ENVIRONMENT AND SOCIAL IMPACT ASSESSMENT - ENVIRONMENT AND SOCIAL MANGEMENT PLAN REPORT FOR GOHPUR SUBSTATION

ASSAM INTRA-STATE TRANSMISSION SYSTEM ENHANCEMENT PROJECT

SUBMITTED TO

ASIAN INFRASTRUCTURE INVESTMENT BANK

SUBMITTED BY

ASSAM ELECTRICITY GRID CORPORATION LIMITED

PREPARED BY: PT FEEDBACK INFRA CONSORTIUM

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ABBREVIATIONS

AH	Affected Household
AIIB	Asian Infrastructure Investment Bank
AEGCL	Assam Electricity Grid Corporation Limited
AIS	Air Insulated Substation
AISTSEP	Assam Intra-State Transmission System Enhancement Project
APCB	Assam Pollution Control Board
AGM	Assistant General Manager
BOQ	Bill of Quantity
CESMP	Contractor's Environmental and Social Management Plan
CPCB	Central Pollution Control Board, Government of India
CBO	Community Based Organization
DisCom	Distribution Company
DPR	Detailed Project Report
DC or D/C	Double Circuit
EIA	Environmental Impact Assessment
EPC	Engineering, Procurement And Construction Management
E&S	Environment and Social
E&S officer	Environment and Social Officer
E&S Specialist	Environment and Social Specialist
ESIA	Environmental and Social Impact Assessment
ESMPF	Environmental and Social Management and Planning Framework
ESMP	Environmental and Social Management Plan
ESP	Environmental and Social Policy
ESS	Environmental and Social Standard
GoA	Government of Assam
GoI	Government of India
GHG	Greenhouse Gas
GIS	Gas Insulated Substation
GRC	Grievance Redress Committee
GRM	Grievance Redress Mechanism
HTLS	High Temperature Low Sag
IA	Implementing Agency
IMD	Indian Meteorological Department
INR	Indian Rupee
IPP	Indigenous People Plan
IP	Indigenous Peoples
LA	Land Acquisition
MoEF&CC	Ministry of Environment, Forest and Climate Change
NWBL	National Wildlife Board
NGO	Non-Government Organization
OPGW	Optical Power Ground Wire

PAPs	Project Affected Persons
PFA	Power for All
PIU	Project Implementation Unit
PMC	Project Management Consultancy
PMU	Project Management Unit
RP	Resettlement Plan
RPF	Resettlement Planning Framework
RoW	Right of Way
RFCLARRA	Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement Act, 2013
SBWL	State Wildlife Board
SC or S/C	Single Circuit
SF6	Sulphur Hexafluoride
S/S	Substation (s)
ST	Scheduled Tribe
STU	State Transmission Utility
TRL or T/L	Transmission Line
T&T	Tower and Transmission

WEIGHTS AND MEASURES

Ha. (hectare)	10,000 sq. m = 2.47105 Acre
km (kilometer)	1,000 meters
kV	kilovolt (1,000 volts)
MVA	Megavolt Ampere

EXECUTIVE SUMMARY

Asian Infrastructure Investment Bank (AIIB) has considered supporting enhancement of power transmission to improve the reliability of power supply through "Assam Intra-State Transmission System Enhancement Project" (The Project) in two phases.

Assam Electricity Grid Corporation Limited (AEGCL), the State Transmission Utility (STU) of Assam, owns and operates intra-state Transmission system of Assam and is responsible for transmission of electricity to the distribution entity of Assam from the Generating Plants of the State as well as from Central Sector Generating Utilities and the power contracted from other sources. AEGCL is the Implementing Agency (IA), to support the implementation of Power for All (PFA) plan. PT Feedback Infra Limited, Indonesia in Association with Jade Consult Nepal and NIPSA, Spain has been engaged by AEGCL as Project Management Consultant (PMC).

The Project under Phase I includes the construction of 10 new substation in 400kV, 220kV and 132kV voltage level along with the associated (332.945 km) transmission lines (TL), Conversion of one no. of existing AEGCL S/S (132/33kV Gohpur) from AIS to GIS; Augmentation of 18 existing substations (replacement of old transformers with new transformers); Augmentation of 186 km of transmission line (restringing of One Single Circuit (S/C) line and two Double Circuit (D/C) line) by High Temperature Low Sag (HTLS) conductors; Replacement of ground wire to Optical Power Ground Wire (OPGW) for 636 km of transmission lines and substation equipment at substations.

Power transmission projects including the construction of substations have not been listed in the list of environmentally sensitive projects and hence, no environmental clearance is required, as per the Environmental Impact Assessment (EIA) notification of 2006 and its subsequent amendments by the Ministry of Environment, Forest and Climate Change (MoEF&CC). However, project associated activity like quarry operation (if any) for the project may require prior Environmental Clearance. Clearance from the Assam Forest Department is required only in cases where a project is constructed on forest land or requires cutting of forest trees. Clearance from the National Wildlife Board (NWBL) / State Wildlife Board (SBWL) is required only in cases where a project is constructed on Notified Wildlife area or within the Eco-sensitive Zone of Wildlife area. Clearance from the Wetland authority is required only in cases where a project is constructed on Notified Wetland or within the Eco-sensitive Zone of Wetland.

The present Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) report focuses on package F - conversion of existing AEGCL 132/33kV S/S from AIS to GIS at Gohpur and thus forest, wildlife and wetland clearances are not applicable.

As the Project is funded through the AIIB, the Bank's Environmental and Social Policy (ESP) applies. The Project has been assigned to "Category B" as per the ESP.

ESS 1 will be applicable to the Project, as civil works may cause a limited number of potentially unlikely environmental and social impacts. These impacts are not unprecedented and are limited to the Project area.

ESS 2 and **ESS 3** are not applicable.

The detail of the various regulatory frameworks pertaining to the project has already been discussed / considered in ESMPF.

AEGCL's working operation safety manual also serves as its commitment towards fulfilling the E&S responsibilities including occupation health and safety.

A baseline study to assess the environmental and socio-economic condition within the substation premises and adjoining areas has been conducted on 23rd September 2022 to gather baseline information of the environmental and social profile. The detail of the baseline conditions of substation is provided in main report.

Environmental sensitive sites are away from the proposed substation site. Environmental condition of the substation sites is quite good.

As assessed from the baseline condition, the impacts are manageable as no major environmental issues have been recorded during site visit. Details of impact and mitigation measures are discussed in the main report. ESMP cost to implement the key environmental & social measures and environmental & social monitoring plan which a part of Engineering Procurement Construction (EPC) Contractor's contract as included in Bill Of Quantity (BOQ) item and as part of their good Engineering practice. An amount of **INR 29, 67,300** is estimated to be required for implementation of ESMP.

Public consultation was conducted with local habitants like economically poor communities, women, vulnerable groups and other local community leaders nearby substation location on 23rd September 2022. The consultation followed strict protocols to prevent the spread of Covid-19 and to reiterate awareness about safe behavior.

The transcript of these discussions will help AEGCL and the EPC contractor to conduct a proper needs assessment to ensure the issues raised by people are addressed appropriately. Consultation will be carried out on an on-going basis throughout the sub-project cycle.

Community welcomed the proposed conversion of existing AEGCL 132/33kV S/S from AIS to GIS. No major environmental issues were raised during the consultation process. Local people has shown their interest on unskilled works on temporary basis for the civil works.

Local people are waiting eagerly for the implementation of the sub-project, so they could receive better power supply and opportunity for some employment generation.

This draft ESIA - ESMP will be disclosed online on the website of AIIB and AEGCL. Their hardcopies in English are available at the following locations:

1. PMU: Project Director,
   Address: 1st Floor, AEGCL, Bijulee Bhawan,
   Contact No.: 0361-2739520
   Website: www.aegcl.co.in,
   Contact Person: Mr. Lokhnath Choudhury

2. PIU:

Name of the T&T Circle	Name of the Project Districts	Pkg	Name of EPC Contractor	Sub-Projects	Focal point / Nominated Official	Contact number (Mobile and WhatsApp)	Communication Address
N. Lakhimpur	Biswanath	F	M/s Sumaja Electricals	Gohpur S/S	Sri Nayan Jyoti Kuli, DM, (Nalkata GSS)	7002949313	O/o The DGM, T&T Circle, AEGCL, North Lakhimpur, Nalkata, 787031

This executive summary in English and Assamese can be found at the following locations:

1. PMU: Project Director,
Address: 1st Floor, AEGCL, Bijulee Bhawan,
Contact No.: 0361-2739520
Website: www.aegcl.co.in,
Contact Person: Mr. Lokhnath Choudhury

2. PIU: As mentioned in table above.

3. GRC

Tier 2:

(i) Chief General Manager (CGM, PP&D), AEGCL
Address: 1st Floor, AEGCL, Bijulee Bhawan,
Contact No.: 0361-2739520
Website: www.aegcl.co.in,
Contact Person: Mr. Lokhnath Choudhury
(ii) PMU: Project Director,
Address: 1st Floor, AEGCL, Bijulee Bhawan,
Contact No.: 0361-2739520
Website: www.aegcl.co.in,
Contact Person: Mr. Lokhnath Choudhury

Tier 1: As mentioned in table above.

The Project provides for the establishment of a Grievance Redress Mechanism (GRM). The GRM is a free system that registers and attempts to resolve concerns or complaints by Project-affected people (PAPs) or construction workers. This process aims to quickly resolve disputes and avoid litigation, thus ensuring the smooth implementation of the project activities.

At all levels of the project Grievance Redress Mechanism, the Grievance Redress Committee members should uphold the objectives of the GRM and strive to achieve them. The primary objectives of GRM are:

- Provide an accessible, transparent, efficient and predictable mechanism for resolution of grievances to all project by:

  - Popularizing the GRM and how it can be accessed for free.
  - Receiving grievances in various possible forms (Written, Verbal, Electronic, Email, Social Media, Telephone, Fax, Suggestion Box)
  - Establishing clear procedures for redress that covers:
    - Registrations in the GRM log all grievances (including minor and verbal).
    - Acknowledgement to the complainant, explaining expected duration for resolution.
    - Investigation of the grievance, proposing a solution to the complainant and if acceptable closure of the complaint. OR
    - Escalation of the grievance to Tier II which should be communicated to the complaint.
    - Investigation of the grievance, proposing a solution to the complainant
    - Provision of feedback and closure of the grievance in the GRM Log.
  - Complaint should be made aware that:
    - There is no retribution or intimidation for complainants.
    - Access of the GRM is free for the complainants.
    - The GRM does not replace the judicial system.
- Observe for any repeated complaints and inform PMU of such for their systemic resolution.
- Providing an environment that fosters free and honest exchange of information, views, and ideas.

The GRM can be accessed through the following channels:

- Project Sign board
- Display in PIU office/T&T Circle office
- To be upload in the AEGCL web site

The Project-affected People's Mechanism (PPM) has been established by AIIB to provide an opportunity for the independent and impartial review of submissions from Project-affected people who believe they have been or are likely to be adversely affected by the AIIB's failure to implement its ESP in situations when their concerns cannot be addressed satisfactorily through the Project-level GRM or the AIIB's management processes. Information about the PPM is available at: **https://www.aiib.org/en/policies-strategies/operational-policies/policy-on-the-project-affected-mechanism.html**

1 INTRODUCTION

Asian Infrastructure Investment Bank (AIIB) extends financial assistance for "Assam Intra-State Transmission System Enhancement Project" (AISTSEP) to Assam Electricity Grid Corporation Limited Assam Electricity Grid Corporation Limited (AEGCL), the Implementing Agency (IA), to support the implementation of Power for All (PFA) plan. PT Feedback Infra Limited, Indonesia in Association with Jade Consult Nepal and NIPSA, Spain has been engaged by AEGCL as Project Management Consultant (PMC). The Project under Phase I includes the construction of 10 new substation in 400kV, 220kV and 132kV voltage level along with the associated (332.945 km) transmission lines (TL), Conversion of one no. of existing AEGCL S/S (132/33kV Gohpur) from AIS to GIS; Augmentation of 18 existing substations (replacement of old transformers with new transformers); Augmentation of 186 km of transmission line (restringing of One Single Circuit (S/C) line and two Double Circuit (D/C) line) by High Temperature Low Sag (HTLS) conductors; Replacement of ground wire to Optical Power Ground Wire (OPGW) for 636 km of transmission lines and substation equipment at substations.

The present Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) report focuses on package F - conversion of existing AEGCL 132/33kV S/S from AIS to GIS S at Gohpur.

2 DESCRIPTION OF THE PROJECT AND SUB-PROJECT

2.1 Description of Project

AEGCL, the State Transmission Utility (STU) of Assam, has planned to execute "Assam Intra-State Transmission System Enhancement Project" to materialize the vision of Govt. of India to provide "Power for All" (PFA) and evacuate power from Generating Plants of the State as well as from Central Sector Generating Utilities and other sources as well as strengthen the Grid Infrastructure of the State reducing the transmission losses. AEGCL is responsible for transmission of electricity to the Distribution Company (DisCom) of Assam.

The project scope involves construction of substations and associated transmission lines, augmentation, up gradation and installation of equipment of substations.

2.2 Project component features

The subproject is located in Gohpur, Biswanath District of Assam. The location map of substation is depicted in Figure below.

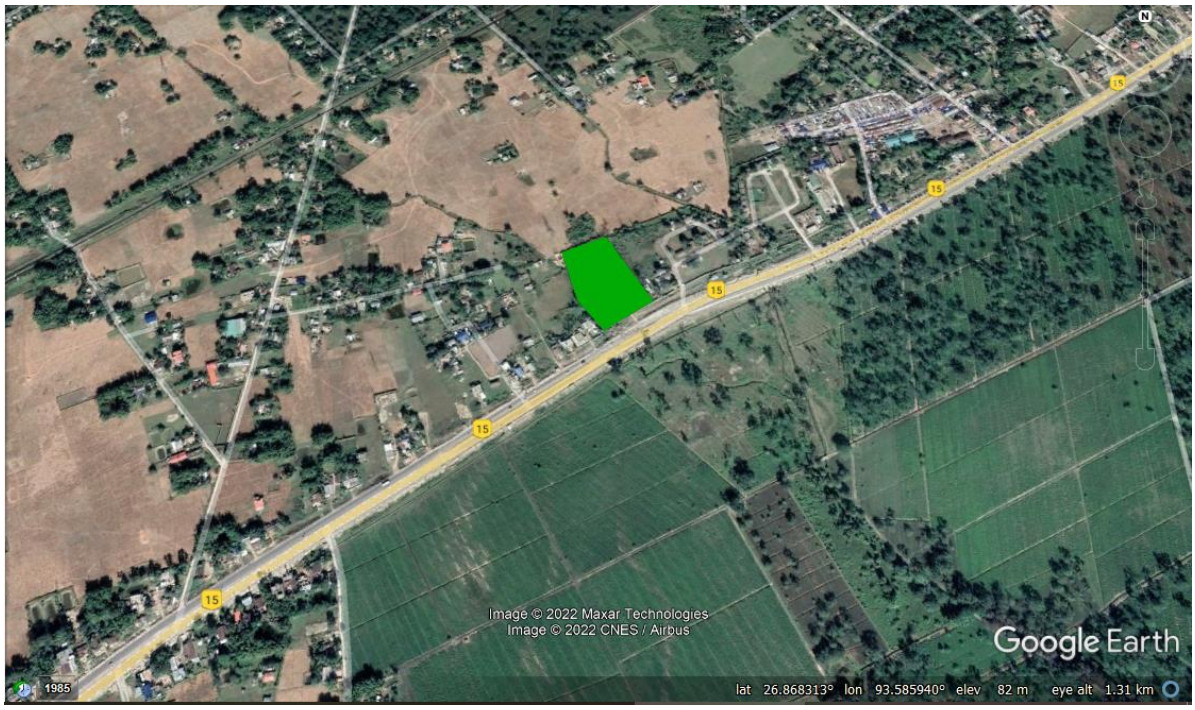

Figure – 1: Location of Substation

Details of sub-project component features are discussed below.

Conversion of existing AEGCL 132/33kV S/S from AIS to GIS at Gohpur

a. Logistics: The substation is approximately 279 km from Guwahati City via Guwahati – Kaliabor road. The road condition is in good condition. The road starts from Guwahati to Barghat passes through National Highway (NH-27) then NH 127 upto Kaliabor, then Tezpur NH 715 and then Gohpur S/S is NH 15. Nearest Railway Station is Gohpur which is approx. 5 km from the S/S.

b. Substation: The scheme provides conversion of existing AEGCL 132/33kV S/S from AIS to GIS at Gohpur having 2 nos. 25 MVA Transformers.

2.3 Detailed Description of Sub-Project

Table - 1: Details of the proposed substation and the land ownership

Scope of Work	GPS coordinates of Substation locations	Location / Village / Town / Tehsil / District	Consignee / Concerned Division Official	Area as per Appendix-11 of ESMPF (in Hectare)	Area at present (In Hectare)	Slope/ Plain	Type of Land	Ownership
Conversion of existing AEGCL 132/33kV S/S from AIS to GIS) at Gohpur	26°52'6.12"N 93°35'21.97"E	Gohpur / Biswanath	Sri Nayan Jyoti Kuli, DM, (Nalkata GSS)	6.68	6.68	Plain	AEGCL existing S/S	AEGCL existing S/S

3 REVIEW OF LEGAL & POLICY FRAMEWORK

The laws, regulations and policies of Government of India (GoI), Government of Assam (GoA), International conventions and the AIIB pertaining to E&S risks and impacts need to be considered for effective management of environmental aspects.

As a sequel to the UN Conference on the Human Environment (1972), Indian Parliament in 1976 amended the Constitution of India by introducing articles 48A and 51A. These articles incorporated environmental concerns into the Directive Principles of state policy and postulated as a fundamental duty of all citizens to preserve and protect the environment.

Power transmission projects including the construction of substations have not been listed in the list of environmentally sensitive projects and hence, no environmental clearance is required, as per the Environmental Impact Assessment (EIA) notification of 2006 and its subsequent amendments by the Ministry of Environment, Forest and Climate Change (MoEF&CC). However, project associated activity like quarry operation (if any) for the project may require prior Environmental Clearance. Clearance from the Assam Forest Department is required only in cases where a project is constructed on forest land or requires cutting of forest trees.

