpile	100,000	
2.5	Off-site gully control and drainage management works	25,000	
2.6	Spoil tip protection, Planks, Green net barricade, Hard Barricade (Ply board/Zinc sheets), and other management works	120,000	
2.7	Dust Control; Removal of leftover stockpiles, Tarps to place earth material, Transportation of water for damping airborne dust, Sprinkler for damping air borne dust (if required)	60,000	
2.8	Replenishing measures for vegetation loss - plantation	10,000	.
2.9	Orientation and Training programs.	20,000	
2.10	Occupational Health and Safety; Hard Hats, Gloves, Safety Boots, Reflective Jackets, Welding goggles, OHS First Aid Kit as a safety equipment for workers. Caution Tapes, Pegging materials, Wooden or Metallic Planks for public access. Flags and led lights for traffic diversions Signage for community safety and awareness	100,000	
	Total EMP cost	**900,000**	

VI. GRIEVANCES REDRESS MECHANISM

189. 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.

79. **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, DSC, 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 representatives of contractors, DSC, and PMU can immediately resolve the complaint on site. The PMU branch offices can also be involved in grievance redress at this stage. The KUKL hotline and PMU 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 PMU branch offices are 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 DSC safeguards specialists (the environmental specialist or social safeguards specialist) to help resolve the issue. The consumer relations officer or branch manager will notify the PMU safeguards unit that a complaint was received, and whether it was resolved. The branch 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.

80. **Second level of GRM**: If the grievance remains unresolved first level, the branch manager, consumer relation officer/ support unit will take action within one week, if not branch manage will forward the complaint to the PMU 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 PMU 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 PMU 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 PMU 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.

81. **Third level of GRM**: Should the grievance remain unresolved, the PMU'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 KUKL, who will, based on review of the grievances, address them in consultation with the PMU safeguards unit, project manager, and affected persons. The Third tier GRC will consist of members of the PMU head, PMU safeguards unit head, affected persons, and concerned branch manager, 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 PMU 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.

82. **Fourth level of GRM**: In the event that a grievance is not addressed by the contractor, DSC, branch office, PMU, 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 are depicted in Figure 11.

83. **Fifth level of GRM**:In the event that the established GRM is not in a position to resolve the issue, the affected person also can use the ADB Accountability Mechanism (AM) through directly contacting (in writing) the Complaint Receiving Officer (CRO) at ADB headquarters or the ADB Nepal Resident Mission. The complaint can be submitted in any of the official languages of ADB's DMCs. The ADB Accountability Mechanism information will be included in the KUKL/PMU to be distributed to the affected communities, as part of the project GRM.

190. This subproject will follow the GRM established for Loan 3255. The process requires a GRM committee to be established at the local level to assure accessibility to the affected person or stakeholder. The committee should consist of members with sufficient knowledge about the project, with technical know-how and expertise and someone aware about the socio-cultural dynamics of the community. GRM requires that issues and comments are first lodged with the

local level GRM committee for handling of grievances at project site. The GRM committee should conduct their meeting within 3 weeks of receipt of complaint and solution needs to be provided at meeting or within 3 weeks.

191. If the grievance cannot be solved at the project level, the GRM committees need to submit it to the PMU. The PMU with assistance from environmental specialist should resolve the grievance. If the grievance cannot be solved by the PMU, it will be referred to the relevant court of law.

VII. IMPLEMENTATION ARRANGEMENT

192. Institutions have crucial roles to play during monitoring. There should be a firm institutional commitment by the agencies responsible for monitoring. The Ministry of Environment (MOE) oversees environmental control and management for all sector agencies. The Ministry of Water Supply (MOWS) will have overall responsibility for environmental monitoring of all water supply and sewerage projects. In case of an EIA, it must be approved by MOE. In case of an initial environmental examination (IEE), the final approval lies with MOWS. In this case, the approval is not required as per existing national rules.

193. The different agencies involved in Project are as explained in Table 5

Table 5: Institutions Involved in the Proposed Project

S. N	Organization	Roles and Responsibilities
1.	Project Management Unit(PMU)	PMU under KUKL implements the project. It ensures that all the mitigation measures prescribed by approved by the employer and will be fully adopted by the contractor or concerns. It acquires permits and approval for project construction and assists.
2.	Contractor	It is responsible to ensure that the mitigation measures are specified during the construction

A. Reporting Procedure

194. The contractor has a crucial role in ensuring that the mitigation measures are implemented during the project construction phase. The contractor will develop an Environmental Mitigation Execution Plan (EMEP) based on EMP. The contractor must report weekly about the progress of its work together with day-to-day practical aspect of project implementation to the PMU. The PMU then is responsible for ensuring that all the procedures and final design that includes the mitigation measures are followed. PMU is responsible to check the weekly progress report of the contractor and field verify whether the implementation of mitigation measures have been conducted as decided in the EMEP or not.

195. PMU then will prepare an environmental monitoring report based on the weekly progress report of the contractor. The environmental specialists of PMU will then review the comments and suggestions from the various authorities and act accordingly.

B. Procurement Plan and Cost Estimates

196. The cost for the recommended mitigation measures and monitoring activities are described in Table 4. The cost of mitigation measures directly linked to the construction activities (such as erosion control measures) are not included in the cost estimates as most of these are already included in the construction and operation and maintenance cost of the project.

