Environmental Monitoring Report

Project Number: 41614-033
May 2016

Period: January 2015 – June 2015

IND: MFF - Assam Power Sector Enhancement Investment Program - Tranche 2

Submitted by

Assam Power Distribution Company limited, Guwahati, Assam

Asian Development Bank

RGS/GM/JB

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No. APDCL/PMU/APSEIP/ESMU/2014-15/249/128 Dtd. 18/04/2016

To

Ms M. Teresa Kho, Country Director
Indian Resident Mission, ADB
4 San Martin Marg, Chanakyapuri
New Delhi-110021

Sub: - Biannual Social and Environmental Safeguard Monitoring Report for Loan No -2592-Ind & 2677-Ind for the periof January 2015 to June 2015

Dear Madam,

Please find enclosed herewith the following copies of the Biannual Social and Environmental Safeguard Monitoring Reports for Loan No -2592-Ind & 2677-Ind for the period January 2015 to June 2015 for favour of kind needful action from your end. The soft copy of the documents will be mailed to ADB by today.

1. Biannual Social Safeguard Monitoring Report(Jan –June,2015) Loan No : 2592-Ind
2. Biannual Social Safeguard Monitoring Report(Jan –June,2015) Loan No : 2677-Ind
3. Biannual Environmental Safeguard Monitoring Report(Jan –June,2015) Loan No : 2592-Ind
4. Biannual Environmental Safeguard Monitoring Report(Jan –June,2015) Loan No : 2677-Ind

Sincerely yours

16/04/16

Director (PMU)
APDCL

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Environmental Safeguard Monitoring Report

Reporting Period: From January 2015 to June 2015

Loan No. 2677 - Tranche 2

Assam Power Sector Enhancement Investment Program

Prepared by the Assam Power Distribution Company Limited for the Asian Development Bank

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ABBREVIATIONS

ADB	Asian Development Bank
ADEF	Assam Department of Environment and Forest
ADH	Assam Department of Health
AEGCL	Assam Electricity Grid Corporation Ltd.
APCB	Assam Pollution Control Board
APDCL	Assam Power Distribution Company Limited
ASEB	Assam State Electricity Board
ASI	Archeological Survey of India
dB	Decibels
EA	Executing Agency
EARF	Environmental Assessment and Review Framework
EIA	Environmental Impact Assessment
EMA	Environment Monitoring Agency
EMP	Environmental Management Plan
ESMC	Environmental and Social Management Cell
ESMU	Environmental and Social Management Unit
ESO	Environmental Safety Officer
GHG	Greenhouse Gas
GOA	Government Of Assam
GOI	Government Of India
GRC	Grievance Redressal Committee
HSE	Health Safety Environment
IA	Implementing Agency
IEE	Initial Environmental Examination
Ltd.	Limited
MFF	Multi-Tranche Financing Facility
NO_2	Nitrogen dioxide
PM_{10}	Particulate Matter (Size less than 10 µm)
$PM_{2.5}$	Particulate Matter (Size less than 2.5 µm)
PMU	Project Management Unit
PPE	Personal Protective Equipment
ROW	Right of Way
S/S	Sub Station
SEIA	Summary Environmental Impact Assessment
SIEE	Summary Initial Environmental Examination
SO_2	Sulphur dioxide
T&D	Transmission and Distribution

Electrical Terminology

V	Volt	Unit of Voltage
kV	Kilovolt	1000 volts
W	Watt	Unit of active power
kW	Kilowatt	1000 watts
MW	Megawatt	1000 kW
MWh	Megawatt hour	Unit of energy
VA	Volt ampere	Unit of apparent power
MVA	Million volt ampere	10^6 VA
Transmission System	400kV, 220kV, 132kV and/or 66kV lines supplying (incoming & outgoing feeder) grid substations (Substation) with primary voltage of 400kV, 220kV, 132kV, or 66kV	
LILO	Line – in – Line - Out	

1.0 Introduction:

1. The Government of India and Government of Assam have requested ADB to provideUS$200 million loan funding via a Multi-tranche Financing Facility (MFF) to supportcontinued investment in power sector in the state of Assam.

2. The project is implemented in 3 Tranches viz. Tranche 1, Tranche 2 and Tranche 3. Theoriginal Loan Agreement (LOAN NUMBER 2592 - IND) for Tranche 1 was signed on 15February 2010 between Government of India and Asian Development Bank (ADB). While the LoanAgreement (LOAN NUMBER 2677 - IND) for Tranche 2 was signed on 17 January 2011 andLoan Agreement (LOAN NUMBER 2800 - IND) for Tranche 3 was signed on 27 February2012 between Government of India and ADB.

3. As per the original Loan Agreement ADB has agreed to make to the Government of India, GOI(Borrower) the loan on the terms and conditions set forth in the Loan Agreement, but only onthe condition that the proceeds of the Loan be made available to the State and through theState (Govt. of Assam, GOA) to Assam State Electricity Board (ASEB). ASEB was theExecuting Agency (EA) for all the three tranches. The Borrower in its letter of 11th June 2014has informed ADB of the dissolution of erstwhile EA for the Projects i.e., the ASEB and itsplace of its successive entities namely the Assam Power Generation Corporation Limited(APGCL), Assam Electricity Grid Corporation Limited (AEGCL) and Assam PowerDistribution Company (APDCL). The Borrower further requested ADB to accordingly make therelevant change in the EAs as AEGCL for Tranche 1 and 2, and APDCL for Tranche 3. ADBhas approved the request and communicated to Department of Economic Affairs (DEA),Ministry of Finance, GOI on 5th August 2014 for Amendment related to Minor Change inMFF.

