DRAFT ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

BAGTHALA-KALINGA ELECTRICITY DISTRIBUTION LINE SUBPROJECT

Bajhang District, Sudurpaschim Province

NEPAL ELECTRICITY AUTHORITY

DISTRIBUTION AND CONSUMER SERVICE DIRECTORATE

DISTRIBUTION SYSTEM UPGRADE AND EXPANSION PROJECT (DSUEP)

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NEPAL

AUGUST 2022

DATE	REVISION	PREPARED	APPROVED

"This Environmental and Social management Plan is a document of the Proponent. The views expressed herein do not necessarily represent those of

EIB’s Board of Directors, Management, or Staff, and may be preliminary in nature.”

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ACRONYMS AND ABBREVIATIONS

AIS	Air Insulated Substation
CBOs	Community Based Organizations
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CPA	Core Project Area
CSC	Construction Supervision Consultants
DCSD	Distribution and Consumer Service Directorate
DD	Data Deficient
DDR	Due Diligence Report
DHM	Department of Hydrology and Meteorology
DoS	Department of Survey
DSUEP	Distribution System Upgrade and Expansion Project
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EIB	European Investment Bank
EMF	Electromagnetic Fields
EPA	Environment Protection Act
EPR	Environment Protection Regulations
ESIA	Environmental and Social Impact Assessment
ESM	Environmental and Social Monitoring
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESMU	Environment and Social Management Unit
ESP	Environment and Social Policy
ESS	Environmental and Social Standards
EU	European Union
GHG	Green House Gas
GoN	Government of Nepal
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
IEE	Initial Environmental Examination
IUCN	International Union for Conservation of Nature and Natural Resources
LC	Least Concern
LPG	Liquid Petroleum Gas
MoEWRI	Ministry of Energy, Water Resources and Irrigation
NEA	Nepal Electricity Authority
NEAEC	NEA Engineering Company
OHS	Occupational Health and Safety
PIU	Project Implementation Unit
PPE	Personal Protective Equipment
SPA	Surrounding Project Area
SWM	Solid Waste Management

WEIGHT AND MEASURES

%	Percent/ Percentage	LV	Low Voltage
cum	Cubic Meter	m	Meter
dB	Decibel	amsl	Average Mean Sea Level
g	Gram	mm	Millimeter
ha	Hectare	MVA	Mega Volt Ampere
Kg	Kilogram	MW	Megawatt
Km	Kilometer	NRs.	Nepalese Rupees
kV	Kilovolt	^{o}C	Degree Celsius
kWh	Kilo Watt Hour	sq.m.	Square Meter
ltr	Liter		

EXECUTIVE SUMMARY

As required by the Environmental and Social Management Framework (ESMF) of DSUEP for "Category III" Subprojects, this Environmental and Social Management Plan (ESMP) has been prepared for Bagthala-Kalinga Electricity Distribution Line Subproject. This ESMP documents existing baseline conditions, concerns of local stakeholders, and recommends environmental and social management measures, monitoring and reporting requirements for the Subproject components (i.e., construction of 33/11kV distribution line and 33/11kV substation of capacity 3MVA) during the preconstruction, construction and operational phases of the Subproject.

The primary environmental and social issues identified from the study are,

i. The substation land belongs to Government and is managed by Bungal Municipality.
ii. The substation land lies in ridge part of mountain while distribution line passes through cultivated, barren land, RoW of access road, and water crossings.
iii. Additional volume of 16812cum of spoil will be necessary for filling the backside of retaining boundary wall in substation area.
iv. During construction, issues of dust, noise and solid waste will arise but their impact is expected to be minimal.
v. There are no significant biological issues within the Subproject footprint area.
vi. The crop might get damaged from the construction activity along the distribution line.
vii. *Nandadevi Devil Spirit Worshipping Place* lies within the edge of Subproject footprint area will be affected.

The primary mitigation measures proposed for this Subproject are,

i. Local people shall be given priority for employment and local market shall be preferred to purchase construction materials.
ii. Boundary wall, retaining wall will be constructed at substation boundary, compaction of spoil, adequate drainage system and sediment control traps and ditches will be constructed for mitigating unanticipated erosion issues towards downward side.
iii. Income restoration activities (skill development training) along with additional assistance will be provided to the users cultivating the land.
iv. Advance notice of three month will be provided to users' to harvest their crops.
v. Loss compensation of standing crops will be provided based on market rate.
vi. *Nandadevi Devil Spirit Worshipping Place* lies within the edge of Subproject footprint area will be avoided while demarcation/fencing of substation boundary.
vii. Avoidance of child labor, provision of equal wages for men and women, and priority to people from socially backward community for employment are advised.
viii. Preparation and execution of Environmental, health and safety plan by the contractor is recommended to address occupational hazard and safety related issues.
ix. Use of insulation, guarding, grounding, electrical protective devices, and industry-standard safe work practices are advised.

NRs. 26,57,215.00 is estimated to implement associated E&S mitigation measures and monitoring activities. This ESMP along with DDR is considered sufficient to meet the environmental and social requirements for the Subproject at present design conditions.

1. INTRODUCTION

1.1 Project Background

The proposed Distribution System Upgrade and Expansion Project (DSUEP) is expected to enhance and expand the electricity distribution system to improve the reliability (voltage level and reduction in power loss) and coverage of electricity supply in the Sudhurpaschim, Karnali and Lumbini Provinces. Upgradation of system efficiency and expansion of coverage area will improve quality of life in the region, enhance economic activities, and reduce dependency on petroleum and fuelwood. DSUEP will expand distribution lines of 33kV and 11kV in the three provinces as part of Government of Nepal (GoN)'s program "to achieve affordable electricity fulfilling the demands at the local levels for all the households by 2022".

There are various Subprojects within DSUEP. The European Investment Bank (EIB) has provided loan finance to 13 Subprojects under DSUEP. Of these 13 Subprojects, based on the geographical locations and implementation cost, NEA has clustered the Subprojects. Nine Subprojects lie in six districts of Lumbini Province, and five Subprojects lie in three districts of Sudhurpaschim Province. The project will construct 13 new 33/11kV substations, and 133 km long 33kV distribution lines along with the installation of transformers.

The Bagthala-Kalinga Electricity Distribution Line Subproject (hereafter referred to as "the Subproject") is one among the 13 Subprojects being constructed under DSUEP. The Subproject is located in Bajhang district approximately 877Km from Kathmandu through Prithvi Highway, Narayanghat-Mugling Highway, East-West Highway, Mahakali Highway, Khodpe-Bajhang Feeder Road and village road in far-west region of Nepal.

1.2 Scope of ESMP

Within the framework of Environmental and Social Management Framework (ESMF) of DSUEP, the scope of ESMP is to identify environmental and social issues (including potential impact of the Subproject), recommend measures for environmental and social management, and recommend monitoring and reporting requirements for the Subproject.

Specifically, the construction of 33/11kV substation (including guard house, staff quarter, office building, control building inner service road & drainages facilities, storage yards) is within the scope of ESMP. The scope also includes construction of 33kV distribution line for this Subproject.

1.3 Objectives of ESMP

In accordance with the EIBs' safeguard standards and GoN's legislative requirements, the objective of the ESMP is to recommend a structured list of actions to maximize the positive impacts and avoid/minimize the negative impacts of the Subproject. The objectives of this ESMP are to;

- Document the indicators of existing physical, biological, and socio-economic environmental components of the Subproject impact area.
- Document the concern of local stakeholders and address them as appropriate.

- Identify, predict, and assess the potential adverse and beneficial environmental impacts of the Subproject during preconstruction, construction, operation and maintenance phases.
- Recommend environmental and social mitigation measures to enhance positive impacts and avoid/minimize negative impacts of the Subproject.
- Recommend monitoring plan, institutional arrangement, and suggest capacity building activities for effective implementation of ESMP.

1.4 Description of Subproject

Brief of the general and technical features of the Subproject are given in the following table.

Table 1-1: Technical Description of the Proposed Project

Description	Features
Proponent	Nepal Electricity Authority
Project	Distribution System Upgrade and Expansion Project
Sub Project	Bagthala - Kalinga Electricity Distribution Line Subproject
Funding Agency	EIB
Project Location	Bungal Municipality, Bajhang District, Sudurpaschim Province
Distribution Line	
33/11kV Line Starting Point	Tapped from 33/11kV DL at Bungal - 5, Donek, Bajhang
33/11kV Line End Point	Bungal Substation (Proposed) at Bungal - 5, Bajhang
System Voltage	33kV
Max, Min System Voltage	36, 30 kV
Climatic Condition	Wind Speed: As per IS 802-1-1 Maximum Ambient Temperature: 40 °C Altitude (Min, Max): 1140, 1230 amsl
Length of Line	0.51 km
Right of way	6 m
Number of Circuit	2, Loop in Loop Out
Conductor	ACSR Dog
Line Capacity/Thermal Limit	13.4 MW (Dog) at 0.9 power factor
Type of Poles	Steel Tubular, 13m
Number of Poles	13 Poles
Pole Configurations	Single Pole Structures, H-Pole Structures etc. (With and Without Stay Sets)
Diameter of a Single Pole	0.22m (As per IS 2713-3)
Planting Depth of	2.2 m

Description	Features
Pole	
Insulators	Porcelain Disc and Pin Insulator
Substation	
Location	Bungal - 5, Bajhang Co-ordinate: Lat 29°35'20.16"N, Long 80°51'25.68"E Elevation: 1212 amsl
Voltage Level	33/11kV
Substation Capacity	3MVA
Number and Capacity of Transformer	1 no., 3MVA
Type of Transformer	3 Phase, ONAN, Mineral Oil
Type of Substation	AIS (33/11kV) and Indoor (11kV)
Number of 33/11kV Line Bays	2
No. of 33/11kV Transformer Bays	1
Number of 11kV Feeders	4
Approximate Area of Substation	5,604 sq.m.(0.56 ha)

Source: Feasibility Study Report, 2021

1.4.1 Location of Subproject

The Subproject lies in Bungal Municipality, wards-5, of Bajhang District in Sudurpaschim Province. The Subproject tapping area lies at latitude 29°35'10.21"N, longitude 80°51'35.61"E.

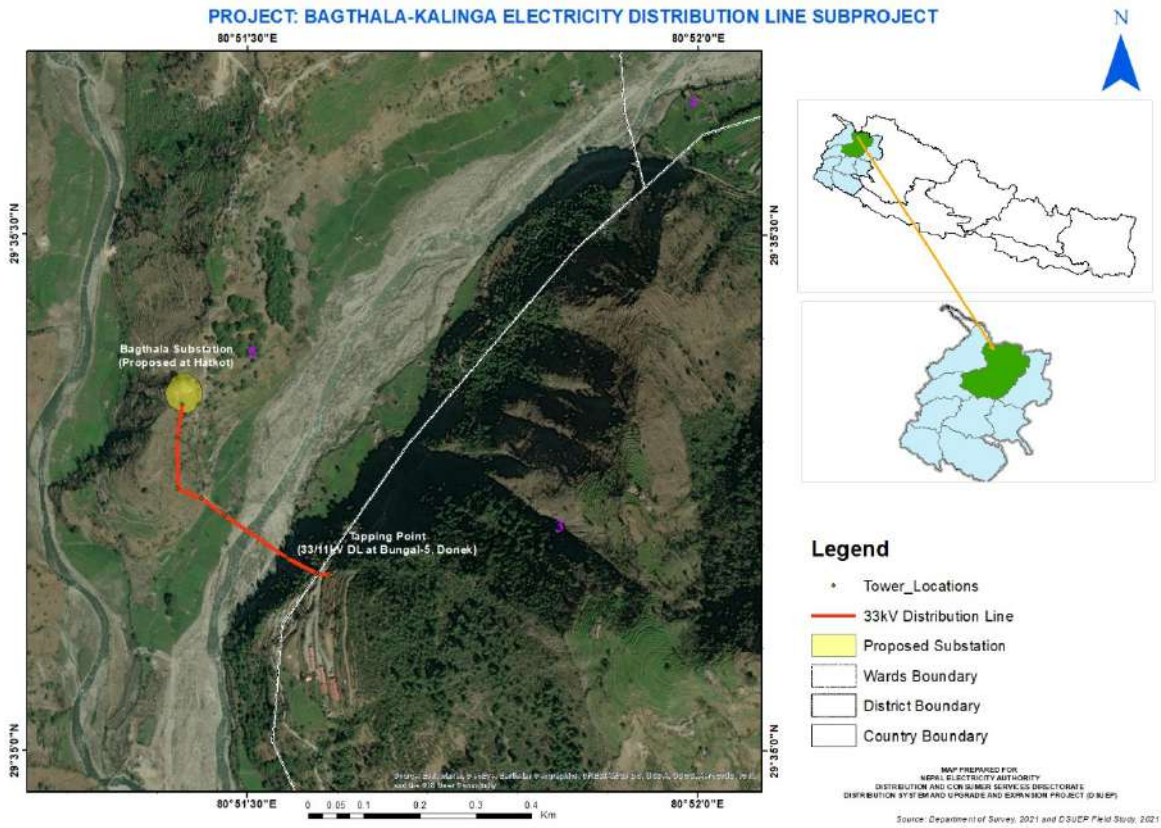


Figure 1-1: Layout and Location Map of Subproject
Source: Digital Data from Department of Survey, 2021 and Field Study, 2021

Figure 1-2: Bird-Eye View of Subproject

Source: Digital Data from Department of Survey, 2021 and Field Study, 2021

1.4.2 Accessibility to the Proposed Site

The Subproject is approximately 877Km through Prithvi Highway, East-West Highway, Mahakali Highway, Khodpe-Bajhang Feeder Road to the far-west of Kathmandu. The site is connected by Bagthala-Bichgada access road section up to Subproject area.

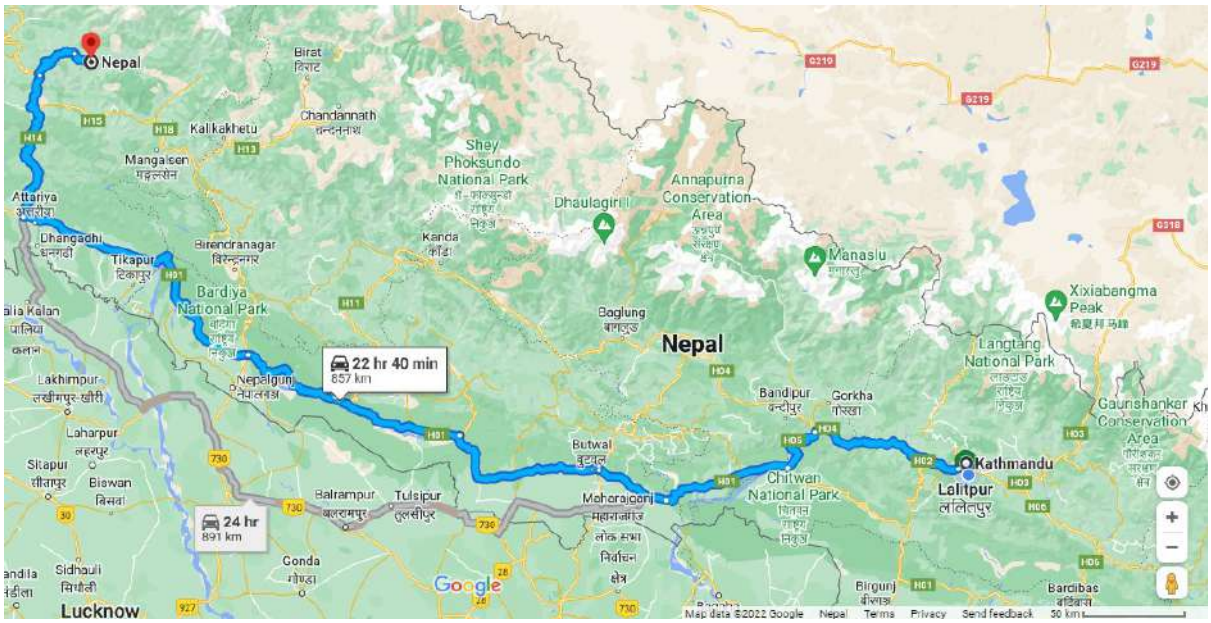


Figure 1-3: Accessibility to the Proposed Site

Source: https://maps.google.com/ on 2/14/2022

1.4.3 Subproject Components

Major component of the Subproject is 33/11 kV substation and 33kV distribution line. The structures of the Subproject are briefly described below.

A. Substation

The proposed substation 33/11 kV is of capacity 3MVA. The major component of the substation is power transformer, which is supported by the switchgear components and Civil Structures. Map, layout, pictures of substation components and other facilities are shown in ANNEX 1.

Transformers: Transformer is the major component of the substation. Power Transformers are used for the 33/11 kV substations. These transformers are mineral oil based with ONAN/ONAF (Oil Natural Air Natural/Oil Natural Air Forced) cooling mechanisms. In existing practice, the transformers used for 33/11 kV substation in Nepal are typically of 1 MVA, 3 MVA, 8 MVA and 16 MVA depending upon the load supplied by the substation. This Subproject comprises of power transformer of 3 MVA ONAF type.

Electrical Switchgear: Electrical Switchgear comprises of equipments including Circuit Breaker, Earth Switch, Current Transformer, Potential Transformers installed in the substation. Electric Switchgear facilitates power conversion.

Civil Structures: A control building will be constructed for the operation of the substation. It houses the operating station, along with battery systems. Guard House and Staff Quarter will also be constructed for smooth operation of the substation.

Switchyard, Boundary, Roads, Drainage and Essentials: The outdoor civil structure in the proposed substation includes the boundary wall, main entrance gates and Switchyard. The power transformer and components of power system are laid in the switchyard based on the prudent engineering practice. Steel structures are used to support the components as per requirements. Roads are paved within the boundary as essential for the transport of power transformer and other components. The substation location also serves as site store for storage of distribution system components.

B. 33 kV Distribution Line (DL)

The 33 kV DL serves as the pathway for feeding electricity to the proposed substation. Aluminum Conductor Steel Reinforced (ACSR) type conductors are stringed on Steel Tubular Pole from the starting point of the line. In general, the 33 kV lines comprises of the Steel Tubular Poles, Insulators, Conductors and Supporting Stays.

Steel Tubular Poles: Steel tubular poles will be installed in this subproject. 11 m and 13 m long poles shall be used depending upon the location of the poles and number of circuits used in the line. The poles to be erected, will be supported by stays wherever necessary. Insulators will be installed at cross arms to support the conductor from the poles.

Insulators: The insulators provide insulation to the poles from high voltage in the conductors. Pin type insulators will be employed for suspension whereas disc types will be employed for tension poles. Porcelain type insulators will be used owing to its dielectric strength, better compressive strength, higher resistance to degradation, suitability for extreme climate, and environment friendly characteristics over its counterparts.