VIII. CONCLUSIONS AND RECOMMENDATIONS

197. The EMP proposal has been proposed by Kathmandu Upatyaka Khanepani Limited. As per the requirement set out by EPR 1997, the study has been conducted as per the requirement of

ADB, but it is not required by the domestic rules. The EMP has assessed potential environmental impacts due to the building construction and operation. Different elements of physical environment, geology and soil, hydrology, land use pattern air and noise, water sources, waste disposal were studied. No significant impacts were seen on these elements of the physical environment. This building construction and modernization does not pose negative impact to the system, water source, soil pollution, soil erosion and disturbances to the existing natural landscape. The study has not observed long term negative impacts; however, small impacts that are identified can easily be minimized and coped with proposed mitigation measures.

198. Different elements of the biological environment, vegetation and fauna have been studied. Adverse impacts on socio-economic environment are also found to be minimal. Different elements, demography, population growth and its composition, economic characteristic of population, migration pattern, agriculture and food situation, religion and culture and historical important area, of socioeconomic and cultural environment have been studied. There would be short term employment opportunity and local economic activities would also increase at the time of construction as well as in operation phase. There is no any adverse impact to the socio-economic environment since there is no any land acquisition, people's displacement and rehabilitation due to the building. Numbers of mitigation measures construction safety, solid waste management at the time of construction and operation etc. are outlined in previous chapters. In order to ensure the implementation of the environmental protection measures, an EMP has been prepared, which include plan for the implementation of the mitigation measures. The plan includes detail on environmental monitoring, both compliance and impact monitoring.

199. There is no any significant adverse impact to the existing environment by the project implementation. Some impacts that are caused during construction phase will be checked after the completion and can even minimized during the process. As per the guidelines of the EPR, 1997 the EMP is sufficient and there is no need for any further studies. Hence the study recommends for implementing the project as per design, drawing and specification.

APPENDICES

Appendix 1: ADBs Rapid Environmental Assessment (Rea) Checklist

Instructions:

- This checklist is to be prepared to support the environmental classification of a project
- This checklist is to be completed by KUKL (or its consultants)
- This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB checklists and handbooks on (i) involuntary resettlement, (ii) indigenous peoples planning, (iii) poverty reduction, (iv) participation, and (v) gender and development.
- 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.

Screening Questions	Yes	No	Remarks
A. PROJECT SITING IS THE PROJECT AREA			
Densely populated?		√	Moderate density of population in the construction areas.
Heavy with development activities?		√	
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?		√	
impairment of historical/cultural monuments/areas, and loss/damage to these sites?		√	
social conflicts arising from displacement of communities?		√	

Screening Questions	Yes	No	Remarks
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 the management of chlorine used for disinfection and other contaminants?		√	
dislocation or involuntary resettlement of people?		√	
social conflicts between construction workers from other areas and community workers?		√	
noise and dust from construction activities?		√	Small construction e.g. wall rejection, furnishing etc.

Screening Questions	Yes	No	Remarks
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 mud 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?		√	

A. Checklist for Preliminary Climate Risk Screening Country/Project Title: Sector/Subsector/Division/Department:

	Screening Questions	Score	Remarks
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather-related events such as floods, droughts, storms, landslides?	0	
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters? (e.g., sea level, peak river flow, reliable water level, peak wind speed etc.)?	0	
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 hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?	0	
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s)?	0	
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?	0	

Options for answers and corresponding score are provided 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 a 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.

B. Result of Initial Screening (Low, Medium, High): Low

Other Comments: The proposal for modernization of KUKL & its' branches have furnishing and small construction works, therefore, impact is low.

Prepared by: KUKL

Appendix 2: Sample Grievance Redress Form

(To be available in Nepalese and English language)

The _____Project welcomes complaints, suggestions, queries and comments regarding project implementation. We encourage persons with grievance to provide their name and contact information to enable us to get in touch with you for clarification and feedback. Should you choose to include your personal details but want that information to 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 included as attachment/note/letter, please tick here:					
How do you want us to reach you for feedback or update on your comment/grievance?					

FOR OFFICIAL USE ONLY

Registered by: (Name 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:	

Appendix 3: Semi-Annual Environmental Monitoring Report Template

I. INTRODUCTION

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

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

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

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

[a] If on-going construction, include %physical progress and expected date of completion.

II. COMPLIANCE STATUS WITH NATIONAL/STATE/LOCAL STATUTORY ENVIRONMENTAL REQUIREMENTS [a]

Package No.	Subproject Name	Statutory Environmental Requirements	Status of Compliance	Validity if obtained	Action Required	Specific Conditions that will require environmental monitoring as per Environment Clearance, Consent/Permit to Established

[a] All statutory clearance/s, no-objection certificates, permit/s, etc. should be obtained prior to award of contract/s. Attach as appendix all clearance obtained during the reporting period. If already reported, specify in the "remarks" column.

[b] Specify (environmental clearance? Permit/consent to establish? Forest clearance? Etc.)

[c] Specify if obtained, submitted and awaiting approval, application not yet submitted.

[d] *Example: Environmental Clearance requires ambient air quality monitoring, Forest Clearance/Tree-cutting Permit requires 2 trees for every tree, etc.*

III. COMPLIANCE STATUS WITH ENVIRONMENTAL LOAN COVENANTS

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

IV. COMPLIANCE STATUS WITH THE ENVIRONMENTAL MANAGEMENT PLAN (REFER TO EMP TABLES IN APPROVED IEE/S)

Confirm if IEE/s require contractors to submit site-specific EMP/construction EMPs. If not, describe the methodology of monitoring each package under implementation.

