Semi-Annual Environment Safeguard Monitoring Report

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Reporting Period: July.- December 2018

Green Energy Corridor and Grid Strengthening Project

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ABBREVIATIONS

ADB	–	Asian Development Bank
CEA	–	Central Electricity Authority
CPTD	–	Compensation Plan for Temporary Damages
CTU	–	Central Transmission Utility
DFO	–	Divisional Forest Officer
ESPP	–	Environment and Social Policy & Procedures
ESMD	–	Environment & Social Management Department
EMP	–	Environmental Management Plan
GRM	–	Grievances Redressal Mechanism
GRC	–	Grievance Redressal Committee
HVDC	–	High Voltage Direct Current
Ha./ha.	-	Hectare
IEE	–	Initial Environmental Examination
Km/km	–	Kilometers
MoEFCC	–	Ministry of Environment, Forest and Climate Change
PAL	–	POWERGRID Academy of Leadership
NBWL	–	National Board for Wildlife
PAPs	–	Project Affected Persons
POWERGRID	–	Power Grid Corporation of India Ltd.
PMU	–	Project Management Unit
RE	–	Renewable Energy
RoW	–	Right of Way
RMoEFCC		Regional Office of Ministry of Environment, Forest and Climate Change
S/s	–	Substation
SBWL	–	State Board for Wildlife
USD	–	United States Dollar
VSC	–	Voltage Source Converter

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EXECUTIVE SUMMARY

Power Grid Corporation of India Ltd. (POWERGRID), the Central Transmission Utility (CTU) of the country, is engaged in power transmission with the mandate for planning, co-ordination, supervision and control over complete Inter-State transmission system. The Green Energy Corridor and Grid Strengthening Project ("The Project") has been planned to facilitate the transfer of renewable energy as well as increasing interregional connectivity. The project is a subset of India's' green energy corridor' initiative to ensure that transmission system development is commensurate with renewable energy capacity development over time and will also increase the interregional transmission capacity between the southern and western regional systems.

The Asian Development Bank (ADB) is supporting the said project with a total financial assistance of $1000 million ($500 million Sovereign loan under Loan No.-3365-IND & $500 million Non- Sovereign loan under Loan No.-3375-IND). The Loan No.-3365-IND & Loan No.-3375-IND became effective from 22nd March, 2017 & 24th November, 2017 with loan closing date of 30th June, 2021 and 31st August, 2021 respectively.

The Project comprises of number of subprojects involving construction of EHV lines and associated substations of different voltage levels spread across 5 States i.e. Chhattisgarh, Tamil Nadu, Kerala, Rajasthan & Punjab. This includes 1216 km of transmission lines of different voltages (765 kV/400 kV/ 320 kV VSC based HVDC) along with associated 5 no. new substations (±800 kV HVDC terminals station at Raigarh & Pugalur, ±320 kV HVDC terminals station at Pugalur & North Thrissur and 765/400 kV substation at Bikaner).

The Project is being implemented in accordance with POWERGRID's Environmental and Social Policy & Procedures (ESPP) & ADB's Safeguard Policy Statement, 2009. Additionally, various covenants as per agreed loan agreements and provisions made in project specific safeguard documents (IEE/CPTD/EMP) which were prepared and disclosed as per the framework are also applied to this project. The Project is classified as Environmental Category 'B' as per ADB's SPS. The present 3rd Semi-annual Safeguard Monitoring Report for period July – December 2018 is part of the reporting framework agreed under loan covenants.

With careful route selection technique, the total forest involvement for proposed projects was restricted to 4.93 km which is only 0.40 % of total line length of 1212 km lines. Besides, a small stretch (0.49 km) of underground portion of ±320 kV Pugalur-North Trichur line is passing through Peechi Vazhani Wildlife sanctuary which is unavoidable as no other utility corridor is available to lay the underground cable. However, required clearance/permission for diversion of forest and wildlife area as per the applicable provisions of The Forest (Conservation) Act, 1980 and The Wildlife (Protection) Act, 1972 respectively are being obtained from Ministry of Environment, Forest & Climate Change (MoEFCC). Besides, POWERGRID has been complying with all other applicable laws/rules/regulations of the country and no violation/ penalty in this regard has been reported till date.

No major environmental impacts are envisaged in the instant project except some impacts due to infringement of forest and wildlife area for construction of proposed lines. However, the compliance of forest and wildlife clearance conditions including wildlife mitigation plan as stipulated by the Chief Wildlife Warden (CWW)/ NBWL will be implemented to mitigate the all possible impacts. Besides, as anticipated some localized impacts like loss of vegetation due to clearing of the Right of Way (RoW) for lines and temporary impacts due to small scale construction activities in substation during construction period will never be avoided completely. However, till date no complaints from public in respect of increase noise, traffic, dust etc. or any major inconvenience due to proposed intervention have been reported during reporting period. The project specific mitigation measures enlisted in EMP, which is also part of contract documents are being applied appropriately in different stages of project and regularly monitored for proper implementation. Apart from identified impacts as mentioned in EMP, no other unanticipated impacts were observed/reported during the implementation of projects in the reporting period. As regard Safety, all required measures are in place including due precautions/awareness programs as well as ensuring use of PPEs, which is evident from the fact that no accidents (fatal or non-fatal) including major/minor injuries were reported during the reporting period from any of the construction sites.

The two-tier grievance redress mechanism has been addressing/resolving the concerns and grievances of the complainant effectively. All concerns/grievances of affected persons/public including minor one are also recorded and regularly tracked for early resolution within stipulated timeframe.

POWERGRID approach of project implementation involving selection of optimum route before design stage, proper implementation of EMP and monitoring mechanism throughout project life cycle supported by strong institutional arrangement has considerably nullified the adverse impacts arising out of project activities. There will be optimization of RoW resulting in reduction in land requirement due to high power carrying capacity of these lines. Besides, direct or indirect benefits of the Projects like the employment opportunity, improved & uninterrupted power supply, improvement in infrastructure facilities, improved business opportunity outweigh the negligible impacts of the project. Since this Green Energy Corridor subproject is planned to evacuate clean and green energy through renewable sources, the benefits associated with such projects like reduction in emission of Green House Gases (GHGs) and resultant warming & climate change shall offset possible adverse impact if any.

SECTION 1: INTRODUCTION

Power Grid Corporation of India Ltd. (POWERGRID), the Central Transmission Utility (CTU) of the country, is engaged in power transmission with the mandate for planning, co-ordination, supervision and control over complete Inter-State transmission system. It has been contributing significantly towards development of Indian power sector by undertaking coordinated development of power transmission network along with effective and transparent operation of regional grids and through continuous innovations in technical & managerial fields.