Clearance from the Assam Forest Department is required only in cases where a project is constructed on forest land or requires cutting of forest trees. Clearance from the National Wildlife Board (NWBL) / State Wildlife Board (SBWL) is required only in cases where a project is constructed on Notified Wildlife area or within the Eco-sensitive Zone of Wildlife area. Clearance from the Wetland authority is required only in cases where a project is constructed on Notified Wetland or within the Eco-sensitive Zone of Wetland.

The present Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) report focuses on package F - conversion of existing AEGCL 132/33kV S/S from AIS to GIS at Gohpur and thus forest, wildlife and wetland clearances are not applicable.

As the Project is funded through the AIIB, the Bank's Environmental and Social Policy (ESP) applies. The Project has been assigned to "Category B" as per the ESP.

ESS 1 will be applicable to the Project, as civil works may cause a limited number of potentially unlikely environmental and social impacts. These impacts are not unprecedented and are limited to the Project area.

ESS 2 and **ESS 3** are not applicable.

The detail of the various regulatory frameworks pertaining to the project has already been discussed / considered in ESMPF.

AEGCL's working operation safety manual also serves as its commitment towards fulfilling the E&S responsibilities including occupation health and safety.

4 DESCRIPTION OF ENVIRONMENTAL & SOCIAL BASELINE CONDITIONS

4.1 E&S baseline and primary data pertinent to the potential E&S risks of Sub-project activities for S/S

A baseline study to assess the environmental and socio-economic condition within the substation premises and adjoining areas has been conducted on 23rd September 2022 to collect and gather baseline information of the environmental and social profile. The ambient air quality monitoring data was collected from the sub-project location i.e. Gohpur substation location is presented in Table below**.** The monitoring data generated in pre-construction phase for ambient air quality, water quality, soil quality and noise level by EPC contractor for substation location should be considered as baseline data.

Table-2: Air Quality Monitoring Data of the proposed substation

Name of Monitoring Station	Monitoring Period/Date	PM_{10} ($\mu g/m^3$)	$PM_{2.5}$ ($\mu g/m^3$)	SOx ($\mu g/m^3$)	NOx ($\mu g/m^3$)	Remarks
National Ambient Air Quality Standards (NAAQS)		100	60	80	80	**24-hours average**
National Ambient Air Quality Standards (NAAQS)		60	40	50	40	**Annual**
Results: Gohpur S/S	28.09.2022	**64.6**	**39.2**	**9.8**	**11.8**	**24-hours average**

Table-3: Noise Level Monitoring Data of the proposed substation

Name of Monitoring Station	Monitoring Period/Date	Sound Parameters (dBA)		
		Category of Zones	Limits in dB(A) / Day time	Limits in dB(A) / Night time
		Industrial	75	70
		Commercial	**65**	**55**
		Residential	55	45
		Silence Zone (Sensitive Locations)	50	40
Results: Gohpur S/S	28.09.2022	Commercial zone	**64.2**	**44.6**

Table-4: Ground Water Quality Data of the proposed substation

Name of Monitoring Station	Sampling Period/Date	Parameters	Method	Unit	Results	IS-10500-2012	
						Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source
Gohpur	28.09.2022	pH	IS 3025 part 11 1983 (RA:2017)	–	7.20	6.5-8.5	No relaxation
		Conductivity	IS 3025 part 14 1984 (RA:2013)	µs/cm	0.46	–	–
		Colour	IS 3025 part 4 1983 (RA:2017)	hazen	NC	5	15
		Total Dissolved Solids	IS 3025 part 16 1984 (RA:2017)	mg/l	71.2	500	2000

		Total Suspended Solids	IS 3025 part 17 1984 (RA:2017)	mg/l	64.8	–	–
		Turbidity	IS 3025 part 10 1984(RA:2017)	NTU	2.2	1	5
		BOD	IS 3025 part 44 1993(RA:2014)	mg/l	1.1	–	–
		Dissolved Oxygen	IS 3025 part 38 1989(RA:2019)	mg/l	4.4	–	–
		Chlorides	IS 3025 part 32 1988(RA:2013)	mg/l	-	250	1000
		Fluoride	IS 3025 part 60 2008(RA:2013)	mg/l	0.21	1	1.5
		Iron	IS 3025 part 53 2003 (RA:2014)	mg/l	0.16	0.30	No relaxation
		Oil and Grease	IS 3025 part 39 1991 (RA:2014)	mg/l	-	–	–
		Sulphates	IS 3025 part 24 1986 (RA:2019)	mg/l	8.6	200	400
		Hardness	IS 3025 part 21 2009 (RA:2019)	mg/l	72.2	200	600
		Nitrate	IS 3025 part 34 1988 (RA:2019)	mg/l	-	45	No relaxation
		Odour	IS 3025 part 5 1983(RA:2017)	–	Agreeable	Agreeable	Agreeable
		E. Coli	Hi Media Kit	MPN/100ml	Absent	Absent	Absent
		Total Coliform	APHA 23rd Edition 2017	MPN/100ml	Absent	Absent	Absent
		Pesticides	APHA 23rd Edition 2017	µg/l	BDL	–	–
		Taste	APHA 23rd Edition 2017	–	Agreeable	Agreeable	Agreeable
		Floating Materials	–	–	Not visible	–	–

Based on the secondary information acquired through consultation with local populace and the site reconnaissance survey it was observed that baseline air quality and ambient noise appeared to be within acceptable limits and air or noise pollution poses insignificant threat.

4.2 District and location wise social profile of proposed substation locations

Table -5: Social profile of proposed substation location

Particulars	Social profile of proposed substation location
Population	Biswanath District: - 346624 (male-1764341, female-170190) as per the Census 2011 Gohpur Block – 121830 (male -62000 , female – 59830)
Schedule Caste (SC) and Schedule Tribe (ST) Population	Biswanath District – SC-24471, ST-17435 Gohpur Block – SC-6481, ST-53654
Literacy rate	Biswanath District – 51.43% Gohpur Block – 65.21%
Sex ratio	Biswanath District – 965 Gohpur Circle – 965

4.3 E&S profile of substation

The E&S profiling has been conducted for substation on 23rd September 2022 to collect and gather the baseline information of the environmental and social profile. The team for the E&S assessment comprises of Environmental and Social staffs and member from the sub-project execution team of PMC. The team was supported by officials from PIU's.

Selection of Site

Site visit was carried out at Gohpur substation to establish the E&S profile along with community consultations in S/S location.

Adopted Methodology

The adopted methodology for establishing the E&S data involves collection of data for existing conditions on physical, ecological, economic and social aspects, together with the anticipated environmental and social impacts and proposed mitigation measures. The assessment of physical, biological and social features along the proposed substations also involved data collection from secondary sources and has been executed to support the findings of the field survey.

The data generation was supplemented with field observations, survey reports and interactions with the community and project personals of PIU.

A baseline study was conducted to assess the environmental and socio-economic conditions within the substation premises and adjoining areas. The baseline data generation was supplemented with field observations, survey reports and interaction with the community and project personnel. The detail of the baseline conditions of substation is presented in the Table below.

Table - 6: E&S profile of the proposed substation site

Name of Proposed Substation	Location (District)	Status of Land	Detail of Proposed Site and E&S Conditions
Conversion of existing AEGCL 132/33kV S/S from AIS to GIS) at Gohpur	Gohpur (Biswanath)	AEGCL Existing S/S	• The proposed substation is located in 26°52'6.12"N 93°35'21.97"E. • 3,000 Cu-m land filling is required in the S/S. Likely earth quantity required including compaction 4,200 Cu-m. • Approx. 5,400 Cu-m sand and 10,800 Cu-m aggregate are required to be procured phase wise as per Implementation Schedule in the entire construction period of S/S. • There are 5 numbers trees recorded in the proposed S/S site. • No protected area has been observed or recorded near the proposed substation site. • No Air, Water and Noise pollution observed during site visit. • 6.68 ha AEGCL land is available for the S/S within the existing S/S premises. • The identified land for the S/S is barren adjacent to the NH-15. • The local inhabitants belong to General/ ST/SC/OBC/MOBC Caste. • No cultural heritage site nearby proposed substation.

5 ANALYSIS OF ALTERNATIVES

The land for construction of proposed substation is within AEGCL existing S/S. Therefore, there is no need for alternative site for the above substation. The details of land ownership and justification of non-requirement of alternate location is tabulated in Table below.

Table - 7: Justification for alternative

Scope of Work	Area as per Appendix-11 of ESMPF (in Hectare)	Area at present (In Hectare)	Slope/ Plain	Type of Land	Ownership	Alternate (Required/Not Required)
Conversion of existing AEGCL 132/33kV S/S from AIS to GIS) at Gohpur	6.68	6.68	Plain	Barren	AEGCL	AEGCL existing S/S

6 ENVIRONMENT & SOCIAL AUDIT

The key environmental and social baseline conditions are tabulated as under and the detail of the baseline conditions of substation is presented in **Chapter – 7: Specific E&S Impacts** of this report.

Table - 8: E&S Audit of substation

Name of Proposed Substation	Location (District)	Status of Land	Detail of Proposed Site and E&S Condition	E&S risks noticed
Conversion of existing AEGCL 132/33kV S/S from AIS to GIS) at Gohpur	Biswanath	AEGCL existing S/S	• The proposed substation is located in 26°52'6.12"N 93°35'21.97"E. • 3,000 Cum land filling is required in the S/S. Likely earth quantity required including compaction 4,200 Cu-m. • Approx. 5,400 Cu-m sand and 10,800 Cum aggregate are required to be procured phase wise as per Implementation Schedule in the entire construction period of S/S. • There are 5 numbers trees recorded in the proposed S/S site. • No protected area has been observed or recorded near the proposed substation site. • No Air, Water and Noise pollution observed during site visit. • 6.68 ha AEGCL land is available for the S/S within the existing S/S premises. • The identified land for the S/S is barren adjacent to the NH 15. • The local inhabitants belong to General/ ST/SC/OBC/MOBC Caste. • No cultural heritage site nearby proposed substation.	• Inconvenience may be caused to local residents and road users from the transportation of construction material including transportation of earth for filling purposes in S/S. • Temporary deterioration of surface water quality due to runoff from land filling of proposed S/S in nearby area. • There are 5 numbers trees recorded, which may require to be felled. • There may be some disturbances and safety issues may arise to local residents during construction of the proposed S/S. • Minor air pollution, noise and vibration may takes place during construction of substation. • Social conflict with local people and labors hired from outside by contractor may arise during construction period.

7 SPECIFIC E&S IMPACTS OF SUBSTATION

Details of specific E&S impacts of S/S are given the following section.

Checklist for identification of Environmental Impacts

Screening Checklist	Yes	No	Remarks
A. Project Sitting: Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
1. Cultural heritage site		No	No cultural heritage site nearby proposed substation.
2. Legally protected Area (core zone or buffer zone)		No	No protected area nearby the S/S has been observed and recorded.
3. Wetland/ Mangrove/ Estuarine		No	No wetland nearby the S/S has been observed.
4. Special area for protecting biodiversity		No	
B. Potential Environmental Impacts: Will the Project cause			
1. Impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to physical cultural resources?		No	There are no such environmental impacts envisaged due to construction of substation.
2. Disturbance to precious ecology (e.g. sensitive or protected areas)?		No	
3. Alteration of surface water hydrology of water ways resulting in increased sediment in streams affected by increased soil erosion at construction site?	Yes		Alteration of surface water hydrology may occur due to silt runoff from land filling for construction of substation and associated facilities.
4. Deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in Construction?	Yes		Alteration of surface water hydrology may occur due to silt runoff from land filling for construction of substation and associated facilities.
5. Increased air pollution due to project construction and operation?	Yes		Moderate air pollution may takes place during construction of substation.
6. Noise and vibration due to project construction or operation?	Yes		Moderate noise and vibration may occur during construction of substation and from the existing road.
7. Involuntary resettlement of people? (physical displacement and/or economic displacement)		No	
8. Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		No	
9. Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?		No	Contractor will hire local labour to the extent possible and provide adequate facility to labor camp and work site for those hired from outside. Regular health checkup and awareness campaigning regarding transmission of communicable diseases (such as Covid 19, STI's and HIV/AIDS) will be provided by contractor.

Screening Checklist	Yes	No	Remarks
10. Creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?		No	
11. Social conflicts if workers from other regions or countries are hired?		No	Contractor will hire local labor to the extent possible. To avoid social conflict, contractor will provide adequate facility to the labor to stay within camp site for those hired from outside.
12. Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?		No	During construction of substation, contractor will use existing facility of AEGCL and will use water from other sources after taking appropriate permission from competent authority. Filtration water must be done for drinking purpose.
13. Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	Yes		Any intervention in safety at S/S will be taken care by implementing proper precautionary measures as per safety procedures. Use of PPEs during construction and operation of substation will also be ensured.
14. Risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?		No	
15. Community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		No	
16. Generation of solid waste and/or hazardous waste?	Yes		Solid waste and/or hazardous waste will be generated during construction and operation of substation.
17. Use of chemicals?	Yes		
18. Generation of wastewater during construction or operation?	Yes		Wastewater from Septic Tank will be generated during construction and operation of substation.

Checklist for identification of Social Impacts

Particulars		Observation
A. Proposed Site Location		
1.	Land requirement for the project (GPS parcel border for Substation)	Land Available GPS (Longitude, Latitude) 26°52'6.12"N 93°35'21.97"E.
2.	Landownership of the project area: Govt. / Private lands	AEGCL existing Land.
3.	Does the project require acquisition of land or transfer of Govt. land/structures? If yes please mention the area of land, number of affected structures, Households	Yes, 6.68 ha AEGCL land is available for the S/S within the existing S/S premises.
4.	Present usage of the land parcels is for: Agricultural purposes Residential purposes Commercial purposes Other purposes (Indicate)	AEGCL existing barren land
5.	Will the project lead to loss of housing?	No
6.	Will the project lead to loss of agricultural land?	No
7.	Will the project cause damage to private property/assets? (Structures, crops, trees, etc.)	No
8.	Will the project lead to loss of common property resources?	No
9.	Will the project lead to loss of livelihood – directly or indirectly?	No
10.	Does the project require relocation of encroachers/squatters? If yes, please elaborate number, gender and nature, if possible.	No
11.	Does the project require relocation of community facilities/Govt. establishment or any object that are of religious, cultural and historical significance.	No
12.	Is the proposed project site encountering any site of archaeological/historical value? Cultural/Symbolic value?	No
13.	Proposed project onsite/off-site support infrastructures are located in an area where residents are: All Mainstream / All Indigenous peoples/Majority Mainstream or Non-indigenous peoples/ Majority Indigenous peoples.	Majority Mainstream (The local inhabitants belong to General/ST/SC/OBC/MOBC Caste.
B. Potential Social Impacts- Will the Project cause		
1.	Involuntary resettlement of people? (physical displacement and/or economic displacement)	No
2.	Impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?	No
3.	Will community facilities require relocation?	No
4.	Poor sanitation and solid waste disposal in construction camps and work sites	May occur at the time of construction; EPC will maintain the situation as per requirement.

Particulars		Observation
5.	Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?	May occur at the time of construction. EPC maintain the adequate measure.
6.	Social conflicts relating to inconveniences in living conditions where construction interferes with preexisting roads	May occur at the time of construction. EPC maintain the adequate measure.
7.	Will a Resettlement Plan be required?	No
8.	Impact on local economy – Fisheries, local tourism related businesses, market places, etc.?	No
9.	Livelihood- Direct impact due to loss of land and structures?	No
10.	Indirect impact due to loss of commercial grounds, market places, places for hawker stalls, etc.?	No
11.	Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	Any intervention in safety at S/S will be taken care by implementing proper precautionary measures as per safety procedures. Use of PPEs during construction and operation of substation will also be ensured.
12.	Other social concerns relating to inconveniences in living conditions in the project areas?	May occur at the time of construction. EPC will take the adequate measure as per requirement.
13.	Social concerns relating to local inconveniences associated with project operation, if any? (e.g. increased volume of traffic, greater risk of accidents, GBV/SE communicable disease transmission)	May occur at the time of construction. EPC will inform the vehicle movement etc. to handle the situation as and when necessary.
14.	Does the project related work affect any objects that are of religious and cultural significance to the IPs?	No
15.	Which are the 3 main economic activities that are conducted by the IP population? Will these be affected by the proposed project development and how?	There will be positive impact on Agriculture, Poultry firming and small business.
16.	Is there a requirement for an in-depth Indigenous people's plan? (IPP)	No
17.	Describe any other impacts that have not been covered in this screening form	No
18.	Describe alternatives, if any, to avoid or minimize displacement from private and public lands	Not Applicable

Project Impact Assessment Checklist

S.No.	Potential Environmental Impacts Will the Project cause	Yes	No	Remarks (If yes, what is the proposed mitigation measures and indicate which Environmental and Social Management Standard will be implemented)
1.	Encroachment on historical / cultural areas, disfiguration of landscape and increased waste generation?		No	
2.	Encroachment on precious ecosystem (e.g. Sensitive or protected areas)?		No	No protected area nearby the S/S has been observed and recorded.
3.	Alteration of surface water hydrology of water ways crossed by roads and resulting in increased sediment in streams affected by increased soil erosion at the construction site?	Yes		Alteration of surface water hydrology may occur due to silt runoff from land filling for construction of substation and associated facilities.
4.	Deterioration of surface water quality due to silt Runoff, sanitary wastes from worker-based camps and chemicals used in construction?	Yes		Alteration of surface water hydrology may occur due to silt runoff from land filling for construction of substation and associated facilities.
5.	Increased local air pollution due to rock crushing, cutting and filling?	Yes		Crushers (if any) will operate after obtaining Consent to Establish and Consent to Operate from SPCB and follows the conditions of SPCB.
6.	Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?	Yes		Any intervention in safety at S/S will be taken care by implementing proper precautionary measures as per the safety procedures. Use of PPEs during construction and operation of substation will also be ensured.
7.	Chemical pollution resulting from chemical clearing of vegetation for construction site?		No	
8.	Noise and vibration due to civil works?	Yes		Moderate noise and vibration may occur during construction of substation and existing road passing nearby the proposed substation. Proper noise mitigation measures will be installed as per requirement to minimize the Noise. To minimize noise and vibration from civil works, all construction vehicles, machineries and equipment will be maintain regularly and with a valid PUC certificate.
9.	Dislocation or involuntary resettlement of people?		No	