Package-wise Implementation Status

Package Number	Components	Design Status (Preliminary Design Stage/Detailed Design Completed)	Final IEE based on Detailed Design				Site-specific EMP (or Construction EMP) approved by Project Director? (Yes/No)	Remarks
			Not yet due (detailed design not yet completed)	Submitted to ADB (Provide Date of Submission)	Disclosed on project website (Provide Link)	Final IEE provided to Contractor/s (Yes/No)		

(i) Identify the role/s of Safeguards Team including schedule of on-site verification of reports submitted by consultants and contractors.
(ii) For each package, provide name/s and contact details of contractor/s' nodal person/s for environmental safeguards.
(iii) Include as appendix all supporting documents including signed monthly environmental site inspection reports prepared by consultants and/or contractors.
(iv) With reference to approved EMP/site-specific EMP/construction EMP, complete the table below
(v) Provide the monitoring results as per the parameters outlined in the approved EMP (or site-specific EMP/construction EMP when applicable).
(vi) In addition to the table on EMP implementation, the main text of the report should discuss in details the following items:

(i) **Grievance Redress Mechanism.** Provide information on establishment of grievance redress mechanism and capacity of grievance redress committee to address project-related issues/complaints. Include as appendix Notification of the GRM (town-wise if applicable).

(ii) **Complaints Received during the Reporting Period.** Provide information on number, nature, and resolution of complaints received during reporting period. Attach records as per GRM in the approved IEE. Identify safeguards team member/s involved in the GRM process. Attach minutes of meetings (ensure English translation is provided).

(i) Confirm if any dust was noted to escape the site boundaries and identify dust suppression techniques followed for site/s.
(ii) Identify muddy water was escaping site boundaries or muddy tracks were seen on adjacent roads.
(iii) Identify type of erosion and sediment control measures installed on site/s, condition of erosion and sediment control measures including if these were intact following heavy rain;
(iv) Identify designated areas for concrete works, chemical storage, construction materials, and refueling. Attach photographs of each area.
(v) Confirm spill kits on site and site procedure for handling emergencies.
(vi) Identify any chemical stored on site and provide information on storage condition. Attach photograph.
(vii) Describe management of stockpiles (construction materials, excavated soils, spoils, etc.). Provide photographs.
(viii) Describe management of solid and liquid wastes on-site (quantity generated, transport, storage and disposal). Provide photographs.
(ix) Provide information on barricades, signages, and on-site boards. Provide photographs.
(x) Provide information on
(xi) Checking if there are any activities being under taken out of working hours and how that is being managed.

Summary of Environmental Monitoring Activities (for the Reporting Period) [a]

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						

[a] Attach Laboratory Results and Sampling Map/Locations.

Overall Compliance with CEMP/EMP

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

V. APPROACH AND METHODOLOGY FOR ENVIRONMENTAL MONITORING OF THE PROJECT

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

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

(i) Brief discussion on the basis for monitoring
(ii) Indicate type and location of environmental parameters to be monitored
(iii) Indicate the method of monitoring and equipment to be used

(iv) Provide monitoring results and an analysis of results in relation to baseline data and statutory requirements

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

Air Quality Results

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

Water Quality Results

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

Noise Quality Results

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

VII. SUMMARY OF KEY ISSUES AND REMEDIAL ACTIONS

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

APPENDICES

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

Appendix 4: Sample Environmental Site Inspection Report

Project Name: _____
Contract Number _____
Name: _____
Title: _____
Location: _____
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
Access to Water Tanks by Tankers	