Conductor: ACSR Conductor – Aluminum Conductors Steel Reinforced, conductors with stranded layers of aluminum and steel will be used for 33 kV lines. Aluminum strands carry the current whereas the steel in between provides the mechanical strength for the conductor. Typically, 100 sq. mm conductors are used in 33 kV line for this subproject, which is also known as ACSR DOG conductor.

Stay/Guy Sets: Stay Wires are used to support or provide the balancing tension to the poles. These are made up of steel materials and can be used in multiples for a single pole, depending upon the requirements.

1.4.4 Construction Work and Resource Requirement

- The substation land proposed (0.56ha) has already been acquired by NEA (ANNEX 2), while in case for distribution line passes through RoW of access road, barren, and cultivated land.

- During the implementation of Subproject, nearly 60 people will be deployed for construction works on daily basis.
- The major equipment used are: Excavator (1), Roller (1), Drilling Machine (1), and Crane (1).
- For construction power, 1 Grid Supply- 120kVA Distribution Transformer, and 2 Diesel Generators (50kVA each) as alternate supply will be required.
- The construction schedule is estimated to be 24 Months after awarding the tender process.

1.4.5 Major Construction Activities in the Subproject

i. **Preconstruction Phase:** The activities to be carried out before the construction phase are:
- Demarcation of proposed substation land area
- Receive public opinion
- Permanent clearance of the substation land
- Distribution line route selection

ii. **Construction Phase:** The activities to be carried out during the construction phase are:
- Transportation of construction materials
- Leveling of land area for the proposed substation
- Construction of substation structures
- Installation of equipment
- Pole erection work for 33 kV, 11 kV and low-tension distribution lines
- Stringing of 33 kV, 11 kV and low-tension distribution line

iii. **Operation Phase:** The activities to be carried out during the operation phase are:
- Operation of the Substation
- Maintenance of the substation, facilities and equipment
- Pruning of trees and weeds

1.5 Legal Requirement for ESMP

Based on the Environmental Screening Criteria and Social Screening Criteria defined in ESMF of DSUEP, "Environmental and Social Screening Report of Bagthala-Kalinga Electricity Distribution Line Subproject" concluded that this Subproject requires preparation of ESMP along with DDR.

1.6 Methodology and Approaches of ESMP Preparation

Following methodology and approaches were adopted to prepare the ESMP.

1. **Review of Literature:**
   The study started with the review of previous relevant reports, EIB's Environmental and Social Safeguard documents, ESMF for DSUEP and SES (NEA), feasibility study reports, and relevant social safeguard documents prepared by the NEA and consultant.
2. **Site Inspection and Field Visit:**
   After approval of inception and screening report, ESMP study team had visited the site (refer to **ANNEX 3** for field visit photographs) from 2078/04/32 to 2078/05/03 (16-19 August 2021). The necessary baseline data/information of physical, biological, socio-economic, and cultural environment was collected

through site observation, testing (air/noise/water), walk-through survey, consultative meeting/discussion with concerned stakeholders within the Subproject footprint area.

3. Stakeholder Identification:

Prior to stakeholder consultation, stakeholder identification and analysis was done. The identified stakeholders are categorized in three groups **(Figure 1-4)**.

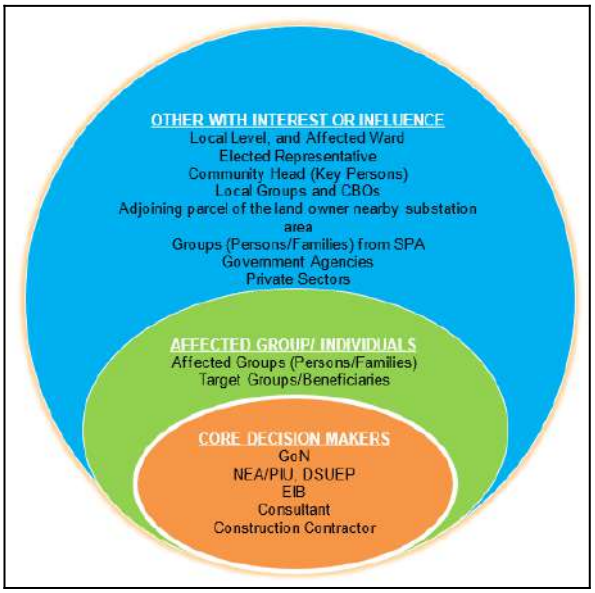


Figure 1-4: Identified Stakeholder from Mapping Process[1]

4. Public Consultation:

Local level stakeholders including the people along the distribution line route were notified through a notice (**ANNEX 4**) from NEA consisting of objectives of consultation, venue, and time requesting their presence in the consultation meeting. The notice was pasted in ward office and proposed substation area. The proof of notice pasting is attached in ANNEX 5. The consultation meeting was conducted at the Hatkot, Bungal Municipality-5 on 2078/05/02 (18 August 2021). Hard copies of Subproject features and activities in Nepali language were shared at the time of consultation. Each of the components, activities and possible enviro-social issues during Subproject implementation was briefed. The views/consent, concerns, recommendations/suggestions, and demands of the participants were documented in the form of minutes. The summary of consultation meeting minutes is given in table below and the copy of minutes is attached in ANNEX 6.

Table 1-2: Summary of Issues, Comments and Suggestions Received

Date	Location	Participants	Issues, Comments and Suggestions Received
207	**Bungal Mun. - 05,**	Stakeholders Female: 1	There will be no issues while using land for the substation by the Subproject as proposed land is public and not used for grazing or other purposes

[1] *Referenced Meaningful stakeholder engagement: a joint publication of the MFI working group on environmental and social standards / Reidar Kvam, PP-19, 2019. (Retrieved from https://publications.iadb.org/publications/english/document/Meaningful_Stakeholder_Engagement_A_Joint_Publication_of_the_MFI_Working_Group_on_Environmental_and_Social_Standards_en.pdf, January 2022) for stakeholder mapping process.*

Date	Location	Participants	Issues, Comments and Suggestions Received
8-05-02 (18th August 2021)	**Hatkot**	Male: 20 Study Team:3 Total: 24	Prior to the construction of the substation, the Subproject shall have to demarcate and close its boundary area
			The installation of poles within the private land needs to be installed at the edge of the plot as far as possible.
			In case of damages or loss to crops or trees within the private land, the Subproject needs to address the loss equivalent to the owner of land.
			The tripping and voltage drop of electricity exists within the Subproject area for which it should be implemented as soon as possible to address this problem.
			Local people will be prioritized for employment opportunity based on qualification and skills
			Assurance of full support from local stakeholders during Subproject Implementation phase
			Relocation of *Nandadevi Devil Spirit Worshipping Place* adjoining to substation boundary and construction of boundary wall for Nanda-Bhawani Temple away from the Subproject area

Source: Field Study, 2021

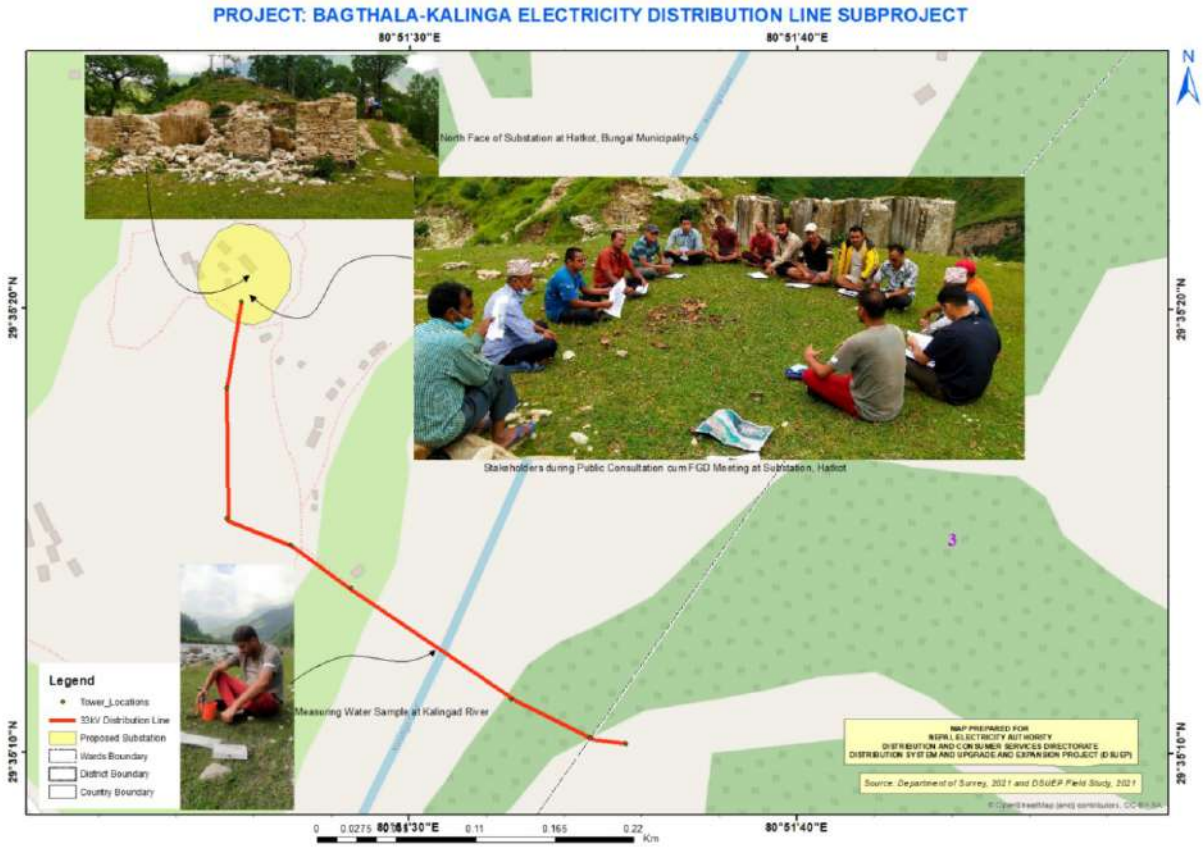


Figure 1-5: Consultation with Stakeholders and Communities in the Subproject Area

Source: Digital Data from Department of Survey, 2021, World Base Map, 2021 and Field Study, 2021

5. Third Party Verification:

The DSUEP Project had requested the ward offices of concerned local level for the verification of consultations undertaken by study team during the field visit. The ward chairperson[2] had made recommendations the DSUEP Project with letters that the needful and meaningful consultations have been undertaken during the project consultation and the views of local people are recorded as evident in the minutes annexed (**ANNEX 6**) in this report.

6. **Data Analysis:**

All potential subproject impacts on physical, biological, socio-economic and cultural resources were integrated and assessed using best practice of Multilateral Development Banks, as well as compliance with national requirements. The Geographic Information System and SW Maps were used for the field assessment and analysis of the Subproject area data and presentation of the maps in the ESMP report.

7. **Impacts Identification, Prediction and Evaluation Methods:**

After field visit, the data, and feedback were put together to identify the associated impacts, their magnitude, extent and duration which was further ranked based on matrix of National EIA Guidelines – 2050. Based on impact ranking, their respective mitigation measures were proposed.

Table 1-3: Impact Ranking Matrix as per National EIA Guidelines - 2050

Magnitude	Score	Extent	Score	Duration	Score	Significance	Score
High	60	Regional	60	Long Term	20	Insignificant Impact	<44
Moderate	20	Local	20	Medium Term	10	Significant Impact	45-74
Low	10	Site Specific	10	Short Term	05	Very Significant Impact	>75

8. **Report Preparation:**

The draft report was prepared after incorporating all the comments and suggestions obtained from local stakeholders based on field assessment, impact identification, prediction and evaluation.

9. **Disclosure of ESMP:**

The final ESMP report will be disclosed from NEA and EIB's web portal. At affected local level, ESMP reports will be shared with concerned local level (municipality) along with ward office for disclosure to the authorities and stakeholders.

1.7 Classification of Impact Area

The National Environment Impact Assessment Guidelines (GoN, 2050) has mentioned the "Core Project Area", and "Surrounding Project Area" based on proximity and magnitude of the impacts due to construction and operation of the proposed project. For the scope of this ESMP impact area has been classified as:

[2] *Ward is the bottom level unit under Government of Nepal. The Ward Chairman is an elected representative of ward responsible for planning and budgeting at ward level, collecting and maintaining data of households, maintaining records of public property, conducting child and environment-friendly programs, carrying out market monitoring and ensuring smooth supply of essential goods and services, issuing letter of recommendation and certifying various documents related to personal incidents, land, house, citizenship, etc.*

Core Project Area: Core Project Area (CPA) refers to the permanent and temporary land used for the proposed Subproject construction activities. CPA is considered the project footprint area and is highly impacted.

Surrounding Project Area: Immediate vicinity of the project footprint location of the proposed Subproject site is considered the Surrounding Project Area (SPA). SPA is considered a moderate and indirect impact area. For this Subproject, whole area of the concerned ward is defined as SPA.

2. EXISTING ENVIRONMENTAL CONDITIONS

2.1 Physical Environment

1. Topography, Geomorphology and Land Use

The Subproject area is located in the Mid-Land Group of Upper Pre-Cambrian-Late Paleozoic Region of Nepal in Bajhang district of Sudurpaschim Province. Substation is situated at 29°35'20.16"N latitude and 80°51'25.68"E longitude, with elevation of 1216 meters above sea level (amsl), while the tapping point is situated at 29°35'10.21"N, 80°51'35.61"E.

Geomorphologically, the area is situated in the ridge part of mountain region, and is made up of Lakharpatta Subgroup. Perennial rivers (Kalinga River and Sannigad River) flow towards south. These rivers surround substation from Northwest and Northeast sides, while distribution line crosses Kalinga River once near the tapping point. The proposed substation area is on barren land, while the land along the distribution line route falls in RoW of access road, water crossing and private cultivated land (ANNEX 1).

2. Geology and Seismic Risks

The Subproject region is located in Lakharpatta Formation. It consists of thin layer of pelitic slate of 0.1 cm thickness with deformed and weathered quartzite of midland group.

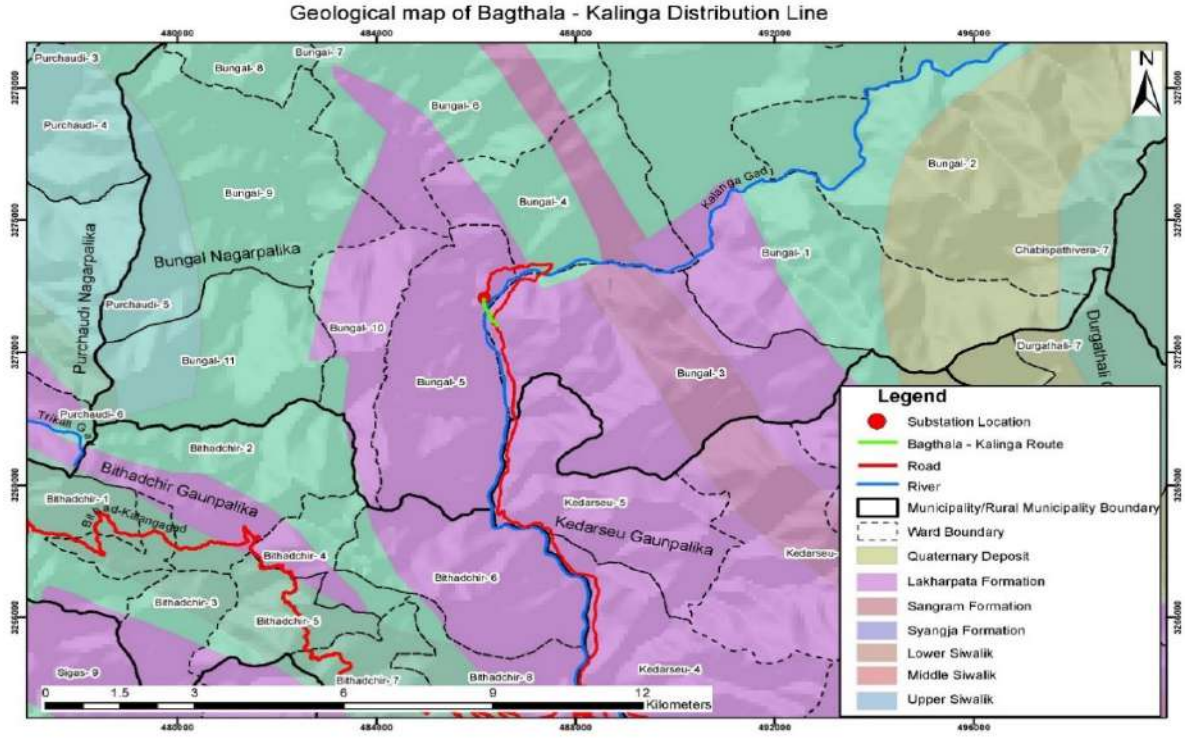


Figure 2-6: Geological Map of Proposed Project Area[3]

[3] *Department of Survey (DoS) 2020 and Field Study 2021*

The seismic hazard map shows that the horizontal seismicity coefficient of the Subproject area is 400gal, which is equal to 0.244g. The project area is located in an area more susceptible to earthquake hazard.

Figure 2-7: Seismic Hazard Map of Nepal Showing Proposed Subproject Site[4]

3. Climatic Condition

The proposed Subproject area falls in Sub-tropical climatic zone. As no meteorological station is present within the Subproject area, weather data recorded at the nearest station i.e., Chainpur Station was taken as a reference. The minimum temperature recorded is 17°C in January, while the maximum temperature recorded is 32°C, in May (DHM, 2021). The area receives the highest rainfall in August. The average rainfall in August is 205 mm.

4. Air, Noise and Water Quality and Polluting Sources

The major air pollution sources observed in the project area are vehicular emission and dust emission from roads. Noise pollution sources noted at the time of field study include vehicular movement and sound of the river. The air quality of the CPA was found within the range of national ambient air quality standard while average noise level at substation exceeded noise quality standard. Following table shows the real-time air quality and noise level recorded during field study.

Table 2-4: Ambient Air and Noise Quality Parameter Measurement

SN	Location/ Chainage	**Air Quality**[5]-*Temtop Airing-1000 PM Detector (µg/m³)*					**Noise Level -***UNI-T UT 353 Mini Sound Meter (dB)*		
		$PM_{2.5}$	***Level***	***PM 10***	***Level***	***Average Time of***	***Measured***	***Ref.***[6]	***Area***

[4] *Department of Mines and Geology, http://seismonepal.gov.np/publications, Retrieved on 2078/03/06(6/20/2021)*
[5] *National Indoor Air Quality Standard, 2009*
[6] *National Ambient Sound Quality Standard, 2012*

						Measurement			
1.	Tapping Point	*35.2*	100	49.8	200	1-hour	58.1	50	Rural Residential Area
2.	Substation	*32*		*40*			*60*		

Source: Field Visit, 2021

5. Solid Waste Management

The proposed Subproject lies in rural and semi-urban areas. The waste was found littered in front of houses, shops and business area near substation and Bungal Bazar. The waste comprised of plastics (bottles, bags and packaging), textiles, and metal cans. Organic waste was also observed in few areas. People nearby the Subproject area have been managing biodegradable waste within the household premises. They sell the recyclable waste to scrap collectors.