4. Now, as per the amendment Government of Assam (GOA) and Assam Electricity GridCorporation Ltd. (AEGCL) are the Executing Agencies (EA) and Assam Electricity GridCorporation Ltd. (AEGCL) is the Implementing Agency (IA) for Tranche 1 and Tranche 2.While Government of Assam (GOA) and Assam Power Distribution Company Ltd. (APDCL)are the Executing Agencies (EA) and Assam Power Distribution Company Ltd. (APDCL) isthe Implementing Agency (IA) for Tranche 3.

5. The power sector investments are necessary to support continued investment in the state power sector, which is necessary for economic growth and poverty reduction. The MFF will partly finance the expansion and augmentation of the transmission and distribution (T&D) networks. The proposed investments are necessary to: (i) facilitate increased power transfers to accommodate increased demand and economic growth; (ii) improve supply-side energy efficiency by system de-bottlenecking and reducing technical losses; (iii) reduce the intensity of greenhouse gas (GHG) and other emissions via improved system efficiency; (iv) support expanded private sector participation in distribution system operations and other energy services; and (v) facilitate poverty reduction via improved electricity services and economic growth.

6. This environmental safeguards monitoring reports provides information pertaining to Tranche 2 for the period January 2015 to June 2015.

1.1 Brief Project Description

7. The proposed Assam Power Sector Enhancement Investment Program of Assam State Electricity Board (ASEB) which is being processed under ADB's Multi-tranche Financing Facility (MFF) would have the following components in Tranche 2, namely:

Part A: 220/132 kV sub-stations
Part B: 132/33 kV sub-stations
Part C: 220 kV transmission lines
Part D: 132 kV transmission lines
Part E: Augmentation, Extension and refurbishment of existing sub-stations and reactive power compensation
Part F Communication system
Part G Capacity Development Program

The details of Sub-Projects under Tranche 2are given below in **Table No. 1.0**:

Table No.1.0: Sub-Projects under Tranche 2

Sl. No	Name of the Sub-Project	
Part A: 220/132/33 kV sub-stations		**MVA**
1	2x100 MVA 220/132/33kV Sonapur Sub Station	200
2	2x100 MVA 220/132/33kV Sonabil Sub Station	200
Total		**400 MVA**
Part B: 132/33 kV sub-stations		MVA
1	2x40 MVA 132/33kV Kamakhya Sub Station	80
2	2x40 MVA 132/33kV Jorhat (West) Sub Station	80
3	2x25 MVA 132/33kV Bordubi Sub Station	50
4	2x25MVA 132/33kV Matia Sub Station	50
5	2x16 MVA 132/33kV Bilasipara Sub Station	32
6	2x16 MVA 132/33kV Hailakandi Sub Station	32
Total		**324 MVA**
Part C: 220kV transmission lines		Length (Km)
1	220kV D/C LILO of Samaguri - Sarusajai Line at Sonapur	13.312
2	220kV S/C Mariani - Namrup Line on D/C Towers	141.203
3	220kV D/C LILO of Samaguri - Balipara (PG) Line at Sonabil	1.512
Total		**156.027 Km**
Part D: 132 kV transmission lines		Length (Km)
1	132kV D/C LILO of Depota - Gohpur Line at Sonabil	1.227
2	132kV D/C LILO of Chandrapur - Kahilipara Line at Sonapur	40.10
3	132kV S/C LILO of Jorhat - Bokakhat Line at Jorhat (West)	1.958
4	132kV S/C LILO of Namrup - Tinsukia Line at Bordubi	2.427
5	Stringing of 2nd Circuit of 132 kV Samaguri - Lanka (Sankardevnagar) Line	60.455
6	132kV S/C LILO of Panchgram - Dullavcherra Line at Hailakandi	0.619
7	132kV S/C of Agia - Matia Line (On D/C Towers)	22.534
Total		**129.32 Km**

Part E:Augmentation, Extension and refurbishment of existing sub-stations and reactive power compensation: Construction activities for this package are in progress and cumulative progress of this package is 95% during this reporting period. (January 2015 to June 2015)
Part G: Capacity Development Program: Training programmes to enhance the capacity building for EA/IA officials conducted on 21st November, 2014 at Guwahati and on 12th December, 2014 at Jorhat.