Site Restored to Original Condition		YES		NO

Signature

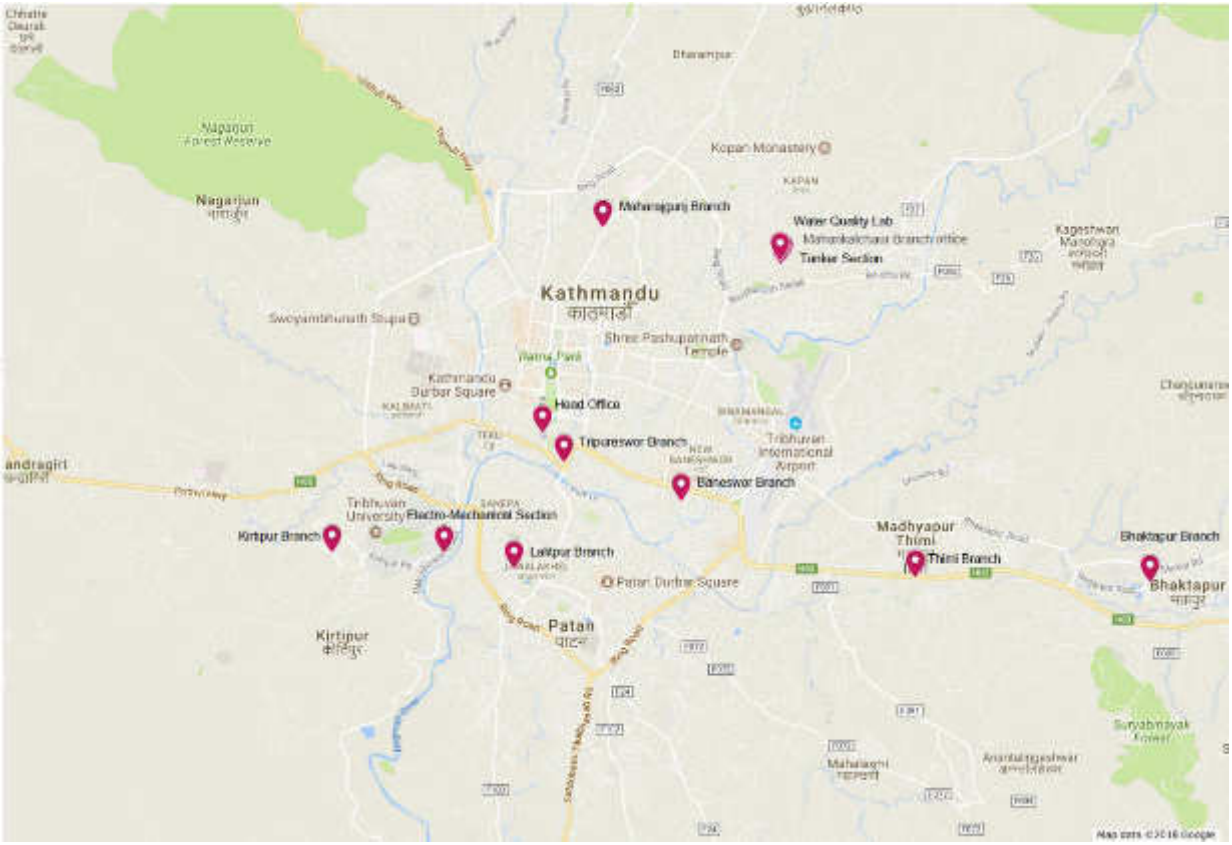
_____

Signoff

Name:	Name
Position:	Position

Appendix 5: Map Showing the Branch Offices of KUKL

Figure 1: Map Showing the Branch Offices of KUKL



APPENDIX 6: ENVIRONMENTAL STANDARDS FOR ADB PROJECTS IN NEPAL

Table 6: Applicable Noise Level Standards for ADB Projects in Nepal

Receptor/ Source	National Noise Standard Guidelines, 2012 (dBA)		WHO Guidelines Value For Noise Levels Measured Out of Doors* (One Hour LA_q in dBA)		Applicable Standards for the Project/ Subproject (dBA)	
	Day	Night	07:00 – 22:00	22:00 – 07:00	Day time	Night time
Industrial area	75	70	70	70	70	70
Commercial area	65	55			65	55
Rural residential area	45	40	55	45	45	40
Urban residential area	55	50			55	45
Mixed residential area	63	55			55	45
Quiet area	50	40	-	-	50	40
Water Pump	65		-		65	
Diesel generator	90		-		90	

* Guidelines for Community Noise, WHO, 1999

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

Table 7: Applicable Ambient Air Quality Standards for ADB Project in Nepal

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

*National Ambient Air Quality Standards for Nepal, 2003.

Source: Environment Statistics of Nepal 2011, Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics, Kathmandu, Nepal.

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

^^ Source: Air Quality Guidelines for Europe, Second Edition, 2000; WHO Regional Office for Europe, Copenhagen

Table 8: Applicable Drinking Water Quality Standards for ADB Project in Nepal

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

* Health-based guideline values

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

^ These standards indicate the maximum and minimum limits.

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

Parameter with WHO guideline value as more stringent than 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.

Source: Environment Statistics of Nepal 2011, Government of Nepal, National Planning Commission Secretariat, Central Bureau of Statistics, Kathmandu, Nepal

Appendix 7: Minutes of Meetings of Focus Group Discussions

1. Meeting Held at Kathmandu Municipality Ward No. 9, Battisputali Ward Office

Kathmandu Valley Water Supply Improvement Project- Additional Financing (KVWSIP-AF)

Repair & Maintenance of Leakage/breakage in existing networks during commissioning and testing of Integrated network to reduce NRW (Lot No. 1, 2, & 3)

Focus Group Discussion

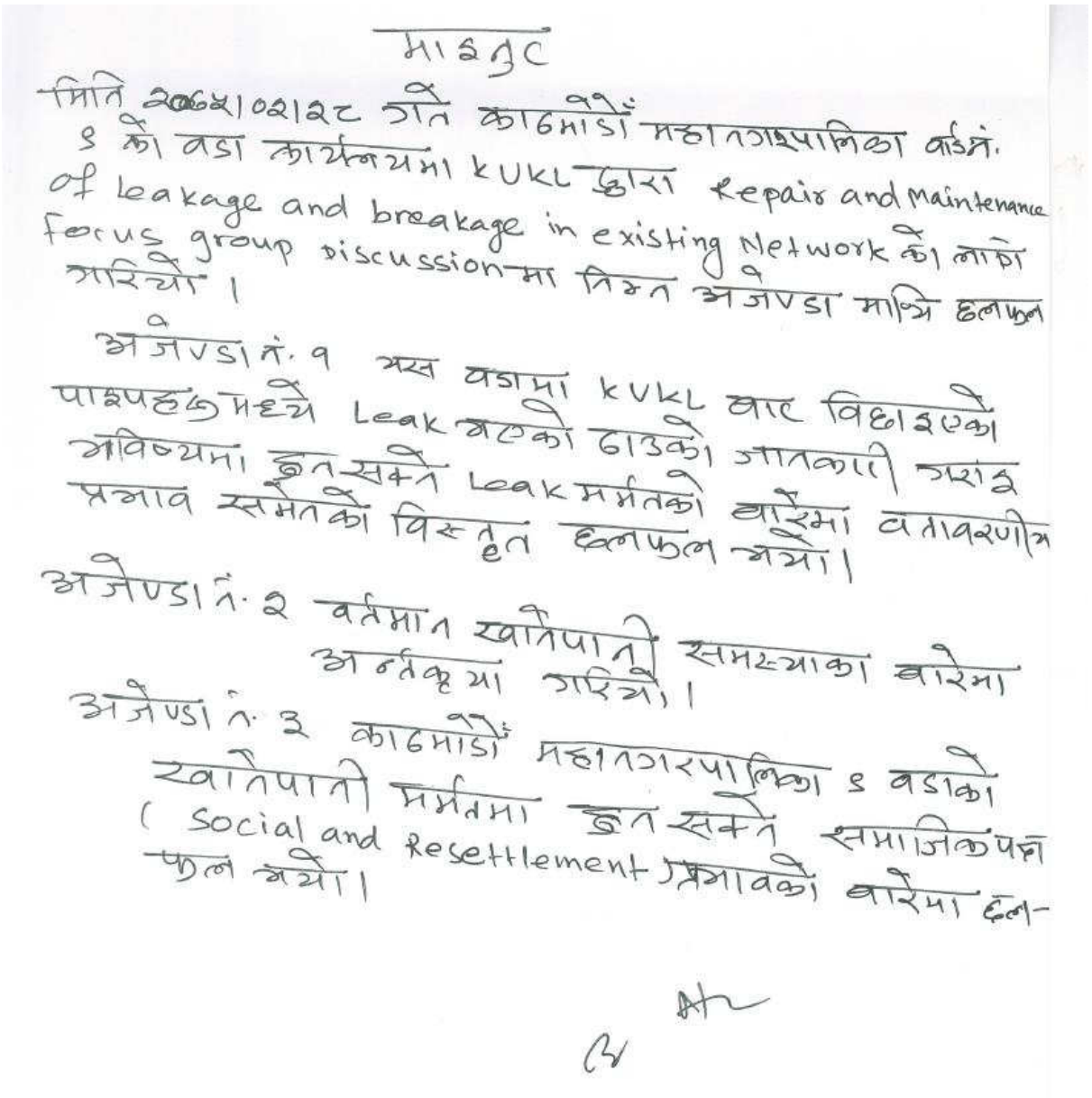
Repair & Maintenance of Leakage/breakage in existing networks: Lot-1 to Lot-3