2.2 Biological Environment

The Subproject area lies in Sub-tropical bio-climatic zone (less than 1500 m amsl). The proposed Subproject site does not lie within any protected areas and ecologically sensitive areas. The nearest conservation area, i.e., Api-Nampa Conservation Area is located 11.14 km away from the Subproject area.

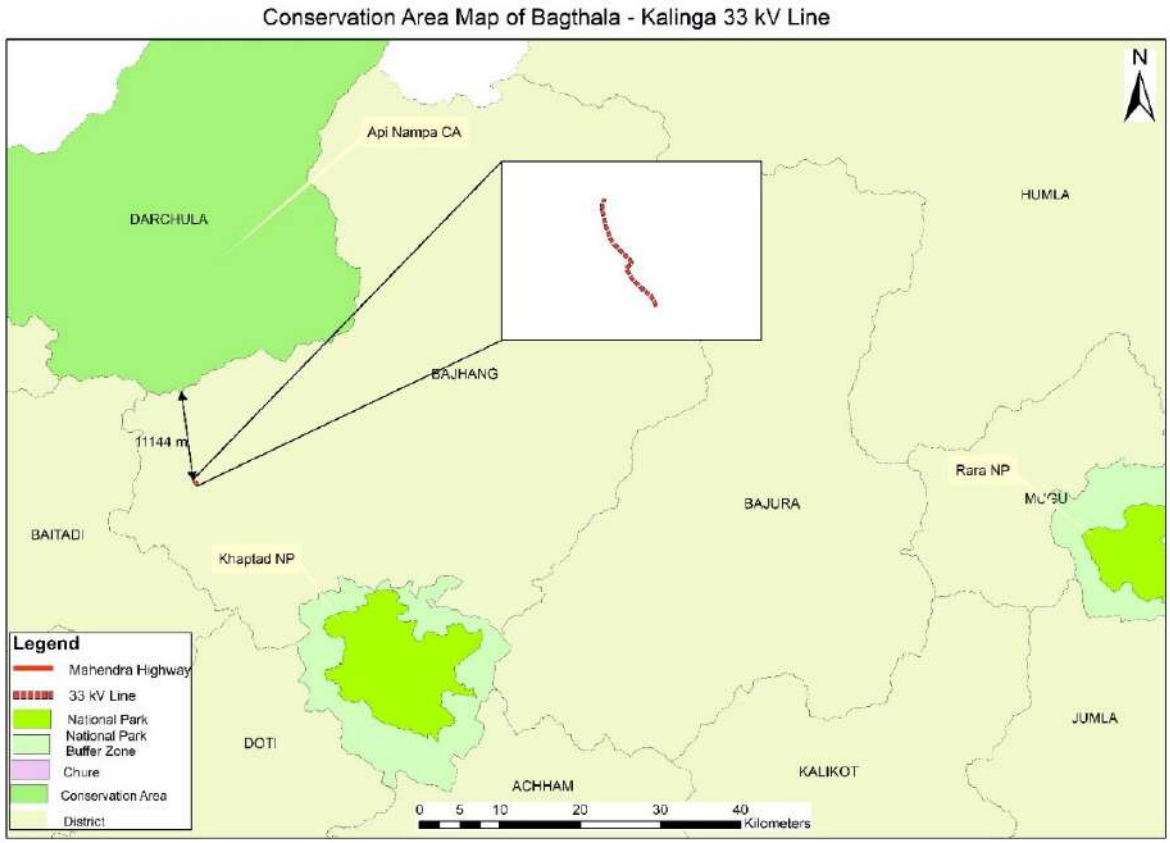


Figure 2-8: Location of Subproject area with respect to Nearby Protected Areas

Dominant tree species observed within the Subproject footprint area during the field visit is Chir Pine (*Pinus roxburghii*). Five Chir Pine tree needs to be cut

before substation ground levelling. A total of two species of fish (Asala and Jhorle) were recorded in Kalinga River. Common bird species such as Crow, Myna, Dhukur, Bhangera, Jureli, Suga and Fisto were frequently observed during field visit. Nesting places of birds were not observed in the trees that need to be felled during substation construction. Other wildlife species were not observed during the field visit.

During field visit, eight species of birds were recorded from project site, and its peripheral area.

Table 2-5: List of Birds recorded within the Project Area

S.N.	Common/ Local Name	Scientific Name	GoN	IUCN	CITES
1.	Ghar Kaag (House Crow)	*Corvus splendens*	-	LC	-
2.	Maina (Jungle Myna)	*Acridotheres fuscus*	-	LC	-
3.	Dhukur (Spotted Dove)	*Streptopelia chinensis*	-	LC	-
4.	Bhangera (House sparrow)	*Passer domesticus*	-	LC	-
5.	Jureli (Black Bulbul)	*Hypsipetes leucocephalus*	-	LC	-
6.	Suga (Rose-ringed parakeet)	*Psittacula krameri*	-	LC	-
7.	Fisto (Common tailorbird)	*Orthotomus sutorius*	-	LC	-
8.	Parewa (Piegon)	*Columba livia*	-	LC	-

Source: Field Visit, 2021
Note: Least Concern (LC)

2.3 Socio-Economic and Cultural Environment

The Subproject lies in ward 5 of Bungal Municipality. According to municipal profile of Bungal Municipality[7], the total male population is 33,224, and female population is 17,008 in Bungal Municipality while, Ward No. 5 has total population of 4,375 among which 2,182 are male, and 2,193 are female living in 696 households. Nearly 80% of the population in agro-based occupation while foreign remittance, small trade and business/enterprises and services are other economic activities in the municipality. Bungal Municipality was inhabited mostly the people of Chhetri caste with total population of 26,512. Agriculture is the mainstay of the people of the Subproject area (about 85% population is engaged in agriculture). Other occupations include small trade and business/enterprises and services. From the Subproject construction, 0.138ha of cultivated land will be affected at the time of stringing the conductor.

The major health issues reported are headache, Backache, Upper Respiratory Tract Infection (URTI), Presumed Non-Infectious Diarrhea, Fungal Infection, Gastritis, ARI/Lower Respiratory Tract Infection (LRTI), Refractive Error,

[7] *https://bungalmun.gov.np/en/node/40, Retrieved on 2077/03/31 (15/07/2021).*

Conjunctivitis, and cataract. The nearest and easily accessible basic health facility is located at 15–20 minutes walking distance at Bungal.

The proposed substation area falls under the ownership of GoN and is managed by Bungal Municipality (ANNEX 2). The construction of substation will not require the relocation of any private or public property. The proposed distribution line (DL) route passes through public as well as private registered land including cultivated land. There will be chance of loss of agricultural crops along the distribution line. However, the physical activities associated with the construction of the proposed Subproject (substation and DL) will not require land acquisition and resettlement.

3. POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS, AND MITIGATION MEASURES

This chapter identifies the possible environmental, and social impacts in the Subproject site that may arise during the construction and operation phase. All the relevant environmental and social impacts associated with this Subproject are sequentially illustrated in subsequent sub-headings along with their mitigation measures.

3.1 Beneficial Impacts

A. Construction Phase

1. Increased Economic Opportunities for Local People

Impacts

Altogether about 60 personnel (3 Engineers, 6 Supervisors, 8 Foreman, 18 Skilled Lineman/Electricians, 20 Laborers and 5 Helpers) will be deployed on normal day basis during construction phase of 33/11kV substation over the implementation period of 24 months. Working together with technical experts, local people will be able to enhance their technical skills in construction work. The construction activities require different construction materials like aggregate, sand, cement, steel, etc. which can be supplied from local market.

Impact Rating: Very Significant (Table 3-1)

Augmentation Measures

- While employing manpower, local people within the Subproject area will be given priority based on qualification and skills.
- The construction material, if available, shall be brought from the locally available legally operating market near Bungal.

B. Operation Phase

1. Enhancement in Rural Electrification

Impacts

Intermittent tripping and voltage drop problem nearby the area will be reduced. The local economy will benefit through improved reliability of electricity supply, which is a necessary condition for economic growth. Different industries within/nearby the proposed subproject area will be established. It will promote the use of new types of home appliances, use of electric motors for irrigation, and establishment of small and large industries.

Impact Rating: Very Significant (Table 3-1)

Augmentation Measures

- Proper and timely maintenance of the Substation will be done to maintain reliable power supply.

2. Reduction in Green House Gas (GHG) emissions

Impacts

Net Green House Gas (GHG) emissions resulting from the subproject area are expected to decrease as the distribution lines will improve and expand electricity supply which will trigger change in energy use pattern to electricity from GHG emitting traditional sources like (made from cow dung), firewood and timber along with Kerosene for cooking/lighting, heating and diesel for water pumping.

Impact Rating: Very Significant (Table 3-1)

Augmentation Measures

- Proper and timely maintenance of the Substation will be done to maintain reliable power supply so that people will keep continuing the use of electricity.

3.2 Potential Adverse Impacts

3.2.1 Physical Environment

A. Construction Phase

1. Impact Associated with Change in Land Use

Impacts

The Subproject will require about 0.56 ha land for the substation. The proposed substation area falls in Government Land in Bungal Municipality. The distribution line passes through the edge of barren land, cultivated land and the RoW of access road. The construction of the substation will bring permanent change in land use of the proposed substation site. Potential impacts caused by the construction of distribution line will be limited to approximately 0.22 m width of land for each pole, at the edge of cultivated lands and RoW of the access road.

Impact Rating: Significant (Table 3-1)

Mitigation/Enhancement Measures

- Steel Tubular Pole for distribution lines will be erected at the right of way of existing road without hampering traffic movement. In case of cultivated land, minimal land will be used at the edge of cultivated land for erecting the poles of diameter 0.22 m.
- Cropping calendar will be kept in consideration while erecting poles and stringing of conductors so that standing crops will not be damaged.

2. Impact Associated with Spoil & Stability Concerns

Impacts

The proposed substation land is located at the ridge of a hill and levelling of ground is necessary for the construction of the substation. After using the cut volume, a surplus of about 16812 cum spoil will be required for filling. Issues of spoil and instability during excavation work may raise concerns to the nearest private structures and cultivated land located immediately below the downward side of site in Northeast direction. For distribution lines, the excavation activity will be insignificant.

Impact Rating: Insignificant (Table 3-1)

Mitigation/Enhancement Measures

- Spoil required for filling will be purchased from the nearby authorized market.
- Appropriate civil engineering measures such as retaining wall will be constructed to avoid spills of spoil towards cultivated land towards Northeastern and Southeastern parts of substation area.
- Simultaneous water sprinkling and compaction of spoil will be done using the roller.
- Spoil will be covered with tarpaulin while transporting it from earth-borrowing areas to the substation site.
- Adequate site drainage system will be provided around stockpiled materials, campsites, and the foundation work area.

- Bioengineering measures will be adopted to bind the top soil of spoil and excavated area.
- During the installation of steel tubular poles, the base of poles will be supported by concrete and cement by using accelerating admixtures for curing cement more quickly at the bank of Kalinga River.
- In order to eliminate the possibility of accidents, pit holes dug for the installation of steel tubular poles shall not be left open.

3. Impact due to Air and Noise Pollution

Impacts

The impact on air quality during the construction period is expected to be insignificant, as site clearance, excavation, stockpiling of construction materials, waste burning at camp site and equipment installation are localized and short term. Transportation of the materials and movement of construction crews and equipment will cause minor impact on air quality. Construction-related noise will be limited to vehicular movement and inside-the-fence construction activities at substation site; construction related noise is not expected to exceed acceptable levels.

Impact Rating: Insignificant (Table 3-1)

Mitigation/Enhancement Measures

- Contractors' vehicles and equipment should meet Nepal's vehicle emissions standards.
- Dust emissions will be controlled with water sprays on earthen roads nearby settlements in substation area.
- Open burning of wastes should be strictly prohibited.
- Construction workers should use face masks at all times.
- All dust generating loads carried in open trucks should be covered.
- Contractors shall monitor noise during the construction as well as use the standard construction equipment.
- Personal Protective Equipment (PPE) such as earplugs, earmuffs, etc. will be provided to the workers in high noise areas.

4. Impact due to Solid Wastes

Impacts

The waste generated during construction within the subproject area are cement bags, iron bars, and other leftover construction materials, and waste generated in the labor camp. Biodegradable wastes generated from labor camp may give foul smell, and attract rodents. It will cause adverse impact, if not properly managed. Inorganic wastes generated during implementation shall be managed through source segregation.

Impact Rating: Insignificant (Table 3-1)

Mitigation/Enhancement Measures

- Source segregation of organic, and inorganic wastes in different storage areas or facilities in the designated location will be done.
- The biodegradable waste generated from the campsite shall be managed through constructing a ground pit, and covered by the sufficient thick layer of soil on daily basis.
- Reusable waste like debris, broken brick pieces, sand, stone, waste cement, and sand mix will be used as refills for making ground leveling.
- The packing materials used for casing components should be recyclable, and non-hazardous.

- The construction contractor shall ensure proper management of ground drainage from camps as a preventive measure against breeding places of mosquitoes, and other pests.
- Recyclable wastes like left out/non-usable reinforcement bars and packing materials shall be sent or sold to scrap vendors.
- Chemical waste generated from transformer shall be collected in leakage proof, corrosion free, specially designed container and sealed carefully.
- Effective coordination shall be done with local level government for proper waste management during construction period.

B. Operation Phase

1. Issues Related to Electric and Fire Hazard

Impacts

Employees performing servicing or maintenance of substations may be exposed to electric shock, burns and injuries from the unexpected energization or release of energy stored in the equipment.

Impact Rating: Significant (Table 3-1)

Mitigation/Enhancement Measures

- Shutdown shall be taken during maintenance work.
- Use of insulation, guarding, grounding, electrical protective devices, and safe work practices is advised.
- Boundary walls and security fences around substation are necessary to prevent unauthorized access.
- Only trained and authorized personnel shall be allowed for electrical works.
- Warning signs shall be installed.

3.2.2 Biological Environment

The proposed Subproject avoids forestland or other sensitive biodiversity areas. Hence, there will be no significant impact to biological environment because of construction of the Subproject.

A. Construction Phase

1. Loss of Habitat

Impacts

Five Chir Pine trees need to be cut before ground levelling at the proposed substation area. This will pose no major consequences to the local environment of the substation area.

Impact Rating: Insignificant (Table 3-1)

Mitigation/Enhancement Measures

- Approval from GoN needs to be taken prior to site clearance.
- Compensatory plantation in ratio of 1:10 shall be done for the trees that need felling at the construction site and hand over to Bungal Municipality authority.

B. Operation Phase

1. Bird Electrocution and Collision

The Subproject area is located in rural cum semi-urban area and there is no presence of important habitat of avian fauna. Although the electrocution can cause a risk to bird species which perch on power line infrastructures (Substation and distribution line).

Impact Rating: Insignificant (Table 3-1)

Mitigation/Enhancement Measures

- Provision of bird guards above the poles and white spirals in the conductors to improve visibility (ANNEX 1 for sample pictures).
- Connector part mechanisms must be burr-free.

3.2.3 Socio-Economic and Cultural Environment

The anticipated impacts on the socio-economic and cultural environment associated with Subproject are discussed below:

A. Construction Phase

1. Impact Associated with Transformation of Land

Impacts

The Subproject requires about 0.56 ha of land for the substation. The land is owned by GoN and managed by Bungal Municipality. The construction activities of the subproject will not involve any private land. So, there will be no land acquisition, and thus no resettlement impacts. *Nandadevi Devil Spirit Worshipping Place* lies within the edge of Subproject footprint area will be affected.

Impact Rating: Insignificant (Table 3-1)

Mitigation/Enhancement Measures

- Proper demarcation of the Substation area shall be done.
- *Nandadevi Devil Spirit Worshipping Place* lies within the edge of Subproject footprint area will be avoided while demarcation/fencing of substation boundary.
- Distribution pole of diameter 0.22 m are to be installed at the edge of cultivated land to avoid the loss of standing crops.
- Advance notice of three month will be provided to users' to harvest their crops.
- Loss compensation of standing crops will be provided based on market rate.
- Special assistance for income restoration activities will be conducted.

2. Issues Related to Child Labor and Gender

Impacts

During the Subproject construction, people will be employed on daily/monthly wages for excavation, transportation of construction materials and other construction related works. There might be discrimination on women and vulnerable groups while hiring the worker and they might be provided less wage than men. Contractors might use child labor for economic benefits. This is harmful to the child's health or physical, mental, moral or social development. There is a chance that children, woman and socially backward communities are exploited.

Impact Rating: Very significant (Table 3-1)

Mitigation/Enhancement Measures

- Provide equal wage to male and female for similar nature of work
- People from socially backward community should be given priority
- Restrict use of children below 16 years of age in labor work (or as per government and ILO guidelines).
- Provide gender friendly construction environment with separate cabins and toilet for women in the camp.
- Suitable work assignment for women.

3. Socially Undesirable Activities

The workers may use alcohol and other forms of intoxication, gambling, quarrel with locals, disrespect local culture and religion, and may promote socially undesirable activities in and around the project area.

Impact Rating: Insignificant (Table 3-1)

Mitigation/Enhancement Measures

- Organization of awareness programs on gender based violence risks for the Subproject workers.
- Restrict movement of workers out of camp after certain hours in the night time.
- Restrict use of alcohol and gambling in the camp.
- Supply water supply, daily consumable items, communication facility in the camp so as not to create additional pressure on the local services
- Orient workers to show respect to local tradition and culture;
- Prepare a code of conduct for all project staff, orient them and monitor that these are effectively followed by all;
- Assign a Community Liaison Officer (CLO) by the project to keep close and regular consultation and coordination with local communities;
- Regular monitoring of worker's behavior and take appropriate actions against rule violators.

4. Occupational Hazards and Safety

Impacts

Occupational health hazard and safety of staff is a major issue during the construction period. Primary victims are the construction workers. In addition, the pedestrian might also be injured.

Impact Rating: Very significant (Table 3-1)

Mitigation/Enhancement Measures

- Contractor shall prepare the Environmental, Health and Safety plan (ANNEX 7) and take approval from the Client before implementation. Safety officer should be employed during construction period
- All employees shall be provided with the necessary training, and safety equipment as required for their responsibilities and duties. The Contractor will adhere to labor Act 2074 and Labor Rules 2075.
- The basic facilities of drinking water, sanitation & clean resting place, canteen, and first aid are required for the campsite.
- All the workers shall have health insurance over the period of construction.
- Installation of warning signs (High Voltage, Fire Safety Signs, and Emergency Signs) as shown in ANNEX 8.
- NEA will be responsible to supervise the EHS performance of the construction Contractor, and workers health and safety.