1.2 Project Progress Status and Implementation Schedule

A. Progress Status

8. The updated status of Environment activities for the Substations and Transmission Lines from January to June 2015 under Tranche 2 are given below in **Table 2.0** and **Table 2.1** respectively:

Table No. 2.0: Project Progress Status (Substations)

Sl. No.	Name of sub-project		Status
1	**Construction of 220/132/33 kV Sub Station. (Contractor: M/S NECCON Power & Infra Ltd.)**		
	A.	**Sonapur Sub Station.** (4.29ha of private barren land acquired)	• Construction activities are in progress. Top soil is being preserved for reuse in project. • No trees falling in substation land • No Forest Land acquisition for Sub Station land • No Wild life sanctuary involved in Substation land • No major adverse environmental issues identified • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	B.	**Sonabil Sub Station.** (7.33 ha of private barren land acquired)	• Construction activities are in progress. • No trees falling in substation land. • No Forest Land acquisition for Sub Station. • No Wild life sanctuary involved in Substation land. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
Construction of 132/33 kV Sub Station. (Contractor: Alstom T & D India Ltd.)			
	A.	**Kamakhya Sub Station** (0.4ha of private barren land acquired)	• Construction activities are in progress. • No major adverse environmental issues identified. • No trees falling in substation land. • No Forest Land acquisition for Sub Station • No Wild life sanctuary involved in Substation land. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	B.	**Jorhat (West) Sub Station.** (3.43 ha of private barren	• Construction activities are in progress. • No major adverse environmental issues identified • No trees falling in substation land • No Forest Land acquisition for Sub Station

Sl. No.	Name of sub-project		Status
2		land acquired)	• No Wild life sanctuary involved in Substation land. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	C.	**Bordubi Sub Station.** (2.48 Ha. Private Tea Garden land acquired)	• Switch Yard work is in progress • No trees falling in substation land • No Forest Land acquisition for Sub Station • No Wild life sanctuary involved in Substation land • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	D.	**Matia Sub Station.** (3.33 ha of Govt. land acquired)	• No major adverse environmental issues identified • No trees falling in substation land • No Forest Land acquisition for Sub Station • No Wild life sanctuary involved in Substation land • Switch yard and control room work is in progress. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	E.	**Bilasipara Sub Station.** (4.0 ha of Government land acquired)	• No major adverse environmental issues identified • No trees felling in substation land • No Forest Land acquisition for Sub Station • No Wild life sanctuary involved in Substation land • Control room work and switch yard work is in progress. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	F.	**Hailakandi Sub Station.** (1.81ha of private land acquired)	• No major adverse environmental issues identified • No trees felling in substation land • No Forest Land acquisition for Sub Station • No Wild life sanctuary involved in Substation land • Construction activities are in progress. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.

Table No. 2.1: Project Progress Status (Transmission Lines)

Sl. No.	Name of sub-project		Status
Construction of 220kV Transmission Lines. (Contractor: M/S NECCON Power & Infra Ltd.)			
	A.	220 kV D/C LILO of Samaguri - Sarusajai Line at Sonapur. Approx. Length – 13.312 kms.	• Total No. of towers : 41 - Tower foundation completed : 30 - Tower erection completed : 0 • Tower foundation work up to this period completed to 73.17%.

Sl. No.	Name of sub-project		Status
3			• Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	B.	220 kV S/C Mariani - Namrup Line on D/C Towers. Approx. Length – 141.203 kms.	• Total No. of towers : 451 - Tower foundation completed : 447 - Tower erection completed : 447 • Tower foundation work up to this period completed to 99% and erection completed to 99%. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	C.	220 kV D/C LILO of Samaguri - Balipara (PG) Line at Sonabil. Approx. Length – 1.512 kms.	• Total No. of towers : 6 - Tower foundation completed : 6 - Tower erection completed : 4 • Tower foundation work up to this period completed to 100% and erection completed to 66%. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
Construction of 132kV Transmission Lines. (Contractor: M/S Shyama Power India Ltd.)			
4	A.	132 kV D/C LILO of Depota - Gohpur Line at Sonabil. Approx. Length – 1.227 kms.	• Total No. of towers : 6 - Tower foundation completed : 6 - Tower erection completed : 5 • Tower foundation work up to this period completed to 100% and erection completed to 83%. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	B.	132 kV D/C LILO of Chandrapur - Kahilipara Line at Sonapur. Approx. Length – 40.10 kms.	• Total No. of towers : 138 - Tower foundation completed : 79 - Tower erection completed : 36 • Tower foundation work up to this period completed to 57% and erection completed to 26%. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	C.	132 kV S/C LILO of Jorhat - Bokakhat Line at Jorhat (West). Approx. Length – 1.958 kms.	• Tower foundation and erection works completed. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	D.	132 kV S/C LILO of Namrup - Tinsukia Line at Bordubi. Approx. Length – 2.427 kms.	• Tower foundation and erection works completed. • Air, water and noise monitoring in post construction period

Sl. No.	Name of sub-project		Status
			has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	E.	Stringing of 2nd Circuit of 132 kV Samaguri - Lanka (Sankardevnagar) Line. Approx. Length – 60.455 kms.	• 2nd circuit stringing of this line completed and the same is in operation stage. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	F.	132 kV S/C LILO of Panchgram - Dullavcherra Line at Hailakandi. Approx. Length – 0.619 kms.	• Tower foundation and erection works completed. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.
	G.	132 kV S/C of Agia - Matia Line (On D/C Towers). Approx. Length – 22.534 kms.	• Tower foundation and erection works completed. • Air, water and noise monitoring in post construction period has been planned and will be carried out by the Environmental Monitoring Agency after monsoon period.