Place of Discussion: KMC Ward No. 9, Battisputali, Ward office

Settlement:

Date: June 11th 2018

S.No.	Name	Sex	Occupation	Signature
1	Shree Ram Rai	Male	Ward member	
2	Rayana Adhikari	F	Er.	
3	Tekalal Adhikari	Male	[illegible]	
4	Ambika Khadka	F.	Ward Secr.	
5	Ganesh Kumar Shah	M.	Engineer	
6	Nirmal Tandukar	M	Engineer	
7	Umesh Acharya	M.	9 No. ward	
8	[illegible]			
9	Janak K.C	M.	"	
10	[illegible]	F	[illegible]	
10	Sriyana Bhetwal	F	Ward	
11	~~[illegible]~~		Member	
11	Sanjaya Gautam	M	Engineer	
12	Pratima Karki	F	Engineer	
13	Bimal Prasad Dhakal	M.	Consultant	
14	Tilak Mohan Bhandari	m	Consultant	



मिति २०७२।०२।२८ गते काठमाडौं महानगरपालिका वडा नं. ९ को वडा कार्यालयमा KUKL द्वारा Repair and Maintenance of leakage and breakage in existing Network को लागि focus group discussion मा निम्न अनुसार छलफल गरियो।

अजेण्डा नं. १ यस वडामा KUKL बाट विछाइएको पाइपहरूमध्ये Leak भएको ठाउँको जानकारी गराउने भविष्यमा हुन सक्ने Leak मर्मतको बारेमा वातावरणीय प्रभाव सम्बन्धमा विस्तृत छलफल भयो।

अजेण्डा नं. २ वर्तमान खानेपानी समस्याका बारेमा आदानप्रदान गरियो।

अजेण्डा नं. ३ काठमाडौं महानगरपालिका ९ वडाको खानेपानी मर्मतमा हुन सक्ने सामाजिक पक्ष (Social and Resettlement प्रभावको बारेमा छलफल भयो।

2. Meeting Held at Kathmandu Municipality Ward No. 32, Narephant Ward Office

Kathmandu Valley Water Supply Improvement Project- Additional Financing (KVWSIP-AF)

Repair & Maintenance of Leakage/breakage in existing networks during commissioning and testing of Integrated network to reduce NRW (Lot No. 1, 2, & 3)

Focus Group Discussion

Repair & Maintenance of Leakage/breakage in existing networks: Lot-1 to Lot-3
Place of Discussion: KMC, Ward No: 32 office Narephant
Settlement:
Date: June 12, 2018

S.No.	Name	Sex	Occupation	Signeture
1)				
2)				
3)				
4)				
5)				
6)				
7)				
8)				
9)				
10				
11				
12				
13				

माइन्युट

मिति २०६२।०२।२९ गते काठमाडौं महानगरपालिका वार्ड नं. ३२ को वडा कार्यालयमा KUKL द्वारा Repair and maintenance of Leakage and breakage in existing Network को लागि Focus group discussion मा निम्न अजेण्डामाथि छलफल गरियो।

अजेण्डा नं. १ यस वडामा KUKL बाट बिछाइएको पाइपहरुमा Leak भएको ठाउँको जानकारी गराई भविष्यमा हुन सक्ने Leak मर्मतको क्रममा वातावरणीय प्रभाव सं त को विस्तृत छलफल भयो।

अजेण्डा नं. २ वर्तमान खानेपानी समस्याको बारेमा अन्तर्कृया गरियो।

अजेण्डा नं. ३ काठमाडौं महानगरपालिका ३२ वडाको खानेपानी मर्मतमा हुनसक्ने सामाजिक पक्ष (Social and Resettlement) प्रभावको बारेमा छलफल भयो।