B. Operation Phase

1. Hazards and Safety

Impacts

Employees working in the operation and maintenance of the electric components might get exposed to electric shock, electrocution, fires, and explosions.

Impact Rating: Significant (Table 3-1)

Mitigation/Enhancement Measures

- There will be the use of insulation, guarding, grounding, electrical protective devices, and industry-standard safe work practices.

- Boundary walls and / or security fences around substations to prevent unauthorized access.
- Only trained and authorized personnel will be allowed for the electrical works.
- No electric wire shall be stringed above the house.
- Security fences around the substation.
- Placement of warning signs.
- Shutdown shall be taken during work on DL route.

2. Electric and Magnetic Field Effect

Electric power distribution lines create electric and magnetic field together, referred to as electromagnetic fields (EMF). Electrical flux density declines in inverse proportion to the square of the distance and magnetic fields decline in inverse proportion to the cube of the distance; there will be no impact outside of the substation boundaries[8]. Research on the long-term effects of EMF associated with distribution lines is inconclusive with respect to health risks. As noted in the World Bank EHS guidelines for transmission and distribution systems, there is no empirical data demonstrating adverse health effects from exposure to typical EMF levels from power transmissions lines and equipment.

Impact Rating: Insignificant (Table 3-1)

[8] *E.g., at a distance of 10 meters from a single distribution line or conductor, electrical flux density drops to 1% of the field strength at a distance of 1 meter from the conductor: 1/ (10*10) = 1%. Likewise, the magnetic field drops to 0.1% of the field strength at the conductor: 1/ (10*10*10) = 0.1%.*

Table 3-6: Impact Identification and Evaluation Matrix

S.N.	Issues	Impacts	Impact Rating				
			Nature	Magnitude	Extent	Duration	Rating
3.1	**Beneficial Impacts**						
A	**Construction Phase**						
1	Increased Economic Opportunities for Local People	Altogether about 60 personnel (3 Engineers, 6 Supervisors, 8 Foreman, 18 Skilled Lineman/Electricians, 20 Laborers and 5 Helpers) will be deployed on normal day basis during construction phase of 33/11kV substation over the implementation period of 24 months. Working together with technical experts, local people will be able to enhance their technical skills in construction work. The construction activities require different construction materials like aggregate, sand, cement, steel, etc. which can be supplied from local market.	D	H (60)	L (20)	ST (05)	VSI (85)
B	**Operation Phase**						
1	Enhancement in Rural Electrification	The local economy will benefit through improved reliability of electricity supply, which is a necessary condition for economic growth.	I	H (60)	L (20)	ST (05)	VSI (85)
2	Reduction in Green House Gas (GHG) emissions	Net Green House Gas (GHG) emissions resulting from the subproject area are expected to decrease as the distribution lines will improve and expand electricity supply which will trigger change in energy use pattern to electricity	I	H (60)	L (20)	LT (20)	VSI (100)
3.2	**Adverse Impacts**						
1	**Physical Environment**						
A	**Construction Phase**						
1	Impact Associated with Change in Land Use	Landuse of 0.56 ha land for substation construction will changed permanently into built-up area while 0.22m diameter steel tubular pole installation will require negligible area of land at the RoW of access road, edge of barren or cultivated land.	D	M (20)	SS (10)	LT (20)	SI (50)
2	Impact associated with Spoil and Stability Concerns	Ground leveling is necessary for the construction of the substation. After using the cut volume, a	D	L (10)	SS (10)	ST (05)	II (25)

S.N.	Issues	Impacts	Impact Rating				
			Nature	Magnitude	Extent	Duration	Rating
		surplus of about 16812 cum spoil will be required for filling. Issues of spoil and instability during excavation work may raise concerns to the nearest private structures and cultivated land located immediately below the downward side of site in Northeast direction.					
3	Impact due to Air and Noise Pollution	Construction activities such as site clearance, ground leveling, excavation of the building foundation, spoil management work, waste burning, haphazard stockpiling of construction materials, vehicular movement will generate dust, emission and noise.	D	L (10)	SS (10)	ST (05)	II (25)
4	Impact due to Solid Wastes	The waste generated during construction within the subproject area are cement bags, iron bars, and other leftover construction materials, and waste generated in the labor camp. Biodegradable wastes generated from labor camp may give foul smell, and attract rodents	D	L (10)	SS (10)	ST (05)	II (25)
B	**Operation Phase**						
1	Issues Related to Electric and Fire Hazard	Employees performing servicing or maintenance of substations may be exposed to electric shock, burns and injuries from unexpected energization or release of energy stored in the equipment.	I	M (20)	SS (10)	LT (20)	SI (50)
1	**Biological Environment**						
A	**Construction Phase**						
1	Loss of Habitat	Five trees of Pine need clear-felling within the substation area.	D	L (10)	SS (10)	MT (10)	II (30)
B	**Operation Phase**						
1	Bird Electrocution and Collision	The Subproject area is located in rural cum semi-urban area and there is no presence of important habitat of avian fauna. Although the electrocution can cause a risk to bird species which perch on power line infrastructures (Substation and distribution line).	I	L (10)	SS (10)	LT (10)	II (30)

S.N.	Issues	Impacts	Impact Rating				
			Nature	Magnitude	Extent	Duration	Rating
1	**Socio-Economic and Cultural Environment**						
A	**Construction Phase**						
1	Impacts Associated with Transformation of Land	The Subproject requires about 0.56 ha of land for the substation. The land is owned by GoN and managed by Bungal Municipality. The construction activities of the subproject will not involve any private land. So, there will be no land acquisition, and thus no resettlement impacts. *Nandadevi Devil Spirit Worshipping Place* will be affected during demarcation/fencing of substation boundary. The crop will be damaged from Subproject construction along the distribution line.	D	M (20)	SS (10)	ST (05)	II (35)
2	Issues Related to Child Labor and Gender	Discrimination against women and vulnerable groups while hiring the workers, not paying minimum wage, and use of child labor.	D	H (60)	SS (10)	ST (05)	VSI (75)
3	Socially Undesirable Activities	The workers may use alcohol and other forms of intoxication, gambling, quarrel with locals, disrespect local culture and religion, and may promote socially undesirable activities in and around the project area.	I	L (10)	SS (10)	ST (05)	II (25)
4	Occupational Hazards and Safety	Occupational health hazard and safety of staff is a major issue during the construction period. In addition, the pedestrian might also be injured.	D	H (60)	SS (10)	ST (05)	VSI (75)
B	**Operation Phase**						
1	Hazards and Safety	Employees working in the operation and maintenance of the electric components might get exposed to electric shock, electrocution, fires, and explosions.	D	M (20)	SS (10)	LT (20)	SI (50)
2	Electric and Magnetic Field Effect	Electric power distribution lines create electric and magnetic field together, referred to as electromagnetic fields (EMF).	I	L (10)	SS (10)	LT (20)	II (40)

Note: Direct (D), Indirect(I), High (H), Moderate (M), Low (L), Regional (R), Local (L), Site Specific (SS), Long Term (LT), Medium Term (MT), Short Term (ST), Insignificant Impact (II), Significant Impact (SI), Very Significant Impact (VSI)

3.3 Management Specifications for the Construction and Operational Phases

The overall Environmental and Social Management Plan of the subproject along with mitigation and management measures is presented in table below. The ESMP will be implemented in three stages: (i) pre-construction (ii) construction, and (iii) operations and maintenance. This ESMP is living document and will be updated and modified under the supervision of Environmental and Social Management Unit (ESMU) of the Project Implementation Unit (PIU) as necessary based on field conditions, construction Contractor's performance, and stakeholders' feedback.

Table 3-7: Construction and Operational Management Specifications

Environmental Issues	Mitigation and Management Measures	Mitigation Costs (NRs.)	Institutional Responsibility	
			Implementation	Supervision
1. Beneficial Augmentation Measures				
A. Construction Phase				
1. *Increased Economic Opportunities for Local People*	• While employing manpower, local people within the Subproject area will be given priority based on qualification and skills. • The construction material, if available, shall be brought from the locally available legally operating market near Bungal.	Embedded within Contract Document	Construction Contractor	NEA/PIU (DSUEP)
B. Operation Phase				
1. *Enhancement in Rural Electrification*	• Proper and timely maintenance of the Substation will be done to maintain reliable power supply.	-	NEA Transmission Operations units and Distribution Service Center(s)	NEA
2. *Reduction in Green House Gas (GHG) emissions*	• Proper and timely maintenance of the Substation will be done to maintain reliable power supply so that people will keep continuing the use of electricity.	-	-	GoN/ MoEWRI
2. Adverse Mitigation/ Enhancement Measures				
1. Physical Environment				
A. Construction Phase				
1. *Impact Associated with Change in Land Use*	• Steel Tubular Pole for distribution lines will be erected at the right of way of existing road without hampering traffic movement. In case of cultivated land, minimal land will be used at the edge of cultivated land for erecting the poles of diameter 0.22 m. • Cropping calendar will be kept in consideration while erecting poles and stringing of conductors so that standing crops will not be damaged.	Embedded within Contract Document	Construction Contractor	NEA/PIU (DSUEP) and Bungal Municipality

Environmental Issues	Mitigation and Management Measures	Mitigation Costs (NRs.)	Institutional Responsibility	
			Implementation	Supervision
2. *Impact Associated with Spoil & Stability Concerns*	• Spoil required for filling will be purchased from the nearby authorized market. • Appropriate civil engineering measures such as retaining wall will be constructed to avoid spills of spoil towards cultivated land towards Northeastern and Southeastern parts of substation area. • Simultaneous water sprinkling and compaction of spoil will be done using the roller. • Spoil will be covered with tarpaulin while transporting it from earth-borrowing areas to the substation site. • Adequate site drainage system will be provided around stockpiled materials, campsites, and the foundation work area. • Bioengineering measures will be adopted to bind the top soil of spoil and excavated area. • During the installation of steel tubular poles, the base of poles will be supported by concrete and cement by using accelerating admixtures for curing cement more quickly at the bank of Kalinga River. • In order to eliminate the possibility of accidents, pit holes dug for the installation of steel tubular poles shall not be left open.	Embedded within Contract Document	Construction Contractor	NEA/PIU (DSUEP) and Bungal Municipality
3. *Impact due to Air and Noise Pollution*	• Contractors' vehicles and equipment should meet Nepal's vehicle emissions standards. • Dust emissions will be controlled with water sprays on earthen roads nearby settlements in substation area. • Open burning of wastes should be strictly prohibited. • Construction workers should use face masks at all times. • All dust generating loads carried in open trucks should be covered. • Contractors shall monitor noise during the construction as well as use the standard construction equipment. • Personal Protective Equipment (PPE) such as earplugs, earmuffs, etc. will be provided to the workers in high noise areas.	* Air Quality Monitoring- 1,50,000.00 * Sprinkling Water (Dust Management) 3,00,000.00 * Noise Level Monitoring: 50,000.00 * Provision of PPE and other cost will be	Construction Contractor	NEA/PIU (DSUEP)

Environmental Issues	Mitigation and Management Measures	Mitigation Costs (NRs.)	Institutional Responsibility	
			Implementation	Supervision
		embedded within Contract Document		
4. *Impact due to Solid Wastes*	• Source segregation of organic, and inorganic wastes in different storage areas or facilities in the designated location will be done. • The biodegradable waste generated from the campsite shall be managed through constructing a ground pit, and covered by the sufficient thick layer of soil on daily basis. • Reusable waste like debris, broken brick pieces, sand, stone, waste cement, and sand mix will be used as refills for making ground leveling. • The packing materials used for casing components should be recyclable, and non-hazardous. • The construction contractor shall ensure proper management of ground drainage from camps as a preventive measure against breeding places of mosquitoes, and other pests. • Recyclable wastes like left out/non-usable reinforcement bars and packing materials shall be sent or sold to scrap vendors. • Chemical waste generated from transformer shall be collected in leakage proof, corrosion free, and specially designed container and sealed carefully. • Effective coordination shall be done with local level government for proper waste management during construction period.	Solid Wastes Management: 1,00,000.00 and other cost will be embedded within Contract Document	Construction Contractor	NEA/PIU (DSUEP) and Bungal Municipality
B. Operation Phase				
1. *Issues Related to Electric and Fire Hazard*	• Shutdown shall be taken during maintenance work. • Use of insulation, guarding, grounding, electrical protective devices, and safe work practices is advised. • Boundary walls and security fences around substation are recommended to prevent unauthorized access. • Only trained and authorized personnel shall be allowed for electrical works.	-	NEA Transmission Operations units and Distribution Service	NEA

Environmental Issues	Mitigation and Management Measures	Mitigation Costs (NRs.)	Institutional Responsibility	
			Implementation	**Supervision**
	• Warning signs shall be installed.		Center(s)	
2. Biological Environment				
A. Construction Phase				
1. *Loss of Habitat*	• Compensatory plantation shall be done for the trees that need felling at the construction site.	-	Construction Contractor	NEA/PIU (DSUEP)
B. Operation Phase				
1. *Bird Electrocution and Collision*	• Provision of bird guards above the poles and white spirals in the conductors to improve visibility (**ANNEX 1**). • Connector part mechanisms must be burr-free.	Embedded within Contract Document	NEA Transmission Operations units and Distribution Service Center(s)	NEA
3. Socio-Economic and Cultural Environment				
A. Construction Phase				
1. Impact Associated with Transformation of Land	• Proper demarcation of the Substation area shall be done. • *Nandadevi Devil Spirit Worshipping Place* lies within the edge of Subproject footprint area will be avoided while demarcation/fencing of substation boundary. • Distribution pole of diameter 0.22 m are to be installed at the edge of cultivated land to avoid the loss of standing crops. • Advance notice of three month will be provided to users' to harvest their crops. • Loss compensation of standing crops will be provided based on market rate. • Special assistance for income restoration activities will be conducted.	Other measure's cost will be Embedded within Contract Document	Construction Contractor	NEA/PIU (DSUEP) and Bungal Municipality
2. Issues Related to Child Labor	• Provide equal wage to male and female for similar nature of work	Embedded within Contract	Construction	NEA/PIU (DSUEP)

Environmental Issues	Mitigation and Management Measures	Mitigation Costs (NRs.)	Institutional Responsibility	
			Implementation	Supervision
and Gender	• People from socially backward community should be given priority • Restrict use of children below 16 years of age in labor work (or as per government and ILO guidelines). • Provide gender friendly construction environment with separate cabins and toilet for women in the camp. • Suitable work assignment for women.	Document	Contractor	and Bungal Municipality
3. *Socially Undesirable Activities*	• Organization of awareness programs on gender based violence risks for the Subproject workers. • Restrict movement of workers out of camp after certain hours in the night time. • Restrict use of alcohol and gambling in the camp. • Supply water supply, daily consumable items, communication facility in the camp so as not to create additional pressure on the local services • Orient workers to show respect to local tradition and culture; • Prepare a code of conduct for all project staff, orient them and monitor that these are effectively followed by all; • Assign a Community Liaison Officer (CLO) by the project to keep close and regular consultation and coordination with local communities; • Regular monitoring of worker's behavior and take appropriate actions against rule violators.	-	Construction Contractor	NEA/PIU (DSUEP)
4. *Occupational Hazards and Safety*	• Contractor shall prepare the Environmental, Health and Safety plan ANNEX 7and take approval from the Client before implementation. Safety officer should be employed during construction period • All employees shall be provided with the necessary training, and safety equipment as required for their responsibilities and duties. The Contractor will adhere to labor Act 2074 and Labor Rules 2075. • The basic facilities of drinking water, sanitation & clean resting	* EHS Awareness Trainings: 1,50,000.00 and other cost will be embedded within	Construction Contractor	NEA/PIU (DSUEP)

Environmental Issues	Mitigation and Management Measures	Mitigation Costs (NRs.)	Institutional Responsibility	
			Implementation	Supervision
	place, canteen, and first aid are required for the campsite. • All the workers shall have health insurance over the period of construction. • Installation of warning signs (High Voltage, Fire Safety Signs, and Emergency Signs) as shown in ANNEX 8. • NEA will be responsible to supervise the EHS performance of the construction Contractor, and workers health and safety.	Contract Document		
B. Operation Phase				
1. *Hazards and Safety*	• There will be the use of insulation, guarding, grounding, electrical protective devices, and industry-standard safe work practices. • Boundary walls and / or security fences around substations to prevent unauthorized access. • Only trained and authorized personnel will be allowed for the electrical works. • No electric wire shall be stringed above the house. • Security fences around the substation. • Placement of warning signs. • Shutdown shall be taken during work on DL route.	-	NEA Transmission Operations units and Distribution Service Center(s)	NEA

Note: The provision of environment and social management cost should be included in the project cost making each item visible in BOQ of bidding document for the safeguard compliance by the construction contractor.

3.4 Livelihood Support Activities

The majority of community people living outside of footprint area (SPA) are from Chhetri and Brahmin (Hill). However, nearly 0.138ha cultivated land will be affected at the time of stringing the 33kV line. There will be chance of loss of income source from agricultural crops along the distribution line. Following table shows the livelihood support activities for the users affected by the Subproject.

Table 3-8: Livelihood Support Activities

Type of Loss	Scope	Who is Entitled	Entitlement	Responsible for the Delivery of the Entitlement	Remarks
Income Restoration Activities	Special assistance for income restoration activities	Support for land owners (households) along the distribution line losing income sources based on agriculture loss and other people from SPA area	At least one-person from each affected user (households if interested) along the distribution line will be considered for income generating vocational training and skill improvement options as per their choice expressed during consultation *(such as, building electricians and tailoring training)* and the people from SPA area	Training cost will be addressed by NEA	The NEA/PIU and PSC will facilitate to this support for organizing skill development training.
A. Loss of Standing Agricultural Crops	Crop affected from Subproject construction activity	Land Owner/ Users	Advance notice of three month to be provided to users' to harvest their crops. Cash compensation for loss of agricultural crops at current market value of crops (if destroyed)	Cash compensation based on the crops loss types and market rates NEA will address all the cost.	The NEA/PIU will ensure that the payment of compensation is made prior to construction of Subproject. PSC will facilitate for this loss estimation and procedural works

Source: Field Visit, 2022

Table 3-9: Crop Loss Estimation from Area Affected for Cultivation and Estimated Production

Municipality	Area in Sq.m.	Area in Hectare (ha)	Productivity Per Ropani (Kg.)	Productivity Per Hectare (Kg.)	Two Seasons Production (Kg.)	Rate/ Kg (NRs.)	Amount (NRs.)
Bungal Municipality	**1,380.0**	**0.138**	**65.00**	**1,919.45**	**529.77**	**108.00**	**57,215.00**
Total	**1,380.0**	**0.138**	**65.00**	**1,919.45**	**529.77**	**108.00**	**57,215.00**

Source: Field Visit, 2022

3.5 Institutional Arrangement

The Ministry of Energy, Water Resources and Irrigation (MoEWRI) is responsible for planning and execution of the plans for the overall development of water and

energy sector in Nepal. Nepal Electricity Authority (NEA) under MoEWRI is the responsible agency for the implementation of the DSUEP. The project comes under Distribution and Consumer Services Directorate (DCSD) of NEA. Project Implementation Unit (PIU) under DSUEP is the implementing unit of the project. Environment and Social Management Unit will be within PIU. All the resources needed for the EMP implementation for the construction and operation phase will be provided by the PIU. The site offices under PIU will have the supervision consultant with environmental and social safeguard specialist, who will be responsible for compliance monitoring during the construction phase. S/he will also provide technical support in preparing the monitoring report.