B. Implementation Schedule

9. The entire works related to tranche 2 were scheduled to be completed within 36 months from effective date of project approval from ADB. Package wise contract details are provided below in **Table No. 3.0**:

Table No. 3.0: Package Wise Contract Details

Name of the Packages	Sub projects under this package	Contractor	Contract Award Date	Contract Effective Date	Contract Completion Date (Original)	Contact Completion Date (Revised)	Remarks
A	220/132/33kV Sonapur S/S 220/132/33kV Sonabil S/S	M/S NECCON Infra & Power Ltd	20.07.2012	27.09.2012	31.03.2013	31.03.2016 (3rd revision)	Both the substations civil works is in progress
B	132/33kV Kamakhya S/S 132/33kV Jorhat (West) S/S 132/33kV Bordubi S/S 132/33kV Matia S/S 132/33kV Bilasipara S/S 132/33kV Hailakandi S/S	M/S Alstom T&D India Ltd	14.09.2012	07.11.2012	07.05.2014	31.03.2016 (3rd revision)	All the substations civil works is in progress
C	220kV D/C Sonapur LILO 220kV S/C Mariani - Namrup Line on D/C Towers 220kV D/C Sonabil LILO	J/V of M/S NECCON Power Infra Ltd and M/S Trans Global Power Ltd	12.11.2011	12.12.2011	11.12.2013	31.03.2016 (3rd revision)	Tower foundation, Erection and Stringing is in progress
D	132kV D/C Sonabil LILO. 132kV D/C Sonapur LILO 132kV S/C Jorhat LILO 132kV S/C Bordubi LILO Stringing of 2nd Circuit of 132 kV Samaguri - Lanka T/L 132kV S/C Hailakandi LILO 132kV S/C of Agia – Matia T/L	M/S Shyama Power India Ltd	21.09.2011	16.11.2011	16.11.2013	31.03.2016 (2nd revision)	All transmission line works is in progress during this period
E	Augmentation of Existing Substation	M/S NECCON Infra & Power Ltd	03.09.2012	31.10.2012	30.04.2014	31.03.2016 (2nd revision)	Civil works is in progress

2.0 Compliance to National Regulations

The relevant applicable Acts and Legislations to the project are given in the **Table No.4.0**

Table No. 4.0: Applicable Acts and Legislations to the project

Act/Rule/Notification	Year	Objectives	Compliance Status
The Environment (Protection) Act The Environment (Protection) Rules	1986 1986	To protect and improve the overall environment.	Complied
Indian Forest Act Forest (Conservation) Act Forest (Conservation) Rules Forest Conservation Rules (Notification)	1927 1980 1981 2003	To consolidate the laws related to forest, the transit of forest produce and the duty levy able on timber and other forest produce. Conservation of Forests, Judicious use of forestland for non-forestry purposes; and to replenish the loss of forest cover by Compensatory Afforestation on degraded forestland and non-forest land. Procedure for submission of the proposals seeking approval for Central Government for diversion of forestland to non-forest purposes.	Not Applicable No Forest Land is involved in the project.
Wild Life (Protection) Act The Wild Life (Protection) Amendment Act	1972 2002	To protect wildlife in general and National Parks and Sanctuaries in particulars. To protect wild animals, birds and plants with a view to ensure the ecological and environmental security of the country	Not Applicable No Wild Life Protected area is involved in the project.
The Water (Prevention and Control of Pollution) Act	1974	To control water pollution by controlling discharge of pollutants as per prescribed standards	Complied
The Air (Prevention and Control of Pollution) Act	1981	To control air pollution by controlling emission of air pollutants as per prescribed standards	Complied
The Noise Pollution (Regulation and Control) Rules The Noise Pollution (Regulation and Control) Amendment Rules	2000 2006	To regulate and control noise producing and generating sources with the objective of maintaining the ambient air quality standards in respect of noise	Complied
The Ancient Monuments and Archaeological Sites and Remain Act	1958	To provide for the preservation of ancient and historical monuments and archaeological sites and remains of national importance and protection sculptures, carvings and other like objects.	Not Applicable No ASI site identified so far
The Electricity Act	2003	Although the Act does not explicitly deal with environmental implications of activities related to power generation, transmission and distribution. However, ASEB integrates environment protection as a part of its project activities.	Complied