The Green Energy Corridor and Grid Strengthening Project has been planned to facilitate the transfer of renewable energy, as well as increasing interregional connectivity. This project is a subset of India's 'Green Energy Corridor' initiative to ensure that transmission system development is commensurate with renewable energy capacity development over time. The project will also incorporate increasing interregional transmission capacity between the southern and western regional systems via an 800 kV HVDC link. The Green Energy Corridor and Grid Strengthening Project includes of number of projects consisting of 800 kV HVDC, 765 kV and 400 kV, 320 kV VSC based transmission lines and associated 800 kV HVDC & 320 kV terminals, 765/400kV substation as part of increased inter-regional connectivity between India's western and southern regional power grids. The details of projects are as below;

a. Establishment of +800 kV, 6000 MW HVDC system between the Western (Raigarh) and Southern (Pugalur) Regions;

   Southern Region is facing power deficit mainly due to delay/deferment of anticipated generation projects and non-availability of gas for existing gas projects in Southern Region. Presently, maximum power demand of Southern region is about 39,000 MW and faces a deficit of about 3400 MW in spite of import capacity of about 4950 MW from NEW grid. As per 18th EPS of CEA the expected power demand of Southern region by the end of XII and XIII plan would be about 57,200 MW and 82,200 MW respectively. Power transfer requirement to Southern Region is expected to increase in coming years. Therefore, in view of large deficit and requirement of transmission system to meet future demands, the implementation of HVDC link has been proposed with a capacity of 6000 MW.

b. Establishment of Pugalur - Trichur 2000 MW VSC Based HVDC System;

   Considering the RoW problem in Kerala and dispersal of power beyond Pugalur, establishment of Voltage Source Converter (VSC) based 2000 MW HVDC link between Pugalur and North Trichur (Kerala) has been proposed. The present project will improve import capability of Southern Region.

c. Green Energy Corridor (Part-D);

   About 33 GW Renewable capacity addition has been envisaged in 12th Plan in the eight renewable energy rich States, viz. Rajasthan, Gujarat, Tamil Nadu, Maharashtra, Karnataka, Andhra Pradesh, Himachal Pradesh and J&K through Wind/ Solar & small Hydro generation. Considering above quantum of envisaged renewable capacity, it is expected that some of the Renewable Energy (RE) resource rich States including Rajasthan shall have more RE capacity than the capacity required for fulfilling their Renewable Purchase Obligations (RPO). Further, such RE rich host State may not absorb full RE energy locally particularly

during the other than peak hour conditions when renewable generation is at peak. Intermittency/ variability, inherent characteristics of renewable, also necessitates requirement of strong grid interconnections for grid stability.

For dispersal of power, high capacity transmission corridor, as part of inter-State transmission system, connecting major renewable pockets is being proposed right from the Bhuj Pooling Station in Gujarat (Western Region) to Moga in Punjab (Northern Region) via Chittorgarh/ Ajmer/ Bikaner in Rajasthan (NR). For onward dispersal of power beyond Ajmer/ Bikaner, 765 kV High capacity transmission corridor is proposed towards Moga in Punjab, a major load centre in Northern Region, as part of the subject scheme "Green Energy Corridors ISTS - Part-D".

d. 400 kV AC Power Transmission system associated with HVDC terminal stations at Pugalur, Tamil Nadu

The Project involves construction of 400 kV AC Transmission system for transfer of power from Pugalur HVDC Terminal to 400 kV AC network of Tamil Nadu.

The total project cost is about $2.5 billion However, to meet the funding requirement for the proposed project, Asian Development Bank (ADB) has accepted POWERGRID's proposal to finance $500 million as Sovereign loan under Loan No.-3365-IND & additional $500 million as Non-sovereign loan under Loan No.-3375-IND for implementation of Green Energy Corridor and Grid Strengthening Project. The funding for the remaining part will be met from POWERGRID's own Internal Resources (IR). The above said was signed on 23rd February, 2017 and became effective from 22nd March, 2017. The loan closing date is 30th June, 2021.

1.1 OVERALL PROJECT DESCRICTION

Following subprojects are covered under the subject loan:

1. Establishment of +800 kV, 6000 MW HVDC system between the Western (Raigarh) and Southern (Pugalur) Regions;

   a) Establishment of Raigarh ±800kV HVDC Station with 6000MW HVDC terminals.
   b) Establishment of Pugalur ±800kV HVDC Station with 6000MW HVDC terminals.

2. Establishment of Pugalur - Trichur 2000 MW VSC Based HVDC System;

   a) Establishment of VSC based ±320 kV, 2000 MW HVDC link between Pugalur and North Trichur (Kerala)- **Underground Cable portion: 28 km**
   b) ±320 kV, 2000 MW VSC based HVDC terminal at Pugalur.
   c) ±320 kV, 2000 MW VSC based HVDC terminal at North Trichur.

3. Green Energy Corridor (Part-D)

   a) Ajmer (New) – Bikaner (New) 765 kV D/c line – **263 km**
   b) Bikaner (New) – Moga (POWERGRID) 765 kV D/c line – **293 km**
   c) LILO of 400 kV Bhadla (RVPN) -Bikaner (RVPN) D/c line at Bikaner (New)-**9 km**
   d) 765/400 kV Substation at Bikaner.

4. 400 kV AC Power Transmission system associated with HVDC terminal stations at Pugalur, Tamil Nadu

   a) Pugalur HVDC Station – Pugalur (Existing) 400 kV (quad) D/c line- **58 km**.
   b) Pugalur HVDC Station – Arasur 400 kV (quad) D/c line - **60 km**

c) Pugalur HVDC Station – Thiruvalam 400 kV (quad) D/c line - **390 km**
d) Pugalur HVDC Station – Edayarpalayam 400 kV (quad) D/c line - **57 km**
e) Edayarpalayam – Udumulpet 400 kV (quad) D/c line - **54 km**

1.2 PROJECT OBJECTIVES

The objective of the project is to increase transmission of renewable energy and interregional connectivity leading to increase in overall efficiency and more reliable transmission system capacity in selected regions of India.

1.3 ENVIRONMENTAL CATEGORY

As per the Asian Development Bank's (ADB) classification of project on the basis of potential environmental impacts, the Green Energy Corridor and Grid Strengthening Project is classified as Environmental Category 'B'.

1.4 ENVIRONMENTAL PERFORMANCE INDICATOR:

The following parameters which are considered as key indicators for this project need to be monitored to evaluate the environmental performance.