S.No.	Potential Environmental Impacts Will the Project cause	Yes	No	Remarks (If yes, what is the proposed mitigation measures and indicate which Environmental and Social Management Standard will be implemented)
10.	Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?		No	
11.	Social conflicts relating to inconveniences in living conditions where construction interferes with pre-existing roads?		No	
12.	Hazardous driving conditions where construction interferes with pre-existing roads?		No	
13.	Creation of temporary breeding habitats for vectors of disease such as mosquitoes and Rodents?		No	
14.	Dislocation and compulsory resettlement of people living in right-of-way of the power Transmission lines?		No	
15.	Environmental disturbances associated with the maintenance of lines (e.g. routine control of vegetative height under the lines)?		No	
16.	Facilitation of access to protected areas in case corridors traverse protected areas?		No	
17.	Disturbances (e.g. noise and chemical pollutants) if herbicides are used to control vegetative height?		No	
18.	Large population influx during project construction and operation that cause increased burden on social infrastructure and services (Such as water supply and sanitation systems)?		No	
19.	Social conflicts if workers from other regions or countries are hired?		No	
20.	Poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases from Workers to local populations?		No	
21.	Risks to community safety associated with maintenance of lines and related facilities?		No	
22.	Community health hazards due to electromagnetic fields, land subsidence, lowered Groundwater table, and salinization?		No	
23.	Risks to community health and safety due to the transport, storage, and use and/or		No	

S.No.	Potential Environmental Impacts Will the Project cause	Yes	No	Remarks (If yes, what is the proposed mitigation measures and indicate which Environmental and Social Management Standard will be implemented)
	disposal of materials such as explosives, fuel and other Chemicals during construction and operation?			
24.	Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project (e.g. high voltage wires, and transmission towers and lines) are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?		No	
Involuntary Resettlement Screening				
1.	Will the activity be undertaken in public land or existing right of way (RoW)?		No	Not Applicable
2.	If no1 is yes, are there any non-titled people (squatters) who live at the site or within the public and/RoW? Please provide gender disaggregated number.		No	Not Applicable
3.	Will the activity be undertaken in private land but acquired, and then it has been acquired in the anticipation of the program or in the last three years?		No	
4.	If no 3 is yes, when the private land was acquired, the land acquired legally under GoI law? (unknown =No)		No	Not Applicable
5.	If no 3 is yes, are there any outstanding Complaints about the land acquired?		No	Not Applicable
6.	Will the activity require new private land acquisition or use?		No	
7.	If no 6 is yes, the land will be obtained through negotiated settlement or donation?		No	
8.	If no 6 is yes, will it require compulsory land Acquisition?		No	
9.	If no 6 is yes, then will the activity require permanent or temporary relocation or Displacement of any people (titled or non-titled)?		No	
10.	If no 8 is yes, then will there be any loss		No	Not Applicable

S.No.	Potential Environmental Impacts Will the Project cause	Yes	No	Remarks (If yes, what is the proposed mitigation measures and indicate which Environmental and Social Management Standard will be implemented)	
	of housing / accommodation or severely affected households more than 10% of their productive Asset?				
11.	In all cases, will there be any loss of vegetable gardens or agriculture?		No	Not Applicable	
12.	In all cases, will there be any losses of crops, fruit Trees or private structures?	Yes		5 trees were recorded at the time of site visit.	
13.	In all cases, will any small or informal businesses have to be moved or closed temporarily or Permanently?		No	Not Applicable	
14.	In all cases, will there be temporary or permanent loss of employment as a result of the renovation?		No	Not Applicable	
15.	In all cases, will there be temporary or permanent impact on women or vulnerable groups?		No	Not Applicable	
Indigenous Peoples Screening		**Yes**	**No**	**Not Known**	**Remarks**
16.	Are the subproject areas located in scheduled Tribe area?		No		
17.	Do the applicants belong to scheduled tribes?		No		Not Applicable
18.	Will the project directly or indirectly affect Indigenous Peoples' traditional socio-cultural and belief practices? (e.g. child-rearing, health, education, arts, and governance)		No		Not Applicable
19	Will the project affect the livelihood systems of Indigenous Peoples? (e.g., food production system, natural resource management, crafts and trade, employment status)		No		Not Applicable
20.	Commercial development of the cultural resources and knowledge of Indigenous Peoples?	Yes			There will be overall development of the area and region as whole due to enhanced power supply from proposed project.
21.	Physical displacement from traditional or Customary lands?		No		Not Applicable
22.	Commercial development of natural resources (such as minerals, hydrocarbons, forests, water, hunting or fishing grounds) within customary lands under use that would impact the livelihoods or the cultural,		No		Not Applicable

S.No.	Potential Environmental Impacts Will the Project cause	Yes	No	Remarks (If yes, what is the proposed mitigation measures and indicate which Environmental and Social Management Standard will be implemented)	
	ceremonial, spiritual uses that define the identity and community of Indigenous Peoples?				
23.	Establishing legal recognition of rights to lands and territories that are traditionally owned or customarily used, occupied or claimed by Indigenous peoples?		No		Not Applicable
24.	Acquisition of lands that are traditionally owned or customarily used occupied or claimed by indigenous peoples?		No		Not Applicable

7.1 A Brief Assessment of Climate Risk and Adaptation at the Design Stage

Following are the few climatic parameters along with remedial measures adopted for Gohpur S/S at design stage.

7.1.1 Earthquakes

Impact: The earthquake disaster has a vast risk for a sustainable and harmonious societal and economic development. The performance of substation equipment during an earthquake depends on their configuration, dynamic properties, ductility and strength of construction. Substation equipment's are lightly hampered structures having natural modes within the frequency band of ground excitation. The satisfactory operation of substation during and after an earthquake depends on the survival, without malfunction of many diverse type of equipment. Porcelain components are identified as most vulnerable parts against earthquake vibrations than any other components.

Structural failures are possible in each story and in any kind of structure. They are caused by lateral and torsional displacement, local fracture of supporting members, large displacement of foundations and collision of adjacent buildings.

Direct impact such as liquefaction, ground settlement, slope sliding, fault creation and ground vertical motion takes place due to earthquakes.

Indirect impact such as falling of distribution poles and/or their connections to power transformers and falling of these transformers separately or in a group on buildings etc. may takes place due to earthquakes.

Destruction of bushings, porcelain insulator and angles of structural support due to large vibrations of connected equipment may happen due to earthquake. Settlement, sliding, destruction of foundations, supporting equipment and transformers may also damage due to earthquakes.

Adaptation: In selection the best method for retrofitting and enhancing lateral load resisting capacity of structures, the whole system including site characteristic, foundations and structural and non-structural members has been considered as per IS 1893 (Part 1) 2002. It is worth mentioning that evaluation of geotechnical properties, soil conditions and type of foundations is an important stage in selecting the best method is retrofitting.

7.1.2 Lightning Strikes

Impact: The Lightning strikes due to Thunderstorm lead to affect (electrical shock and fire) the substation drastically because it's built with steel structures only. The direct lightning strikes the conducting paths to equipment and the first element on a grounded structure within striking distance will be the point of the strike of the lightning flash. The striking distance depends on the return strike peak current. The higher the strike's current, the greater the striking distance, final breakdown to ground or a grounded object occurs.

Adaptation

Lightning Arrester: A device on an electric power or telecommunication system which diverts power to ground when the system attains an extreme voltage spike. These devices are designed to work with a direct lightning strike or an extreme surge from a fault somewhere down the line. The lightning arrester is essentially an automatic switch designed to work instantaneously.

In the case of a ground wire, the protective angle results in inclined plane surfaces below which all objects have protection against the lightning strikes. For masts or rods, the protective angle generates a conical surface for protection.

Following are some specific protection against direct lightning attack:

Protective angle and protective zone

This method consists of shielding by overhead ground wires, masts or rods. The ground wires run over the substation so that all equipment lies in the protective zone. The ground wire's protective angle is between a vertical line through the ground wire and a diagonal line connecting the ground wire.

Mesh type

This method is useful for shielding a substation's buildings, like the control room. The method locates a mesh of wires on the top or at a certain distance from the building's roof and provides down conductors for connection to the grounding electrodes. The cell size and the separation between down conductors depend on the protection level required. Most lightning currents go through the wires and grounding electrodes close to the impact point. Wire mesh type lightning protection has been adapted for lightening protection.

7.1.3 Flood

Impact: Flooding caused by heavy rains and storm may submerge the substations leading to heavy damage to civil/substation equipment structures. Increasing heavy rain may cause flashover faults across high voltage insulators and short circuits in high voltage circuit breakers. A few feet of standing water can easily take a substation off line and have damaging trickle-down effects to the other substations connected to the one experiencing flooding.

Adaptation: The area/equipment level of substation location will be raised sustainably to avoid logging of water. During preparation of contour plan, Finished Ground Level (FGL) is fixed by considering the Highest Flood level (HFL) data of that area.

7.1.4 Insulator

Impacts: In electrical sub- stations, the electrical insulator is a very important component. Porcelain/ceramic and glass insulators exhibit satisfactory mechanical, surface and ultra- violet-resistance properties. However, surface wettability, brittleness and heavy weight are the primary drawbacks.

Adaptation: Porcelain Post Composite (PPC) insulators are adapting for the project, which use tight gas-kilns with advanced thermal insulating materials and coatings. The High Voltage substation and Over-Head line ceramic insulators might have a service life of over 50 years. At end-of-life, the porcelain is an inert, non-hazardous and fully recyclable material. PPC insulators are also green products with a very low carbon footprint. Basic minerals, like kaolin, feldspar, bauxite and clays etc. are used without expensive and complicated refining operations. All these minerals are widely available everywhere on this planet, allowing the use of local mining sources and reducing the logistics carbon footprint. While the carbon dioxide equivalent of a ceramic insulator depends on manufacturer, factory, season and product mix, the Kyoto Agreement Scopes 1 and 2 values for porcelain vary between 1.0 and 2.0 kg CO2-eq/kg.

The PPC ceramic material C-130 consists mainly of Aluminum-oxide c. 50% and Silicon dioxide c. 45 % with the remaining 5 % made up of various metal-oxides present in the raw material. Ceramic insulators are 100 % recyclable. All the minerals found exist in nature and are non-hazardous, inert and non-toxic, making the recycling very easy and cost effective.

Porcelain insulators are typically the 'green' option due to,

- Natural, locally-sourced raw materials;
- Long service lives;
- 100% recyclability with no hazard at end-of-life.

7.1.5 Sulfur Hexafluoride (SF_6)

Impact: Gas insulated systems are now a major component of power transmission and distribution networks all over the world. GIS is used above 132kV, having all components interconnected and insulated via compressed SF6 (i.e., circuit breakers, disconnections, grounding switches, bush bars, potential transformers, power transformers, cable insulation).

The relative contribution of SF6 to global warming is estimated at the present time to be only 0.01%, and unlike other environmental pollutants, there is no evidence that SF6 contributes to stratospheric ozone depletion.

It is a potent greenhouse gas with a high global warming potential with a rapid increase of concentration in the earth atmosphere.

Due to compactness and steel shielding structures of GIS substation, it offers significant savings in land use, aesthetically acceptable, have relatively low radio and audible noise emissions.

SF6 decomposes under electrical stress in GIS substation forming toxic by-products that are a health threat for working personnel in the event of exposure.

Several precautions are recommended to avoid personnel exposure to toxic by-products (oxyfluoride) levels or other by-products. These are -

- Concentrations in the operating gas matrix should be traced to pre determine the overall gas toxicity.
- Contaminants should be systematically considered during maintenance, chamber evacuation and system opening process.
- Small SF6 quantities leaking into air or stagnated pollutant concentrations in the operating field should be analysed and compare to the threshold limit values and permissible exposure level.
  - Cost-effective options to reduce SF6 emissions
    - Leak Detection and Repair

- Use of Recycling Equipment
- Employee Education/Training

- Reducing SF6 emissions helps electric power systems
  - **Increase Grid Reliability -** Use of improved SF6 equipment and management practices helps protect system reliability and efficiency.
  - **Save Money -** Purchasing SF6 can be expensive, so reducing emissions can save money.

Adaptation: The monitoring of the data (i.e. data from the sensors and other signals) will be made through data acquisition modules as per International Electro-technical Commission (IEC) - 61850 standards.

These modules will be connected via Ethernet network to a switch. In this way, the data can be sent through a single optical fiber to the control room of the substation. The communication protocol used for data acquisition will be the MODBUS/ Transmission Control Protocol (TCP)/IEC-61850 standard.

To provide automation of verification through on-line monitoring, the system collects data from sensors and performs leakage checking using computer software. From the detection of any possible leakage the software may display a visual alarm to an operator or to warn any responsible person via e-mail or other way of communication.

7.2 Cumulative Impacts

Cumulative impacts may have an amplified effect in the study area due to the presence of other projects. As most of the impacts are temporary, reversible and bound to occur in the project area and the impacts are manageable using good practice, the cumulative impact of the project is insignificant.

This section assesses the cumulative impacts of the project that will have on the land, ambient air, noise, water, soil, ecology and socio- economic environment that will be managed using good practice.

7.2.1 Air Environment

Impact: Air quality will get impacted from the following sources:

- Dust and emissions from site clearing, excavation work, cutting and leveling work at site and access/ internal roads, stacking of soils, handling of construction material, transportation of material, emission due to movement of vehicles and heavy construction machinery etc.;
- Vehicular emissions due to traffic movement on site and on access roads;
- Particulate emissions from operation of vehicular mount mixing plant;
- Exhaust emissions from construction machineries, other heavy equipment like excavators, and compactors etc.;
- Emissions from emergency power diesel generator.
- Based on the above, the receptor sensitivity is assessed to be medium.
- Negligible demolition activities associated with decommissioning are likely to occur for a very small period of time and therefore the impact magnitude has been assessed as **small.**

Significance of Impact: The overall impact significance during construction phase has been assessed to be **Minor**.

Table - 9: Cumulative Impact on Air Quality

Impact	Ambient Air quality–Construction Phase				
Impact Nature	Negative		Positive		Neutral
Impact Type	Direct		Indirect		Induced
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Extent	Local		Regional		International
Impact Scale	Project area and vicinity				
Frequency	Regular during Construction Phase				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource Sensitivity	Low		Medium		High
Impact Significance	Negligible	Minor	Moderate	Major	
	Significance of impact is considered **Minor.**				
Residual Impact Magnitude	Positive	Negligible	Small	Medium	Major
Residual Impact Significance	Negligible	Minor		Moderate	Major
	Significance of impact is considered **Minor.**				

Mitigation Measures

- Emissions from the emergency DG set and other stationary machines will be controlled by ensuring that the engines are always properly tuned and maintained.
- Minimize stockpiling by coordinating excavations, spreading, re-grading and compaction activities;
- Speed of vehicles on site will be limited to 10-15 km/hr. which will help in minimizing dust and emissions due to vehicular movement;
- Idling of vehicles and equipment will be prevented;
- Burning of any waste material shall be prevented;
- Laborers shall be provided with gas connection to prevent burning of fuel wood for cooking purposes;
- If excess dust is observed, source of dust shall be investigated and proper suppression measures ensured;
- Proper maintenance of vehicles, equipments and machineries and use of vehicles with Pollution under Control (PUC) Certificate shall be ensured.

7.2.2 Noise Environment

Impact: During construction phase of the project, noise will generate from movement of vehicles carrying materials, machineries and equipments. The receptor sensitivity is assessed to be **low to medium.**

Impact magnitude is considered to be **small** considering the construction period to last for 6-7 months in a year for construction period of 3 years.

Significance of Impact: The overall impact significance is envisaged to be **Minor**.

Table - 10: Cumulative Impact on Ambient noise level

Impact	Ambient Noise Levels–Construction Phase				
Impact Nature	Negative		Positive		Neutral
Impact Type	Direct		Indirect		Induced
Impact Duration	Temporary	Short-term	Long-term	Temporary	
Impact Extent	Local		Regional		International
Impact Scale	Project area and vicinity				
Frequency	Regular during Construction Phase				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource Sensitivity	Low		Medium		High
Impact Significance	Negligible	Minor	Moderate	Major	
	Significance of impact is considered to be **Minor**.				

Mitigation Measures

Normal working hours of the contractor to be defined (preferable 8 am to 5-6pm). If work needs to be undertaken outside these hours, it should be limited to activities with minimum noise generation pre-approved from competent authority.

- Only well and regularly maintained equipment will be operated on-site;
- If it is noticed that any particular equipment is generating too much noise then lubricating moving parts, tightening loose parts and replacing worn out components should be carried out to bring down the noise as possible;
- Machinery and equipment that may be in intermittent use will be shut down or throttled down during non-work periods; and
- Minimal use of vehicle horns and heavy engine breaking in the area will be encouraged.

7.2.3 Water Environment

Impact: The Contractor shall be overall responsible for supply of water within switch yard for firefighting, drinking purposes, construction purpose and other miscellaneous purposes. The scope is also inclusive of installation of deep tube well, construction of slow sand filter and ground storage tank, supply and installation of distribution network pipelines, supply and erection of all overhead tanks, staging for OH tank wherever necessary, pipes, fittings etc. required for the water supply to be taken from the terminal point to the respective buildings. A scheme shall be prepared by the contractor indicating the layout and details of water supply which shall subject to the approval of Employer before actual start of work. Any extra bore required shall be within the scope of the contractor.

Since, there are other development activities present in proposed project area water requirement during construction phase may include groundwater / surface water abstraction. The construction phase is anticipated to last for as short time span of approximately 6-7 months in a year for construction period of 3 years. Therefore, based on the above, the receptor sensitivity and impact magnitude is assessed to be **Minor** during construction phase.