3.0 Compliance to Environmental Covenants from the ADB Loan Agreement

10. The **Table 5.0** shows the applicable Environmental Covenants from the ADB Loan Agreement

Table No.5.0: Environmental Covenants

Product	Schedule	Para No.	Description	Remarks/Issues
Loan 2677	5	14	The State through ASEB shall ensure that the Subprojects under the Project are undertaken and that all Project facilities are designed, implemented, operated and maintained in accordance with all applicable laws, and regulations of the Borrower, the State, and ADB's Safeguard Policy Statement (2009), as set out in the EARF. The State shall ensure that all associated projects will be constructed and commissioned in compliance with the laws and regulations of the Borrower.	It is being complied as per ADB's Environment Policy (2002), as set out in the EARF. The EMP is being implemented in accordance with applicable laws and regulations of GOI, GOA, and the ADB guidelines. Further an Environment monitoring agency has been placed to carry out the regular environmental monitoring as set out in the EMP. The environmental monitoring has been planned and is being carried out in all three phases i.e. pre-construction, during construction and post construction phase.
Loan 2677	5	15	For each Subproject, ASEB shall cause the IA to prepare and implement the necessary IEE/EIA as applicable, and EMP (with budget) in accordance with the EARF. For Subprojects, the environmental categorization and assessment procedures defined in the EARF shall be followed. For any environment category A or B sensitive Subproject, a SEIA/SIEE as applicable shall be prepared and made available to the public 120 days before the Subproject is submitted to ADB for approval. ASEB through the IA shall monitor, audit, and report to ADB twice a year on the implementation of the EMPs for each Subproject.	It is being complied. The project falls under category B and IEE for the subprojects has been prepared accordingly. Consultant Supporting ESMU in PMU is internally monitoring the EMP implementation and submitting quarterly progress reports to PMU. Further an Environment monitoring agency is in place and is carrying out environmental monitoring regularly as set out in the EMP for all three phases i.e. pre- construction,

Product	Schedule	Para No.	Description	Remarks/Issues
				during construction and post construction phase. Since subproject involves no major environmental issues, hence hiring of independent external monitoring agency is not felt by APDCL & AEGCL (EA).

4.0 Compliance to Safeguards Management Plan

11. Based on the Environmental Management Plan the Compliance Status on Environmental Issues in Tranche 2 Subprojects for construction stage has been prepared and presented in **Table No. 6.0**

Table No. 6.0: Compliance Status on Environmental Issues in Tranche 2 Subproject

Project Activity	Environmental Issues	Management / Mitigation Measures	Responsibility					Compliance Status/ Remarks
			Planning	Implementation	Monitoring	Supervision	Review Agency	
Construction Stage								
Equipment layout and installation	Noise and vibrations	Construction techniques and machinery selection to minimize noise and vibration. Noise to be limited to 70 dB(A) at site boundaries. Environmental and Social Management Cell (ESMC) of Project Management Unit (PMU) to conduct periodic spot checks to confirm compliance.	AEGCL	Contractor	ESMC/ EMA	ESMC/ PMU	APCB	Environmental and Social Management Cell (ESMC) of Project Management Unit (PMU) conducted periodic spot check to confirm compliance. Being Complied. The noise level monitoring is carried by the environment monitoring agency (ENGECORC, Ghy) on regular basis.
Physical construction (manual labor)	Disturbance of farming activity	Construction activities on cropping land timed to avoid disturbance of field crops (within one month of harvest wherever possible).	AEGCL	Contractor	ESMC	ESMC/ PMU	ADEF	Being complied. Contractors are avoiding disturbance of field crops
Mechanized construction	Noise, vibration, and operator safety, equipment wear and tear	Construction equipment to be maintained in accordance with GOI standards for noise exposure to workers. Equipment to be shut off when not in use.	AEGCL	Contractor	ESMC / EMA	ESMC/ PMU	APCB	Being Complied. Noise level exposure to workers in accordance with GOI standards are examined by the environment monitoring agency.
Substation site clearance	Removal of trees and other vegetation	Marking of trees / vegetation to be removed prior to clearance, and strict control on clearing activities to ensure minimal clearance.	AEGCL	Contractor	ESMC	ESMC/ PMU	ADEF	Being complied. Enumeration of trees / vegetation to be removed prior to clearance, to ensure minimal clearance.
Trimming /cutting of	Fire hazards	Trees allowed growing up to a height within the RoW by	AEGCL	Contractor	ESMC	ESMC/ PMU	ADEF	Being Complied.

Project Activity	Environmental Issues	Management / Mitigation Measures	Responsibility					Compliance Status/ Remarks
			Planning	Implementation	Monitoring	Supervision	Review Agency	
trees within Right-of-Way (RoW)	Temporary loss of vegetation and permanent deforestation	maintaining adequate clearance between the top of tree and the conductor as per transmission design standards. Trees that can survive pruning to comply with vertical and horizontal separation requirements should be pruned instead of cleared. Felled trees and other cleared or pruned vegetation to be disposed of as authorized by ADEF						Provisions are made to clearance the growing up trees within the Right of Way (RoW) for maintenance the transmission line in future.
Wood / vegetation harvesting	Temporary loss of vegetation and permanent deforestation	Construction workers prohibited from harvesting wood in the project area (apart from locally employed staff continuing current legal activities).	AEGCL	Contractor	ESMC	ESMC/ PMU	ADEF	Being Complied. Contractors are using gas/ kerosene for cooking.
Ambient air quality and noise level and Water quality	Dust, exhaust, & noise emissions from construction equipment. Noise impacts on nearby communities& construction workers	Controlled construction activities & maintenance of machineries, timely scheduling of construction activities to avoid nuisance to nearby communities. Construction equipment to meet GOI emissions & noise standards. Water sprays to be used for dust control as necessary.	AEGCL	Contractor	ESMC / EMA	ESMC/ PMU	APCB	Being Complied. Monitoring as per GOI standards on air, water and noise are examined by the environment monitoring consultant.
Storage of chemicals and any hazardous materials	Possible spills resulting in contamination land, water, and air	Fuel and any other hazardous materials will be securely stored to prevent spills. Contractors to provide spill response kit in accordance with Material Safety Data Sheets for chemicals and hazardous materials.	AEGCL	Contractor	ESMC / EMA	ESMC / PMU	APCB	Being Complied. Contractors are storing oils and fuels on cemented floor to prevent spills lead to contaminate surface &ground water and land.
Construction schedules	Noise nuisance to neighboring properties	Construction activities only undertaken during the day and local communities informed of the	AEGCL	Contractor	ESMC / EMA	ESMC/PM U	APCB	Being Complied. Monitoring as per GOI standards on