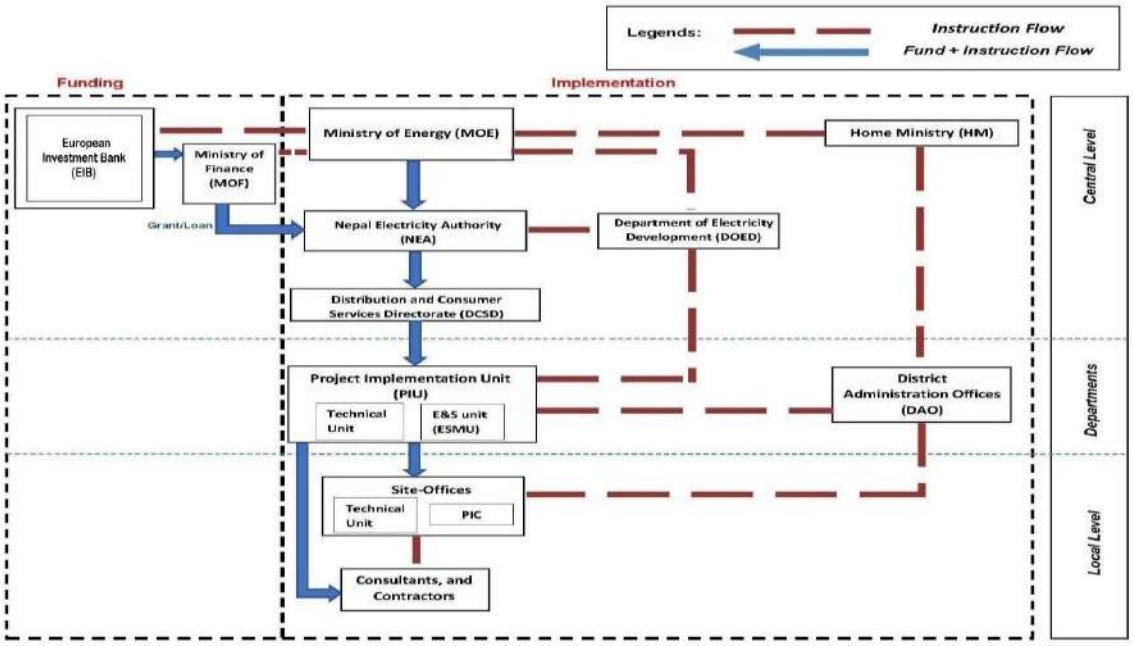


Figure 3-9: Institutional Arrangement for Environmental and Social Management

Source: ESMF-DSUEP

Contractor shall have the main responsibility to ensure the compliance. The Contractor shall prepare an Environment, Health and Safety (EHS) report that would be approved by DSUEP before field mobilization. They need to strictly follow the EHS plan requirements. Contractor shall urgently comply with corrective actions for any noncompliance as instructed by PIU. The ESMU of PIU will provide safeguard and ESMP compliance orientation to all environment monitors and safeguard team of the Contractor.

3.6 Grievance Redress Mechanism

The Grievance Redress Mechanism (GRM) has been established to receive, evaluate, and facilitate the resolution of affected people's concerns, complaints, and grievances about the social and environmental related issues at the subproject level. The GRM is designed to be simple, transparent and responsive. GRM shall address only the concerns arising due to the project implementation activities, mainly during construction stage.

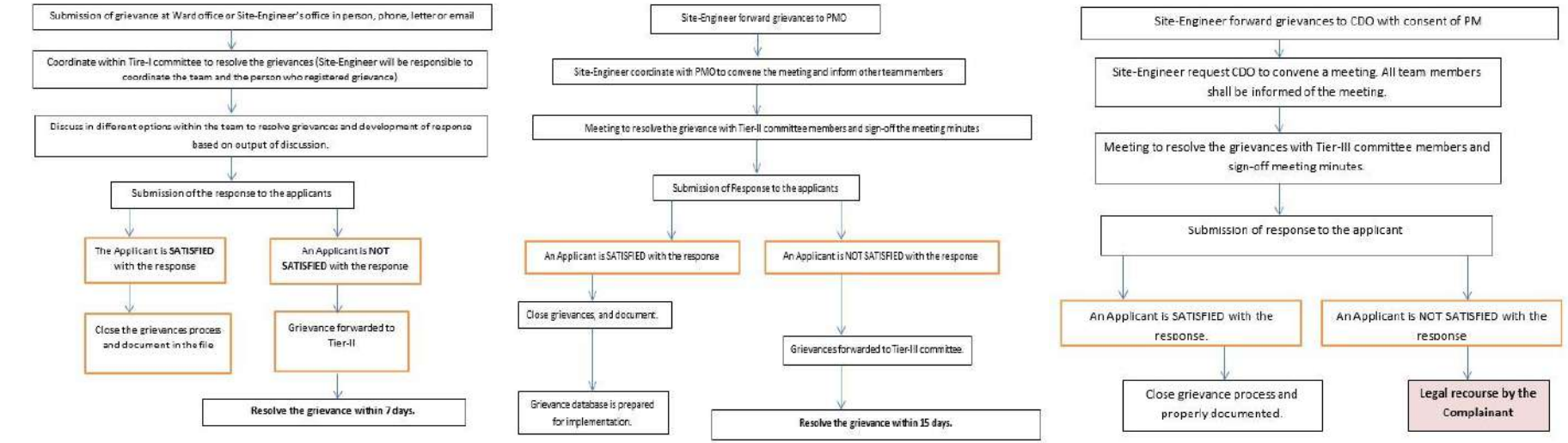
This process entails the concerned party submitting a grievance either in-person, or via phone, letter, or email to the Site-Engineer or the concerned Municipality Chief or the concerned Ward Chair. The Site-Engineer will record such complaint. In cases where Ward Chair has received such grievance, s/he should forward the grievance to the Site-Engineer. The Site-Engineer shall notify the committee members of Tier-I and arrange meeting to resolve the received grievances. If not resolved such grievances will be forwarded to Tier II and Tier III. The three level of GRM will work on time-bound schedules as mentioned in **Table 3-10**. The Subproject will hold regular meetings for Tier-I, to follow up if any grievances are received or not and to resolve the grievances received and update its status to PIU. **Figure 3-10** describes the Workflow Diagram of GRM for the Subprojects.

Table 3-10: Levels of Grievance Redress Mechanism

Provisions	**Levels of Grievance Redress Mechanism**					
	First Level (Tier-I)		**Second Level (Tier-II)**		**Third Level (Tier-III)**	
Level	Local Level		Project Manager Office (PMO) headed by the Project Manager (PM) at Project Implementation Unit (PIU)		District Level	
Supervisory	NEA Site-Engineer		PMO		Chief District Officer (CDO)	
Assistance	Chief/Mayor of Concerned Local Level and Chairperson/ Representative of Ward, Construction Contractor's (CC) Representative and Project Supervision Consultant's (PSC) Safeguards Officer		NEA Site-Engineer and PSC's Social Expert, and Construction Contractor		PMO, affected persons, representative from Rural Municipality/Municipality, Site-Engineer, PSC's Social Expert. *If deemed necessary, representative from Forest Office, representative from Land Revenue Office, and representative from Land Survey Office are invited.*	
Days for Resolving Complain	7 days of receipt of a complaints/ grievance		15 days of complaints forwarded by Site-Engineer		15 days	
Committee Members	**Committee Member**	**Designation**	**Committee Member**	**Designation**	**Committee Member**	**Designation**
	Ward Chair	Coordinator	Project Manager	Coordinator	Chief District Officer (CDO)	Chair
	Site-Engineer-NEA	Member secretary	Site-Engineer	Member Secretary	Project Manager	Coordinator
	Community Liaison Officer from PSC	Member	Mayor/ Chair of municipality	Member	Site-Engineer	Member Secretary
	Contractor Engineer	Member	Community Relations Manager from PSC	Member	Municipality Chief/Ward Chair	Member
	Affected person (one male and one female)	Member	Contractor Engineer	Member	Community Relations Manager from PSC	Member
	Women Member of ward committee	Member	Representative from affected people (at least 2, one male and one female)	Members	Contractor Engineer	Member
	One IP member	Member	Women Member of	Member	Representatives from	Members

Provisions	Levels of Grievance Redress Mechanism					
	First Level (Tier-I)		Second Level (Tier-II)		Third Level (Tier-III)	
	(if IP's are affected)		Municipality committee		affected people (at least 2, one male and one female)	
			One IP member (if IP's are affected)	Member	Women Member of Municipality committee	Member
					One IP member (if IP's are affected)	Member

Figure 3-10: Workflow Diagram for GRM from NEA[9]



* Affected People (AP) have the right to refer the grievances to appropriate courts of law if not satisfied with the redress at any stage of the process i.e., the AP will have the choice to approach country's judicial system.

[9] *Grievance Redress Mechanism (GRM) Prepared for the sub-projects financed by European Investment Bank (EIB) under Distribution System Upgrade and Expansion Project (DSUEP), Nepal Electricity Authority (NEA), August 2021.*

3.7 Compliance with Environmental Laws and Regulations

During the ESMP report preparatory phase, different legal instruments (constitution, acts, policy, plan, rules and international conventions/agreements) have been reviewed. Key provisions of those legal documents that might be relevant to this project have been summarized in tabulated form and given in ANNEX 9 which will guide the NEA, EIB, consultant and the construction contractor to effectively and efficiently implement ESMP maintaining the international and national standard.

4. MONITORING, AND REPORTING MECHANISM

4.1 Environmental and Social Monitoring

Environmental and Social Monitoring (ESM) is undertaken to collect data/information of the Subproject environment and social aspect to assess the compliance concerning regularity standards, planning documents, and effectiveness of the implementation of Environmental and Social Protection Measures recommended in ESMP. It involves the assessment of physical, biological, and socioeconomic, and cultural variables associated with activities, and stages. To ensure effective implementation of ESMP, PIU/NEA (DSUEP) and Construction Supervision Consultants (CSC) will be responsible for undertaking monitoring the Subproject.

The main objectives of the environmental monitoring plan are listed below,

- To ensure that the Subproject baseline conditions were adequately documented such that a comparative evaluation of the Subproject baseline before, and after commencement of the Subproject could be made precisely for impact evaluation.
- To ensure that the mitigation commitments by the NEA for the minimization of adverse impacts, and enhance the beneficial impacts, and the mitigation measures, and enhancement program are complied, and implemented in time, and with sincerity.
- To confirm that the Subproject impacts are within the limits of the impact prediction or not, and to minimize unpredicted impacts that occurred during Subproject construction and operation.

Table 4-11: Environmental Monitoring Plan[10]

SN	Environmental Component	Indicators	Monitoring Methods	Location	Schedule	Responsibility
1.	Budget allocation for implementation of mitigation measures	Budget heading and amount in figures in contract documents	Review of Subproject documents, and records, and inquires with Subproject staff	-	Once pre-construction	NEA/PIU (DSUEP)
2.	Employment for Locals	Job placement ToR, notice of vacancies published in local media/notice board	Appointment document, and job announcement	Project area	Once, after vacancy announcement	Construction Contractor/ NEA/PIU (DSUEP)
Physical Environment						
1.	Alteration of Land	Demarcation of land for substation	Field observation, Meeting minutes with stakeholders	Substation area	Early Subproject Implementation Phase	Construction Contractor under the supervision of PIU Safeguard Officers/Local Level
2.	Stability and Erosion Issues	Backfilling in excavated part after construction, subsidence/sliding and erosional evidence, damages to adjoining entities, pit hole and its foundation materials compaction, design and working framework	Direct Site Inspection and records	Project area	Early Subproject Implementation Phase and Monthly	Construction Contractor under the supervision of PIU Technical Team
3.	Spoil Management	Excavation and filling as per design, compaction and watering facility	Observation, records and contract documents	Construction site	Early Subproject Implementation Phase and Monthly	Construction Contractor under the supervision of PIU Safeguard Officers
4.	Air quality	Emission and Dust around Subproject area, Foul smell, suspended particulate matter, State of vehicles used	Observation, and taking records for spraying water and vehicle log book of maintenance work	Construction site	Quarterly	Construction Contractor under the supervision of PIU Safeguard

[10] *Nepal Electricity Authority 2019: Environment, and Social Management Framework (ESMF) for Distribution System Upgrade & Expansion Project (DSUEP), Kathmandu.*

SN	Environmental Component	Indicators	Monitoring Methods	Location	Schedule	Responsibility
						Officers
5.	Noise pollution	Noise level dB(A) of Construction vehicles and construction schedule	Observation, and measurement using digital sound meter	Construction site	Quarterly	Construction Contractor under the supervision of PIU Safeguard Officers
6.	Solid Waste Management	Solid waste segregation, collection and management mechanism, adherence to waste management practices	Direct Site Observation and practices	Construction site	Quarterly	Construction Contractor under the supervision of PIU Safeguard Officers
7.	Electric, and Fire Hazard	Evidence of workforce skill development training, installation of warning signs, electrical, mechanical insulation, and guarding system	Incident Record, and Direct Site Inspection	Construction site	Daily	NEA
Biological Environment						
1.	Habitat Loss	Not Applicable				Construction Contractor
2.	Bird Collision	Preventive measures included Subproject infrastructure, incidence of an accident, and causes	Carcasses count to test the efficacy of preventative measures	Project area	Every 3 Month[11]	NEA
Social, and Cultural Environment						
1.	Subproject's Assistance	Number of owners/users received assistance from NEA and people's active participation during training program	Notice from NEA/PIU for a call to users to receive assistance (crop loss and additional assistance) and associated documents, training proposal, training minutes/attendances, receipts, photographs, visual evidences	Subproject Area	Before and during construction phase	NEA/PIU and PSC

[11] *Bennun, L., van Bochove, J., Ng, C., Fletcher, C., Wilson, D., Phair, N., Carbone, G. (2021). Mitigating biodiversity impacts associated with solar, and wind energy development. Guidelines for project developers. Gland, Switzerland: IUCN, and Cambridge, UK: The Biodiversity Consultancy. (https://portals.iucn.org/library/sites/library/files/documents/2021-004-En.pdf)*

SN	Environmental Component	Indicators	Monitoring Methods	Location	Schedule	Responsibility
2.	Workers, Labor Camp Location, and Management	Number of workers from Subproject area, and its surrounding settlement, Basic facilities within the camps as suggested in ESMP, and Inclusiveness of marginalized, and indigenous groups people as workers	FGD with local people, Direct Site Inspection and verification	Project area	Weekly during construction; Monthly during operation	Construction Contractor
3.	Child, and Gender issues	Engagement of child in any form (direct/indirect or on/off-site), wage discrimination among male, and female workers, basic facilities for females as per recommended in ESMP, psychological, and physical assault evidence (recorded/verbal complain)	Direct Site Observation, Direct Consultation with the (Female) workers, Consultation with local people nearby the Subproject area,	Construction site	Weekly/Daily as per nature of indicator	Construction Contractor under the supervision of PIU Safeguard Officers
4.	Occupational Hazard and Safety	No. of toolbox talk/ safety orientation to workers, No. of accidents registered, use of the personal protective instrument by the workers	Direct Site Observation, Official records	Construction site	Daily during construction, Monthly during operation	Construction Contractor under the supervision of PIU Safeguard Officers
5.	Grievance Redressing Mechanisms	Committee formation records, GRC Meeting minutes, issue settlement records on the campsite, Gender, social, and others associated with Project.	Review of official records of GRC	Project area	Monthly	Construction Contractor under the supervision of PIU/PSC

4.2 ESMP Implementation and Monitoring Cost

The cost estimates for the ESMP are shown in Table 4-12. These estimates cover the basic monitoring activities and the mitigation measures to be complied from the contractor's side. The ESMP cost estimated for this Subproject is NRs 26,57,215.00.

Table 4-12: ESMP Implementation and Monitoring Cost

SN	Budget Items	**Estimated Lump Sum Amount for Monitoring** (NRs)
1	**Compliance with Environment Plan**	**2,00,000.00**
1.1	Air Pollution Monitoring *(at Substation)*	1,50,000.00
1.2	Noise Pollution Monitoring *(at Substation)*	50,000.00
2	**Mitigation Measures and Compliance to EHS Plan**	**5,50,000.00**
2.1	Sprinkling of water, covering during transportation and proper storage of construction material	3,00,000.00
2.2	Segregation and management of Solid Waste	1,00,000.00
2.3	EHS Awareness raising trainings to the labors	1,50,000.00
3	**Meeting of Safeguard Desk and Grievance Redress Committee at Field Level**	**3,50,000.00**
4	**Income Restoration Activities** *(Skill Development Training)*	**15,00,000.00**
5	**Crop Loss Compensation along Distribution Line**	**57,215.00**
Total		**26,57,215.00**

5. CONCLUSION

Potential environmental impacts of the Subproject are not diverse, mainly relating to construction, and are all site-specific being confined to the Core Project Area. Civil works will cause temporary impacts on air quality, noise level, crop losses along distribution line, and occupational and community health and safety in particular related to working with electricity. Key impacts during operation and maintenance include safety risks related to the presence of electricity infrastructure and associated risks at the substation and line maintenance works. The potential environmental impacts of the Subproject are identified and found to be mitigated through adherence to national requirements and international good practice measures and standards as specifically recommended in ESMP and DDR. The implementation of ESMP and DDR is to be supervised and monitored by PIU, supported by Project Supervision Consultant. The total ESMP and DDR cost estimated for this Subproject is NRs. 26,57,215.00. This ESMP along with DDR is considered sufficient to meet the environmental and social requirements for the Subproject at present design conditions.