Significance of Impact: The overall impact significance during construction phase has been assessed to be **Minor.**

Table - 11: Cumulative Impact on Water Environment

Impact	Cumulative Impact on Water Environment			
Impact Nature	Negative	Positive	Neutral	
Impact Type	Direct	Indirect	Induced	
Impact Duration	Temporary	Short-term	Long-term	Permanent
Impact Extent	Local	Regional	International	
Impact Scale	Project area and vicinity			
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource Sensitivity	Low	Medium	High	
Impact Significance	Negligible	Minor	Moderate	Major
	Significance of impact is considered to be **Minor**			

Mitigation Measures: The Contractor shall be overall responsible for supply of water within switch yard for firefighting, drinking purposes, construction purpose and other miscellaneous purposes. The scope is also inclusive of installation of deep tube well, construction of slow sand filter and ground storage tank, supply and installation of distribution network pipelines, supply and erection of all overhead tanks, staging for OH tank wherever necessary, pipes, fittings etc. required for the water supply to be taken from the terminal point to the respective buildings. A scheme shall be prepared by the contractor indicating the layout and details of water supply which shall subject to the approval of Employer before actual start of work. Any extra bore required shall be within the scope of the contractor. Measures such as optimizing water usage, sensitization of water use, regular inspection of water leaks, recycling/ reuse (if possible) may reduce the overall impact directly arising from the project.

7.2.4 Soil Environment

Impact: Soil compaction and erosion may occur associated with land filling work during construction phase.

The waste generated from project includes domestic solid waste and hazardous waste like waste oil, lubricants etc. The quantity of hazardous waste generated will be much lesser quantity. Therefore, receptor sensitivity has been assessed as **low.**

Significance of Impact: The overall impact significance on soil erosion and compaction has been assessed as **negligible**.

Table - 12: Cumulative Impact on Soil Environment

Impact	Soil Erosion and Compaction				
Impact Nature	Negative	Positive	Neutral		
Impact Type	Direct	Indirect	Induced		
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Extent	Local	Regional	International		
Impact Scale	Limited to Project areas				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource/Receptor Sensitivity	Low	Medium	High		
Impact Significance	Negligible	Minor	Moderate	Major	
	Significance of impact is considered **Negligible.**				

Mitigation Measures

Vehicles will utilize the existing road to undertake construction activities.

The waste generated will be disposed of through approved and licensed vendors in accordance with Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016. The hazardous wastes will be stored onsite at separate designated covered area provided with impervious flooring and sent for disposal through an authorized vendor. During operation phase, the quantity of municipal waste and hazardous waste generated is less and probability of the hazardous waste generation is only during plant maintenance and therefore occasional. The waste generated would be routed through proper collection and containment.

- Municipal domestic waste generated at site to be segregated onsite;
- Ensure hazardous waste containers are properly labeled and stored onsite provided with impervious surface, shed and secondary containment system;
- Ensure routinely disposal of hazardous waste through approved vendors and records are properly documented;
- Use of spill control kits to contain and clean small spills and leaks during O&M activities.

7.2.5 Ecological Environment

Impact: There are 5 numbers trees recorded, which may require to be felled. Construction workers may disturb local flora and fauna.

Significance of Impact: The overall impact significance on Ecological Environment has been assessed as **Minor**.

Table - 13: Cumulative Impact on Ecological Environment

Impact	Ecological Environment				
Impact Nature	Negative	Positive	Neutral		
Impact Type	Direct	Indirect	Induced		
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Extent	Local	Regional	International		
Impact Scale	Project area and vicinity				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource Sensitivity	Low	Medium	High		
Impact Significance	Negligible	Minor	Moderate	Major	
	Significance of impact is considered to be **Minor**				

Mitigation Measures

The activities of the construction and operations staff must be restricted to avoid disturbance to flora and fauna.

7.2.6 Socio – Economic Environment

Impact: 6.68 ha AEGCL land is available for the S/S within the existing S/S premises. Therefore, there is no such impact anticipated. There may be minor impact due to social conflict with local people and labors hired from outside by contractor etc. and other minor impacts may arise during construction period.

Significance of Impact: The overall impact significance on Socio – Economic Environment has been assessed as **Minor**.

Table - 14: Cumulative Impact on Socio - Economic Environment

Impact	Social Impact Levels- Construction Phase				
Impact Nature	Negative	Positive	Neutral		
Impact Type	Direct	Indirect	Induced		
Impact Duration	Temporary	Short-term	Long-term	Permanent	
Impact Extent	Local	Regional	International		
Impact Scale	Project area and vicinity				
Impact Magnitude	Positive	Negligible	Small	Medium	Large
Resource Sensitivity	Low	Medium	High		
Impact Significance	Negligible	Minor	Moderate	Major	
	Significance of impact is considered to be **Minor**				

Mitigation Measures

The possibilities of Impact to be mitigated by the detailed consultation with the local People of the Project area.

The project component to be discussed and proper discloser of the same to be discussed in that consultation along with the local authority and they should be informed that about the developmental work and the compensation to be given for any damage (if any) as per rules.

8 AUDIT FINDINGS AND PROPOSED REMEDIATION MEASURES

Table - 15: Audit Findings and Proposed Remediation Measures

Name of Proposed Substation	Location (District)	Status of Land	Audit Findings	Remediation Measures
Conversion of existing AEGCL 132/33kV S/S (from AIS to GIS) at Gohpur	Biswanath	AEGCL existing S/S	• Inconvenience may be caused to local residents and road users from the transportation of construction material including transportation of earth for filling in S/S. • Temporary deterioration of surface water quality due to runoff from land filling of proposed S/S in nearby area. • There are 5 numbers trees recorded, which may require to be felled. • Some disturbances and safety issues may arise to local residents during construction of the proposed S/S. • Minor air pollution, noise and vibration may takes place during construction of substation. • Social conflict with local people and labors hired from outside by contractor may arise during construction period.	• Detailed Traffic Management Plan (TMP) will be prepared and included in CESMP by EPC contractor. • Proper drainage system will be provided as per design to avoid contamination of water. • EPC contractor will plan land filling in dry season to avoid temporary deterioration of surface water quality due to runoff from land filling area. • Covering of vehicles carrying loose soil/construction materials. • Sprinkling of water will be carried out in dust generating areas as per requirement. • The speed limits of vehicles during movement on unpaved roads will be restricted. • For unavoidable falling of trees, plantation will be taken as per requirement under the guidance of State Forest Department. • During working hours, EPC Contractor will provide all Personnel Protective Equipment (PPEs) to all workers to avoid health and work hazard that will arise from air, noise and civil works. • EPC Contractor will establish the labor camp (s) for those hired from outside, as per the rules within the site premises. • Laborers should be informed by the EPC project officials to maintain and respect traditional and cultural values of the local communities.

9 ENVIRONMENTAL & SOCIAL MANAGEMENT PLAN (ESMP) WITH SPECIFIC POTENTIAL ES IMPACTS

Table – 16: Environmental & Social Management Plan (ESMP)

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
PRE-CONSTRUCTION PHASE								
A. Physical Environment								
1.	Substation location and design	Disturbance to the adjacent lands and the people due to cut and fill operations	Construction of retaining structures, peripheral drain, minimize the cut and fill operations, etc. Substation designed to ensure noise will not be a nuisance.	Setbacks to substation and other structures	Substation and other structures	Once during substation siting survey and design	Surveyor (during survey) Contractor (Detailed design and layout development) PMC (Review of Detailed Design) AEGCL -PMU (Approval of survey report, detailed design and design layout), AEGCL Field Officials and P& E Wing	Part of the site selection, layout development and detailed design
2.	Interference with drainage patterns	Temporary flooding	The proposed area / equipment level will be raised sustainably to avoid logging of water. During preparation of contour plan,	Substation location	Visual observation and confirmation for the implementation of contour plan by finished Ground Level (FGL) will be	Once before start of civil construction	Surveyor / Contractor / PMC / AEGCL PIU officials / AEGCL-PMU (during implementation of contour plan)	During implementation of contour plan

[1]All clearance/permits will be obtained prior to construction commencement.

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
			Finished Ground Level (FGL) will be fixed by considering the Highest Flood level (HFL) data of that area.		fixed by considering the Highest Flood level (HFL) data of that area.			
B.	**Ambient Environment**							
3.	Substation location and design	Noise exposure causing nuisance to neighboring areas.	Substations sited and designed to ensure noise will not be a nuisance. AEGCL – PMU and PMC will review the detail design to ensure substation noise level are under required limits.	Ambient noise levels at the substation boundary and distance from nearby dwellings.	The Noise Pollution (Regulation and Control) Rules, 2000 and IFC / WB EHS. General Guidelines and Guidelines for Electric Power Transmission and Distribution, whichever is stringent.	Once before start of construction work	Contractor (Detailed design and layout development) PMC (Review of detailed design) AEGCL -PMU (Approval of, detailed design layout) & AEGCL Field Officials	Part of the detailed alignment survey and design.
4.	Equipment specifications and design parameters	Release of chemicals and gases in receptors (air, water, land)	PCBs forbidden in substation transformers or other project facilities or equipment	Transformer design	Exclusion of PCB's in transformers (should be part of tender specifications)	Once	AEGCL – PMU, PMC, AEGCL Field Officials & P&E Wing	Tender document/specifications
			The equipments and process should not use	Design stage of equipments and process	Part of tender specifications	Once before start of construction	Contractor (during procurement of equipment) AEGCL -	Part of the tender document and

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
			chlorofluorocarbons or halon. Their use (if any) in existing process should be phased out and disposed of in a manner consistent with the required statutory guidelines.	finalization	(Exclusion of CFC) Disposal / phase out of existing equipments and process (IEC 61619 or ASTM D4059)	work	PMU & PMC (during site inspections and approval for installation) & AEGCL Field Officials	detailed project design
C.	**Ecological Environment**							
5.	Cutting of Trees	Loss of trees and loss to biodiversity.	Tree replantation budget allocated as per Forest Department's requirement.	Tree loss, relevance of applicable clearances required from concerned authorities (forest department, revenue authorities)	Tree Enumeration	Consultation with local authorities (once) Statutory approval (clearance) from relevant authorities (once)	Surveyor / AEGCL - PMU/Revenue Circle / Forest Department / Contractor & AEGCL Field Officials	Detailed Design and Planning stage
D.	**Social Environment**							
6.	Involuntary resettlement or land acquisition	Not applicable, AEGCL existing substation	-	-	-	-	-	-
7.	Encroachment into farm land	Not applicable, AEGCL existing substation	-	-	-	-	-	-

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
8.	Interference with drainage patterns/ Irrigation channels/ rivers	Flooding hazards/loss of agricultural production	Appropriate drainage system to be made to avoid channel interference for low lying areas and adjacent village.	Place of Substation land and Land utilization Plan should be approved after physical verification.	Consultation with design engineers	Once	PMC & AEGCL Field Officials.	Part of detailed drawing and design.
9.	Cutting of Trees	Not applicable, 5 nos. of trees will be cut **within** the existing substation premise	-	-	-	-	-	-
CONSTRUCTION PHASE								
A. Physical Environment								
10.	Site clearance	Soil erosion and surface runoff	Construction to be restricted to the non-rainy season. Provision and maintenance of drains and retention ponds.	Soil erosion	Visual inspection (Turbidity and sedimentation).	Twice during construction phase	Contractor through contract provisions under supervision of PMC / PMU of AEGCL PMC & AEGCL Field Officials.	Throughout the construction Phase
11.	Disturbance to public utility services- Water supply, sanitation.	Public inconvenience	Advance notice to the public about the time and the duration of the utility disruption (if any arises).	Disruption to other commercial and public activities/public complaints. Contractor obligation to	As per public complaint.	At least once during construction (as and when required).	AEGCL and Contractor through contract provisions and PMC through public disclosure and consultations &	Contractor provisions in planning stage and PMC monitoring in Construction

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
			Use of well trained and experienced machinery operators to reduce accidental damage to the public utilities. – pipelines/Power Lines/Road crossings etc. Restoring the utilities immediately to overcome public inconvenience.	restore the facilities such as blocked drains (if any) through contract provisions.			AEGCL Field Officials.	period.
12.	Uncontrolled erosion/silt runoff	Soil loss, downstream siltation	Use of existing roads	Design basis and construction procedures	Incorporating good design and construction management practices.	Once for each site	Contractor through contract provisions under supervision of PMC and AEGCL - PMU & AEGCL Field Officials.	Throughout the Construction Phase.
B.	**Ambient Environment**							
13.	Equipment layout and installation	Noise and vibrations	Selection of construction techniques and machinery to minimize ground disturbance.	Construction techniques and machinery.	Minimal ground disturbance.	Once – Commencement of construction Phase.	Contractor through contract provisions under supervision of PMC and AEGCL - PMU & AEGCL Field Officials.	Throughout the construction Phase.
14.	Surplus earth	Runoff to cause water pollution,	Excess fill from foundation	Location and amount	Appropriate recoding disposal	At least once during	Contractor through contract provisions	Throughout the construction

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
	work/soil	solid waste disposal	excavation to be reused on site where earth filling is required.	(m^3) of fill disposal. Soil disposal locations and volume (m^3).	and dispersal locations in quarterly reporting of contractor and PMC.	construction phase (as and when required).	under supervision of PMC and AEGCL - PMU & AEGCL Field Officials.	Phase
15.	Substation construction	Loss of topsoil	Use the excess soil from excavation of the substation foundation and drainage improvement in filling operations.	Borrow area sighting and required earth filling (area of site in m^2 and estimated volume in m^3).	Record maintenance for excavated earth and utilization of earth for earth filling.	At Least once during construction phase (as and when required).	Contractor under supervision of PMC & AEGCL -PMU & AEGCL Field Officials.	Throughout the construction Phase
		Water pollution due to wastewater disposal and construction water runoff. Interference in drainage of rain and waste water at site.	Construction of appropriate drain system. Removal of silt and trash choking the drainage from the substation land.	Drains choked with rain/ water due to silt and trash.	Presence of proper drainage and sanitation and waste disposal facilities.	Daily - construction phase	Contractor under supervision of PMC & AEGCL -PMU & AEGCL Field Officials.	Construction/ operation period. Semi-annually Inspection report to be submitted by Contractor along with Photographs
16.	Construction of roads for accessibility to substations	Air pollution due to loosen dust might blow in the area causing dusty	Suppression of dust by sprinkling of water within the work area and stack the loose soil and	Soil stacking locations (access roads & substation site).	CPCB ambient air quality standards and IFC/WB. EHS General Guidelines and Guidelines for	Daily - Visual inspections. Monitoring for PM_{10} & $PM_{2.5}$ etc.	Contractor (for implementing mitigation measures), PMC (conducting air	Throughout the construction Phase

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
		conditions.	contain it with covers if required.		Electric Power Transmission and Distribution, whichever is stringent.	twice in a year.	quality monitoring) under supervision of AEGCL– PMU & AEGCL Field Officials.	
		Nuisance caused by noise to neighboring areas.	Minimize construction activities undertaken during the night. Construction as per scheduled timings only.	Timing of construction (noise emissions, (dBA).	Monitoring of time schedule for work CPCB. Regulations for noise level and IFC/WB EHS. General Guidelines and Guidelines for Electric Power Transmission and Distribution, whichever is stringent.	Weekly monitoring by contractor especially during usage of heavy machinery. Monitoring noise levels in dB during construction phase as per monitoring schedule	Contractor (maintenance of record) and PMC (verification of record) under supervision of AEGCL – PMU & AEGCL Field Officials.	Throughout the construction Phase
17.	Provision of facilities for construction workers.	Contamination of receptors (land, water, air). Health Impact on labour due to lack of basic amenities.	Construction workforce facilities to include proper sanitation, water supply and waste disposal facilities. (IFC/EBRD- Worker's Accommodations: processes and standards or its equivalent will be	Amenities for Workforce, grievances filed by workers.	Presence of proper sanitation, water supply and waste disposal facilities. Statutory clearances obtained under: Inter-State Migrant Workmen (Regulation of	Once before commencing construction work.	Contractor (to provide amenities to workforce) through contract provisions under supervision of PMC (visual inspection and monitoring for provided facilities to labour/workers) and AEGCL – PMU.	Throughout the construction Phase

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
			followed).		Employment and Conditions of Service) Act, 1979 and Contract Labour (Regulation and Abolition) Act, 1970 AIIB ESS1.		(validation of documentary evidence) & AEGCL Field Officials.	
18.	Mechanized construction	Noise, vibration and operator safety, efficient operation, Noise, vibration, equipment wears and tear	Construction equipment to be well maintained. Construction techniques and Machinery selection to minimize ground disturbance.	Construction techniques and equipment-estimated noise emissions and operating schedules.	Technical specifications, safety regulations, Noise control regulations (the more stringent of the standards, National or International to be followed).	Once a month	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials.	Throughout the construction Phase
19.	Storage of chemicals and materials	Contamination of receptors (land, water, air).	Fuel and other hazardous materials securely stored.	Location of hazardous material storage; spill reports {type of material spilled, amount (kg or m3) and action taken to control and clean up spill}.	Fuel storage in appropriate locations and receptacles with reference to IFC/WB EHS. General Guidelines and Guidelines for Electric Power Transmission and	Once a month	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary	Throughout the construction Phase

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
					Distribution, whichever is stringent		evidence) & AEGCL Field Officials.	
C. Ecological Environment								
20.	Site clearance	Vegetation	Not applicable, as there are no trees observed in S/S.	-	-	-	-	-
21.	Wood/ vegetation harvesting, cut and fill operations	Loss of vegetation and deforestation	Construction workers should be prohibited from harvesting wood in the project area during their employment.	Illegal wood / vegetation harvesting (area in sq. m, number of incidents reported)	Complaints by local people or other evidence of illegal harvesting.	Once a month	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials.	Throughout the construction Phase
		Effect on fauna (including avifauna)	Preventing work force from disturbing the flora, fauna including hunting of animals and fishing in water bodies. Proper awareness	Habitat loss	Complaints by local people or other evidence of illegal hunting.	Once a month	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU	Throughout the construction Phase

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
			programme regarding conservation of flora, fauna including ground vegetation to all workers. Special care to be taken during breeding season of any species.				(Validation of documentary evidence) & AEGCL Field Officials.	
D. Social Environment								
22.	Construction schedules	Noise nuisance to neighboring areas.	Minimize the construction activities during the night time and local communities to be informed of the construction schedule properly before starting the construction.	Timing of construction (noise emissions, dBA).	The Construction as per scheduled timings to be made after consultation with nearby dwellers.	As and when necessary.	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials.	Throughout the construction Phase
23.	Acquisition of cultivable lands	Loss of agricultural productivity.	66.68ha AEGCL land is available for the S/S within the existing S/S premises.	66.68 ha AEGCL land is available for the S/S within the existing S/S premises.	-Documentary evidence as certified by revenue officer and or hand over letter.	-Once	AEGCL – PMU (Validation of documentary evidence)	Throughout the construction Phase

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
24.	Temporary use of land	Losses to neighboring land uses/ values	Contract clauses specifying careful construction practices. As much as possible existing access ways to be used. Productive land to be reinstated following completion of construction. Compensation to be paid for loss of production, if any.	Contract clauses Design basis and layout. Reinstatement of land status (area affected, m^2).	Incorporating of good construction management, design engineering practices. Maintain good understanding with affected People.	Frequent before and during construction phase.	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials.	Throughout the construction Phase
25.	Transportation & storage of materials	Nuisance to the general public	Transport loading and unloading of construction materials should not cause nuisance to the people by noise, vibration and dust. Avoiding storage of construction materials beside the road, around water bodies, residential or CPR.	Compliance to traffic management plan	CPCB Emission standards and Water Quality standards (the more stringent of the National or International standards to be followed).	Once in a month	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials.	Throughout the construction Phase.