Project Activity	Environmental Issues	Management / Mitigation Measures	Responsibility					Compliance Status/ Remarks
			Planning	Implementation	Monitoring	Supervision	Review Agency	
		construction schedule.						noise are being examined by the environment monitoring consultant.
Health and safety	Injury and sickness of workers and members of the public	Contract provisions specifying minimum sanitation, health, and safety requirements for construction camps. Contractor to prepare and implement a health and safety plan including worker training and daily/weekly briefings.	AEGCL	Contractor	ESMC	ESMC/ PMU	APCB & ADH	Being Complied. Contractors are regularly using Personnel Protective Equipment's during construction time. First aid box and fire extinguisher are kept at work site.
Provision of Sanitary facilities for construction workers	Potential BOD and fecal coli form contamination	Construction workforce facilities to include proper sanitation, water supply, waste disposal facilities, including primary treatment for domestic sewage and secure disposal of domestic solid wastes.	AEGCL	Contractor	ESMC	ESMC/ PMU	APCB	Being Complied. Contractors are providing sanitary and waste disposal facilities at construction camp.
Construction waste management	Air, soil, and water pollution due to inadequate management and control	Construction wastes to be managed in accordance with GOI standards & industry best practices. Waste lubricating oils to be disposed or recycled off-site by licensed service companies. Transformer oils to be returned to vendors via existing arrangements for transformer maintenance. Scrap steel & other salvaged materials to be auctioned and disposed / recycled off-site by licensed vendors.	AEGCL	Contractor	ESMC / EMA	ESMC/ PMU	APCB/ ADB Review Mission	Being Complied. Construction waste is being managed properly.

5.0 Safeguards Monitoring Results and Unanticipated Impacts

A. Environmental Monitoring Schedule

12. In order to comply with requirements of Environmental monitoring an external environmental monitoring agency[1] (M/s En Geo Consultancy & Research Centre, Guwahati) has been hired by PMU to carry out the environmental monitoring with regards to air quality, water quality and noise levels during preconstruction, construction and post construction stage. The primary responsibility of the environmental monitoring agency are for testing, analysing and reporting impact of transmission lines & substation projects on air, ground & surface water and noise levels.

13. Since the civil construction works under the project are very meagre, hence, the environmental monitoring for ambient air quality, water quality and noise levels during various stages – pre construction, construction and post construction are being monitored for Tranche 2 as per below schedule. **(Refer Table 7.0).**

Table No. 7.0: Environment Monitoring Schedule for Tranche 2

Sl. No.	Parameters	Locations	Total Sample Nos.	Maximum Frequency of Sampling
Substations				
1	Ambient Air quality monitoring	At all 8 Sub Stations	8	Twice during construction and Once during post construction
2	Ambient Noise level monitoring	At all 8 Sub Stations	8	Twice during construction and Once during post construction
3	Water quality monitoring (surface & groundwater)	At all 8 Sub Stations	8	Twice during construction and Once during post construction
Transmission Lines[2]				
1	Ambient Air quality monitoring	Habitations throughout the transmission corridor	75	Once during pre-construction; Twice during construction and Once during post construction
2	Ambient Noise level monitoring	Habitations throughout the transmission corridor	75	Once during pre-construction; Twice during construction and Once during post construction
3	Water quality monitoring (surface & groundwater)	Water bodies along the transmission-corridor	75	Once during pre-construction; Twice during construction and Once during post construction

[1] Ref. Contract Agreement No. PMU/03/OF 2011-12 dated June 04, 2012 between Assam State Electricity Board and En-Geo Consultancy & Research Centre

[2] For transmission lines a sample to be collected within a maximum of 1km on either side of the lines.

B. Environmental Monitoring Parameters

14. The details of parameters for Ambient Air, Water and Noise being monitored by external environmental monitoring agency are given below in **Table 8.0**.

Table No. 8.0: Environmental Monitoring Parameters

Sl. No.	Environmental Parameters	Analytical Parameters
1	Air Quality Monitoring	PM_{10}, $PM_{2.5}$,SO_2, NO_2
2	Ground Water Quality Monitoring	pH, Turbidity (NTU), Specific Conductance (micro mhos/cm), Total Dissolved Solids (TDS), Total Alkalinity (as $CaCO_3$), Total Hardness (as $CaCO_3$), Calcium (as Ca), Magnesium (as Mg), Chlorides (as Cl), Sulphates (as SO_4), Nitrates (as NO_2), Fluoride (as F), Arsenic (as As), Selenium (as Se), Cadmium (as Cd), Copper (as Cu), Lead (as Pb), Zinc (as Zn).
3	Surface Water Quality Monitoring	Colour (Hazen Units), Dissolved Oxygen (DO), pH, Iron (as Fe), Chlorides (as Cl), Biological Oxygen Demand (BOD), Total Dissolved Solids (TDS), Copper (as Cu), Total Chromium (as Cr), Sulphate (as SO_4), Nitrates (as NO_3), Fluoride (as F), Total Coliform (MPN/100ml), Cadmium (as Cd), Selenium (as Se), Arsenic (as As), Lead (as Pb), Zinc (as Zn), Chromium (as Cr+6), Phenolic compounds (as C_6,H_5OH, Oil & Grease).
4	Noise Level Monitoring	Day and Night time