1. Selection of optimum route which has least impact on environment and also avoids protected area/ecological sensitive area/ historical or cultural monuments;
2. Compliance with all applicable statutory requirements;
3. Compliance to Loan Covenants agreed with ADB;
4. Compliance with Environment Management Plan

1.5 OVERALL PROJECT PROGRESS, AGREED MILESTONES & COMPLETION SCHEDULES

Name of project	Project Details	Progress as on Jun.' 18	Completion Schedule
Establishment of +800 kV, 6000 MW HVDC system between the Western (Raigarh) and Southern (Pugalur) Regions	**Substation:** a) Establishment of Raigarh ±800 kV HVDC Station with 6000 MW HVDC terminals. b) Establishment of Pugalur ±800 kV HVDC Station with 6000 MW HVDC terminals	Engineering, Foundation and Civil Works under progress. (Overall progress is 43%)	November 2019
Establishment of Pugalur - Trichur 2000 MW VSC Based HVDC System	**Transmission Line:** Establishment of VSC based ±320 kV, 2000 MW HVDC link between Pugalur and North Trichur (Kerala) (UG cable: 28 km) **Substation:** a) ±320 kV, 2000 MW VSC based HVDC terminal at Pugalur. b) ±320 kV, 2000 MW VSC based HVDC terminal at North Trichur.	Engineering & Civil Works under progress. (Overall progress is 32%)	April 2020

Green Energy Corridor (Part-D)	**Transmission Line:** a) Ajmer (New)-Bikaner (New) 765 kV D/c b) Bikaner -Moga 765 kV D/c c) LILO of one circuit of 400 kV Bhadla (RVPN) - Bikaner (RVPN) D/c line at Bikaner (New) **Substation:** a) 765/400 kV Substation at Bikaner.	Approx. 98% of Tower foundation, 90% of Erection & 50 % of Stringing completed Approx. 93% civil work & 64% equipment erection completed.	May 2019
400 kV AC Power Transmission system associated with HVDC terminal stations at Pugalur, Tamil Nadu	**Transmission Line:** a) Pugalur HVDC Station – Pugalur (Existing) 400 kV D/c. b) Pugalur HVDC Station – Arasur 400 kV D/c. c) Pugalur HVDC Station – Thiruvalam 400kV D/c. d) Pugalur HVDC Station-Edayarpalayam 400 kV D/c. e) Edayarpalayam-Udumulpet 400 kV D/c	Approx. 18% of Tower foundation & 13% of Erection works completed	February 2020

SECTION 2: COMPLIANCE STATUS WITH APLLICABLE STATUTORY REQUIREMENTS

S. No.	Legal Requirements	Applicable Attributes	POWERGRID's Compliance Status
1.	Forest (Conservation) Act, 1980	This Act is applicable whenever a transmission line traverses forest area. Prior approval from Ministry of Environment, Forest and Climate Change (MoEFCC), Govt. of India has to be obtained before construction of line in forest areas.	The project involves a total of 4.93 km (22.406 ha.) of forest land en-route of 1212 km. POWERGRID has already submitted forest diversion proposal for obtaining clearance from MoEFCC. Details of clearance status are presented in **Table-1.**
2.	Wildlife (Protection) Act, 1972	This Act is applicable whenever a transmission line traverses protected area such as National Parks, Wildlife Sanctuaries etc. Prior approval from Ministry of Environment, Forest and Climate Change (MoEFCC), Govt. of India has to be obtained before construction of line in protected areas.	The UG portion (28 km) of ±320 kV line between Pugalur and North Trichur involves 0.49 km (0.098 ha.) of Peechi Wildlife Sanctuary. POWERGRID has already obtained permission/approval from Standing Committee of National Board for Wildlife (NBWL), MoEFCC. Details of permission/approval status is presented in **Table-1.**
3.	Batteries (Management and Handling)	To avoid/minimize lead pollution, Bulk consumers shall have the responsibility to	Since the instant project is under implementation phase, no used batteries have been

S. No.	Legal Requirements	Applicable Attributes	POWERGRID's Compliance Status
	Rules, 2001	dispose all used batteries to dealers, manufacturer, registered recycler, reconditioners or at the designated collection centres only. Half-yearly return (Form-8) for the same is to be submitted to the concerned State Pollution Control Board.	replaced so far.
4.	Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016.	As per the notification, used mineral oil is categorized as hazardous waste and requires proper handling, storage and disposed only to authorised disposal facility (registered recyclers/ reprosessors). Annual return (Form -13) for the same is to be submitted to the concerned State Pollution Control Board.	Transformer oil (Used mineral oil) is changed only after 10-15 years of operation Since the instant project is under implementation phase, oil change/ replacement is not envisaged at present.
5.	Ozone Depleting Substances (Regulation and Control) Rules, 2000	Controls and regulations specified on manufacturing, import, export, and use of CFC compounds.	Necessary provisions have been made in contract document for restricting the use/supply of CFC compounds.

Table-1: Details of Forest/ Wildlife Clearance Status

Sl. No.	Name of the Line	Forest Area (Ha.)	State	Present Status
1.	**Establishment of +800kV, 6000MW HVDC system between the Western (Raigarh) and Southern (Pugalur) Regions**			
	Transmission line not covered under funding			
2.	**Establishment of Pugalur - Trichur 2000 MW VSC Based HVDC System**			
a.	±320 kV 2000 MW VSC based HVDC link between Pugalur and North Trichur (Kerala)	0.244 (0.146 ha. forest + 0.098 ha. Peechi WLS)	Kerala	Affected forest area already stand diverted to National Highway Authority of India (NHAI). However, due to changes in the road alignment of NHAI, some wildlife area belonging to Peechi Vazhani Wildlife Sanctuary got involved. In principle (Stage-1) clearance for 0.146 ha. of forest land in Thrissur division obtained on 09.10.18. (Copy enclosed as **Appendix-1**) Similarly, clearance/permission for 0.098 ha. Peechi Wildlife Sanctuary area already obtained from MoEFCC on 25.01.18. (Copy enclosed as **Appendix-2**).