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
			Construction materials should be stored in covered areas to ensure protection from dust, emissions and such materials should be bundled in environment friendly and nuisance free manner.					
		Road Safety	Prepare the Traffic Management Plan; Instruct drivers of construction vehicles to strictly follow road regulations; Adequate and clearly visible warning signs (such as danger, detour, cross here, works in progress, people at work, etc.) will be posted at designated sites while scaffoldings will be placed over road crossing points.	Compliance to traffic management plan.	Regular Monitoring and Daily Incident Reporting.	Once a month	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials.	Throughout the construction Phase
26.	Earth Work	Impact on	Selection of quality	Quality Construction	Construction	Daily –	Contractor	Throughout the

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
	during execution	Community health and safety due to air pollution and increase in noise level.	construction techniques and machinery to minimize ground disturbance, noise generation. Using water sprinkling to minimize the dust.	Techniques and machinery.	timing, good quality of machineries & pollution control certificates of machineries in Use.	during construction phase	(implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials.	construction phase
27.	Worker's Health and safety Community health and safety	Injury and sickness of workers and members of the public; Incidents/accidents; GBV/SE	Contract provisions specifying requirements for construction camps. Contractor to prepare and implement a health and safety plan and provide workers with required PPE. Contractor to arrange for health and safety awareness programmes including on AIDS and sexually	Contract clauses: number of incidents and total loss of man days caused by injuries and sickness to be registered. Periodic health Checkup of workers and the details to be recorded/properly maintained by EPC. Workers Insurance Policy to be provided, as per Labour Laws.	Monitoring of Health and Safety practices of IFC/WB EHS. General Guidelines and Guidelines for Electricity Act.	Workers Insurance to be valid throughout the project. Health checkup to be done at the time of mobilization/ entry of the Worker/Workers. After then Twice in every month-	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials	Throughout the construction Phase

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
			transmitted diseases (STD). Detailed workers camp Management plan to be maintained by EPC.			Health check-up of works to be done.		
		Electrocution and other accident may occur due to lack of proper awareness of the Workers.	Adequate signage and barriers around charged components.	Complaints raised by community people or workers and number of accident to be recorded and maintained.	Regular Monitoring and Daily Incident Reporting	Continuous activity	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence)	Throughout the construction phase
		COVID-19 Response	Taking cognizance of situation at time of mobilization, the Contractor shall undertake a COVID-19 risk assessment of project area and prepare a COVID-19 Response and Management Plan (C-R&MP) and submit to AEGCL and	Checklist of implementation of PPE distributed Plan to be maintained by the EPC.	WHO/GoI COVID-19 Guidelines	Monthly	Contractor through contract provisions under supervision of PMC and PMU	Throughout the construction phase

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
			PMC for approval. The preparation of C-R&MP shall consider guidelines of GoI, World Health Organisation, International Labour Organisation etc. The contractor shall submit a monthly monitoring and progress report to AEGCL and PMC.					
		Human and Animal interference in Substation area.	Restriction to be maintained in the Substation area to avoid any type of accident and injury.	In the first Phase of construction the boundary wall should be constructed by the EPC.	Substation construction to be starts according to the specification of Land Utilization Plan (LUP) and Design.	Entire construction phase	Contractor (implementation of measures), PMC and AEGCL - PMU	Throughout the construction Phase
28.	Impact of Migrant workers	Lack of proper knowledge/ training, unhygienic living conditions, occupational hazards may	The provisions given in the Inter-state Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979,	As per provisions Regulation of Employment and Conditions of Service) Act, 1979, along with the Bonded Labour System (Abolition) Act	Regulatory clearance documents	Continuous activity	Contractor (implementation of proposed measures) through contract provisions under supervision of PMC (Site inspections)	Throughout the construction phase

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
		cause spread of diseases in camps; Potential conflict between migrant workforce and local may took place.	along with the Bonded Labour System (Abolition) Act 1976, and subsequent amendments, to be followed. The spread of disease to be avoided by improving the Labour camp facilities and Conflict with local People to be addressed through proper awareness and training session to the workforce.	1976.			and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials.	
29.	Capacity Building	Improve standards of implementation of work and Monitoring the Project progress.	Training of AEGCL staff & contractors.	Training schedules	Number of training program	Quarterly	PMC to provide training to EPC and AEGCL – PMU, AEGCL – Field staff and Divisional Officers.	Throughout the construction Phase
30.	Site clearance and Excavation works	Chances of finding archaeological /cultural artifacts	Instruction should be given to the workers not to remove such articles (if found any) and immediately	Discovery of any artifact of such Historical or cultural significance.	Chance finds procedure	As per occurrence of event.	Contractor (implementation of proposed measures) through contract	Throughout the construction Phase

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
			inform to the Supervisor of the EPC and further to Environmental Specialist of PMU.				provisions under supervision of PMC (Site inspections) and AEGCL – PMU (Validation of documentary evidence) & AEGCL Field Officials	
OPERATION AND MAINTENANCE PHASE								
A. Ambient Environmental								
31.	Oil Spillage	Contamination of land and nearby water bodies/aquifer	Presence of oil pit for collection of oil leakage (if any from transformer). Storage of transformer oil drums on raised and solid surface.	Design of transformer pad and availability of storage area for transformer oil drums.	Visual inspections	Continuous activity	AEGCL-Divisional Offices/PIU & PMC.	Throughout the operations
32.	Switchgear operation	SF_6 leakage during operations and refilling activity	Record of all substation switchgear, storage cylinders located within secure casings.	Usage of SF_6 gas	As per prevailing guidelines	During storage and refilling of equipments containing SF6 (Record is to be maintained for all substation	AEGCL-Divisional Offices/PIU & PMC	Throughout the operations

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
						switchgear, storage cylinders located within secure casings).		
B. Ecological Environment								
33.	Vegetation Clearance in substation	Toxic impact on non-target organism	Prior marking of vegetation to be removed to clearance, and strict control on clearing activities to ensure manual cutting and removal of vegetation.	Vegetation marking and clearance control (area in m^2).Usage of herbicides if any should be reported.	Visual Inspections to check if clearance is strictly limited to marked area.	Weekly inspections	AEGCL-Divisional Offices/AEGCL-PIU & PMC	Throughout the operations
C. Social Environment								
34.	Operation and Maintenance of substations	Nuisance to neighboring properties	If required, provision of fixing noise barriers near substation sites.	Noise level to be maintained as per the rules of CPCB.	Noise level standards should be maintained as prescribed by CPCB and IFC/WB EHS. General Guidelines and Guidelines for	Once in a year	AEGCL-Divisional Offices/AEGCL-PIU & PMC	Throughout the execution of the Project.

SL. No.	Project Activity	Potential Environmental & Social Impact	Mitigation Measures	Parameters to be Monitored	Standards/Measurement	Frequency[1]	Institutional Responsibility	Implementation Schedule
					Electric Power Transmission and Distribution, whichever is Applicable.			
		Lightning	Lightning conductor and earth wire will be installed in the Substation site.	Usage of appropriate technologies (number of incidents).	Preparedness level for using these technologies in crisis.	once a month	AEGCL-Divisional Offices/AEGCL -PIU & PMC	Throughout the operations
35.	Inadequate provision of staff/workers health and safety	Injury and sickness of staff and workers	Availability of Personal Protective Equipments. Safety awareness trainings. Availability of emergency action plan and training of staff and worker on implementation of emergency action plan.	Availability of PPE's. Training records. Availability of emergency action plan. Documentation of fire drills and emergency action plan implementation Drills.	Record of Number of staff trained in a year to be kept properly.	Twice a year	AEGCL – corporate office/HR Department	Throughout the operations
36.	Training for Electric safety	Raising awareness for electrical safety measures	Training of AEGCL – Project Implementation Unit.	Training schedules/ valid license	Number of training program	Twice a year	AEGCL – corporate office/HR Department	Throughout the operations

Abbreviations

PMU – Project Management Unit

PMC – Project Management Consultancy P&E Wing - Planning and Engineering Wing

SO_2- -Sulphur Dioxide; NO_2- - Nitrogen Dioxide; CO- Carbon Monoxide; EC – Electric Conductivity;
Pb – Lead; $PM_{2.5}$ - Particulate Matter <2.5; PM_{10} - Particulate Matter <10; TSPM- Total suspended Particulate Matter; EC - Electrical Conductivity; DO - Dissolved Oxygen; TSS - Total Suspended Solids;
BOD - Biological Oxygen Demand; NAAQS - National Ambient Air Quality Standards;
NWQS - National water Quality Standards; AEGCL - Assam Electricity Grid Corporation Limited; ORP – Oxidation Reduction Potential, PMC – Project Management Consultancy
PIU – Project Implementation Unit (AEGCL) IFC – International Finance Corporation (World Bank Group), HR – Human Resource
PS – Performance Standards

10 ENVIRONMENTAL AND SOCIAL MONITORING PLAN (ESMOP)

Table - 17: Environmental and Social Monitoring Plan

Environmental component	Project stage	Parameters to be monitored	Location	Frequency[2]	Standards	Implementation	Supervision
1.Air Quality	A. Pre-Construction Stage	PM10, PM2.5, SOx, NOx along with Meteorological data-temperature Humidity, wind speed, wind direction.	Inside the substation boundary	One time	National Ambient Air quality standards of CPCB	EPC by CPCB approved laboratory	AEGCL - PMU/ AEGCL Field officials & PMC
	B. Construction Stage	PM10, PM2.5, SOx, NOx along with Meteorological data-temperature Humidity, wind speed, wind direction.	Same location as selected during pre- construction period	Twice a year	National Ambient Air quality standards of CPCB	EPC by CPCB approved laboratory	AEGCL - PMU/ AEGCL Field Officials & PMC
	C. Operation Stage	PM10, PM2.5, SOx, NOx along with Meteorological data-temperature Humidity, wind speed, wind direction.	Same location as selected during pre- construction period	One time	National Ambient Air quality standards of CPCB	EPC by CPCB approved laboratory (Defect Liability Stage)	AEGCL - PMU/ AEGCL Field Officials & PMC
2.Water Quality	A. Pre-Construction Stage	As per IS: 10500 (PH, Colour, TSS, Conductivity, Odour, Nitrate, Fluoride, Sulphates, Chloride, DO, BOD, T. coliform, E. coliform, Dissolved Iron, total pesticides, Floating materials-wood, plastic, rubber etc. Oil and grease, TDS Turbidity, Total hardness, (as CaCO3), corrosivity, Taste).	Nearest downstream spring/hand pump of substations	One time	National water quality standards of CPCB	EPC by CPCB approved laboratory	AEGCL - PMU/ AEGCL Field Officials & PMC

[2]Here the frequency means the frequency for the monitoring report.

Environmental component	Project stage	Parameters to be monitored	Location	Frequency[2]	Standards	Implementation	Supervision
	B. Construction Stage	As per IS:10500 {pH, Colour, TSS, Conductivity, Odour, Nitrate, Fluoride, Sulphates, Chloride, DO, BOD, T. coliform, E. coliform, Dissolved Iron, total pesticides, Floating materials-wood, plastic, rubber etc. Oil and grease, TDS, Turbidity, Total hardness, (as CaCO3), corrosivity, Taste}.	Nearest downstream spring/hand pump of substations	Twice a year	National water quality standards of CPCB	EPC by CPCB approved laboratory	AEGCL - PMU/ AEGCL Field officials & PMC
	C. Operation Stage	As per IS: 10500 (PH, Colour, TSS, Conductivity, Odour, Nitrate, Fluoride, Sulphates, Chloride, DO, BOD, T. coliform, E. coliform, Dissolved Iron, total pesticides, Floating materials-wood, plastic, rubber etc. Oil and grease, TDS, Turbidity, Total hardness, (as CaCO3), corrosivity, Taste).	Nearest downstream spring/hand pump of substations	One Time	National water quality standards of CPCB	EPC by CPCB approved laboratory (Defect Liability Stage)	AEGCL - PMU/ AEGCL Field officials & PMC
3.Noise/ Vibration	A. Pre-Construction Stage	Noise level (dB level) On hourly basis for 24 hours	Inside the substation boundary	One Time	CPCB standards for Noise and vibrations	EPC by CPCB approved laboratory	AEGCL- PMU/ AEGCL Field officials & PMC
	B. Construction Stage	Noise level (dB level) On hourly basis for 24 hours	Same location as selected during pre- construction period	Twice a year/ noise assessments by demand	CPCB standards for Noise and vibrations	EPC by CPCB approved laboratory	AEGCL- PMU/ AEGCL Field officials& PMC

Environmental component	Project stage	Parameters to be monitored	Location	Frequency[2]	Standards	Implementation	Supervision
	C. Operation Stage	Noise level (dB level) On hourly basis for 24 hours	Same location as selected during pre- construction period	One Time	CPCB standards for Noise and vibrations	EPC by CPCB approved laboratory (Defect Liability Stage)	AEGCL- PMU/ AEGCL Field officials & PMC
4. Soil	A. Pre-Construction Stage	PH, Sulphate (SO3), Chloride, ORP, water Soluble salts EC, Organic Matter, Moisture Content.	Inside the substation boundary	One time	Technical specifications	EPC by CPCB approved laboratory	AEGCL- PMU/ AEGCL Field officials & PMC
	B. Construction Stage	PH, Sulphate (SO3), Chloride, ORP, water Soluble salts EC, Organic Matter, Moisture Content.	Same location as selected during pre- construction period	Twice a year	Technical specifications	EPC by CPCB approved laboratory	AEGCL- PMU/ AEGCL Field officials& PMC
	C. Operation Stage	PH, Sulphate (SO3), Chloride, ORP, water Soluble salts EC, Organic Matter, Moisture Conten.t	Same location as selected during pre- construction period	One Time	Technical specifications	EPC by CPCB approved laboratory (Defect Liability Stage)	AEGCL- PMU/ AEGCL Field officials & PMC
5. EMF	A. Pre-Construction Stage	Design specification	-	Once during final design approval	National Electrical Safety Code, American National Standard Institute, C2	Contractor (designing), PMC and PMU (design review)	AEGCL- PMU/ AEGCL Field officials& PMC
	B. Construction Stage	Adherence to Design specification during construction work.	Transmission line routes	Continuous activity	National Electrical Safety Code, American National Standard Institute, C2	Contractor	AEGCL- PMU/ AEGCL Field officials& PMC
	C. Operation Stage	Maintenance of conductor to ground, phase to phase and circuit to circuit clearances.	Transmission line routes	Continuous activity	National Electrical Safety Code, American National Standard Institute, C2	AEGCL – Field Staff	AEGCL- PMU/ AEGCL Field officials& PMC
6. Carcass	A. Pre-Construction	Visual inspection for	Substations	Continuous	Identification of	Surveyor	AEGCL- PMU/

Environmental component	Project stage	Parameters to be monitored	Location	Frequency[2]	Standards	Implementation	Supervision
	Stage	substation locations		activity	carcass (animals/birds) to be reported to concerned forest/wildlife authority for identification of species. Record to be maintained for number of carcasses		AEGCL Field officials& PMC
	B. Construction Stage	Visual Physical Inspection for substation.	Substations	Continuous activity		Contractor	AEGCL- PMU/ AEGCL Field officials& PMC
	C. Operation Stage	Visual Physical Inspection for substation.	Substations	Continuous activity		AEGCL – Field Staff	AEGCL- PMU/ AEGCL Field officials& PMC
7. Traffic	A. Pre-Construction Stage	Number & type of vehicles being used to access substation site.	Substations	Continuous activity	Record maintenance for being used for survey and increased traffic load in localities	Surveyor	AEGCL- PMU/ AEGCL Field officials& PMC
	B. Construction Stage	Number & type of vehicle being used for material transportation by EPC contractor.	Substations	Continuous activity	Maintenance of Logbook for in-out time of vehicle on site (substation).	Contractor	AEGCL- PMU/ AEGCL Field officials & PMC
	C. Operation Stage	Number & Type of vehicles being used for maintenance activity.	Substations	Continuous activity	Maintenance of Logbook for in-out time of vehicle on site (substation)	AEGCL – O&M staff	AEGCL- PMU/ AEGCL Field officials & PMC
8. Tree cutting	A. Pre-Construction Stage	Enumeration of trees after finalization of layout plan of selected substation area.	Substations	Once during detailed survey and layout design development	Documentary evidence to be maintained by surveyor for counting of trees.	Surveyor	AEGCL- PMU/ AEGCL Field officials & PMC
	B. Construction Stage	Development of inventory of tress before initiating the substation construction.	Substations	During the construction phase	Marking of tress by revenue authority in presence of Contractor	Contractor / Revenue Department / AEGCL	AEGCL- PMU/ AEGCL Field officials & PMC