C. Environmental Monitoring Status

15. The environmental monitoring for ambient air quality, water quality and noise levels have been conducted and details are as under:

Substation: Environmental monitoring conducted twice during construction stage in the month of November 2013 and April 2014.

Transmission lines: Environmental monitoring conducted once during preconstruction stage in the month of December 2012/January 2013 and twice during construction stage in the month of November 2013 and April 2014.

As per the communication by External monitoring agency vide letter Ref. No. ENGECORC/ASEB-Env.Mon/01-05/15-16 date12-05-2015, Post construction environmental monitoring for ambient air quality, water quality and noise levels at substation and transmission lines shall be undertaken after monsoon period.

6.0 Implementation of Grievance Redress Mechanism and Complaints Received from Stakeholders

16. There are 5 circles under AEGCL for substations and T/Ls. One Grievance Redressal Committee (GRC) cell at each circles level has been formed (i) to provide support to affected persons (AP's) on problems arising from the environmental activities. (ii) record grievances of the AP's and resolve them; and (iii) review grievances involving benefits like compensations for

private tree loss and assistance to AP's. A directive in this regard from Director (PMU), ASEB dated January 19, 2012 have been issued to AEGCL and APDCL, who are the Implementing Agencies of the MFF. GRC at circle levels are formed and Project Authorities are the Chairman of respective circles to comply the grievances in regard to environmental activities if any.

The GRC constitutes representatives of

i.	Concerned Project Authority (IA)	Chairman of the committee
ii.	One official from the o/o the concerned District Magistrate or SDM (Civil)	Member
iii.	Concerned Circle Officer or his representative	Member
iv.	Concerned Project Manager (IA)	Member
v.	Deputy General Manager (PMU), APDCL	Member
vi.	AGM, Environment & Social Management Unit (ESMU)	Member
vii.	Land Acquisition Officer (LAO), AEGCL	Member
viii.	Affected Person(s)/Gaon Burha	Member

17. Grievance Redress Committee (GRC) set up at circle level to monitor subprojects Implementation for each subproject affected area. The GRC will determine the merit of each grievance, and resolve grievances within an outer time limit of three months of receiving the complaint. The AP has the right to refer the grievances to appropriate courts of law if not satisfied with the redress at any stage of the process. The set up GRC has the system of records keeping, contact details of complainant, date of the complaint received, nature of grievance etc. if any for the ongoing project and taking the necessary action against the complaint.

18. During this reporting period no formal complaint or grievances from have been registered.

7.0 Consultations Conducted for132/33kV Hailakandi Sub Station and 132kV S/C LILO of Hailakandi T/L

19. The National Individual Social and Environmental Consultant and Technical Team of M/s SMEC India Pvt. Ltd. along with PMU, APDCL conducted a site visit to Hailakandi on 20th February 2015. The site visit was also planned to carry out socio-economic census survey and public consultation with affected people due to 132kV DC LILO at Hailakandi of Tranche 2.

20. The site visit was accompanied by Contractor representative and meeting with AEGCL officials was held to understand the overall physical progress, issues impediment to project completion and observation requiring attention of PIU. The Social and Environmental team comprised of;

i. **Mr. Khumujam Khabilongtshup**, Social Safeguard Specialist
ii. **Mr. Dibya Jyoti Baruah**, Environment & Social Investigator
iii. **Mr. DeepjyotiSingha**, Environment & Social Investigator
iv. **Mr. Manzil Gogoi**, Environment & Social Investigator

21. The substation is being constructed on acquired private land. The disbursement of land compensation and other assistance to affected person, and mutation of landownership in

AEGCL name is completed. Contractor representative informed that there are no outstanding social issues that are affecting construction activities.

22. The public consultation was conducted with affected persons on 20 February, 2015 at Chandpur village. The public consultation started with the briefing about the project, Right of Way requirement, process involved for finalising compensation and status of compensation processes etc. The people in the project area have received the sub-project on positive note and expect improvement in quality of power supply.

23. The following observation has come out from the visit:

I. It was encouraging to note that Contractor's staffs and labours were wearing safety helmet. However, Contractor HSE Officer has been advised to ensure providing PPE during entire construction period.
II. The approach road to the sub-station is also used by resident is being improved with earth filling. Contractor has been advised to properly carry out compaction work.
III. Affected persons were happy with the compensation amount

The photographs of site visit and attendance sheet of public consultations are provided in **Annexure 1.**

8.0 Conclusion and Recommendations

24. In order to have a sustainable development in the project the emphasis on the implementation of EMP has been given top most priority. Compliances to National Regulations and to Environmental Covenants as contained in ADB Loan Agreement are being met. Environment and Social Cell is monitoring the implementation of environmental safeguards measures being undertaken by the contractor on regular basis. A grievance Redressal committee has been constituted with due representation to the people residing near to the project site. Complaints, if any, received will be recorded. The copy of the complaint together with the corrective action taken by the contractor will be placed before the committee immediately. The contractor will implement the decision taken by the committee. Environmental monitoring is regularly being conducted by external environmental monitoring agency during pre-construction and construction stage. Post construction environmental monitoring for ambient air quality, water quality and noise levels at substation and transmission lines shall be undertaken after monsoon period.