3.	**Green Energy Corridor (Part-D)**			
a.	Ajmer (New) – Bikaner (new) 765 kV D/c	1.57	Raja sthan	Forest area involved only strip plantation along road crossings (National/ State Highway) and need for forest clearance informed by forest authority in March'18. Accordingly, forest proposal was submitted on 27.03.18. Proposal accepted by Nodal Officer (NO) on 08.05.18. Proposal after formulation forwarded to NO on 13.09.18. NO raised queries on 12.10.18 which were clarified on 18.12.18.
b.	Bikaner (New) – Moga (POWERGRID) 765 kV D/c	9.12 5.50	Punjab Raja sthan	In-Principle & Final approval obtained on 01.06.18 & 17.09.18 respectively. Forest area involved only strip plantation along road crossings (National/ State Highway) and need for forest clearance informed in March'18 only by forest authority. Accordingly, forest proposal for 3.49 ha. submitted on 17.03.18. Proposal after formulation forwarded to NO on 03.12.18. NO raised queries on 13.12.18 which are being clarified. Proposal for 1.67 ha submitted online on 11.07.18. NO raised queries on 24.09.18. Area revised to 2.01 ha. and proposal resubmitted on 14.12.18. Proposal accepted by NO on 31.12.18..
c.	LILO of 400 kV D/c Bhadla-Bikaner Line at Bikaner	0.584	Raja sthan	Proposal submitted on 24.07.18. NO raised queries on 24.09.18. Area revised to 0.584 ha. and proposal resubmitted on 11.11.18. Proposal accepted by NO on 05.12.18.
4.	**400 kV AC Power Transmission system associated with HVDC terminal stations at Pugalur, Tamil Nadu**			
a.	Pugalur HVDC - Pugalur 400kV D/c	-	-	No forest involved
b.	Pugalur HVDC - Arasur 400kV D/c			
c.	Pugalur HVDC - Thiruvalam 400kV D/c	5.382	Tamil Nadu	Forest proposal submitted on 13.03.18. NO raised queries on 25.06.18 which were replied on 02.08.18. Proposal forwarded to respective DFOs on 20.11.18. Presently, proposal under formulation.
d.	Pugalur HVDC Edayarpalayam 400kV D/c	-	-	No forest involved
e.	Edayarpalayam – Udumulpet 400kV D/c			

SECTION 3: COMPLIANCE STATUS WITH MAJOR LOAN COVENANTS

POWERGRID has complied with various environmental safeguards as agreed in the loan covenants. The point wise compliance status is presented in the table below;

Project Specific Covenants	**Reference**	**Status of Compliance**
The Borrower shall ensure that the preparation, design, construction, implementation, operation and decommissioning of the Project and all Project facilities comply with (a) all applicable laws and regulations of the Guarantor and the relevant States relating to environment, health and safety; (b) the ESPP; (c) the Environmental Safeguards; and (d) all measures and requirements set forth in the IEE, the EMP, and any corrective or preventative actions set forth in the Safeguards Monitoring Report.	LA, Sch. 5, para. 13	Being complied.
The Borrower shall ensure that (a) the Project and/or Project facilities are not located within national parks, forests, and wildlife sanctuaries, unless prior environmental clearances are obtained from the relevant government agencies and unless requirements on biodiversity conservation and sustainable natural resource management in Environmental safeguards are met; (b) the monuments of cultural or historical importance are avoided; and (c) works do not commence without obtaining prior forest clearances, wherever applicable.	LA, Sch. 5, para. 14	Being complied.
The Borrower shall make available necessary budgetary and human resources to fully implement the EMP, the CPTD and any corrective or preventative actions set forth in a Safeguards Monitoring Report.	LA, Sch. 5, para. 18	Complied/Being complied.
The Borrower shall ensure that all bidding documents and contracts for Works contain provisions that require contractors to: (a) comply with the measures relevant to the contractor set forth in the IEE, the EMP and the CPTD (to the extent they concern impacts on affected people during construction), and any corrective or preventative actions set forth in a Safeguards Monitoring Report; (b) make available a budget for all such environmental and social measures.	LA, Sch. 5, para. 19	Complied/Being complied.

(c) provide the Borrower with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP, the CPTD and any corrective or preventative actions set forth in a Safeguards Monitoring Report. (d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction; (e) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.		
The Borrower shall do the following: (a) submit semiannual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission; (b) if any unanticipated environmental and/or social risks and impacts arise during construction, implementation or operation of the Project that were not considered in the IEE, the EMP and the CPTD, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed corrective action plan; (c) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP and the CPTD promptly after becoming aware of the breach; and (d) in the event unexpected significant safeguard impacts are identified, promptly engage qualified and experienced external expert or agency under terms of reference intimated to ADB, to verify information produced through the Project monitoring process, and facilitate the carrying out of any verification activities by such external experts.	LA, Sch. 5, para. 20 & Clause 17.5 (a) (LA-3375-IND)	Last such reports for period Jan. to June.'18 already disclosed on website. No such issues come across till date. Will be complied in case of any breach. Will be complied if such situation warrants.
The Borrower shall ensure that subsequent to award of Works contract, no Works are commenced by the contractor unless the applicable provisions of the IEE, the EMP and the CPTD, as approved by ADB, have been complied with.	LA, Sch. 5, para. 21	Compliance ensured
Any changes to the location, land alignment, or environment impacts on account of detailed designs of the Project shall be subject to prior approval by ADB before commencement of Works for transmission lines or substations under the Project.	LA, Sch. 5, para. 23	No such deviations reported so far.

SECTION 4: COMPLIANCE STATUS WITH ENVIRONMENT MANAGEMENT AND MONITORING PLAN STIPULATED IN IEE AND AS AGREED WITH ADB

The instant project is being implemented as per approved IEE and EMP and in accordance with ESPP & ADB's Safeguard Policy Statement, 2009. POWERGRID has prepared Initial Environmental Examination (IEE) reports including Environmental Management Plan (EMP) to ensure that all the anticipated environment impacts due to the project activities are minimized wherever possible. The EMP describes detailed site-specific mitigation measures and monitoring plans for impacts anticipated during different stages of the proposed project i.e. pre-construction, construction, and operation & maintenance phase. A summary of monitoring requirements has also been included which identifies when and where the parameter will be monitored, how often and against what aspect. For proper implementation of EMP and other mitigation measures separate fund has been allocated in the project cost.

Monitoring the implementation of environmental mitigation measures is required to ensure that these are undertaken in accordance with the EMP, and to enable mitigation to be adapted and refined as required. A summary of the environmental mitigation measures and monitoring requirements vis-a-vis to compliance status by POWRGRID's is given in **Table 2**.