Environmental component	Project stage	Parameters to be monitored	Location	Frequency[2]	Standards	Implementation	Supervision
					and AEGCL officials Obtaining applicable clearance from forest department.		
	C. Operation Stage	Pruning/cutting of tress after getting prior permission from the competent authority for maintenance activity.	Not Applicable	-	-	-	-
9.Stakeholder Engagement	A. Pre-Construction Stage	Mapping of stakeholders	Substations	Continuous activity	Keep record of the Consultation with mapped stakeholders (Keep minutes of Consultation and attendance sheet)	Survey Consultant/ Concerned revenue circle	AEGCL- PMU/ AEGCL Field officials & PMC
	B. Construction Stage	Listing of identified stakeholders (administrative and project affected people)	Substations	Continuous activity	Keep record of the Consultation with mapped stakeholders and PAPs (Keep the record MOM of Consultation and attendance sheet)	Contractor/PMC/AEGCL/ Concerned revenue circle	AEGCL- PMU/ AEGCL Field officials & PMC
	C. Operation Stage	Identification of stakeholders	Substations	Continuous activity	Consultation with identified stakeholders has to be kept and the copy of minutes of Consultation and attendance sheet also to be kept.	Contractor (Defect Liability Stage)/ AEGCL – Field Officers	AEGCL- PMU/ AEGCL Field officials & PMC
10.Grievance Mechanism	A. Pre-Construction Stage	Identification of officials, NGO, stakeholders to be part	Substation Locations	Continuous activity	Development of Grievance redress	AEGCL - PMU	AEGCL- PMU

Environmental component	Project stage	Parameters to be monitored	Location	Frequency[2]	Standards	Implementation	Supervision
		Grievance redressal committee.			mechanism as per provisions Notification of formulation of GRM and GRC		
	B. Construction Stage	Working files of GRC and GRM records.	Substation Locations	Continuous activity	Notification of formulation of GRM and GRC and display of GRM procedure in project locations (in local language) keep records for GRM (if any)	Contractor, PMC, AEGCL – PMU, Concerned PIU, AEGCL – Field staff	GRC
	C. Operation Stage	Working files of GRC and GRM records.	Substation Locations	Continuous	Notification of formulation of GRM and GRC and display of GRM procedure in project locations. Working records for GRM	Concerned field staff, concerned PIU	AEGCL- PMU/ PMC
11. Compensation	A. Pre-Construction Stage	Identification of project affected people	Substation locations	During identification of land parcel of substation	Not applicable, as land areas for all proposed S/S are AEGCL / transferred from APDCL.	-	-
	B. Construction Stage	Mapping and listing of projects affected people (crop damage (if any area m2), zirat damage (marking of trees & development of inventory), land acquisition (area m2) –if	Not Applicable	-		-	-

Environmental component	Project stage	Parameters to be monitored	Location	Frequency[2]	Standards	Implementation	Supervision
		applicable.					
	C. Operation Stage	Marking of trees (enumeration) to where pruning/cutting is required to maintain clearance between trees and conductor after obtaining prior permission from the competent authority Damage to crop (area m^2 and Listing of the types of crop) during Stringing of line.	Not Applicable	-		-	-
12. Livelihood	A. Pre-Construction Stage	Identification of any impact on livelihood due to acquisition of land, crop damage and zirat damage.	Substation locations	Once during identification of land parcel for substation.	Compensation is paid as per RPF.	Revenue Department & AEGCL -concerned divisional officer, PMC, EPC Contractor	AEGCL– PMU
	B. Construction Stage	Identification of any impact on livelihood due to loss of land (area m^2) – land utilization pattern, crop damage (area m^2 and type of crop) and zirat damage (inventory development).	Substation locations	Once – before commencing construction work		Revenue Department & AEGCL -concerned divisional officer, PMC, EPC Contractor	AEGCL– PMU
	C. Operation Stage	Identification of any impact on livelihood due to acquisition of land, crop damage and zirat damage (inventory development).	Substation locations	Continuous activity		Revenue Department & AEGCL -concerned divisional officer, EPC Contractor (Defect Liability	AEGCL– PMU/ PMC

Environmental component	Project stage	Parameters to be monitored	Location	Frequency[2]	Standards	Implementation	Supervision
						Stage)	
13. Restoration	A. Pre-Construction Stage	Identification of any damage to public utilities and public/private property to be envisaged during construction phase.	Substation locations	Once during identification of land Parcel for substation location.	Compensation is paid as per RPF	Revenue Department & AEGCL -concerned divisional officer, PMC, EPC Contractor	AEGCL– PMU
	B. Construction Stage	Marking and listing of damage to public utilities / shifting of public utilities and public / private property.	Substation locations	Continuous activity		Revenue Department & AEGCL -concerned divisional officer, PMC	AEGCL– PMU
	C. Operation Stage (Defect Liability Stage)	Marking and listing of damage to public utilities / shifting of public utilities and public / private property.	Substation locations	Continuous activity		Revenue Department & AEGCL -concerned divisional officer	AEGCL– PMU/ PMC

Abbreviations

PMU – Project Management Unit

PMC – Project Management Consultancy P&E Wing - Planning and Engineering Wing

SO_2- -Sulphur Dioxide; NO_2- - Nitrogen Dioxide; CO- Carbon Monoxide; EC – Electric Conductivity;

Pb – Lead; $PM_{2.5}$ - Particulate Matter <2.5; PM_{10} - Particulate Matter <10; TSPM- Total suspended Particulate Matter; EC - Electrical Conductivity; DO - Dissolved Oxygen; TSS - Total Suspended Solids;

BOD - Biological Oxygen Demand; NAAQS - National Ambient Air Quality Standards;

NWQS - National water Quality Standards; AEGCL - Assam Electricity Grid Corporation Limited; ORP – Oxidation Reduction Potential,

PIU – Project Implementation Unit (AEGCL) IFC – International Finance Corporation (World Bank Group), HR – Human Resource

PS – Performance Standards

11 BUDGET FOR IMPLEMENTATION OF ESMP SPECIFIC FOR ACTIVITIES COVERED BY THE ESIA

ESMP cost to implement the key environmental & social measures and environmental & social monitoring plan which a part of Engineering Procurement Construction (EPC) Contractor's contract as included in Bill Of Quantity (BOQ) item and as part of their good Engineering practice. Estimation for different ESMP activities to be performed by EPC Contractor for the two S/S is tabulated as under.

Table - 18: Environmental and Social Monitoring Plan Budget

S. No.	Description	Quantity (in No.)	Rate (in INR approx.)	Amount (in INR approx.)
A.	**Environmental Monitoring (Pre-construction Stage)**			
1	Air Quality*	1	7000	7,000
2	Water Quality	1	7000	7,000
3	Noise Levels	1	3500	3,500
4	Soil	1	7000	7,000
	Sub-Total Cost			**24,500**
B.	**Environmental Monitoring (Construction Stage)**			
1	Air Quality* (Twice/year for 3 year)	1x3x2 = 6	7000	42,000
2	Water Quality (Twice/year for 3 year)	1x3x2 = 6	7000	42,000
3	Noise Levels (Twice/year for 3 year)	1x3x2 = 6	3500	21,000
4	Soil (Twice/year for 3 year)	1x3x2 = 6	7000	42,000
5	Noise assessments by demand[3]			**1,47,000**
	Sub-Total Cost			
C.	**Environmental Monitoring (Defect Liability period)**			
1	Air Quality*	1	7000	7,000
2	Water Quality	1	7000	7,000
3	Noise Levels	1	3500	3,500
4	Soil	1	7000	7,000
	Sub-Total Cost			**24,500**
D.	**Training Workshops/Consultations/ Health Awareness Camp 196000**			
1	Training on Implementation of ESMP for PMU, contractors and Divisional Nodal Officers	5x 1 = 5	50,000	2,50,000
2	Public Consultation: Pre-Construction- Once, Construction- 2 times / year for 3 years, Defect Liability period - Once	8x 1= 8	10,000	80,000
3	Health & Safety Awareness Camp: Pre-Construction- Once, Construction- 2 times / year for 3 years, Defect Liability period- Once	8x 1= 8	10,000	80,000

[3] Budget for this activity (if arises) will be used from contingency fund

4	Training on Implementation of GRM Pre-Construction- Once, Construction- 2 times / year for 3 years, Defect Liability period - Once	8x 1= 8	30,000	2,40,000
5	Training on Occupation Health and safety Pre-Construction- Once, Construction- 2 times / year for 3 years, Defect Liability period - Once	8x 1= 8	30,000	2,40,000
6	Training on fire safety and disaster management Pre-Construction- Once, Construction- 2 times / year for 3 years, Defect Liability period - Once	8x 1= 8	30,000	2,40,000
Sub-Total Cost				**11,30,000**
E. BOQ items				
7	Personal protective equipment's (Hard hats (with full/partial brims as necessary) Safety glasses with side shields. Face masks/shields. Suitable footwear (safety/steel-toed boots, rated dielectric footwear) Insulating gloves (rated, used along with leather/cloth linings for shock protection)) as per site requirement.	1 LOTx 1 S/S	10,00,000	10,00,000
8	SF6 retrieving arrangement as per site requirement.	1 LOTx 1 S/S	5,00,000	5,00,000
Sub-Total Cost				**15,00,000**
F.	**Cost of tree plantation**[4]			
	Total (A+B+C+D+E+F)			**28,26,000**
	Contingency (5%)			**1,41,300**
	Grand Total			**29,67,300**

* Meteorological data- temperature Humidity, wind speed, wind direction.

4 Covered under BOQ item (Landscape item)

12 INSTITUTIONAL ARRANGEMENT FOR MONITORING AND REPORTING

12.1 Monitoring of ESMP compliance

The proposed mitigation measures comprise of conducting environmental monitoring for Air Quality, Noise Level, Soil Quality and Water Quality during Pre-construction, construction and operational phases of the project. The Environment and Social staff of AEGCL shall ensure the monitoring of the environmental and social aspects. During the construction phase, the contractor should ensure that activities like handling of earth works, disposal of debris, storage of materials, labor camps, putting proper traffic signals is done properly to have minimum impact on the environment and affected communities. The PMC for the project will monitor these parameters with the supervision of PMU's E&S special staff. The PMU's E&S staff and Divisional official at divisional level will supervise the contractor. Other environmental good practices include sanitary waste management, noise abatement, maintaining hygienic conditions, maintenance of fire and safety equipment.

The Environmental and Social staff of PMU will ensure that site engineers and contractors adhere and comply with all measures and procedures identified in the ESMP. Activities to be monitored should include, but are not limited to:

- All planning, coordination and management activities related to the implementation of E&S safeguard issues;
- The identification of corrective and preventive actions;
- Records of health and safety matters and training activities;
- Consultations with project affected people (as and when needed, particularly during the implementation);
    - Feedback, trouble shooting and project related grievances;
    - Ensuring that livelihoods, where negatively impacted, are restored to pre-Project levels;
    - Preparation of progress and monitoring reports as required by the funding agency, and
    - Verifying the projects overall compliance with safeguard measures and its progress towards achievingthe intended loan outcomes.

12.2 Monitoring of ESMoP Compliance

Environmental Parameters to Be Monitored are as follows.

To ensure that project would not generate negative impacts to the environment and affected communities, monitoring of environmental and social parameters has to be performed by PMU- AEGCL and PMC as per contract provisions. The monitoring activities of the project include site supervision, verification of permits, monitoring of water quality, soil, noise and air, traffic disruptions, livelihood restorations, Occupational, Health and Safety, etc. Monitoring of the quality of water, soil, air and noise during the construction stage is the responsibility of the PMC. The ESMoP compliance will be monitored by E&S staff of PMU.

12.3 Reporting Line

Mitigation measures related to construction as specified in the ESMP to be incorporated into civil works

contracts, and their implementation will be primarily the responsibility of the contractors. In addition, contractors are required to submit monthly progress reports on the implementation of ESMP measures to PMC/PMU. The PMU – AEGCL will report to the AIIB E&S experts on progress achieved against the ESMP activities and milestones on a half-yearly basis. Progress reports will include a description of implementable activities and their status; identify the responsible parties involved in their implementation; and provide project management schedules and timeframes for doing so, along with their associated costs. The lustrationof reporting line is provided in **Figure** below.

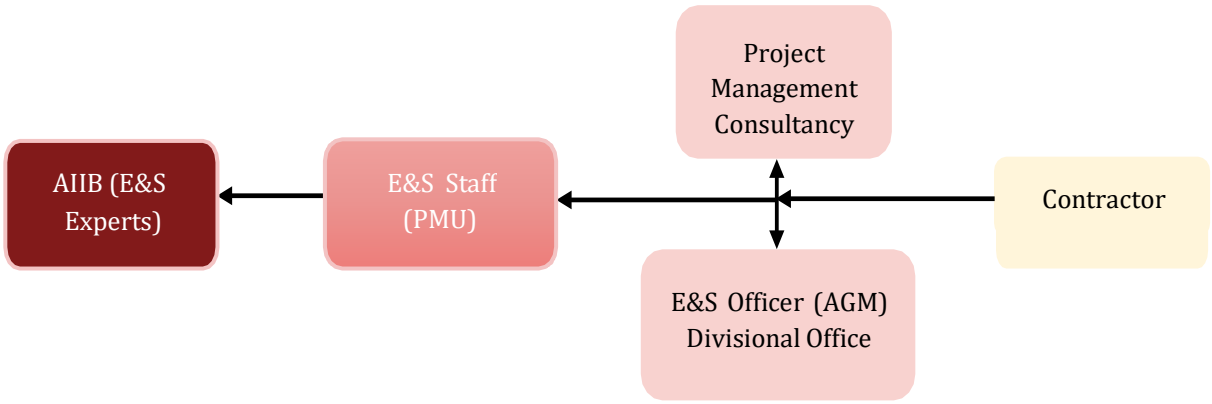

Figure -2: Illustration of Reporting Line

The environmental monitoring report will be submitted by the PMC- E&S staff to the PMU, which will include the result of environmental monitoring into its environmental report. The Environment and Social Staff of PMU after interaction with PMC E&S staff will ensure the adequacy of submitted monitoring reports and PMU will further submit these reports to AIIB twice in a year. This report will include the results of environmental monitoring to demonstrate that sound environmental management practices are applied, andthe set environments targets are achieved.

In case the implementation of ESMP measures is not satisfactory, AEGCL may engage external qualified experts to verify monitoring reports and assess the significant impacts and risks. These external monitoring experts shall recommend actions for AEGCL to enhance environmental compliance. Funding agency will continue to monitor project compliance with safeguard plans and requirements on an on-going basis throughout the duration of the contract.

13 STAKEHOLDER & PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

This chapter provides details of public consultation and way forward for continuous consultation with stakeholders and public in different phases of implementation for proposed substations and process of disclosure.

13.1 Public Consultation

Public consultation was conducted with local habitants like economically poor communities, women, vulnerable groups and other local community leaders nearby substation location on 23rd September 2022. The consultation followed strict protocols to prevent the spread of Covid-19 and to reiterate awareness about safe behavior.

People participated in voluntary public consultation sessions to express their views about the proposed project. The community expressed their opinions freely on the project, its impact and suggestions for mitigating adverse impacts.

Community welcomed the proposed conversion of existing AEGCL 132/33kV S/S from AIS to GIS. No major environmental issues were raised during the consultation process. Local people has shown their interest on unskilled works on temporary basis in construction activities.

Local people are eagerly waiting for the implementation to start, so they could receive better power and employment opportunities. Summary of public consultations is attached in Table 19.

Details of consultation with public are provided in Annexure I.

Table - 19: Summary of Public Consultation

Issues Discussed	People's views and perceptions
General Perception	Majority of the community people (including ST/women) were aware of the proposed set up of the substation and associated activities. Among them, some have heard about it it but not sure about the details of the project components. All the people were positive and supportive towards the construction of proposed substation and associated activities.
Support of local people for the construction of proposed substations and associated activities	Most of the communities expressed their support during implementation of the construction of proposed substation and associated activities, as it has been perceived to be great potential for the people of the area. They are happy for contribution of Government of India's effort towards rural electrification with proposed substation and associated activities. They are hopeful to address their electricity problem such as low voltage and irregular power supply would resolve. Most of the communities expressed that there should be no adverse impact due to the project on their safety.
Critical issue and concern by the local people for the substation locations	Most of the communities expressed that there were no critical issues regarding the establishment of proposed substation.

Issues Discussed	People's views and perceptions
Project site selection criteria	The community held the view that the project should avoid/minimize harm to vegetation's and places of community importance such as schools, community gathering places etc. Some of them suggested that necessary precautions must be taken to ensure safety of people during construction of substation.
Employment potential in the construction of substations	Across the communities, majority felt that, during construction/operation of substation there may opportunities to local unemployed people for self supporting business activity like establishment of small hotel/tea stall/ grocery shop etc. Some of them requested that they should be involved not only in unskilled labour job but also in the supervisory work. They complained that the construction work is generally handed over to contractors who would bring their own labour force from outside. They hoped that instead of hiring people from outside the local people should be given employment. Some others felt that better power supply under the project will ensure proper and regular power and as a result small and medium scale business can be started in the area.
Socio economic standing: land use, cropping pattern	The major sources of livelihood for the communities were agriculture, poultry farming, wage labour and small business. Most of the communities practiced one time cropping in a year, mainly paddy and vegetable cultivation.
Source of drinking water	The main sources of drinking water were hand pump. The other sources of drinking water were ring well and bore well. The availability of water is good as the water table remained high. However, in few people complained about the taste of the drinking water due to iron content in the water and thus they are using simple sand filter for portable use of water.
Negative impact on food grain, availability /land use	In general, the communities did not see any adverse impact on food/grain availability, as the constructions of proposed substation will be in the AEGCL land.
Will the project cause widespread imbalance by cutting fruit and commercial trees in the locality	As there is only 5 tress within the S/S premises which may require to cut, the communities were not forsee any impact.
Will project cause health and safety issues	Most of the communities did not foresee any health or safety issues from the construction of substation. Some of them suggested that necessary precautions must be taken to ensure safety of people during construction of substation.
Protected areas	There is no protected and religious place nearby the proposed substation.
Will project setting	None of the communities consulted were conscious of the presence of any

Issues Discussed	People's views and perceptions
change migration pattern of animals	migrant birds or animals in their localities and nearby proposed substation. They therefore did not foresee any impacts on animals, birds or their habitats from the construction of substation.
Migration pattern	Majority of the communities reported outward migration of young generation especially the local youth to big cities in search of work. The popular destinations of migration were Bangalore for security guard and helper jobs; and Gujarat, Maharashtra, Hyderabad etc. for factory jobs. There are very few cases of migration to capital cities of north eastern states in search of work.
Perceived benefits from project	Across the communities majority of them viewed that the proposed substation would contribute to minimize the prevailing energy crisis such as load shedding, and low voltage in the region. For some it will increase the rate of rural electrification and provide impetus to open small and medium business units in the area. At community level, the people hoped that project will address the problems of low voltage, and irregular power supply to the households.
Perceived loss	It will be temporary in nature due to loss of crops and trees (if any) and can be compensated by AEGCL.