Ram

Page | 48

3. Meeting Held at Lalitpur Municipality Ward No. 1, Kupondole Ward Office

Kathmandu Valley Water Supply Improvement Project- Additional Financing (KVWSIP-AF)

Repair & Maintenance of Leakage/breakage in existing networks during commissioning and testing of Integrated network to reduce NRW (Lot No. 1, 2, & 3)

Focus Group Discussion

Repair & Maintenance of Leakage/breakage in existing networks: Lot-1 to Lot-3

Place of Discussion: Lalitpur Metropolitan city, Ward no: 1

Settlement: Bagmati Phant, Lalitpur, Kupondole

Date: June 13 2018

S.No.	Name	Sex	Occupation	Signature
1)	[illegible]		[illegible]	[illegible]
2)	[illegible]		[illegible]	[illegible]
3)	[illegible]		[illegible]	[illegible]
4)	[illegible]		[illegible]	[illegible]
5)	[illegible]		[illegible]	[illegible]
6)	[illegible]		[illegible]	[illegible]
7)	[illegible]		[illegible]	[illegible]
8)	[illegible]		[illegible]	[illegible]
9)	[illegible]		[illegible]	[illegible]
10	Sunita Kapali	F	Social mobilizer	[illegible]
11	Niraj Tamrakar	M	[illegible]	[illegible]
12	[illegible]	M	[illegible]	[illegible]
13	[illegible]	M	Consultant	[illegible]
14	[illegible]	M	Consultant	[illegible]
15	[illegible]	M	Consultant	[illegible]
16	[illegible]	M	[illegible]	[illegible]

मिति 2062/02/20 गते ललितपुर महानगरपालिकाको वडा नं. 9 को वडा कार्यालयमा KUKL द्वारा Repair and Maintenance of Leakage and breakage in existing Network को लागि Focus Group Discussion मा निम्न अजेण्डा माथि छलफल भयो।

अजेण्डा नं. 9 यस वडामा KUKL बाट विछाइएका पाइप मध्ये Leak भएको ठाउँको नापको गराई भविष्यमा हुनसक्ने Leak सम्बन्धमा वारेमा वातावरणीय प्रभाव समेतको विषय छलफल भयो।

अजेण्डा नं. 2 वर्तमान खानेपानी समस्याको वारेमा अन्तर्क्रिया गरियो।

अजेण्डा नं. 3 ललितपुर महानगरपालिका वडा नं. 9 को खानेपानी सम्बन्धमा हुन सक्ने सामाजिक पक्ष (Social and Resettlement) प्रभाव वारेमा छलफल भयो।

4. Meeting Held at Kathmandu Municipality Ward No. 3, Lainchour Ward Office

Kathmandu Valley Water Supply Improvement Project- Additional Financing (KVWSIP-AF)

Repair & Maintenance of Leakage/breakage in existing networks during commissioning and testing of Integrated network to reduce NRW (Lot No. 1, 2, & 3)

Focus Group Discussion

Repair & Maintenance of Leakage/breakage in existing networks: Lot-1 to Lot-3

Place of Discussion: ward no. 3, KMC

Settlement: Lazimpat, Maharajganj,

Date: 14, june 2018

S.No.	Name	Sex	Occupation	Signature
1	Deepak K.C.	M	ward chairman	[illegible]
2	Shanta Pahadi	F	ward secretary	[illegible]
3	Shrawsthla Pariyar	F	ward member	[illegible]
4	Sita Thapa	F	Ward member	[illegible]
5	Krishna Raj Chaulagai	M	" "	[illegible]
6	Santosh Kumar Shrestha	M	Consultant	[illegible]
7	Nirmal Tandukar	M	Consultant	[illegible]
8	Ramesh K.C	M	Branch Manager KUKL Maharajganj	[illegible]
9	Madhab Pandey	M	A.T. officer KUKL, Mrj	[illegible]
10	Raushan Kumar Shah	M	Sub-engineer KUKL Head office	[illegible]
11	Prem Thapa	M	Ward member	[illegible]
12	Bimal Pd. Dhakal	M	consultant	[illegible]

माइन्युट

मिति २०८२।२।३१ गते काठमाडौं महानगरपालिका वडा नं. २ को वडा कार्यालयमा KVKL द्वारा Repair and Maintenance of Leakage and breakage in existing Network को लागि Focus group Discussion मा विषय अजेण्डा माथि छलफल भयो।

अजेण्डा नं. १ यस वडा KVKL बाट बिछाइएको पाइपमा Leak भएको ठाउको जानकारी गराइ भविष्यमा हुनसक्ने Leak मर्मतको बारेमा वातावरणीय प्रभाव समेतको विस्तृत छलफल भयो।

अजेण्डा नं. २: वर्तमान खानेपानी समस्याको बारेमा अन्तर्कथा गरियो।

अजेण्डा नं. ३ काठमाडौं महानगरपालिका वडा नं. ३ को खानेपानी मर्मत मा हुन सक्ने सामाजिक पक्ष (Social and Resettlement) प्रभावको बारेमा छलफल भयो।