TABLE – 2 : ENVIRONMENT MANAGEMENT PLAN

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
Pre-construction								
1	Location of line towers and line alignment and design	Exposure to safety related risks	Setback of dwellings to line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites	Tower location and alignment selection with respect to nearest dwellings	Setback distances to nearest houses – once	POWERGRID	Part of tower sitting survey and detailed alignment survey & design	Complied during survey. Route alignment criterion is part of survey contract.
2	Equipment specifications and design parameters	Release of chemicals and gases in receptors (air, water, land)	PCBs not used in substation transformers or other project facilities or equipment.	Transformer design	Exclusion of PCBs in transformers stated in tender specification – once	POWERGRID	Part of tender specifications for the equipment	Complied. As per technical specification PCB is not used or it not detectable (i.e. less than 2mg/kg) as per IEC 61619 or ASTM D4059
			Processes, equipment and systems not to use chlorofluorocarbons (CFCs), including halon, and their use, if any, in existing processes and systems should be phased out and to be disposed of in a manner consistent with the requirements of the Govt.	Process, equipment and system design	Exclusion of CFCs stated in tender specification – once	POWERGRID	Part of tender specifications for the equipment	Complied
					Phase out schedule to be prepared in case still in use – once		Part of equipment and process design	Not Applicable.
3	Transmission line design	Exposure to electromagnetic interference	Line design to comply with the limits of electromagnetic interference from power lines including those of ICNIRP	Electromagnetic field strength for proposed line design	Line design compliance with relevant standards – once	POWERGRID	Part of design parameters	Complied. Designed as per guidelines of ICNIRP and ACGIH and checked by CPRI &M/s PTI, USA
4	Substation location and design	Exposure to noise	Design of plant enclosures to comply with National ambient noise standards which are also compatible with the EHS guidelines of the World Bank.	Expected noise emissions based on substation design	Compliance with regulations - once	POWERGRID	Part of detailed siting survey and design	Complied

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
		Social inequities	Careful selection of site to avoid encroachment of socially, culturally and archaeological sensitive areas (i.e. sacred groves, graveyard, religious worship place, monuments etc.)	Selection of substation location (distance to sensitive area).	Consultation with local authorities - once	POWERGRID	Part of detailed siting survey and design	Complied during survey. Route alignment criterion is part of survey contract.
5	Location of line towers & line alignment and design	Impact on water bodies	Avoidance of such water bodies to the extent possible. Avoidance of placement of tower inside water bodies to the extent of possible	Tower location and line alignment selection (distance to water bodies)	Consultation with local authorities– once	POWERGRID	Part of tower siting survey and detailed alignment survey and design	Complied Route alignment criterion is part of survey contract.
		Social inequities	Careful route selection to avoid existing settlements and sensitive locations	Tower location and line alignment selection (distance to nearest dwellings or social institutions)	Consultation with local authorities and land owners – once	POWERGRID	Part of tower siting survey and detailed alignment survey and design	
			Minimise impact on agricultural land	Tower location and line alignment selection (distance to agricultural land)	Consultation with local authorities and land owners – once			

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			Careful selection of site and route alignment to avoid encroachment of socially, culturally & archaeological sensitive areas (i. g. sacred groves, graveyard, religious worship place, monuments etc.)	Tower location and line alignment selection (distance to sensitive area)	Consultation with local authorities - once			
6	Securing lands for substations.	Loss of land/ income change in social status etc.	In the case of Involuntary Acquisitions, Compensation and R&R measures are extended as per provision of RFCTLARRA, 2013[1]	Compensation and monetary R&R amounts/ facilities extended before possession of land.	As per provisions laid out in the act	POWERGRID	Prior to award/start of substation construction.	Land for proposed substations are either prior existing lands under POWERGRID's control or Govt land or private land purchased through willing buyer – willing seller basis on negotiated rates. Details of lands & compensation thereof have been provided separately in Social Monitoring Report.
7	Line through protected area/ precious ecological area	Loss of precious ecological values/ damage to precious species	Avoid siting of lines through such areas by careful site and alignment selection (National Parks, Wildlife Sanctuary, Biosphere Reserves/ Biodiversity Hotspots)	Tower location and line alignment selection (distance to nearest designated ecological protected/ sensitive areas)	Consultation with local forest authorities - once	POWERGRID	Part of tower siting survey and detailed alignment survey and design	In spite of best efforts, sanctuary area of 0.098 ha (0.49 km) in Peechi Wildlife Sanctuary could not be avoided. However, requisite permission obtained from Standing Committee of NBWL, MoEFCC as per the provisions of Wildlife (Protection) Act, 1972. For details refer Appendix **"2".**

[1] No Involuntary acquisition of land (permanent) is involved, hence this clause shall not be applicable.

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			Minimize the need by using RoW wherever possible	Tower location and line alignment selection	Consultation with local authorities and design engineers- once	POWERGRID	Part of tower siting survey & detailed alignment survey & design	Complied
8	Line through identified Elephant corridor / Migratory bird	Damage to the Wildlife/ Birds and also to line	Study of earmarked elephant corridors to avoid such corridors, Adequate ground clearance, Fault clearing by Circuit Breaker, Barbed wire wrapping on towers, reduced spans etc., if applicable	Tower location and line alignment selection. Minimum /maximum ground clearance	Consultation with local forest authorities – once. Monitoring – quarterly basis	POWERGRID	Part of tower sitting and detailed alignment survey & design and Operation	Complied. The routes of proposed lines don't form part of any such areas.
			Avoidance of established/ identified migration path (Birds & Bats). Provision of flight diverter/ reflectors, bird guard, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc[2]., if applicable	Tower location and line alignment selection	Consultation with local forest authorities - once	POWERGRID	Part of tower siting survey and detailed alignment survey and design	
9	Line through forestland	Deforestation and loss of biodiversity edge effect	Avoid locating lines in forest land by careful site and alignment selection	Tower location and line alignment selection (distance to nearest protected or reserved forest)	Consultation with local authorities-once	POWERGRID	Part of tower siting survey and detailed alignment survey and design	Complied/Being complied. Route alignment finalised by taking consideration of minimum impact on forest area after consultation with concerned authorities. However, in spite of best efforts, an area of 22.406 ha. (4.93
			Minimise the need by using existing towers, tall towers and RoW, wherever possible		Consultation with local authorities and design engineers- once			

[2] As per International/National best practices and in consultation with concerned forest/wildlife Authority.

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			Measures to avoid invasion of alien species	Intrusion of invasive species	Consultation with local forest authorities-once			km) forest land[3] could not be avoided. However, as per regulation, forest clearance under Forest (Conservation) Act, 1980 being obtained from MoEFCC (for details refer **Table- 1**).
			Obtain statutory clearances from the Government	Statutory approvals from Government	Compliance with regulations – once for each subproject			
10	Lines through farmland	Loss of agricultural production/ change in cropping pattern	Use existing tower or footings wherever possible.	Tower location and line alignment selection.	Consultation with local authorities and design engineers – once	POWERGRID	Part of detailed alignment survey and design	Complied during survey which is part of survey contract.
			Avoid sitting new towers on farmland wherever feasible	Tower location and line alignment selection	Consultation with local authorities and design engineers- once		Part of detailed sitting & alignment survey /design	
11	Noise related	Nuisance to neighbouring properties	Substations sited and designed to ensure noise will not be a nuisance and shall comply with National Ambient Noise Standards, which are also compatible with the EHS guidelines of the World Bank.	Noise levels	Noise levels to be specified in tender documents- once	POWERGRID	Part of detailed equipment design	Complied. Maximum noise limit of 80 dB stated in the technical specification for transformer.