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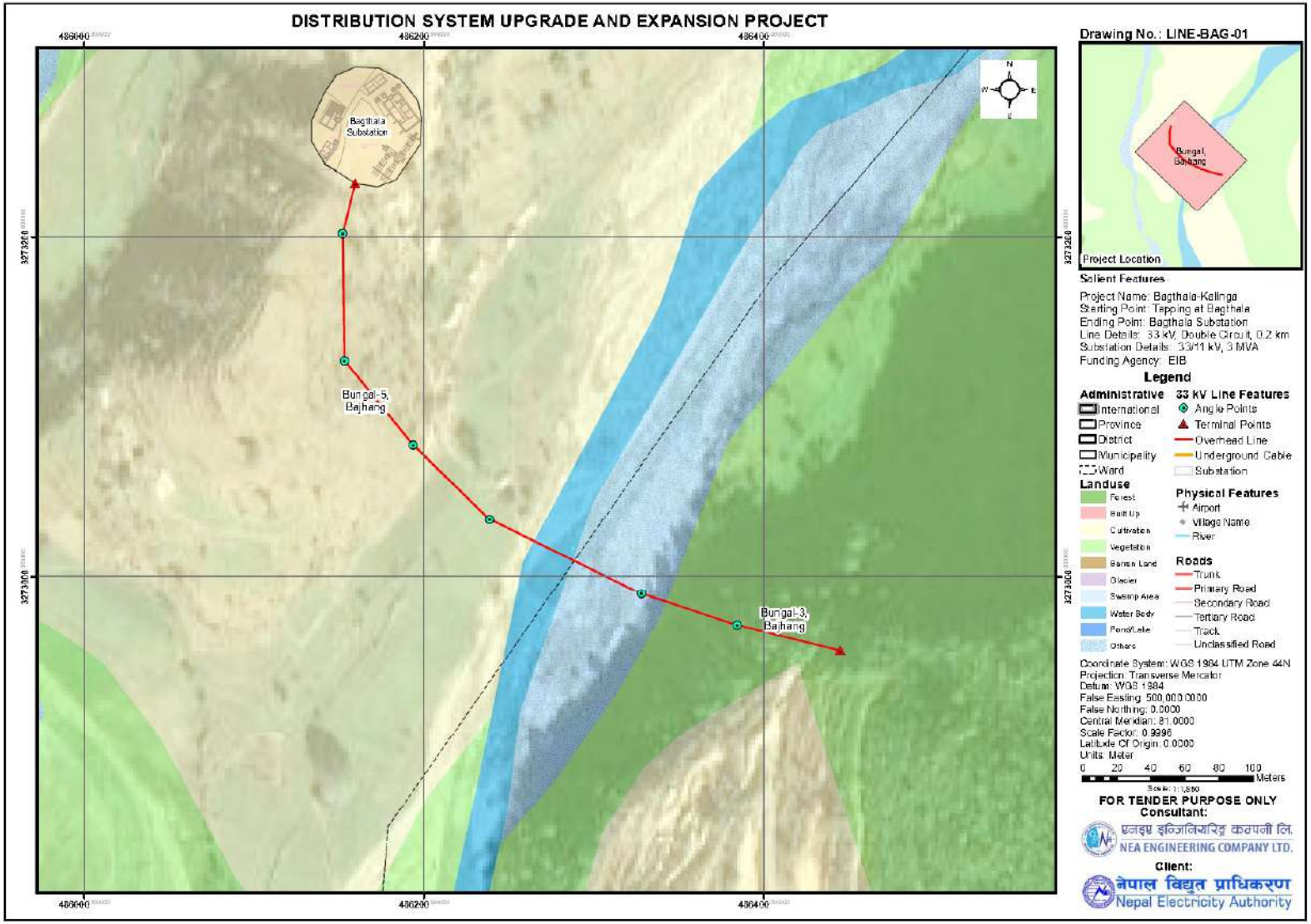
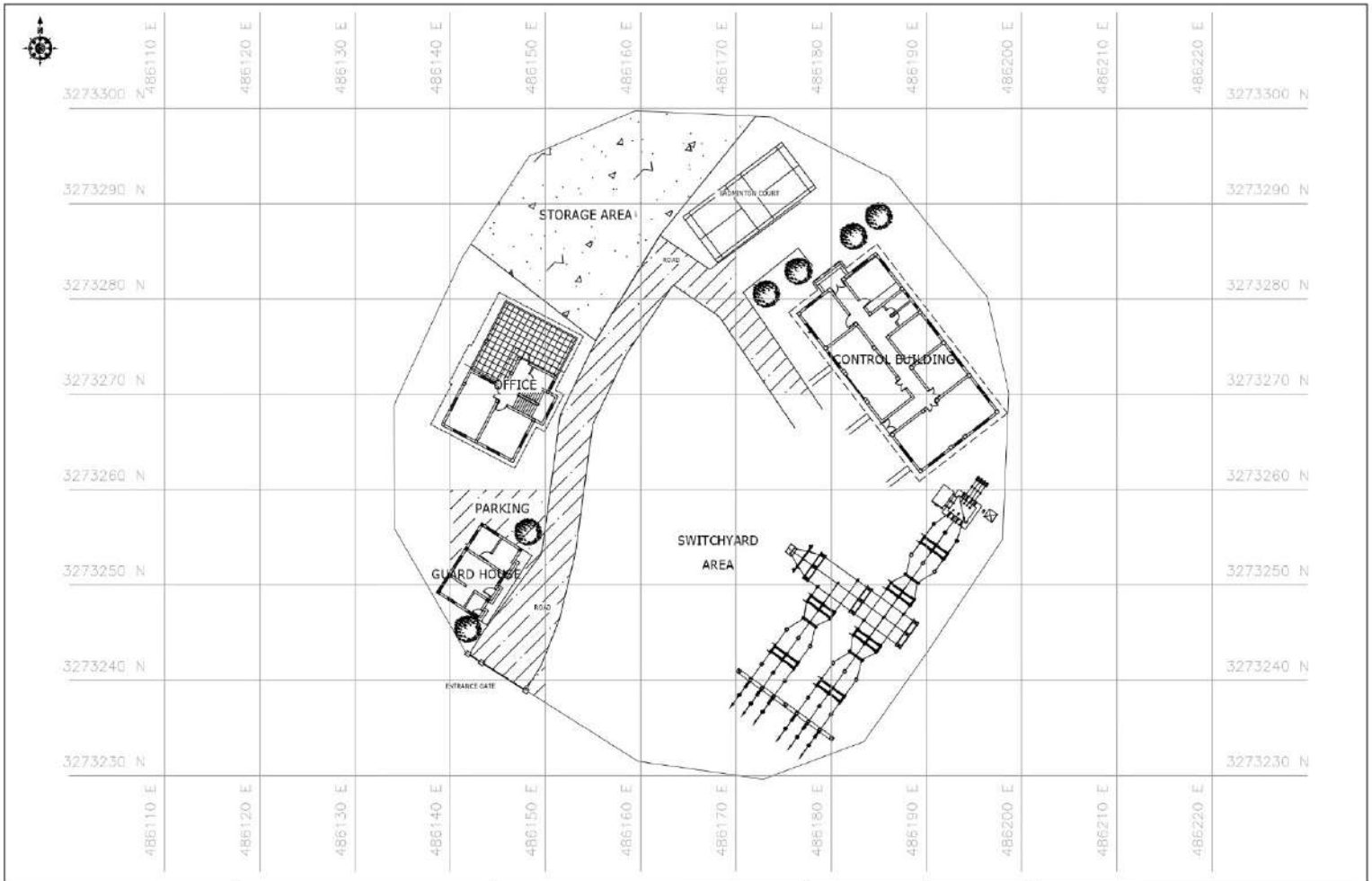
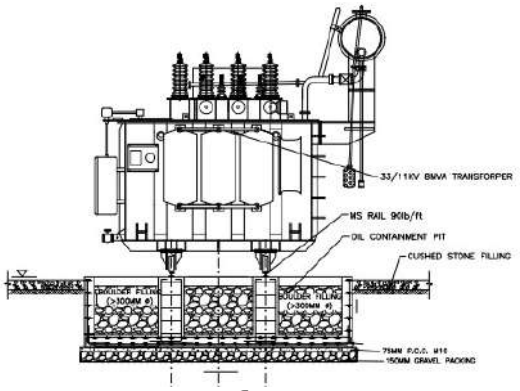
ANNEXES

ANNEX 1: MAP, LAYOUT, SUBSTATION COMPONENTS AND PHOTOGRAPHS OF ANCILLIARY FACILITIES

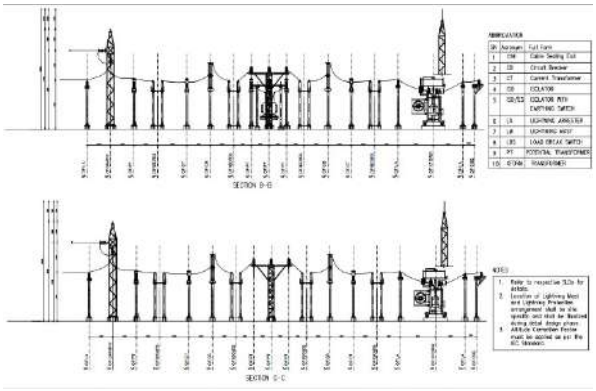




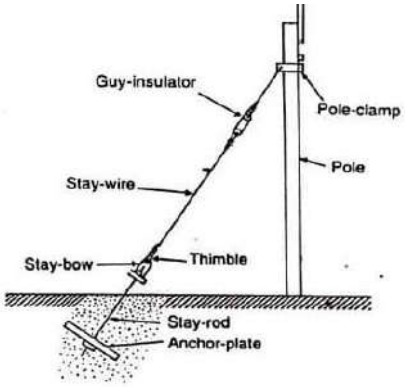
CLIENT: NEPAL ELECTRICITY AUTHORITY DISTRIBUTION AND CONSUMER SERVICES DIRECTORATE DISTRIBUTION SYSTEM UPGRADE AND EXPANSION PROJECT DURBARMARGA, KATHMANDU, NEPAL	CONSULTANT: NEA ENGINEERING COMPANY LTD. TRADE TOWER, THAPATHALI KATHMANDU, NEPAL	PROJECT: DISTRIBUTION SYSTEM UPGRADE AND EXPANSION PROJECT FOR TENDER PURPOSE ONLY NOT IN SCALE	DRAWN	DESIGNED	TITLE: 33/11 kV SUBSTATION LAYOUT FOR BAGTHALA SUBSTATION
			DRAFTING CHECK	DESIGN CHECK	
			APPROVED	DRAWING NO. SSBAG-01	



Transformer

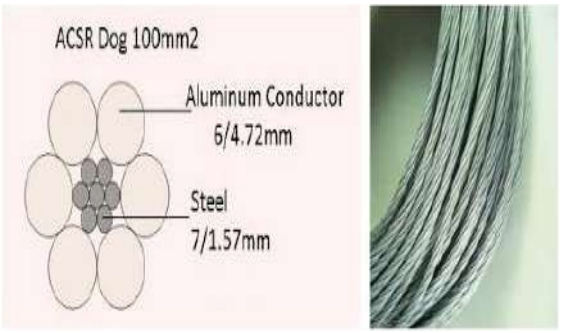


Switch Yard



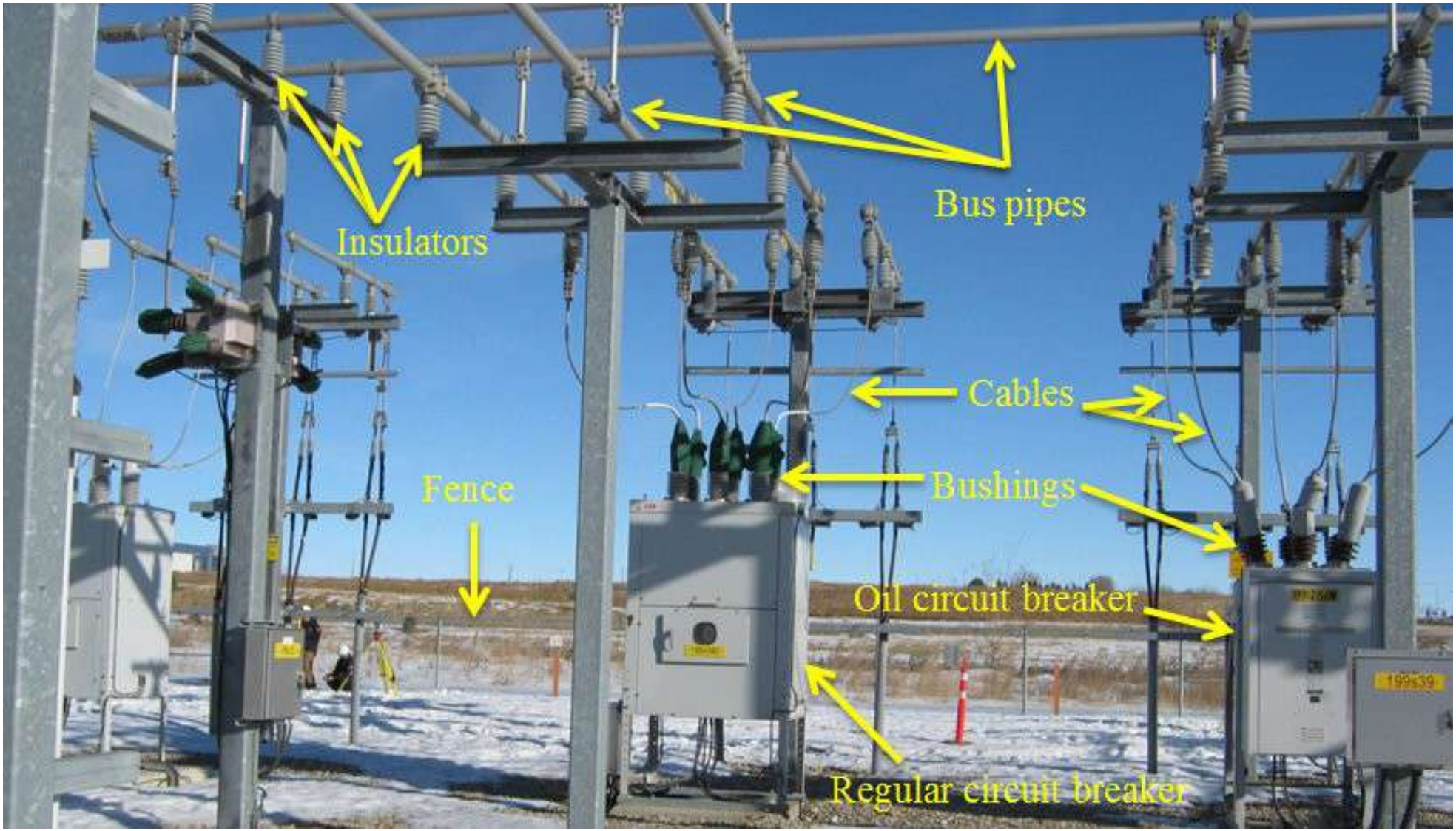
Steel Tubular Pole and Stay/Guy Sets

Pin Insulator



ACSR DOG Conductor

Typical Diagram of Control Building, Office Building, Staff Quarter and Guard House



Component Location within 33/11kV Substation

Bird Diverting Reflector

Wishbone Prevents Birds Landing on Wire

White Spiral in Wire Improves Visibility of Wire

Construction of Nest at Poles also divert Brid not sitting at Wires

Components Used for Preventing Birds from Collision in Distribution

ANNEX 2: CERTIFICATE OF LAND OWNERSHIP

नेपाल सरकार
भूमि व्यवस्था, सहकारी तथा गरिबी निवारण मन्त्रालय
नापी विभाग
नापी कार्यालय, भ्रोताभैरव बभ्राङ्ग

मिति :२०७८/०६/२०

प.सं.०७८/७९
च नं.४६

विषय :-फिल्डबुक उतार गरी पठाईएको बारे ।

श्री नेपाल विद्युत प्राधिकरण
वितरण प्रणाली स्तरोन्नती तथा विस्तार आयोजना
दरवारमार्ग,काठमाण्डौं

प्रस्तुत विषयमा तहाँ कार्यालयको च.नं. ४७ मति २०७८/०६/१९ को पत्रानुसार जिल्ला बभ्राङ्ग साबिकको खिरातडि वडा नं. ३ कि नं.४१३ को फिल्डबुक उतार गरी यसै पत्र साथ संलग्न राखि पठाईएको व्यहोरा अनुरोध छ ।

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रुकुम ब.खड्गायत
कार्यालय प्रमुख

नेपाल सरकार
भुमिव्यवस्था, सहकारी तथा गरिवी निवारण मन्त्रालय
नापी विभाग

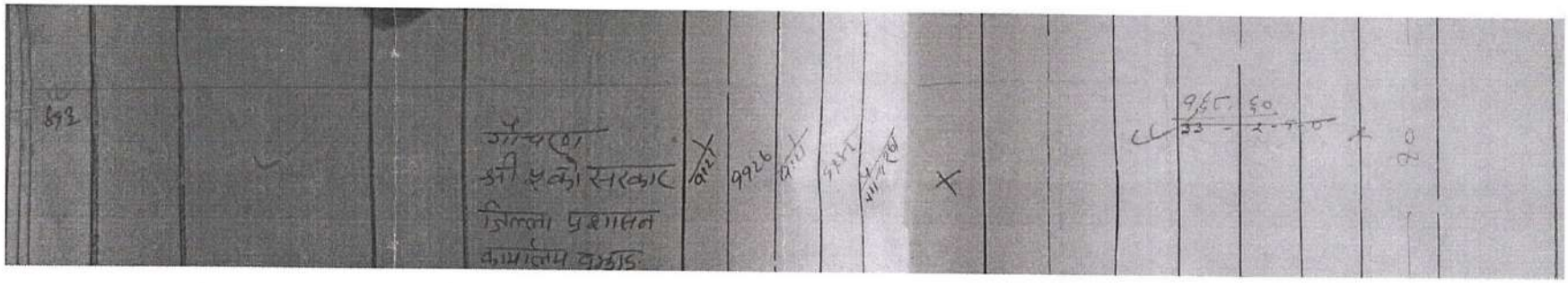
नापी कार्यालय

झोता,भैरब बझाङ्ग

प.सं :०७८/०७९
च.नं ४६

जिल्ला: बझाङ्ग गा.वि.स खिरातडि वार्ड न ०३ मिति २०७८/०६/२०

क.नं	मोहिको		जग्गाबालाको		ब्यहोरा	जग्गाको विवरण	किसिम	क्षेत्रफल	चौहदी				सर्भे भएको मिति	प्रमाण संकेत	जग्गाको रूप रेखा र नाप	कैफियत
	सहिछाप	नाम, थर, वतन	सहिछाप	नाम, थर, वतन					पु.	प.	उ.	द.				