Annexure – I gives the names of all participants including gender-breakdown of the public consultation conducted by the team. Annexure I also indicate a summary of public consultation conducted during the field survey of project village. The transcript of these discussions will help AEGCL and the EPC contractor to conduct a proper needs assessment to ensure the issues raised by people are addressed appropriately.

13.2 Continuous Consultation and Participation

AEGCL with PMC will carry out meaningful consultation as per requirement (Monthly consultation with local people nearby the S/S by PMU, PIU and PMC along with EPC Contractor) with affected people and other concerned stakeholders, including civil society and facilitate their informed participation. Consultation process undertaken under the directions of the PMU (i) will begin in the sub-project preparation stage and will be carried out on an on-going basis throughout the sub-project cycle (ii) will provide timely disclosure of relevant information that is understandable and readily accessible to groups and individuals, and specially women; (iii) is undertaken in an atmosphere free of intimidation or coercion; (iv) will be gender inclusive and responsive, and tailored to the needs of disadvantaged and vulnerable groups; and (v) shall enable the incorporation of all relevant views of affected people and other stakeholders into decision making, such as subproject design, mitigation measures, the sharing of development benefits and opportunities and implementation issues. Consultation will be carried out in a manner commensurate with the impacts on affected communities. The consultation process and its results will be documented and reflected in the environmental and social monitoring report. Feedback

about project should be obtained time to time from local people during consultation. Local people may approach GRC if any grievances arise.

13.3 Public Consultation Information Disclosure

AEGCL will submit to AIIB the following documents for disclosure on AIIB's website: (i) the final ESIA; (ii) a new or updated ESIA and corrective action plan prepared during sub-project implementation, if any; and (iii) the environmental monitoring reports.

AEGCL will provide relevant environmental information, including information from the above documents in a timely manner, in an accessible place and in a form and local language(s) understandable to affected people and other stakeholders in accordance with the AIIB's ESP 2019.

ESIA results will also be communicated to the local community before commencement of construction through posting on the website of AEGCL and other suitable means as well as providing a mechanism for the receipt of comments.

ESIA - ESMP will be disclosed online on the website of AIIB and AEGCL. Their hardcopies in English are available at the following locations:

1. PMU: Project Director,

   Address: 1st Floor, AEGCL, Bijulee Bhawan,

   Contact No.: 0361-2739520

   Website: www.aegcl.co.in,

   Contact Person: Mr. Lokhnath Choudhury

2. PIU (Refer Table, Page no 81)

This executive summary in English and Assamese can be found at the following locations:

1. PMU: Project Director,

   Address: 1st Floor, AEGCL, Bijulee Bhawan,

   Contact No.: 0361-2739520

   Website: www.aegcl.co.in,

   Contact Person: Mr. Lokhnath Choudhury

2. PIU: (Refer Table, Page no 81)
3. GRC

   Tier 2:

   (i) Chief General Manager (CGM, PP&D), AEGCL

   Address: 1st Floor, AEGCL, Bijulee Bhawan,

   Contact No.: 0361-2739520

   Website: www.aegcl.co.in,

   Contact Person: Mr. Lokhnath Choudhury

   (ii) PMU: Project Director,

   Address: 1st Floor, AEGCL, Bijulee Bhawan,

Contact No.: 0361-2739520

Website: www.aegcl.co.in,

Contact Person: Mr. Lokhnath Choudhury

Tier 1: (Refer Table, Page no 81)

ESMPF is disclosed in AEGCL website: **https://www.aegcl.co.in/aiib-project-details/**

14 COVID-19 PRECAUTION MEASURES TO BE IMPLEMENTED BY PMU/PIU/PMC/EPC

SOP on preventive measures to contain spread of COVID-19 in Workplaces

A. Preventive Measures for Self – The preventive measures include simple public health measures that are to be followed to reduce the risk of infection with COVID-19. These measures need to be observed by all (employees and visitors) at all times. These include:

- Wash your hands often with soap and water for at least 20 seconds especially after you have been in a public place, or after blowing your nose, coughing, or sneezing.'
- If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry.
- Avoid touching your eyes, nose, and mouth with unwashed hands.
- Avoid close contact with people who are sick
- Individuals must maintain a minimum distance of 6 feet (2 gaj ki doori) in common places as far as feasible
- Use of face covers/masks at all times. They must be worn properly to cover nose and mouth. Touching the front portion of mask/face covers to be avoided.
- Self-monitoring of health by all and reporting any illness at the earliest to the immediate supervisory officer.
- Spitting shall be strictly prohibited.

B. Preventive Measures for Workplace –

- Entrance to have mandatory hand hygiene (sanitizer dispenser) and thermal screening provisions.
- Only asymptomatic staff/visitors shall be allowed entry.
- There shall be provision for disinfection at-least twice a day of the interior of the vehicle using 1% sodium hypochlorite solution/spray. A proper disinfection of frequently touched surfaces i.e. steering, door handles, keys, etc. should be taken up.
- All officers and staff / visitors to be allowed entry only if using face cover/masks. The face cover/mask has to be worn at all times inside the work premises.
- Meetings, as far as feasible, should be done through video conferencing.
- Proper crowd management in the working premises – duly following physical distancing norms are ensured.
- Specific markings may be made with sufficient distance to manage the queue and ensure physical distancing in the premises.
- Ensure regular supply of hand sanitizers, soap and running water in the washrooms.
- Cleaning and regular disinfection (using 1% sodium hypochlorite) of frequently touched surfaces (doorknobs, elevator buttons, handrails, benches, washroom fixtures, etc.) shall be done in office premises and in common areas at-least twice a day.
- Proper disposal of face covers / masks / gloves left over by visitors and/or employees in covered bins shall be ensured.
- The seating arrangement to ensure a distance of at least 6 feet between patrons as far as feasible.
- Large physical gatherings continue to remain prohibited.

C. Measures to be taken on occurrence of case–

Despite taking the above measures, the occurrence of cases among the employees working cannot be

ruled out. The following measures will be taken in such circumstances, when one or few people(s) who share a room/close office space is/are found to be suffering from symptoms suggestive of COVID-19:

- Place the ill person in a room or area where they are isolated from others at the workplace. Provide a mask/face cover till such time he/she is examined by a doctor.
- Immediately inform the nearest medical facility (hospital/clinic) or call the state or district helpline.
- If there are one or two cases reported, the disinfection procedure will be limited to places/areas occupied and visited by the patient in past 48 hours and work can be resumed after disinfection of the work.
- In case of larger number of cases are being reported at the workplace, the whole block or building, as the case may be, should be disinfected.
- Other members to wear disposable gloves when serving and helping affected person in self-isolation
- Avoid visiting public places like entertainment restaurant, malls, market etc.

D. Vaccination: The concerned person of GRC/PMU/PIU/ PMC/EPC Contractor will ensure that, all project related personals must be double vaccinated.

15 GRIEVANCE REDRESS MECHANISM

General overview of the Grievance Redress Mechanism

Assam Intra-State Transmission System Enhancement Project

Objectives

The Assam Intra-State Transmission System Enhancement Project (the Project) aims to strengthen Assam's electricity transmission system. As the Project is funded by the Asian Infrastructure Investment Bank (AIIB), it complies with the Environmental and Social Framework and the Policy on the Project-affected People's Mechanism of the AIIB.

The Environmental and Social Management and Planning Framework (ESMPF) of the Project provides for the establishment of a Grievance Redress Mechanism (GRM). The GRM is a free system that registers and attempts to resolve concerns or complaints by Project-affected people (PAPs) or construction workers. This process aims to quickly resolve disputes and avoid litigation, thus ensuring the smooth implementation of the project activities.

At all levels of the project Grievance Redress Mechanism, the Grievance Redress Committee members should uphold the objectives of the GRM and strive to achieve them. The primary objectives of GRM are:

- Provide an accessible, transparent, efficient and predictable mechanism for resolution of grievances to all project by:
    - Popularizing the GRM and how it can be accessed for free.
    - Receiving grievances in various possible forms (Written, Verbal, Electronic, Email, Social Media, Telephone, Fax, Suggestion Box)
    - Establishing clear procedures for redress that covers:
        - Registration in the GRM log all grievances (including minor and verbal).
        - Acknowledgement to the complainant, explaining expected duration for resolution.
        - Investigation of the grievance, proposing a solution to the complainant and if acceptable closure of the complaint. OR
        - Escalation of the grievance to Tier II which should be communicated to the complaint.
        - Investigation of the grievance, proposing a solution to the complainant
        - Provision of feedback and closure of the grievance in the GRM Log.
    - Complaint should be made aware that:
        - There is no retribution or intimidation for complainants.
        - Access of the GRM is free for the complainants.
        - The GRM does not replace the judicial system.
- Observe for any repeated complaints and inform PMU of such for their systemic resolution.
- Providing an environment that fosters free and honest exchange of information, views, and ideas.

Stakeholders with Grievances

It is likely the following categories of stakeholders may have grievances and file the grievances for redressal. They are

- Individuals, **both men and women**
- Communities/ Groups of individuals
- Project workers – local and migrant
- Community Based Organizations or Common Interest Groups
- Firms, Companies, Enterprises, Service Providers, and other businesses
- National/ International NGOs

Roles and Responsibilities of GRC Members

PMU/ PIU GRC Members	Community GRC Members
➢ Receives grievance from complainant and record them in a logbook. ➢ Acknowledge receipt of complaints with a written record. ➢ Arrange for GRC meetings to consider the grievances. ➢ Work closely with the GRC members to develop and implementing actions to resolve grievances. ➢ Prepare minutes of GRC meetings and record solutions. ➢ Provide feedback information on the status of resolution to the complainant within assigned timeline. ➢ Review grievance response and submit to Contractor/PIU/PMU for approval or implementation. ➢ Submit proposed solutions to the complainant within assigned timeline. ➢ Ensure proper logging, escalation, tracking, reporting, and following up on all project specific grievances. ➢ Swiftly escalate any grievances that cannot be resolved at the project level or may pose a big reputational risk to the project. **This includes any complaints related to the health, safety, dignity, and wellbeing of any person (both men and women).** ➢ **Notify PMU within 12 hours of any grievances that require investigation or intervention by the police or other relevant authorities.** ➢ Provide monthly update to a member of the PMU who will track grievances and always include a section on grievance management in the monthly progress report.	➢ Popularize the existence, functions, and accessibility of the GRM among all project-affected people, **both men and women.** ➢ Encourage key community members to facilitate submission of complaints, if needed. ➢ Attend regularly and actively participate in GRM meetings to review and provide solutions to project related grievances. ➢ Facilitate and mediate resolution of grievance. ➢ Accept and record grievances from community members. ➢ Facilitate the communication of the response of the GRC to complainants/ aggrieved. ➢ Keep communicating project related matters to GRC/ PIU.

Most Common Grievances and Redressal[5]

Common Grievance Categories	**Issues and Likely Solutions**
Technical/ Engineering	➢ Design related – Suit the design to the site. Restrict the width according to the available land and modify the design accordingly ➢ Alignment related – Always use GPS coordinates. In case of problem contact Revenue department to correct the alignment ➢ Quality related – Get the materials and finished product tested at reputed laboratories and publicize the results
Environmental	➢ Storm water – Do not obstruct or divert natural drainage. Provide for culverts or bridges where necessary ➢ Stone blasting – Take precautions as per law and inform the communities accordingly ➢ Dust – Keep watering as required so that dust doesn't spread or rise. ➢ Noise – Use barriers at sensitive receptors and take up work at appropriate timings. ➢ Uncovered borrow areas – Dig barrow pits as per specifications. ➢ Waste Disposal – Dispose of waste at designated places only.
Social	➢ Disruption of other existing public services e.g. hospitals, schools, Water and electricity supply – Consult communities and minimize the disruption of service. Provide alternative supplies. ➢ Historical and Cultural sites – Follow the government guidelines on this. Do not deface any historical or cultural sites. ➢ HIV/AIDS/ Covid-19 issues – Follow the government SoP for these. Conduct awareness campaigns among the communities and workers. ➢ Child labour – Avoid child labour. No children below 14 years on work. No children below 18 years on hazardous work. ➢ Rape / sexual and Gender-Based Violence – Conduct awareness camps among workers and community. Have a code of conduct. Set up Internal Complaints Committees to redress gender related grievances.
Land, Compensation and Resettlement	➢ Non-payment of compensation money – Do not take possession of land before paying full compensation ➢ Underpayment of compensation money – All compensation valuation has to be done as per the LA Act 2013 and verified before payments ➢ Disputes of land ownership – Refer to Revenue Department for measurement and survey to decide on the ownership ➢ Injurious affections such as cracks in buildings, damages to properties – Do take care not to cause damage to houses. Repair all damages and bring them back to original status. ➢ Boundary queries between PAPs – Do not get involved in this. Leave these matters to PAPs to decide themselves.

[5] Site specific ESIA report for Transmission lines will be prepared separately.

Common Grievance Categories	**Issues and Likely Solutions**
Road Safety	➢ Accidents – Report immediately to PIU/ PMU. ➢ Humps – Do not erect humps without the permission of PIU. The hump has to be as per the design. No private person can built humps ➢ Signage – All signage has to be fixed by PIU/ Contractor. ➢ Cutting of pavement by utility companies – No utility company can cut the pavement without the permission ➢ Overloaded vehicles/ Road littering – Such incidents to be reported to PIU for action.
Occupational Health and Safety	➢ Protective gear – The workers must wear protective gear at all times during the work. ➢ HIV/AIDS / Covid-19 services – The workers and communities must be educated about these. They should follow the SoP.
Governance	➢ Procurement – To be transparent and all matters related to procurement to be disclosed ➢ Contractor highhandedness – All contractors to be instructed not to deal with the communities directly. Always involve PIU in dialogue with communities ➢ Corruption – Such cases to be sent to the respective agencies for enquiring and investigation.

DOs and DON'Ts for GRC Members

DOs	**DON'Ts**
➢ **Respect** complaints. ➢ Follow the established GRM procedures ➢ Popularize the GRM's existence, accessibility, and free access. ➢ Establish accessible compliant receipt locations and channels for vulnerable groups considering their constraints. ➢ Maintain logbooks. ➢ Establish clear timetables for resolving grievances. ➢ Assign each compliant a unique ID, track and report its resolution. ➢ Work with the complainant to find a resolution throughout the GRM. ➢ Keep complainant informed of resolution process. ➢ Seek feedback from the complainant to improve GRM functionality.	➢ Intimidate, threat, or harass complaints. ➢ Set unrealistic redress durations. ➢ Exclude vulnerable groups. ➢ Create constraints in filing grievances. ➢ Create barriers or compound the procedures for grievance filing receipt. ➢ Disclose aggrieved identity to others. ➢ Make false promises to the complainant. ➢ Be biased in redressal. ➢ Expect or seek any compensation or benefits from complainants.

General overview of the Grievance Redress Mechanism

Assam Intra-State Transmission System Enhancement Project

Project Introduction

The Assam Intra-State Transmission System Enhancement Project (the Project) aims to strengthen Assam's electricity transmission system. The Project will facilitate connection of remote areas, enhance the capacity and reliability of the system, improve voltage profile, and reduce losses and ultimately enhance satisfaction for all categories of consumers. As the Project is funded by the Asian Infrastructure Investment Bank (AIIB), it complies with the Environmental and Social Framework and the Policy on the Project-affected People's Mechanism of the AIIB.

The construction activities under the Project may cause some minor disturbances to the physical environment and communities. These are typical of civil works, such as generating dust, noise, air pollution, and construction debris, influx of construction workers and limited need to acquire permanently or temporary land. Thus, a multi-tiered Grievance Redressal Committee (GRC) will be applicable to the project in its entirety. To honor the GRM, Assam Electrical Grid Corporation Limited (AEGCL) will adopt the practice to resolve any major/ minor grievances, where AEGCL shall accept, review and address issues or problems raised by Project Affected Persons (PAPs), local people and project workers related to project works. GRC will review grievances involving all resettlement benefits, compensation, relocation, replacement cost, other additional assistance for vulnerable groups including Indigenous Peoples (IPs) and grievances related to environmental issues (if any).

The Environmental and Social Management and Planning Framework (ESMPF) provides guidelines how to reduce potential risks and mitigate impacts. Site-specific Environmental and Social Management Plans (ESMP) [6]gives specific measures for specific locations.

Overview of the Grievance Redress Mechanism

The Project provides for the establishment of a Grievance Redress Mechanism (GRM). **The GRM is a free system that registers and attempts to resolve concerns or complaints by Project-affected people (PAPs) or workers/employees arising from project activities.** This process aims to quick resolve of disputes and avoid litigation, thus ensuring the smooth implementation of the project activities.

Every person, man, woman, or construction worker employed in Project activities, who feels that they have been adversely affected by the Project, can file their concerns **for free** to the GRM. **The Project guarantees that there will be no reprisals or retributions for raising grievances**. The GRM process does not prevent project affected people to seek their rights through the judicial system but provides an additional and free way to resolve problems. Anonymous grievances are acceptable, but it will be impossible to inform the complainant of the outcome. In this case, the grievance and the proposed resolution will be publicized on site.

Complaints which may be arises during the project implementation period (Pre Construction, During Construction and Post Construction) will be handled according to the following procedure:

1. Project-affected person approaches a member of the CGRC (Tier-1) in person or via the phone/WhatsApp. (Dedicated phone number will be assigned)

[6] The site specific HSESMP (Health, Safety, Environment and Social Management Plan) to be prepared by EPC after finalization of ESMP template from AIIB's end.