[3] As per provision of Forest (Conservation) Act, 1980, Compensatory Afforestation (CA) on degraded forest land double the extent of diverted forest area to be undertaken. However, it may be noted that the role of User Agency (POWERGRID) is limited to depositing the cost for afforestation activities as demanded by forest authorities who in turn undertake the actual afforestation work. In the instant project, CA Scheme have already been prepared for Bikaner (New) – Moga 765kV D/C in Punjab portion & North Thrissur-Pugalur 320 kV VSC line in Kerala which are also available publicly on MoEFCC website following link: http://forestsclearance.nic.in/PartIIReport_A.aspx?pid=FP/PB/TRANS/27080/2017 . However, for other forest cases such afforestation schemes have not yet prepared as forest proposals are being formulated at this moment.

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
12	Interference with drainage patterns/ irrigation channels	Flooding hazards/ loss of agricultural production	Appropriate sitting of towers to avoid channel interference	Tower location and line alignment selection (distance to nearest flood zone)	Consultation with local authorities and design engineers- once	POWERGRID	Part of detailed alignment survey and design	Complied/Being complied. Appropriate siting of towers ensured during alignment survey and Tower spotting to avoid channel interference.
13	Escape of polluting materials	Environmental pollution	Transformers designed with oil spill containment systems, and purpose-built oil, lubricant and fuel storage system, complete with spill clean up equipment.	Equipment specifications with respect to potential pollutants	Tender document to mention specifications – once	POWERGRID	Part of detailed equipment design /drawings	Complied. Underlying pit with a storage capacity of at least 20% of the total oil of the transformer & a common Secondary Containment of capacity of 220% of largest transformer oil volume is part of detailed design.
			Substations to include drainage and sewage disposal systems to avoid offsite land and water pollution.	Substation sewage design	Tender document to mention detailed specifications – once	POWERGRID	Part of detailed substation layout and design /drawings	Complied. Provision of soak pit is part of design where sewage line is not present.
14	Equipments submerged under flood	Contamination of receptors	Substations constructed above the high flood level(HFL) by raising the foundation pad	Substation design to account for HFL (elevation with respect to HFL elevation)	Base height as per flood design- once	POWERGRID	Part of detailed substation layout and design/ drawings	Complied. Substations are designed above HFL.
15	Explosions /Fire	Hazards to life	Design of substations to include modern fire fighting equipment	Substation design compliance with fire prevention and control codes	Tender document to mention detailed specifications – once	POWERGRID	Part of detailed substation layout and design /drawings	Complied. Fire fighting equipments are integral part of Substation design
			Provision of fire fighting equipment to be located close to transformers					

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
Construction								
16	Equipment layout and installation	Noise and vibrations	Construction techniques and machinery selection seeking to minimize ground disturbance.	Construction techniques and machinery	Construction techniques and machinery creating minimal ground disturbance- once at the start of each construction phase	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being Complied. Low noise producing machineries/ equipments are being used.
17	Physical construction	Disturbed farming activity	Construction activities on cropping land timed to avoid disturbance of field crops (within one month of harvest wherever possible).	Timing of start of construction	Crop disturbance –Post harvest as soon as possible but before next crop – once per site	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being complied. Construction on farm land undertaken mostly during post-harvest period.
18	Mechanized construction	Noise, vibration and operator safety, efficient operation	Construction equipment to be well maintained.	Construction equipment – estimated noise emissions	Complaints received by local authorities – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being complied. No complaints received so far
		Noise, vibration, equipment wear and tear	Turning off plant not in use.	Construction equipment – estimated noise emissions and operating schedules	Complaints received by local authorities – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	
19	Construction of roads for accessibility	Increase in airborne dust particles	Existing roads and tracks used for construction and maintenance access to the line wherever possible.	Access roads, routes (length and width of new access roads to be constructed)	Use of established roads wherever possible – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Most sites are easily accessible and existing road are used for construction activity.

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
		Increased land requirement for temporary accessibility	New access ways restricted to a single carriageway width within the RoW.	Access width (meters)	Access restricted to single carriage – way width within RoW – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being Complied
20	Construction activities	Safety of local villagers	Coordination with local communities for construction schedules, Barricading the construction area and spreading awareness among locals	Periodic and regular reporting /supervision of safety arrangement	No. of incidents- once every week	POWERGRID (Contractor through contract provisions)	Construction period	All required safety precautions have been taken. Most of the tower locations are in farm/barren land. Hence, the cases of traffic obstruction are not envisaged. No accidents reported during the reporting period.
		Local traffic obstruction	Coordination with local authority, requisite permission for smooth flow of traffic. Imposing speed limits on Project vehicles in project/habitation areas.	Traffic flow (Interruption of traffic)	Frequency (time span)- on daily basis	POWERGRID (Contractor through contract provisions)	Construction period	
21	Temporary blockage of utilities	Overflows, reduced discharge	Measure in place to avoid dumping of fill materials in sensitive drainage area	Temporary fill placement (m^3)	Absence of fill in sensitive drainage areas – every 4 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being Complied
22	Site clearance	Vegetation	Marking of vegetation to be removed prior to clearance, and strict control on clearing activities to ensure minimal clearance.	Vegetation marking and clearance control (area in m^2)	Clearance strictly limited to target vegetation – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being Complied
			No use of herbicides and pesticides					

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
23	Trimming /cutting of trees within RoW	Fire hazards	Trees allowed growing up to a height within the RoW by maintaining adequate clearance between the top of tree and the conductor as per the regulations.	Species-specific tree retention as approved by statutory authorities (avg. and max. tree height at maturity in meters)	Presence of target species in RoW following vegetation clearance – once per site	POWERGRID (Contractor through contract provisions)	Construction period	Regulated felling of tree in RoW is carried out with permission of owner & revenue authority keeping required electrical clearance as per design.
		Loss of vegetation and defore-station	Trees that can survive pruning to comply should be pruned instead of cleared.	Species-specific tree retention as approved by statutory authorities	Presence of target species in RoW following vegetation clearance-once per site	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being Complied
			Felled trees and other cleared or pruned vegetation to be disposed of as authorized by the statutory bodies.	Disposal of cleared vegetation as approved by the statutory authorities (area cleared in m^2)	Use or intended use of vegetation as approved by the statutory authorities – once per site	POWERGRID (Contractor through contract provisions)	Construction period	All felled trees are handed over to owner for disposal. POWERGRID has no role in storage and disposal of felled tree/wood.
24	Wood/ vegetation harvesting	Loss of vegetation and deforestation	Construction workers prohibited from harvesting wood in the project area during their employment, (apart from locally employed staff continuing current legal activities).	Illegal wood /vegetation harvesting (area in m^2, number of incidents reported)	Complaints by local people or other evidence of illegal harvesting – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Complied/Being Complied No complaints received on illegal harvesting.
25	Surplus earthwork/soil	Runoff to cause water pollution, solid waste disposal	Soil excavated from tower footings/ substation foundation disposed of by placement along roadsides, or at nearby house blocks if requested by landowners.	Soil disposal locations and volume (m^3)	Acceptable soil disposal sites – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Complied/Being complied. 90-95% of the excavated soil is used for refilling/ resurfacing and rest is being disposed of along with other debris at selected location