Annexure –1

Photographs of site visit and Consultation

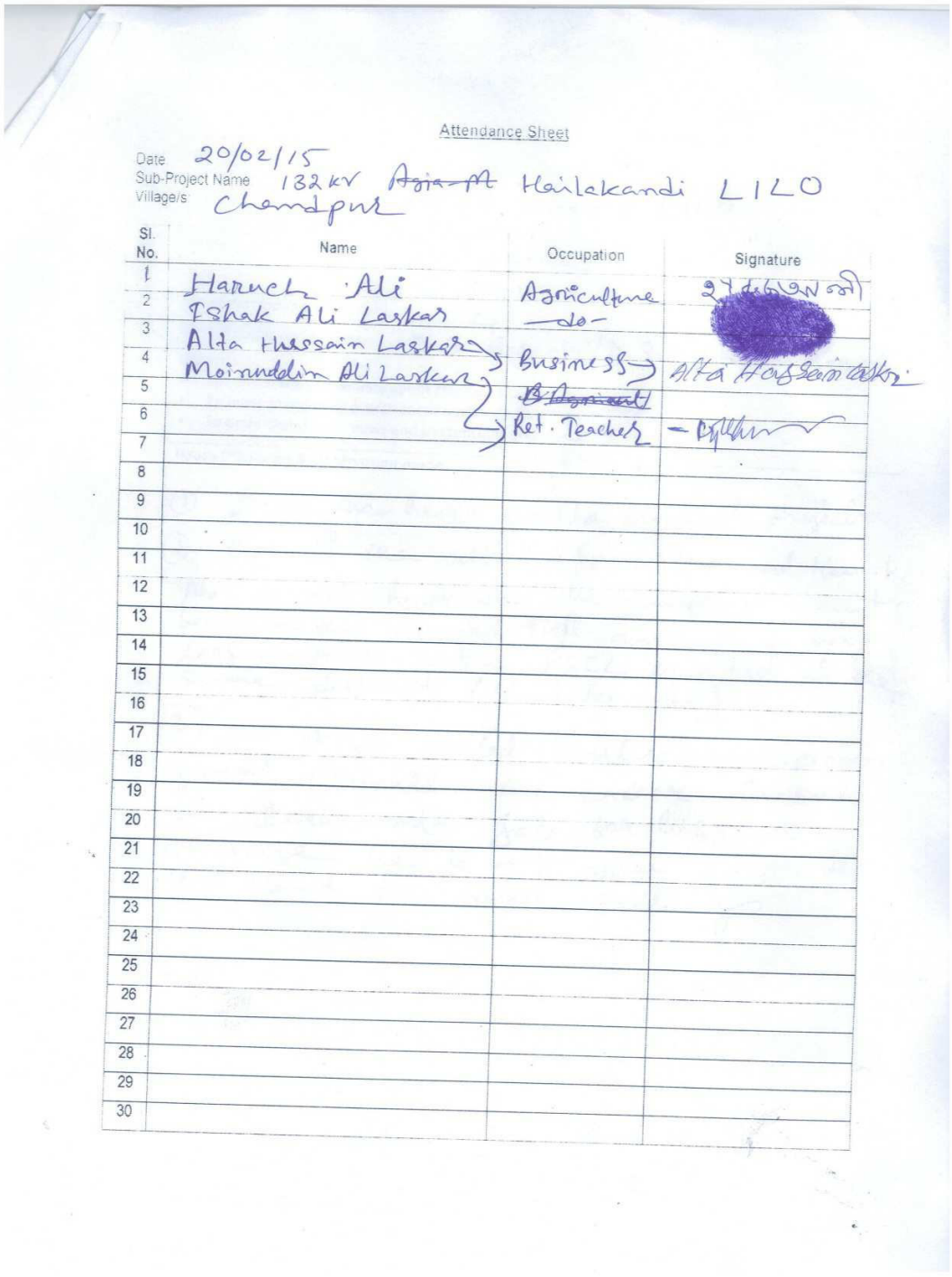
Photo 1 Workers work with safety Helmet

Photo 2: Discussion with People at sub-project RoW

Photo 3: Control room building completed

Photo 4: Census Survey of Affected Person

Public Consultation Attendance sheet



Attendance Sheet

Date 20/02/15
Sub-Project Name 132 kV ~~Agia~~ Hailakandi LILO
Village/s Chandpur

Sl. No.	Name	Occupation	Signature
1	Haruch Ali	Agriculture	
2	Ishak Ali Laskar	—do—	
3	Alta Hussain Laskar	Business	Alta Hussain Laskar
4	Moinuddin Ali Laskar	~~B Agriculture~~ Ret. Teacher	
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