.....
प्रिन्ट दिने

.....
रुजू गर्ने
अमिन

.....
प्रमाणित गर्ने
कार्यालय प्रमुख

ANNEX 3: FIELD VISIT PHOTOGRAPHS

Tapping Point at Donek, Bungal Municipality-5

North Face of Substation at Hatkot, Bungal Municipality-5

South-West Face of Substation at Hatkot, Bungal Municipality-5

Notice Pasting at Bungal Municipality-5 Office and Consultation with Owner of Land at DL Route near Tapping Point

Air and Noise Pollution Measurement and Physical and Biological Inventory Survey near Tapping Point, Donek


Measurement of Water Quality of Kalinga River and Existing Solid Waste Management Practices around Project Site, Bungal Municipality-5

Stakeholders during Public Consultation cum FGD Meeting at Substation, Hatkot

ANNEX 4: NOTICE FOR PUBLIC CONSULTATION

नेपाल विद्युत प्राधिकरण

(नेपाल सरकारको स्वामित्व)

वितरण तथा ग्राहक सेवा निर्देशनालय

फ्याक्स: ०१-४१५३१४४
फोन नं : ०१-४१५३१४५
दरबारमार्ग, काठमाण्डौं।

नेपाल वितरण प्रणाली स्तरोन्नती तथा विस्तार आयोजना

नेपाल वितरण प्रणाली स्तरोन्नति तथा विस्तार आयोजनाको वातावरणीय तथा सामाजिक अध्ययन प्रतिवेदन तयारी सम्बन्धि सूचना

सूचना प्रकाशन मितिः २०८८/०४/०१

सुदूर पश्चिम प्रदेश बझाङ जिल्ला बुङ्गल (नगरपालिका/गाउँपालिका/महानगरपालिका/उपमहानगरपालिका) मा यूरोपियन इन्भेस्टमेन्ट बैंकको ऋण सहयोग भएको नेपाल विद्युत प्राधिकरण, वितरण तथा ग्राहक सेवा निर्देशनालय, वितरण प्रणाली स्तरोन्नति तथा विस्तार आयोजना प्रस्तावक रही कार्यान्वयन गर्न लागिएको बझाङ्गला-कालेगाउ विद्युत वितरण लाईन आयोजना कार्यान्वायन हुनुभन्दा अघि सो आयोजनाले त्यस क्षेत्रको वातावरण तथा सामाजिक पक्षहरुमा के-कस्तो प्रभाव पार्दछ भनि स्थानीय सरोकारवालाहरु सँग छलफल गर्न आयोजना क्षेत्रका सम्पूर्ण सबै सरोकारवालाहरुको निम्न स्थान तथा समय उपस्थितिका लागि यो सूचना प्रकाशित गरिएको छ।

सार्वजनिक छलफल हुने स्थान, मिति र समयः

स्थानः हाटकोट (प्रस्तावित सबस्टेशन)

मितिः २०८०/०४/०२

समयः बिहान ८:०० बजे

ANNEX 5: PROOF OF PUBLIC NOTICE PASTING

बुङ्गल नगरपालिका
नगरकार्यपालिको कार्यालय
खिरातडी,बझाङ
सुदुरपश्चिम प्रदेश,नेपाल

प.स. ०७८/०७९
च.नं. १०१

मितिः २०७८/०५/०१

विषयः सूचना टाँस गरीएको बारे।

श्री नेपाल विद्युत प्राधिकरण
नेपाल वितरण प्रणाली स्तरोन्नती तथा वितार आयोजना।

प्रस्तुत विषयमा सम्बन्धमा तहाँ कार्यालयको पत्र संख्या २०७८/०७९ DSUEP च.न. १७ मिति २०७८/०४/२५ गतेको सूचना यस कार्यालयको सूचना पार्टीमा टाँस गरीएको ब्यहोरा जानकारी गराईन्छ।

राजेन्द्र प्रशाद भट्ट
नि.प्रमुख प्रशासकिय अधिकृत

नि. प्रमुख प्रशासकीय अधिकृत

URL: www.bungalmun.gov.np
E-mail:info@bungalmun.gov.np

बुङ्गल नगरपालिका

५ नं. वडा कार्यालय

सइँपाँच, बझाङ्ग

सुदुरपश्चिम प्रदेश, नेपाल

प. सं. २०७८/०७९

च. नं. ९४०

मितिः- २०७८/५/१

विषयः- सुचना टाँस गरेको सम्बन्धमा।

श्री नेपाल विद्युत प्राधिकरण
नेपाल सरकारको स्वामित्वमा
वितरण तथा ग्राहक सेवा निर्देशनालय
नेपाल वितरण प्रणाली स्तरउन्नति तथा
विस्तार आयोजना

प्रस्तुत विषयको सम्बन्धमा नेपाल विद्युत प्राधिकरण बाट च. नं. २०७८/०७९ को सुचना अनुसार मिति २०७८/५/१ यस वडा कार्यालयको बागचला काँलङ्गा गतेका दिन यस वडा कार्यालयमा बागचला स्थापना सम्बन्धमा विद्युत वितरण लाईन र सब स्टेशन स्थापना सम्बन्धमा छलफल को लागी यस वडा कार्यालयको सुचना पाटीमा सुचना टाँस गरेको व्यहोरा यो सिफारिस साथ प्रमाणित गरिन्छ।

प्रयाग राज धामी
वडा अध्यक्ष

ANNEX 6: CONSULTATION MEETING MINUTES

बुङ्गल नगरपालिका
नगर कार्यपालिकाको कार्यालय
खिरातडी बझाङ्ग
सुदूर पश्चिम प्रदेश, नेपाल।

पत्र संख्या:- ०७९/०८०
च.नं: ९०५

मिति २०७९।०४।२३

श्री नेपाल वितरण प्रणाली स्तरोन्नति तथा विस्तार आयोजना (ई.आई.बि.),

नेपाल विद्युत प्राधिकरण, दरबारमार्ग, काठमाण्डौं ।

विषय: बुंगल न.पा. मा निर्माण हुने आयोजनाको लागि गरिएको परामर्श सम्बन्धमा।

उपरोक्त विषयमा त्यस आयोजनाले यस नगरपालिकामा निर्माण गर्न लागेको ३३/११ के.भी. सबस्टेशन तथा वितरण लाईनहरु निर्माण गर्नु पूर्व सम्पूर्ण सरोकारवालाहरुलाई पूर्व जानकारी दिई सरोकारवालाहरुको मत जाहेर हुने गरी परामर्श तथा सार्वजनिक सुनुवाई गरेको व्यहोरा अनुरोध छ । साथै त्यस आयोजनाको सफलताको लागि यस सम्पूर्ण नगरपालिकावासीको साथ-सहयोग रहने जानकारी पनि गराउदछौं ।

जय बहादुर धामी
नगर प्रमुख

Website: www.bungalmun.gov.np Email: info@bungalmun.gov.np || ito.bungalmun@gmail.com

Date: ....
Page: ....

आज मिति २०७८ भदौ २ गते बुधबार बझाङ जिल्ला बुङ्गल नगरपालिका वडा नं-५ हाटकोटमा नेपाल विद्युत प्राधिकरण वितरण तथा ग्राहक सेवा निर्देशनालय, वितरण प्रणाली सुदृढीकरण तथा विस्तार आयोजना (DSUEP) अन्तर्गत हाटकोट सब स्टेशन ३३/११ के.भि. निर्माण पूर्व वातावरणीय तथा सामाजिक अध्ययन प्रतिवेदन तयारीका लागि NEA डिजिनियर्स कम्पनीबाट खटाई आउनुभएका विज्ञ तथा हामी स्थानीय सरोकारवाला पक्षको उपस्थितिमा देहाय विषयमा छलफल गर्यो।

उपस्थिति

क्र.स	नाम थर	ठेगाना	फोन नं	हस्ताक्षर
१)	मीना बोहरा जोशी	उपमेयर बुङ्गल न.पा.	९८५८४८८४६८	[signature]
२)	प्रयागराज धामी	वडा अध्यक्ष - ५		[signature]
३)	डम्बर धामी	इन्जिनियर बुङ्गल न.पा		[signature]
४)	रवेन्द्र कुवर	स्थानीय वडा नं - ५	९८४३५४८४६१	[signature]
५)	फडेन्द्र कुवर	"		[signature]
६)	डम्बर कुवर	"	9842250713	[signature]
७)	जनक कुवर	"		जनक
८)	विक्रम कुवर		९८६८०७६६५९	[signature]
९)	अम्बर कुवर		9840621922	[signature]
१०)	जनक आउजी	"०४		[signature]
११)	कल्क कुवर	[signature]	9868880408	
१२)	रतन ब. सिंह	स्थानीय वडा न-३		रतन ब. सिंह
१३)	भिम ब. सिंह	"		भिम ब सिंह
१४)	कृष्ण कुवर	स्थानीय वडा न-५		कृष्ण कुवर 98631927[illegible]
१५	धनजित औजी	"		[signature]
१६	नरेन्द्र कुवर	"		नरेन्द्र
१७	मिलक आउजी	"		मलक आउजी
१८	राम कुवर	"		राम
१९	लोकेन्द्र कुवर	"		लोकेन्द्र
२०)	धौले कुवर	"		धौले
२१	महेश कुवर	"	९८६०००९२८६	[signature]
२२	सुदिप घिमिरे	वातावरण विद्		[signature]
२३.	कृष्ण कान्त	समाजशास्त्री		[signature]

२४. विज्ञ अधिकारी — वातावरण विद् — Dwarika

उल्लेखित अवधिमा आयोजनाको बारेमा जानकारी हुँदा निम्न बमोजिमका विषयमा राय सुझाव सहित छलफल गर्यो।

१) प्रस्तावित आयोजनाको बारेमा NEA Engineering Company बाट खटि आएका मध्यमा सामाजिक, वातावरण विज्ञ द्वारा हात्तिकोट सब-स्टेशन ३ एम.भि.ए बुढुर नगरपालिका वडा नं ५ को बारेमा जानकारी अवगत गरायो।

२) प्रस्तावित सब स्टेशन क्षेत्र रहेको स्थानमा रहेको खाली जग्गा स्कुल। रूपमा साथै चरीचरण तथा अन्य उपयोगमा प्रयोग नभएकोले आयोजनाले उपयोग गर्दा कुनै समस्या नपर्ने स्पष्ट जानकारी गराइयो।

३) सब स्टेशन निर्माण गर्दा आयोजनाले आफ्नो क्षेत्र पहिला घेरा बार गरी निर्माण गतिविधि आफ्नो क्षेत्र भित्र मात्र सीमित गर्नु पर्ने।

आज मिति २०७८ भदौ २ गते बुधबार बझाङ जिल्ला बुङ्गल नगरपालिका वडा नं ५ हल्कोटमा नेपाल विद्युत प्राधिकरण वितरण तथा ग्राहक सेवा निर्देशनालय, वितरण प्रणाली स्तरोन्नति तथा विस्तार आयोजना (DSUEP) अन्तर्गत बागथला-कालाङ ३३ के.भी. वितरण लाइन निर्माण पूर्व वातावरणीय तथा सामाजिक अध्ययन प्रतिवेदन तयारीका लागि NEA इन्जिनियरिङ कम्पनी बाट खटिई आउनुभएका विज्ञ तथा हामी स्थानीय सरोकारवाला व्यक्तिको उपस्थिति देहाय विषयमा छलफल गरियो ।

उपस्थिति

क्र.स	नामथर	ठेगाना	फोन नं	हस्ताक्षर
१)	मिना बोहरा जोशी	उपमेयर बुङ्गल न.पा		[signature]
२)	प्रयागराज धामी	वडा अध्यक्ष - ५	९८६८९८८८६३	[signature]
३)	डम्बर धामी	इन्जिनियर बुङ्गल न.पा	९८४९३३७५५५	[signature]
४)	रवडुक कुवर	स्थानीय वडा नं. ५	९८८३२५८८६१	[signature]
५)	डम्बर कुवर	"	९८४२२५०६९३	[signature]
६)	अम्बर कुवर	"	९८४७६२१९३२	[signature]
७)	विक्रम कुवर	"	९८९३०८६३६१	[signature]
८)	फडेन्द्र कुवर	"		[signature]
९)	जनक कुवर	"		जनक
१०)	महेश कुवर	"	9860009287	[signature]
११)	कृष्ण कुवर	"	9863102478	KIRAN
१२)	जनक आरखेडा	"	9864762315	[signature]
१३)	कलक कुवर	"	9868880408	[signature]
१४)	रतन ब. सिंह	स्थानीय वडा नं - ३		रतन ब० सिंह
१५)	भिम ब. सिंह	"		भिम ब सिंह
१६	गोरे आरखेडा		9843974380	गोरे ब रखेडा
१७	धनजित आरखेडा			धनजीत
१८	मलक आरखेडो			मलक आरखेडा
१९.	शालीभान कुँवर			शालीभान कुँवर

Date : ....
Page: ....

२०। स्वप्न कं सिंह —

२१.	बिरे कुंवर		बिरे ब
२२.	धौले कुंवर		धौले
२३.	दिपेश अधिकारी	वातावरण बिद	[illegible]
२४.	कृष्णा कार्की	समाजशास्त्री	[illegible]
२५.	सुदिप घिमिरे	वातावरण बिद	[illegible]

Scanned with CamScanner

उल्लेखित उपस्थितिमा आयोजनाको बारेमा जानकारी हुँदा निम्न बमोजिमका विषयमा राय सुझाव सहित छलफल भयो ।

१) प्रस्तावित नागथली - काभ्रे ३३ के.भी. वितरण लाइन आयोजना बारेमा NEA इन्जिनियरिङ बाट रवि डाँडा गाउँका सामाजिक वातावरण विज्ञ द्वारा वितरण लाइनको बारेमा जानकारी अवगत गरायो ।

२) वितरण लाइन विस्तार गर्दा पोल गाड्दा यदि निजि जग्गामा लैजानु पर्ने अवस्था आएमा सो कम पोललाई जग्गाको छेउ आलीमा गाड्नु पर्ने ।

३) लाइन विस्तार गर्दा निजि जमिनमा लगाएको बाली वा रुख बिरुवामा क्षति पुग्ने देखिएमा सम्बन्धित जग्गा धनी संग समन्वय गरी आयोजनाले उक्त क्षति बापत सम्बोधन गर्नु पर्ने ।

४) पछि केहि समय/विद्युत आपूर्तिमा समस्या, विद्युतीय सेवा लोडसेडिङले पनि आयोजनाले यथासम्भव छिटो सुचारु गरी नियमित विद्युतीय सेवा सञ्चालन गर्नुपर्ने ।

५) सीपको आधारमा स्थानीय जनशक्तिलाई योजनाले प्राथमिकता दिनुपर्ने ।

६) विद्युत लाइन विस्तार गर्दा हामी स्थानियवासी को पूर्ण सहयोग समर्थन रहने प्रतिबद्धता गर्दछौं ।

Date : ....

Page: ....

आज मिति २०८०।५।१२ गते बुधबारका दिन बझाङ जिल्ला बुंगल नगरपालिका वार्ड नं. ५ हातकोटमा नेपाल विद्युत प्राधिकरण, वितरण तथा ग्राहक सेवा निर्देशनालय वितरण प्रणाली स्तरोन्नती तथा विस्तार आयोजना (DSUEP) अन्तर्गत ~~बुंगल~~-बाग्थला-बालिङ वितरण लाइन निर्माण पूर्व वातावरणीय तथा सामाजिक अध्ययन प्रतिवेदन तयारीका लागि NEA Engineering Company बाट खटिआएका [illegible] [illegible] तथा हाम्रो स्थानीय सरोकारवाला व्यक्तिहरुको उपस्थितिमा देहाय बमोजिमको विषयमा छलफल गरियो।

उपस्थिति

क्र.सं.	नाम	ठेगाना	फोन नं.	हस्ताक्षर
१.	मीना कोहरा जागरी	उपमेयर, बुंगल न.पा.		[signature]
२.	प्रयागराज थापा	वडा अध्यक्ष-५		[signature]
३.	डम्बर थापा	इन्जिनियर	९८४३३३७४४४	[signature]
४.	खड्क कुँवर	स्थानिय वडा-५	९८४३२५४७१	[signature]
५.	फडेन्द्र कुँवर	"		[signature]
६.	डम्बर कुँवर	"	9842250713	[signature]
७.	जनक कुँवर	"		[signature]
८.	विक्रम कुँवर	"	९८६३०८९५६९	[signature]
९.	भरबर कुँवर	"	9840621922	[signature]
१०.	जनक ओखेडा	"		[signature]
११.	कलक कुँवर	"	9868880408	[signature]
१२.	रतन ब. सिंह	स्थानिय वडा-५		रतन ब० सिंह
१३.	भिम ब. सिंह	"		भिम बं. सिंह
१४.	कृष्ण कुँवर	स्थानिय वडा-५		कृष्ण
१५.	गोरे ओखेडा	"		[signature]
१६.	धनजित ओखेडा	"		[signature]
१७.	मलक ओखेडा			मलक ओखेडा
१८.	शालीमात कुँवर			शालीमात
१९.	रतन बं. सिंह			रतन ब० सिंह
२०.	[illegible] कुँवर			[signature]

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२१.	कृष्ण कार्की	समाजशास्त्री	
२२.	धीरेन्द्र कुँवर	स्थानीय वडा नं-५	धीरेन्द्र कुँवर
२३.	पद्मा ओखेडा	स्थानीय वडा नं.५	पद्मा
२४	प्रेम कुँवर	"	9860009287
२५.	दिवस अधिकारी	वातावरण विद	
२६.	रवीन्द्र घिमिरे	"	Ghimire

छलफलका विषयहरु

1) बाग्मती - कालीगं. वितरण आयोजना निर्माण गर्दा सत-देखेको क्षेत्राधिकार भित्र रहेका मन्दिरहरुमा स्थानीयवासी हरुको धार्मिक आस्था रहेको हुँदा सोही मन्दिर अन्य ठाउँमा स्थानान्तरण गर्न उपयुक्त तरिकाले मन्दिरहरुको क्षेत्र बाहिर सार्न मञ्जुर रहेको जानकारी गराइयो।

2) मन्दिरहरुमा नजिकै रहेको नन्दकवानी भगवती मन्दिरको घेराबार निर्माणको लागि स्थानीय सरोकारवालाहरुको माग रहेको जानकारी गराइयो।

ANNEX 7: OUTLINE OF ENVIRONMENTAL, HEALTH AND SAFETY PLAN

Chapter 1: Project Overview
- 1.1 Scope of the document
- 2.2 Overview of health and safety features
- 2.3 Project Health, Safety, and Environmental Goals & Objectives

Chapter 2: Safety policy of the Project
- 2.1 Safety policy statement
- 2.2 Contractor's overall safety responsibilities
- 2.3 Contractor's safety Specialist responsibilities
- 2.4 Contractor's Supervisor responsibilities
- 2.5 Worker's responsibilities
- 2.6 Disciplinary policy procedures
- 2.7 Involvement of the public
- 2.8 Color coding for PPE

Chapter 3: Health policy, and amenities
- 3.1 Camp establishment, and operation
    - 3.1.1 Accommodation (Washing, cooking, bedding facilities with locking)
    - 3.1.2 Toilets
    - 3.1.3 Drinking water
    - 3.1.4 Waste collection bin
    - 3.1.5 Lighting
    - 3.1.6 Ventilation
    - 3.1.7 Maintenance of facilities
    - 3.1.8 Menstrual Kit Accessibility
- 3.2 First-aid facilities
- 3.3 Insurance of construction workers
- 3.5 Site facilities for works of short duration
- 3.6 Avoiding fire hazards