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
26	Substation construction	Loss of soil	Loss of soil is not a major issue as excavated soil will be mostly reused for leveling and re-filling. However, in case of requirement of excess soil the same will be met from existing quarry or through deep excavation of existing pond or other nearby barren land with agreement of local communities	Borrow area sitting (area of site in m^2 and estimated volume in m^3)	Acceptable soil borrow areas that provide a benefit - every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being Complied
		Water pollution	Construction activities involving significant ground disturbance (i.e. substation land forming) not undertaken during the monsoon season	Seasonal start and finish of major earthworks (P^H, BOD /COD, Suspended solids, others)	Timing of major disturbance activities –prior to start of construction activities	POWERGRID (Contractor through contract provisions))	Construction period	Complied/ Being Complied
27	Site clearance	Vegetation	Tree clearances for easement establishment to only involve cutting trees off at ground level or pruning as appropriate, with tree stumps and roots left in place and ground cover left undisturbed	Ground disturbance during vegetation clearance(area, m^2)	Amount of ground disturbance – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Regulated felling of tree in RoW is carried out with permission of owner & revenue authority keeping required electrical clearance as per design.
				Statutory approvals	Statutory approvals for tree clearances-once for each site			
28	Tower erection Substation foundation-disposal of surplus earthwork/fill	Waste disposal	Excess fill from substation/tower foundation excavation disposed of next to roads or around houses, in agreement with the local community or landowner.	Location and amount (m^3)of fill disposal	Appropriate fill disposal locations – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being Complied

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
29	Storage of chemicals and materials	Contamination of receptors (land, water, air)	Fuel and other hazardous materials securely stored above high flood level.	Location of hazardous material storage; spill reports (type of material spilled, amount (kg or m^3) & action taken to control and clean up spill)	Fuel storage in appropriate locations and receptacles – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Stored at designated place only.
30	Construction schedules	Noise nuisance to neighbouring properties	Construction activities only undertaken during the day and local communities informed of the construction schedule.	Timing of construction (noise emissions, [dB(A)]	Daytime construction only – every 2 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Construction activity restricted to day time only
31	Provision of facilities for construction workers	Contamination of receptors (land, water, air)	Construction workforce facilities to include proper sanitation, water supply and waste disposal facilities.	Amenities for Workforce facilities	Presence of proper sanitation, water supply and waste disposal facilities – once each new facility	POWERGRID (Contractor through contract provisions)	Construction period	No complaints received. Regular monitoring is undertaken to ensure compliance of applicable contract provisions by contractor. Some photographs of such facilities is placed at **Plate- 1.**
32	Influx of migratory workers	Conflict with local population to share local resources	Using local workers for appropriate asks	Avoidance/ reduction of conflict through enhancement/ augmentation of resource requirements	Observation & supervision–on weekly basis	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being Complied. Local workforce being used based on skill and no incidents of conflict reported so far
33	Lines through farmland	Loss of agricultural productivity	Use existing access roads wherever possible	Usage of existing utilities	Complaints received by local people /authorities - every 4 weeks	POWERGRID (Contractor through contract provisions)	Construction period	Being complied. No complaints received from local peoples/ authorities
			Ensure existing irrigation facilities are maintained in working condition	Status of existing facilities				

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			Protect /preserve topsoil and reinstate after construction completed	Status of facilities (earthwork in				
			Repair /reinstate damaged bunds etc. after construction completed	Status of facilities (earthwork in m^3)				
		Loss of income.	Land owners/ farmers compensated for any temporary loss of productive land as per existing regulation.	Process of Crop/tree compensation in consultation with forest dept.(for timber yielding tree) and Horticulture deptt. (for fruit bearing tree)	Consultation with affected land owner prior to implementation and during execution.	POWERGRID	During construction	Tried to minimise the loss. Details of tree, crop compensation paid is provided separately in Social Monitoring Report
34	Uncontrolled erosion/silt runoff	Soil loss, downstream siltation	Need for access tracks minimised, use of existing roads.	Design basis and construction procedures (suspended solids in receiving waters; area re-vegetated in m^2; amount of bunds constructed [length in meter, area in m^2, or volume in m^3])	Incorporating good design and construction management practices – once for each site	POWERGRID (Contractor through contract provisions)	Construction period	Complied/ Being Complied
			Limit site clearing to work areas					
			Regeneration of vegetation to stabilise works areas on completion (where applicable)					
			Avoidance of excavation in wet season					
			Water courses protected from siltation through use of bunds and sediment ponds					
35	Nuisance to nearby properties	Losses to neighbouring land uses/	Contract clauses specifying careful construction practices.	Contract clauses	Incorporating good construction	POWERGRID (Contractor through	Construction period	Complied/ Being Complied

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
		values	As much as possible existing access ways will be used	Design basis and layout	Incorporating good design engineering practices– once for each site.	contract provisions)		
			Productive land will be reinstated following completion of construction	Reinstatement of land status (area affected, m^2)	Consultation with affected parties – twice – immediately after completion of construction and after the first harvest			
		Social inequities	Compensation will be paid for loss of production, if any.	Implementation of Tree/Crop compensation (amount paid)	Consultation with affected parties – once in a quarter	POWERGRID	Prior to construction	Compensation provided as per POWERGRID's procedure for tree/crop compensation (for details of compensation paid please refer Social Monitoring Report)
36	Flooding hazards due to construction impediments of natural drainage	Flooding & loss of soils, contamination of receptors (land, water)	Avoid natural drainage pattern/ facilities being disturbed/blocked/ diverted by on-going construction activities	Contract clauses (e.g. suspended solids and BOD/COD in receiving water)	Incorporating good construction management practices-once for each site	POWERGRID (Contractor through contract provisions)	Construction period	Complied/Being complied. Good construction management practices are employed at sites to avoid blockage of natural drainage and resultant flooding.
37	Equipment submerged under flood	Contamina-tion of receptors (land, water)	Equipment stored at secure place above the high flood level(HFL)	Store room level to be above HFL (elevation difference in meters)	Store room level as per flood design-once	POWERGRID	Construction period	All equipment foundations are designed above HFL.