Appendix 8: Photographs of Focus Group Discussions

Ward no 9, Battisputali, Kathmandu

Ward no 32, Koteshwor, Kathmandu

Ward no 1, Kupondole, Lalitpur

Ward no 3, Lainchaur, Kathmandu

SOUTH ASIA REGIONAL DEPARTMENT
SAFEGUARDS INFORMATION AND COMMENTS LOG FOR SAUW PROJECT IEE

Project:	NEP: Kathmandu Valley Water Supply Improvement Project – Additional Financing		
Loan No.:	3255	**Package No.:** KUKL/DNI/W/02/24 Repair and Maintenance of Leakage / Breakage in Existing Network During Commissioning and Testing of Integrated Network to Reduce NRW	
Components:	1. Repair of valves (gland packing, nuts and spindles); 2. Replacement of valves; 3. Repair of leakages in pipe joints; 4. Repair of leakages/cracks/holes on pipes; and 5. Repair of leakages from house connections.		
Contract Type:	NCB – detailed engineering design completed and basis of Technical Specifications		
Date of IEE:	July 2018		

Draft IEE	**Updated/Revised IEE**	**Others**
	A draft IEE during the loan processing for Loan 3255-NEP: KVWSIP-Additional Financing was prepared and disclosed. **Action/s required:** Please confirm by specifying in the IEE (under review) is to be considered as the "Final IEE". Also confirm that this IEE is based on detailed engineering design and no major/significant design change or alignment will be considered during implementation.	Take note that the draft IEE dated February 2015 prepared and disclosed during the loan processing mentions about DNI 7 and DNI 8 that do not have package numbers yet, but pertains to works on the replacement of existing and dilapidated networks. (See Table 1 on page 6 of the draft IEE dated February 2015. Link: https://www.adb.org/sites/default/files/project-document/154589/34304-044-iee-01.pdf)

	Section	**Status**		**Comments/Remarks**
1.	Environmental assessment has been satisfactorily conducted based on ADB REA Checklist and scoping checklist.[1]	**Yes**	**No**	KVWSIP-AF is Cat B project. IEE is required. Draft IEE was prepared during project preparation in 2015. **Action/s required:** IEE to be rewritten/reformatted following the format and outline of the draft IEE approved in 2015. Highlight the revisions/changes in the IEE to facilitate review.
		X		
2.	EIA/IEE/envi due diligence based on project components and detailed engineering design?	**Yes**	**No**	Section II (Description of the Project) provides a tabulation (Table 2) of the salient features of the subproject. However, this table does not include technical information on the subproject components and maps showing the locations of these components. **Action/s required:** (i) Confirm that no asbestos cement pipe is present in the existing network. (ii) Provide more information in Table 2 based on detailed engineering
			Information is not clear to provide status	

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

	Section	Status		Comments/Remarks
				design **consistent with the works as specified in the bid and contract documents**. (iii) Include a table showing chainage-wise information for the entire length of water supply alignments to be rehabilitated. Use the chainage/sections and include the following information: - Length - Diameter - Width required for excavation - Width of available ROW - Vegetation to be cleared? (Y/N) - Number of trees to be cut - Utilities to be shifted - Area for materials storage - Amount of excess materials to be disposed (iv) Include maps showing the alignments. (v) Include estimate or calculation of quantity of old pipes and fittings to be replaced (both PVC and metallic pipes). (vi) Include information on how these old pipes and fittings will be disposed (Please take note of the proper disposal of these old pipes and fittings) (vii) Include location and photographs of disposal sites for other wastes such as spoils and construction-related wastes/debris. (viii) Provide specific assessment based on the information being asked in (i) to (vii) above.
3.	Statutory Requirements[2]	???	Forest Clearance	Package-specific information not provided. **Action/s required:** Specify all statutory clearances and no-objection letters to be obtained for the package. Provide status of application. If already obtained, attach as appendix to the IEE.
		???	No Objection Certificate	
		???	Site Location Clearance	
		???	Environmental Compliance Certificate	
		???	Permit to Construct (or equivalent)	
		???	Permit to Operate (or equivalent)	
		???	Others	
5.	Policy, legal, and administrative framework	Adequate	Not Adequate	The national policies and regulations are discussed. However, there is no discussion as to the status of compliance with these regulations. **Action/s required:** Please provide information on status of environmental clearances required for each component. If issued, please attach as appendix to the IEE.
			X	
		EIA/IEE/envi due diligence included discussion on:		
		???	National regulation/law on EIA	
		???	Environmental agency	

[2] Include date accomplished or obtained, if applicable

	Section	Status				Comments/Remarks
		none	Relevant international environmental agreements			No discussion.
		???	Environmental standards (IFC's EHS Guidelines)			No discussion on ADB SPS requirement on internationally-accepted community and occupational health and safety (H&S) practices (as required by ADB SPS). **Action/s required:** Apart from following local regulations on health and safety, include ADB SPS requirements and highlight contractor's responsibilities on following internationally recognized environment and community health and safety guidelines. Specify contractor's responsibilities on preparing site-specific EMP, including H&S plan
6.	Anticipated environmental impacts and mitigation measures	EIA/IEE/envi due diligence satisfactorily discussed impacts and risks on:		Mitigation measures provided? Yes	Mitigation measures provided? No	Discussion on anticipated environmental impacts and mitigation measures is included as Section IV. **Action/s required:** Rewrite and reformat this section similar to the approved and disclosed draft IEE of February 2015.
			Biodiversity conservation		n/a	Endangered species and habitats not present in subproject area.
			Pollution prevention and abatement	X		Section IV provides impacts and measures related to pollution prevention and abatement.
			Health and safety	X		Section IV provides occupational health and safety measures. It also provides community health and safety measures in various community-related impacts discussed in the section during construction and operation stages.
		???	Physical cultural resources (PCR)	???		The draft IEE mentions that no PCRs will be impacted by the subproject. The draft IEE of February 2015 mentions some sections of pipeline to be rehabilitated pass through near UNESCO historical sites (see para 93 and 110 of the February 2015 draft IEE). **Action/s required:** Confirm that the alignments under the subproject do not include this specific alignment mentioned in the February 2015 draft IEE.
		X	Cumulative impacts			No mitigation measures required. **Action/s required:** There are no other on-going or planned projects that may cause negative cumulative impacts.