Chapter 4: Employee training
- 4.1 Competent person designation
- 4.2 Safety induction for new employees
- 4.3 Toolbox meetings

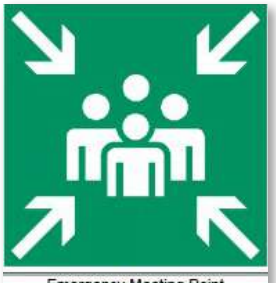
Chapter 5: Accidents, and emergency
- 5.1 First aid requirements
- 5.2 Assisting coworkers in medical emergencies
- 5.3 Emergency evacuation plan
- 5.4 Standby emergency vehicle
- 5.5 Accident investigations

Chapter 6: Toolbox safety talks
- 6.1 Overview of toolbox meetings
- 6.2 Recognize the warning signs
- 6.3 Good housekeeping
- 6.4 Trenching and excavation
    - 6.4.1 Trenching
    - 6.4.2 Competent person
    - 6.4.3 Protective systems to prevent subsidence
    - 6.4.4 Other safety requirements
- 6.5 Access to scaffolds
- 6.7 Falling object protection
    - 6.7.1 Falling object protection alternatives
    - 6.7.2 Falling object protection methods
- 6.8 Slips, trips, and falls

ANNEX 8: OCCUPATIONAL HEALTH AND SAFETY RELATED SIGNS

SIGNAL NOTICE

First Aid
प्राथमिक उपचार



Emergency Meeting Point
आकस्मिक भेला हुने ठाउँ

Fire Extinguisher
अग्नी नियन्त्रण उपकरण

Fire hose
अग्नी नियन्त्रण पाइप

DANGER SIGNS

Keep Out
निर्माण क्षेत्र- टाढै रहनुहोस्

Danger
खतरा - खुल्ला खाल्डो

Danger of open trench
खतरा - खुल्ला ट्रेन्च

No operation without safety guards
सुरक्षाका साधनबिना यो उपकरण संचालन गर्न निषेध

INSTRUCTION SIGNS

Do Not Touch
छुनु मनाही

Food and Drinks Prohibited
खाना तथा मद्यपान निषेध

Slow Sign for Traffic Control
यातायात नानुहोस्

Directional Exit Sign
बाहिर जाने दिशा

SAFETY AND SAFETY INSTRUCTION SIGNS

Safety Gloves Required
सेफ्टी पन्जाको आवश्यक

Safety Vests Required
सेफ्टी भेस्टको आवश्यक

Safety Glasses Required
सेफ्टी चश्मा आवश्यक

Safety Shoes Required
सेफ्टी जुता आवश्यक

Wear safety harness
सेफ्टी हार्नेस लगाउनुहोस्

ANNEX 9: REVIEW OF LEGISLATIVE PROVISIONS

SN	Legislation	Provisions	Relevancy with respect to Project
1.	**Constitution of Nepal**	• Constitution of Nepal is the main legal document, which emphasizes on right of clean environment of the people, natural resources protection, preservation and its prudent use. Rights regarding clean environment, under article 30: • It includes to make multi-purpose development of water resources, while according priority to domestic investment based on public participation to ensure reliable supply of energy in an affordable and easy manner, and make proper use of energy for the fulfillment of the basic needs of citizens, by generating and developing renewable energy in article 51 (g).	DSUEP helps to fulfil the rights of people to live in clean environment along with to fulfil the basic needs by providing access of sufficient energy.
2.	**Environment Protection Act 2076 (2019 AD)**	• Section 3 of the Act requires the proponent to conduct environmental studies in relation to the prescribed proposals of any developmental works. Subsection 2 of this act provides the framework about the environmental study report prepared pursuant to sub-section (1) shall, in fulfillment of the process as prescribed, be submitted to the relevant bodies of Government of Nepal for approval.	Environmental Studies and approved of report from authorized body before construction of any project is mandatory to minimize the negative impacts in Nepal which is addressed in EPA, 2076.
3.	**Environmental Protection Rule, 2077 (2020 AD) [First Amendment on 2078 (2021)]**	• Under the Environmental Protection Rules (2077) first amendment (2078), rule (3) as mentioned in annex (1), Section (F) (Energy, Water Resources and Irrigation Sector) sub-section (1), a proponent shall be required to carry out the Brief Environmental Studies for construction of transmission line project less than 66 kV in forest land for another purpose.	This rule provides the overall guidance to what type of environmental studies is required according to project by Government of Nepal.
4.	**Nepal Environmental Policy and Action Plan, 2050(1993)**	The aims of NEPAP are: • To manage natural and physical resources efficiently and sustainably • To balance the development efforts and environmental conservation for sustainable fulfilment of basic needs	DSUEP should follow the aims of NEPAP to protect and conserve the physical, biological and social environment during

SN	Legislation	Provisions	Relevancy with respect to Project
		• To preserve endemic and endangered species and their habitats; the promotion of private and public institutions for biological resources inventory and conservation • To safeguard national heritage • To mitigate adverse environmental impact of development protects and human actions • To integrate environment and development through appropriate institutions, adequate legislation and economic incentives and sufficient public resources	construction of 33/11kV distribution line along with substation.
5.	**CITES Act, 2017**	Prohibits for the treat and business of protected species is explained in Section 1, Rule 3 of this act. However, Sub-Rule 2 of the Rule 3 has allowed for the export and import of protected species for certain circumstances mention under sub-rule after taking approval. The Section 5 of the acts state the provision of punishment for the unauthorized import, export and provision mentioned in Section 3.	This act binds the workers along with the people not to collect, treat and business of the protected plants and animals listed in appendices of CITES.
6.	**Electricity Act 1992**	• No person shall be entitled to conduct survey, generation, transmission or distribution of electricity without obtaining license under this act. • The Electricity Act of 1992 has provision of land procurement for the development of projects that involve electricity generation, transmission or distribution. The Act states that the licensee may submit an application to GoN to purchase the land or house of any person if it is required for the generation, transmission or distribution of electricity. Upon the receipt of such an application, GoN may make the land or house, so requisitioned, available to any corporate body under the prevailing laws.	The main goal of this project is to distribute the sufficient amount of electricity by constructing 33/11kV line and substation by conducting the survey to minimize the impacts.
7.	**Soil and Watershed Conservation Act, 2039 (1982 AD)**	Soil and watershed conservation Act, 1982 expedient to make legal provisions on the land and watershed conservation by controlling natural calamities such as flood, landslide and soil erosion and maintain convenience and economic interests of	To do the works, which can act, as causative factor of flood, landslide and soil erosion should strictly be

SN	Legislation	Provisions	Relevancy with respect to Project
		the general public.	prohibited during the construction of this project.
8.	**Rural Energy Policy, 2006**	Rationale of formulating and implementing this policy is to create conducive environment that will self-motivate and mobilize local institutions, rural energy user groups, non-government organizations, cooperatives and private sector organization for the development and expansion of rural energy resources. The government will facilitate and promote to involve private development and expansion of new technologies. It has also envisioned subsidy provision for promotion of such renewable energy technologies.	This project helps to improve the distribution and motivate to use the electricity in rural areas of western Nepal.
9.	**Labor Act, 2074 (2017 AD)**	This labor Act was made under the management of parliament under sub-clause 1 of clause 296 of Constitution of Nepal. Sub-section 3 of Section 2 states that the employees should not be compelled to other work other than they are assigned for. In addition, Sub-section 5 of Section 2 states about prohibition of child labor in any organization and sub-section 6 of Section 2 states that there should not be any kind of discrimination among the employee's regard of religion, ethnicity, gender, origin, language or intelligence or other kind of characters.	Construction of project is only possible when the rights of labor is secure. In this project, the contractor should follow this act strictly.
10.	**Child Labor (Prohibition and Regulation) Act, 2056 (2000 AD)**	As per section 3 of this act, no child having not attained the age of 14 years shall be engaged in works as a laborer.	Child labor is strictly prohibited in this project and contractor should follow this act.
11.	**Solid Waste Management Act, 2068 (2011 AD)**	This act has been formulated with a goal of minimizing solid waste production from the target area by setting rules and regulation on solid waste management (SWM) in the country in order to develop better environment for the systematic and	This act provides the overall framework to manage the solid waste generated from

SN	Legislation	Provisions	Relevancy with respect to Project
		effective management of solid waste and to involve all the concern stakeholders in SWM practice. The main features of this act are discussion of 3R principle (Reduce, Reuse and Recycle). 3R principle seems to be very beneficial as it not only increases the life of landfill site but also save the money, which could be used for other infrastructure development. Section 4 of the act assign the local body to manage or use the solid waste discharged or dumped in collection center, transfer station or treatment plant or collected during cleaning.	households to project level. In addition, the proponent should manage the waste generated during construction.
12.	**Solid Waste Management Rules, 2070 (2013 AD)**	The solid waste management rule was formulated as per provision made in article 50 of Solid Waste Management Act, 2068. This regulation has emphasized the segregation of waste at source and mentioned that the responsibility of proper disposal and management of source belongs to the producers themselves. Section 3 of the rule describes about the segregation and management of solid waste. It has mentioned that it is essential to segregate degradable and non-degradable solid waste at source.	These rules provide the overall framework about how to reduce the volume of waste to dispose from the source during construction of substation.
13.	**Fifteenth Plan**	Vision of 15th plan is in contribution to the prosperity of the nation through sustainable and reliable development of hydropower by setting the goal which is ensure energy security through intensifying hydropower generation. In addition, one of the strategies of government of Nepal in 15th plan is to make the distribution system effective and reliable to increase energy efficiency and increase power consumption by expanding access to electricity by formulating the required policies.	This 5-year interim plan sets the goal about generation and distribution of hydroelectricity in Nepal, which is directly related to this project.
14.	**United Nations Framework Convention on Climate Change (UNFCCC), 1992**	UNFCCC, Signatories: 165. Parties: 195. (1), Article (4), commitment (f) states climate change considerations into account, to the extent feasible, in their relevant social, economic and environmental policies and actions, and employ appropriate methods, for example impact	Goal of this project is to replace the traditional form of energy by clean energy i.e., electricity which ultimately reduces

SN	Legislation	Provisions	Relevancy with respect to Project
		assessments, formulated and determined nationally, with a view to minimizing adverse effects on the economy, on public health and on the quality of the environment, of projects or measures undertaken by them to mitigate or adapt to climate change. After it entered into force on 21 March 1994, in accordance with, it mandates the individual state for prioritization of resource conservation with development.	the air pollution and smoke.
15.	**Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 and its Amendment 2014/52/EU**	This Directives in Annex II 3(b) speaks for Projects Referred to in Article 4 (2) for only on "Industrial installations for carrying gas, steam and hot water; transmission of electrical energy by overhead cables (Projects not included in Annex I)" should follow EIA study.	As per the nature and scope of the details, the proposed Subproject is of electricity distribution system instead of overhead electricity transmission lines for which no EIA level study is required.
16.	**ILO 169**	The main objective of this convention is to secure the rights of indigenous and tribal people along with the gender equality and non-discrimination of workers during work. The Article 1 on First Part of this convention mainly focused on following points: (a) the social, cultural and economic conditions of tribal peoples in independent countries differentiate from other parts of the national community and their status is managed fully or partially by their own customs or traditions or by special laws or regulations; (b) peoples in independent countries who are regarded as indigenous on account of their descent from the populations which inhabited the country, or a geographical region to which the country belongs, at the time of conquest or colonization or the establishment of present state boundaries and who, irrespective of their legal status, retain some or all of their own social, economic, cultural and political	Nepal is the part of ILO convention that's why ILO 169 should strictly followed during construction and implementation of any types

SN	Legislation	Provisions	Relevancy with respect to Project
		institutions. • Self-identification as indigenous or tribal shall be regarded as a fundamental criterion for determining the groups to which the provisions of this Convention apply. • The use of the term peoples in this Convention shall not be construed as having any implications as regards the rights, which may attach to the term under international law.	
17.	**Environment and Social Management Framework**	• ESMF is to guide DSUEP sub-projects in the area of E&S management using appropriate instruments, methodologies, procedure and responsibilities during the project cycle. NEA and the project partners shall apply during design and development of the sub-projects in order to comply with the Government of Nepal E&S regulations and the EIBs' standards on E&S assessment and management, Involuntary Resettlement, Indigenous People, Gender, etc.).	Main guiding document for E&S study to identify issues and recommending appropriate practical augmentation/ mitigation measures
18.	**Environmental and Social Policy (ESP)**	• This policy speaks for the mandatory E&S requirements for each Project like, screening, DDR, E&S Assessment, ESMP, ESMF, Information Disclosure, Consultation and Monitoring and Evaluation.	Mandatory requirement for ESMP study
19.	**EIB E&S Standards**	• This Standard recognizes the importance of the promoters' commitment to effective and sustained environmental and social performance through the establishment of an environmental and social management system commensurate with the identified impacts and risks.	Mandatory requirement for ESMP study

ANNEX 10: DUE DILIGENCE REPORT

I. PROJECT DESCRIPTION

A. Background

Distribution System Upgrade and Expansion Project (DSUEP), hereinafter referred as *"Project"*) is expected to enhance and expand the electricity distribution system to improve the reliability (voltage level and reduction in power loss) and coverage of electricity supply in the Sudhurpaschim, Karnali and Lumbini Provinces. The Government of Nepal (GoN) and Nepal Electricity Authority (NEA) have agreed to receive loan financing from European Investment Bank (EIB) to 13 Subprojects under DSUEP. The Environmental and Social Management Framework (ESMF) has provisioned that the Subprojects that are likely to have environmental and social risks/impacts easily addressed through ESMP are categorized as Category III Subprojects requiring Due Diligence Report (DDR) along with ESMP report. The main objective of the E&S due diligence process is to review any potential social issues and risks associated with the activities related to the sub-projects. The Bagthala-Kalinga Electricity Distribution Line Subproject (hereafter referred to as "Subproject") is one of the 13 Subprojects being constructed under DSUEP.

B. Subproject Components

This DDR is focused on the impacts of the following components;

a) **33kV Substation:** The substation 33/11kV of capacity 3MVA has been proposed. The major component of the substation is Power Transformer of ONAN/ONAF (Oil Natural Air Natural/Oil Natural Air Forced) cooling mechanisms; which is supported by the switchgear (Circuit Breaker, Earth Switch, Current Transformer, Potential Transformers) components and Civil Structures like control building, guard house, staff quarter, switchyard, boundary walls, internal access road, drainage and essentials.

b) 33kV Distribution Line: The 33kV DL of 0.51Km length serves as the pathway for feeding electricity to the proposed substation. In general, 33kV line comprises of the Steel Tubular Poles, Insulators, Conductors and Supporting Stays.

II. SUBPROJECT DESCRIPTION

The Subproject is located at Bungal Municipality-5 of Bajhang District of Karnali Province. The site is approximately 877Km through Prithivi Highway, Narayanghat-Mugling Highway, East-West Highway, Mahakali Highway, Khodpe-Bajhang Feeder Road to the far-west of Kathmandu. It constitute of 33/11kV substation of capacity 3MVA and 33kV distribution line of 0.51Km length is proposed in 0.56ha land. The substation land is owned by the Government and managed by Bungal Municipality.

III. FIELD WORK: ASSESSMENT AND PUBLIC CONSULTATION

Literature review comprised the review of previous relevant reports, EIB's Environmental and Social Safeguard documents, ESMF for DSUEP and feasibility study reports, and relevant social safeguard documents prepared by the NEA. The study team had conducted field visit from 2078/04/32 to 2078/05/03 (16-19 August 2021). Local level stakeholders including the users were notified through a notice from NEA which included objectives, venue, and time of consultation requesting their presence in the consultation meeting. The meeting was

conducted at Hatkot, Bungal Municipality-5 on 2078/05/02 (18 August 2021). Hard copies of Subproject features and activities were shared in Nepali language at the time of consultation. Construction activities and possible environmental and social issues during Subproject implementation was briefed. In total 21 participants (1 female and 20 male) participated in the meeting. The views/consent, concerns, recommendations/suggestions, and demands of the participants were documented in the form of minutes (ANNEX 6).

IV. SOCIO-ECONOMIC PROFILE

In Bungal Municipality, the male population is 29,132, and female population is 30,323 aggregating the total population to 59,455. Ward No. 16 has the total population of 6,627 among which 3,185 are male, and 3,442 are female living in 1,096 households. The majority ethnic composition nearby the Subproject area is of Chhetri. Nearly 80% population rely on agriculture-based earning source followed by daily wage labor, small trade and business/enterprises and services. During consultation, it was known that the 33 kV distribution line passes through 0.138ha farmland, which is owned by 6 land users[12].

V. ISSUES AND MITIGATION MEASURES PROPOSED IN ESMP

i. The 0.56ha substation land is barren, owned by GoN and managed by Bungal Municipality (ANNEX 2). None of public infrastructure will be affected by the Subproject. However, 0.138ha of cultivated agricultural land will be affected.
ii. No relocation impacts or impacts on structures and private land acquisition are anticipated at any of the identified proposed Subproject footprint area.
iii. *Nandadevi Devil Spirit Worshipping Place* lies outside the Subproject footprint area and will be avoided during construction. Thus, none of the cultural heritage site will be affected during the Subproject implementation.

VI. ENTITLEMENT MATRIX

Components	Capacity/ Length with No.	Area (Sq.m)	Land Ownership	Involuntary Resettlement (IR) Impacts	Indigenous People (IP) Impacts	Proposed Mitigation Measures
Construction of New Substation	3 MVA/ 1	Required: 0.56ha	GoN and Management by Bungal Municipality	The substation land is barren. All the land will be required for 33kV substation construction. No any structures are present on the proposed site. No IR impacts are anticipated.	None	None

VII. INFORMATION DESSIMINATION

The DDR is publicly available in Nepal Electricity Authority Office and Project Implementation Unit.

VIII. GRIEVANCE REDRESS

[12] *The five land users identified along the distribution line during the field visit are Ratna Bahadur Singh, Nirajan Kunwar, Ratan Kunwar, Harka Kunwar, Janak Kunwar and Gaure Okheda along the line route.*

The Subproject will entail the concerned party submitting a grievance either in-person, or via phone, letter, or email to the Site-Engineer or the concerned Municipality Chief or the concerned Ward Chair. The Site-Engineer will record such complaint. In cases where Ward Chair has received such grievance, s/he should forward the grievance to the Site-Engineer. The Site-Engineer shall notify the committee members of Tier-I and arrange meeting to resolve the received grievances. The Subproject level GRM committee will ensure the grievances are addressed. If not resolved, such grievances will be forwarded to Tier-II and then to Tier-III as described in **Section 3.6.**

IX. CONCLUSION

The due diligence study findings suggests that there are minimal social and environmental impacts associated with Subprojects which will be addressed with minimal mitigation measures. No relocation impacts or impacts on structures and private land acquisition are anticipated at any of the identified proposed Subproject footprint area. NEA will address the total implementation cost as estimated in Table 4-12.