2. The Circle level GRC (Tier 1) member receives the grievances and records the details in the GRM logbook.
3. The CGRC (Tier-1) acknowledges the receipt of the grievance and provides a dated proof (official slip, text or WhatsApp message).
4. The CGRC (Tier-1) gathers information, visits site and interviews people to evaluate if they can find a resolution of the grievance within 10 working days.
5. The CGRC (Tier-1) informs grieved party of the proposed resolution in writing.
    a. Grieved party can accept the proposed solution, which is duly recorded.
    b. Grieved party may not accept the proposed solution, which is duly recorded.
6. If the CGRC (Tier-1) is unable to find a solution, or if the grieved party does not accept the proposition, the CGRC can automatically escalate the issue to the Tier -2 GRC, if grieved party agrees.
7. The Tier-2 GRC acknowledges the receipt of the grievance and provides a dated proof (official slip, text or WhatsApp message).
8. The Tier 2 GRC gathers information, visits site and interviews people to evaluate if they can find a resolution of the grievance within 20 working days.
9. The Tier 2 GRC informs grieved party of the proposed resolution in writing.
    a. Grieved party can accept the proposed solution, which is duly recorded.
    b. Grieved party may not accept the proposed solution, which is duly recorded.
10. The grieved party may seek their rights in the court of law.

The members of the Tier-1 GRC and their communication details in the project Districts are

Name of the T&T Circle	Name of the Project Districts	Pkg	Name of EPC Contractor	Sub-Projects	Focal point / Nominated Official	Contact number (Mobile and WhatsApp)	Communication Address
N. Lakhimpur	Biswanath	F	M/s Sumaja Electricals	Gohpur S/S	Sri Nayan Jyoti Kuli, DM, (Nalkata GSS)	7002949313	O/o The DGM, T&T Circle, AEGCL, North Lakhimpur, Nalkata, 787031

The members of the Tier-2 GRC and their communication details in the corporate level

SL. No.	Designation	Position in the Committee	Communication Address		Website & Email id
1.	Chief General Manager(PP&D), AEGCL	Chairman	Assam Electricity Grid Corporation Ltd, (AEGCL) First Floor, Bijulee Bhawan Guwahati-781001	Contact No.: 0361-2739520	Website: www.aegcl.co.in Mail Id: gm.eap@aegcl.co.in
2.	Project Director(EAP) Projects, AEGCL	Deputy Chairman		Mobile No.: 9859181640	
3.	Dy. General Manager (EAP), PMU, AEGCL	Member		Mobile No.: 7002649012	

4.	E&S Safeguard Specialist, PMU, AEGCL	Member		Mobile No.: 985433922	
5.	Project Related AGMs(EAP), AEGCL	Members		Mobile No.: 9706078551 9864602779 9864577672	
6	Joint Secretary (Power, Electricity), GoA	Member	GoA, Power (Electricity Dept.), Assam Secretariat, Dispur, Guwahati-781006 Contact No.: 0361-2237260		dy.secy.powe@gmail.com
7	Team Leader, Environment Expert and Social Expert, PMC	Members	2B, Saroj Enclave, K.C Patowary Road. Ulubari, Guwahati-781007 Mobile No. 9960996111		Hemant.bhave@feedbackinfra.com

If any unwanted situation like danger, sexual harassment and other life threatening, the victim person may reach to the concerned officials who belong to the Tier-1 and Tier-2 committee and may contact for further needful action or the matter should be informed to AIIB immediately.

Grievance Register

Grievance Register	
Date of Grievance Recorded	* The mobilisation of EPC is awaiting and once EPC starts their work in the S/S as well as in T/L, then the grievances may arises if any, the record will be maintained accordingly
Grievance Recorder	
Grievance submitted through	
Name of Complainant	
Complainant Preferred Contact	
Complainant Address	
Type of Grievance	
Describe Grievance	
Date of Grievance Occurrence	
Date of Acknowledgement	
Mode of Acknowledgement	
Brief Outline of Proposed Resolution	
Action Taken	
Action Taken on	
Outcome	
Outcome communicated to PAH on	
Status Update	
Mode of Complainant Update	
Acknowledged by	
Date Closed	
Days to Close Grievance	
Date of Grievance Received to Tier 2	
Date of GRC meeting (2nd Tier)	
Estimated Time for Resolution	
Action Taken	
Action Taken on	
Outcome	
Outcome communicated to PAH on	
Status Update	
Mode of Complainant Update	
Acknowledged by	
Date Closed	
Days to Close Grievance	

16 SUMMARY & CONCLUSION

The project scope involves construction of substations and associated transmission lines, augmentation, up gradation and installation of equipment of substations.

As the Project is funded through the AIIB, the Bank's Environmental and Social Policy (ESP) applies. The Project has been assigned to "Category B" as per the ESP.

ESS 1 will be applicable to the Project, as civil works may cause a limited number of potentially unlikely environmental and social impacts. These impacts are not unprecedented and are limited to the Project area.

ESS 2 and **ESS 3** are not applicable.

The detail of the various regulatory frameworks pertaining to the project has already been discussed / considered in ESMPF.

AEGCL's working operation safety manual also serves as its commitment towards fulfilling the E&S responsibilities including occupation health and safety.

A baseline study to assess the environmental and socio-economic condition within the substation premises and adjoining areas has been conducted on 23rd September 2022 to gather baseline information of the environmental and social profile. The detail of the baseline conditions of substation is provided in main report.

Environmental sensitive sites are away from the proposed substation site. Environmental condition of the substation sites is quite good.

As assessed from the baseline condition, the impacts are manageable as no major environmental issues have been recorded during site visit. Details of impact and mitigation measures are discussed in the main report. ESMP cost to implement the key environmental & social measures and environmental & social monitoring plan which a part of Engineering Procurement Construction (EPC) Contractor's contract as included in Bill Of Quantity (BOQ) item and as part of their good Engineering practice. An amount of **INR 29, 67,300** is estimated to be required for implementation of ESMP.

Details of impact and mitigations are discussed in the main report.

6.68 ha AEGCL land is available for the S/S within the existing S/S premises. The overall E&S risks associated with the construction of substation will be insignificant, whereas it will contribute to major economic development in the relevant areas.

Construction activities will cause minimal environmental impacts which are temporary in nature and can be easily mitigated through management plan during implementation.

Overall, the environmental impacts associated with construction of substation is limited mostly to the construction period and insignificant in operation period and can be mitigated to an acceptable level by implementation of recommended measures and by best engineering and environmental practices.

The detailed design by the EPC contractor will ensure the inclusion of any such environmental impacts that could not be specified or identified at this stage are taken into account and mitigated where

necessary. Those impacts can be reduced through the use of mitigation measures such as improvement in work practices at the construction site.

One round of public consultation was conducted at the adjoining villages of all substation site. The outcome indicates broad support for the project based on perceived economic and social benefits.

The project implementation will lead to the development of distribution projects, which involve distribution of power and overall energy efficiency improvement. Some of the important project benefits are - strengthen the electricity transmission network, improve reliability to power supply, reduce the transmission losses, reduce the length of transmission lines from power generation utilities to the distribution utilities, improve livelihood and boosts the economic growth of the region and nation as a whole.

ANNEXURE – I: DETAILS OF PUBLIC CONSULTATION AT PROPOSED SUBSTATION SITES

Site/Location: Gohpur, **Village-** Magoni, **Circle/Block** – Gohpur, **District** – Biswanath

Date of Consultation: 23.09.2022

Type of Area (Urban/Rural/ Highly Congested Urban: Rural

S.No.	ISSUES	PARTICIPANTS' OPINION, COMMENTS AND SUGGESTIONS
SOCIAL		
1.	Have you heard about the Project or Do you have any information about the project?	Yes, Electrical department is building substation
2.	What is your opinion about this Project?	Useful for public
3.	Do you support this Project?	Yes
4.	Do you think that the Project is necessary?	Yes
5.	What are your main concerns/issues about the project?	No issue
6.	Can you suggest how best to address your concerns/issues?	Good for people
7.	The proposed new land which may be government or privately owned. Would you volunteer to donate or sell the land for the Project?	AEGCL own land
8.	Do you expect any kind of compensation if there is loss to land or crops or trees during construction?	Yes, expecting compensation for loss of crops if any.
9.	If you need compensation, what kind of compensation will you be expecting (cash or kind) in case of land acquisition?	Cash compensation
10.	Health status, Availability of Hospitals and over all environmental condition. Is there any chronic disease prevalent in this area and are you aware about HIV/AIDS and STP?	No Chronic disease , Aware about COVID-19/HIV/AIDS disease
11.	What positive impacts and/or benefits do you think the project will have?	24 hours power supply. Voltage level will be improved.
12.	What negative impacts do you think the project will have?	No impacts
13.	How safe do you think or consider the distribution feeder?	No idea
14.	Any criteria you would like to be considered for project design, construction and operation stage?	No
15.	How long have you been living in this area?	From my Birth

16.	Are there any indigenous people/ tribal people or ethnic minority living in this area? If yes, how far and what is the name of tribe group and what is their number of Households etc.?	No available nearby S/S
17.	If you are from indigenous people/tribal do you expect any impacts from projects on your culture, territory, and livelihood impacts?	No
ENVIRONMENT		
1	Protected areas (national park, protected forest, religiously sensitive sites, historical or archaeological sites), if any	No protected area nearby S/S
2	Access to the forest land and the use of the forest land (if any)	No
3	Current environmental conditions in the area – air, dust, noise conditions in the area.	Excellent
4	Will the project siting adversely impact the water or soil resource in the locality	No
5	Type of trees in the area: Fruit/non fruit/forest/ rare/endangered species etc.	Mixed trees with Fruit/non fruit etc. and in the village of S/S.
6	Wild, endemic, endangered animals in the area.	No
7	Is the consultation useful	Yes
8	Would you support and participate during the implementation of Project	Yes
9	Any other Suggestions?	A few of the local people of has shown their interest on unskilled works on temporary basis during civil works initiated.

FEEDBACK

Attendance Sheet of Public Consultation

Name of the Sub- Project: Conversion of existing AEGCL 132/33 kV S/S from AIS to GIS at Gohpur

Date: 23.09.2022 Venue: 132/33 kV Gohpur S/S Mongoni Village

Sl No.	Name	Designation	Contact Number	Signature
01	Dinku moni Das	Business	01266223502	Dinkumoni Das
02	Paneshri Das	Business	—	PDas
03	Mandip Das	Business	—	MDas
04	Gopal Rajia	Business	—	GDas
05	Sweeti Das	Homewife	—	SDas

Photographs

Photo plate: 1, 2 & 3- Discussion with local people

ANNEXURE – II: SOME SITE PHOTOGRAPHS

Photo plate 4: Proposed S/S site

Photo plate 5: Discussion with PIU staff, AEGCL

ANNEXURE-III: CODE OF CONDUCT FOR CONTRACTOR'S WORKERS

As Bona fide Contractor, [*enter name of Contractor*] for the project (enter name of the project) we have signed a contract with [*enter name of Employer*] for [*enter specific description of the Works*]. These Works will be carried out at [*enter the Site and other locations where the Works will be carried out*]. Our contract requires us to implement measures to address environmental and social risks related to the Services and Works, including the risks of misdemeanor in workplace / worker's camps, sexual exploitation, abuse, harassment, and gender-based violence.

This Code of Conduct is part of the measures to deal with environmental and social risks related to the Works. This involves all workers, labor camps and the workplace. It applies to all our staff, laborers and other employees at the Works Site or other places where the Works are being carried out. It also applies to the personnel of each subcontractor and any other personnel assisting us in the execution of the Works. All such persons are referred to as "**Contractor's Personnel"** and are subject to this Code of Conduct.

This Code of Conduct identifies the conduct that is required from all Contractor's Personnel.

In our workplace, unsafe, offensive, abusive, or violent behavior will not be tolerated, and all persons should feel comfortable raising issues or concerns without fear of retaliation.

Contractor's Personnel shall:

General Conduct

1. Make earnest efforts to understand his/her responsibilities detailed in this Code of Conduct and any other documents and trainings, as directed by the Employer. Proactively seek clarifications to enable work to be undertaken in strict compliance with this Code of Conduct.
2. Carry out his/her duties competently and diligently.
3. Comply with this Code of Conduct and all applicable laws, regulations, and other requirements, including requirements to protect the health, safety and well-being of other Contractor's Workers, colleagues working under the same contractor and any other person.
4. Maintain a safe working environment by:
    a. Abiding by safety guidelines to ensure that workplaces, machinery, equipment, and processes under each person's control are safe and without risk to health.
    b. Using required Personal Protective Equipment.
    c. All works are conducted with safety clearance and under appropriate supervision.
    d. Using appropriate measures relating to chemical, physical, and biological substances, and agents.
    e. Following applicable emergency operating procedures.
    f. Providing separate, safe, and easily accessible working and accommodation facilities for women and men working on the site.
5. Report to the Supervisor about work situations that he/she believes are not safe or healthy and remove himself/herself from a work situation which he/she believes presents an imminent and danger to his/her life or health.

6. Treat other people with respect, and not discriminate against specific groups such as women, persons with different sexual orientation, people with disabilities, migrant workers, or children.
7. Not engage in sexual harassment which includes unwelcome sexual advances, requests for sexual favors, and other unwanted verbal or physical conduct of a sexual nature in the workplace or with respect to neighboring communities.
8. Engage with the community and/or project affected persons with utmost respect. Intimidation, threats, and coercive behavior will not be tolerated.
9. Not engage in sexual exploitation and abuse, which means any actual or attempted abuse of position of vulnerability, differential power, or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially, or politically from the sexual exploitation of another.
10. Not engage in sexual assault, which means any form and/or threat of non-consensual sexual contact.
11. Not engage in any form of sexual activity with individuals under the age of 18.
12. Not make any inappropriate and unwanted sexual advances to people in the adjoining (host) communities or settlements.
13. Not work or be present in the worksite(s) under the influence of any intoxicating substances, such as alcohol or drugs.
14. Not possess alcohol or any other illegal/ intoxicating substances while on duty or in the labor camps.
15. Return to the labor camp no later than 22:00, unless working on night shift.
16. Participate and complete relevant training courses that will be provided related to the environmental and social aspects of the Contract, including on health and safety matters, Gender-based violence (GBV), Sexual Exploitation, Abuse and Harassment (SEAH).
17. Report violations of this Code of Conduct.
18. Not retaliate against any person who reports violations of this Code of Conduct, whether to AIIB or the Employer, or who makes use of the grievance mechanism for Contractor's Workers or the project's Grievance Redress Mechanism.

RAISING CONCERNS (*Please refer to section on GRM in the bidding document and provide information as needed:* *An appropriate GRM shall be constituted by the contractor for grievances in the worksite. This should include an effective mechanism for receiving and promptly addressing allegations of SEA and/or SH from the Contractor's or Employer's Personnel or any other person including third parties.*)

If any person observes a behavior that he/she believes may represent a violation of this Code of Conduct, or that otherwise concerns him/her, he/she should raise the issue promptly. This can be done in either of the following ways:

1. Contact [*enter name of the Contractor's Social Expert*] in writing at this address [X] or by telephone at [X] or in person at [X]; or

2. Call [X] to reach the Contractor's hotline *(if any)* and leave a message.

The Complainant's identity will be kept confidential, unless reporting of allegations is mandated by the country law. Anonymous complaints or allegations may also be submitted and will be given all due and appropriate consideration. We take seriously all reports of possible misconduct and will investigate and take appropriate action. We will provide warm referrals to service providers that may help support the person who experienced the alleged incident, as appropriate.

There will be no retaliation against any person who raises a concern in good faith about any behavior prohibited by this Code of Conduct. Such retaliation would be a violation of this Code of Conduct.

CONSEQUENCES OF VIOLATING THE CODE OF CONDUCT

Any violation of this Code of Conduct by Contractor's Personnel may result in serious consequences, up to and including termination and possible referral to legal authorities.

The information contained in this note will be disseminated to all Contractor's Personnel. At the time of engagement of any worker/ personnel, the above information will be provided verbally, and a copy of the Code of Conduct will be provided signed by the Personnel and countersigned by the Contractor. A prototype is provided below:

FOR CONTRACTOR'S PERSONNEL:

I have received a copy of this Code of Conduct written in [X] language that I understand. I recognize that if I have any questions about this Code of Conduct, I can contact [*enter name of Contractor's contact person with relevant background in handling gender-based violence*] requesting an explanation.

Name of Contractor's Personnel: [insert name]

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Contractor: [insert name]

Signature: _____

Date: (day month year): _____

ATTACHMENT 1: Behaviors constituting Sexual Exploitation and Abuse (SEA) and behaviors constituting Sexual Harassment (SH)

The following non-exhaustive list is intended to illustrate types of prohibited behaviors:

1. Examples of sexual exploitation and abuse include, but are not limited to:

- A Worker/Expert tells a member of the community that he/she can get them jobs in the work site (e.g., cooking and cleaning) in exchange for sex.
- A Worker/Expert that is connecting electricity input to households says that he can connect women headed households to the grid in exchange for sex.
- A Worker/Expert rapes, or otherwise sexually assaults a member of the community.
- A Worker/Expert denies a person access to the Site unless he/she performs a sexual favor.
- A Worker/Expert tells a person applying for employment under the Contract that he/she will only hire him/her if he/she has sex with him/her.

2. Examples of sexual harassment in a work context

- A Worker/Expert comment on the appearance of another Worker/Expert (either positive or negative) and sexual desirability.
- When a Worker/Expert complains about comments made by another Worker/Expert on his/her appearance, the other Worker/Expert comment that he/she is “asking for it” because of how he/she dresses.
- Unwelcome touching of a Worker/Expert or Employer’s Personnel by another Worker/Expert.
- A Worker/Expert tells another Worker/Expert that he/she will get him/her a salary raise or promotion if he/she sends him/her naked photographs of himself/herself.

ANNEXURE – IV: TREE DETAILS OF GOHPUR S/S

Village/Mouza Name	Survey No. /Plot No.	Owner/Party Name	Tree I.D	Tree Name (Local Name)	Scientific Name	Girth (BHG) in cm	Approx. Height in m	Remarks (falling reqd. or not)
		AEGCL existing S/S	1	Jamun (Java Plum)	*Syzygium cumini*	80	4	1
			2	Jamun (Java Plum)	*Syzygium cumini*	70	3	1
			3	Eucalyptus	*Eucalyptus alba*	130	8	1
			4	Eucalyptus	*Eucalyptus alba*	120	7	1
			5	Krishnachura (fire tree)	*Caesalpinia pulcherrima*	90	3	1