	Section	Status			Comments/Remarks
			Transboundary impacts		Not applicable
7.	Impacts from Associated Facilities[3]	Addressed	Not Addressed	Not applicable	No associated facilities. The subproject/package is relatively small-scale in nature to have potential transboundary impacts.
				X	
8.	Analysis of Alternatives	**Yes**	**No**		Not applicable. This is Category B. Alternatives analyses related to alignment/sites and designs were conducted as part of the preliminary design stage.
		n/a			
9.	EMP budget included	**Yes**	**No**		Table 4 (Monitoring Costs) includes the budget for EMP implementation amounting to 900,000. However, no indication if the figure is in local currency. **Action/s required:** Please confirm currency and that these costs are included in bid and contract documents. Confirm The bid documents include BOQ item (provisional sum or lump sum?) for items related to EMP implementation.
		X			
10.	EMP implementation integrated in PAM, and in bid and contract documents	**Yes**	**No**		No discussion in the IEE. **Action/s required:** Confirm in IEE that EMP is included in the bid and contract documents. PID should ensure the contractor is given a safeguards induction prior to mobilization.
		???			
11.	Consultation and Participation	**Yes**	**No**		There is no discussion on the results of consultations made. However, Appendix 7 shows the minutes of meetings held under the project. **Action/s required:** (i) Include discussion of the results of consultations in the main body of the IEE. Provide more information - who conducted the consultations, how many participants, what are the topics presented and what are the feedback, comments, issues raised during the consultation/s.; and (ii) Provide translation in the English language of the minutes of meetings in Appendix 7, including gender of some participants.
		???			
12.	Grievance Redress Mechanism	**Yes**	**No**		GRM mechanism included in IEE.
		X			

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

	Section	Status		Comments/Remarks
				Action/s required: Attach as appendix in the IEE a copy of the notification of GRC members at the PID level.
		Description of GRM		Included in IEE. This is being adopted in the ongoing implementation of the project.
		Identification of GRC members		Included in the IEE and active in the ongoing implementation of the project. **Action/s required:** Confirm capacity building of the GRC members by the PID and consultants to ensure they are capable to address project-related complaints and grievances.
13.	Disclosure		Endorsement to disclose on ADB website	Pending. **Action/s required:** ADB will disclose draft and final IEE upon review and confirmation that these satisfactorily meet ADB SPS requirements
			Disclosed on project website	Pending. **Action/s required:** This will be requested when the IEE has been cleared by ADB.
			Relevant information available to stakeholders and affected people in language and form they understand	Pending. **Action/s required:** Information sharing will be continued, recorded, and reported in the monitoring report during implementation.
14.	Mobilized PMU Environment Officer	**Yes** X	**No**	The project has an Environment Officer assigned in PID (or PMU?). **Action/s required:** (i) Please include information in the IEE that environment officer has been assigned; and (ii) Please confirm if the "PID" unit has been renamed as "PMU". Or if these two are different units/groups, please explain the roles of each.
15.	Mobilized PIU Environment Specialist	**Yes**	**No**	Not applicable.
16.	Mobilized MDSC Environment Specialist	**Yes** ???	**No**	**Action/s required:** Please include information if DSC has been assigned/mobilized.
17.	Confirm bid and contract documents and/or EMP include requirement for the contractor to appoint EHS supervisor and/or nodal person for environmental safeguards	**Yes** ???	**No**	No information provided. **Action/s required:** Confirm that this requirement is in the bid and contract documents.
18.		Yes	No	Not applicable.

	Section	Status		Comments/Remarks
	If contract awarded already, confirm contractor's appointment of EHS supervisor and/or nodal person for environmental safeguards			
19.	Awareness training on compliance to safeguard requirements	**Yes** ???	**No**	The draft IEE included indicative training program. **Action/s required:** Include detailed training program to be provided by the XXX. Indicate who is main responsible for the trainings. Clarify if this is DSC's Environment Expert task. Include the environmental training program with timeline, estimated budget and topics. PMU/PID review and agree, and ensure this is delivered as planned.
20.	Monitoring and Reporting	**Yes** ???	**No**	**Action/s required:** Please clarify the role of "PMU" and if this unit/group is the same as the "PID". If different units/groups, please explain the roles of each.
21.	Others/Remarks	**Overall action required:** The updated IEE needs to be further revised to: (i) include compliance with the above-mentioned specific actions required; (ii) include categorization assessment; and (iii) follow the format and outline of the draft IEE approved in 2015. **Recommendation/s:** (i) Clearance and disclosure of the IEE covering **Package No.:** KUKL/DNI/W/02/24 pending until above missing information to meet ADB SPS requirements are provided in the IEE.		

Prepared by: Miguel Diangan, Jr. ADB Environment Consultant, Contract No. 141840-S22361

Noted and Checked By: Zarah Pilapil, ADB SAUW Safeguards Officer
Ninette Pajarillaga, ADB SAUW Environment Specialist

Documents/References:
1. IEE Sent by Vivian Castro (05 September 2018)
2. Draft IEE dated February 2015, prepared during ADB loan approval. Link: https://www.adb.org/sites/default/files/project-document/154589/34304-044-iee-01.pdf)