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
38	Inadequate siting of borrow areas (quarry areas)	Loss of land values	Existing borrow sites will be used to source aggregates, therefore, no need to develop new sources of aggregates	Contract clauses	Incorporating good construction management practices – once for each site	POWERGRID (Contractor through contract provisions)	Construction period	Extra aggregates not required till date. However, If needed it will be sourced through approved/registered borrow/quarry area.
39	Health and safety	Injury and sickness of workers and members of the public	Safety equipment's (PPEs) for construction workers	Contract clauses (18.1.3, 18.3.1.1, 18.3.1.4 etc.) (requirements of worker camp, number of incidents and total lost-work days caused by injuries and sickness)	Contract clauses compliance – once every quarter	POWERGRID (Contractor through contract provisions)	Construction period	Complied with project specific safety plan and general conditions of contract, which covers all applicable regulations. Photographs related to use of PPEs, safety training, labour camp facilities and other EMP compliance are placed as **Plate- 1 & 2.**
			Contract provisions specifying minimum requirements for construction workers camps					
			Contractor to prepare and implement a health and safety plan.					
			Contractor to arrange for health and safety training sessions					
40	Inadequate construction stage monitoring	Likely to maximise damages	Training of environmental monitoring personnel	Training schedules	No. of programs attended by each person – once a year	POWERGRID	Routinely throughout construction period	Provided proper training and have very good env. monitoring process. During reporting period such training program were conducted at Bhopal, Hyderabad, Kolkata, Lucknow and Manesar etc. Photographs along with sample training module and attendance are enclosed as **Plate-3**) Appropriate clause incorporated in contact
			Implementation of effective environmental monitoring and reporting system using checklist of all contractual environmental requirements	Respective contract checklists and remedial actions taken thereof.	Submission of duly completed checklists of all contracts for each site - once			

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			Appropriate contact clauses to ensure satisfactory implementation of contractual environmental mitigation measures.	Compliance report related to environmental aspects for the contract	Submission of duly completed compliance report for each contract – once			provision for EMP implementation. Site managers review the implementation on daily basis.
Operation and Maintenance								
41	Location of line towers and line alignment & design	Exposure to safety related risks	Setback of dwellings to overhead line route designed in accordance with permitted level of power frequency and the regulation of supervision at sites.	Compliance with setback distances ("as-built" diagrams)	Setback distances to nearest houses – once in quarter	POWERGRID	During operations	Will be complied during O & M stage
42	Line through identified bird flyways, migratory path	Injury/ mortality to birds, bats etc. due to collision and electrocution	Avoidance of established/ identified migration path (Birds & Bats). Provision of flight diverter/reflectors, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable	Regular monitoring for any incident of injury/mortality	No. of incidents- once every month	POWERGRID	Part of detailed siting and alignment survey /design and Operation	-do-
43	Equipment submerged under flood	Contamination of receptors (land, water)	Equipment installed above the high flood level (HFL) by raising the foundation pad.	Substation design to account for HFL ("as-built" diagrams)	Base height as per flood design – once	POWERGRID	During operations	-do-
44	Oil spillage	Contamination of land/nearby water bodies	Each transformer has a secure and impervious underlying pit with a storage capacity of at least 20% of the total oil volume of the transformer and the individual pits are connected to a main	Substation bunding (Oil sump) ("as-built" diagrams)	Bunding (Oil sump) capacity and permeability - once	POWERGRID	During operations	-do-

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			collection sump of capacity of 220% of largest transformer oil volume, which acts as a Secondary Containment, in case of a leakage. (refer para 8.6 of TS)					
45	SF_6 management	Emission of most potent GHG causing climate change	Reduction of SF6 emission through awareness, replacement of old seals, proper handling & storage by controlled inventory and use, enhance recovery and applying new tech. to reduce leakage	Leakage and gas density/level	Continuous monitoring	POWERGRID	During Operations	-do-
46	Inadequate provision of staff/workers health and safety during operations	Injury and sickness of staff /workers	Careful design using appropriate technologies to minimise hazards	Usage of appropriate technologies (lost work days due to illness and injuries)	Preparedness level for using these technologies in crisis – once each year	POWERGRID	Design and operation	-do-
			Safety awareness raising for staff.	Training/awareness programs and mock drills	Number of programs and per cent of staff /workers covered – once each year			
			Preparation of fire emergency action plan and training given to staff on implementing emergency action plan					
			Provide adequate sanitation and water supply facilities	Provision of facilities	Complaints received from staff /workers every 2 weeks			

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
47	Electric Shock Hazards	Injury/ mortality to staff and public	Careful design using appropriate technologies to minimise hazards	Usage of appropriate technologies (no. of injury incidents, lost work days)	Preparedness level for using these technology in crisis- once a month	POWERGRID	Design and Operation	-do-
			Security fences around substations	Maintenance of fences	Report on maintenance – every 2 weeks			
			Barriers to prevent climbing on/ dismantling of towers	Maintenance of barriers				
			Appropriate warning signs on facilities	Maintenance of warning signs				
			Electricity safety awareness raising in project areas	Training/awareness programs and mock drills for all concerned parties	Number of programs and per cent of total persons covered –once each year			
48	Operations and maintenance staff skills less than acceptable	Unnecessary environmental losses of various types	Adequate training in O&M to all relevant staff of substations & line maintenance crews.	Training/awareness programs and mock drills for all relevant staff	Number of programs and per cent of staff covered – once each year	POWERGRID	Operation	-do-
			Preparation and training in the use of O&M manuals and standard operating practices					
49	Inadequate periodic environmental monitoring.	Diminished ecological and social values.	Staff to receive training in environmental monitoring of project O & M activities	Training/awareness programs and mock drills for all relevant staff	Number of programs and per cent of staff covered – once each year	POWERGRID	Operation	-do-

Cl. No.	Project activity /stage	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
50	Equipment specifications and design parameters	Release of chemicals and gases in receptors (air, water, land)	Processes, equipment and systems using chlorofluorocarbons (CFCs) including halon, should be phased out and to be disposed of in a manner consistent with the requirements of the Govt.	Process, equipment and system design	Phase out schedule to be prepared in case still in use – once in a quarter	POWERGRID	Operation	-do-
51	Transmission line maintenance	Exposure to electromagn etic interference	Transmission line design to comply with the limits of electromagnetic interference from overhead power lines	Required ground clearance (meters)	Ground clearance -once	POWERGRID	Operation	-do-
52	Uncontrolled growth of vegetation	Fire hazard due to growth of tree/shrub /bamboo along RoW	Periodic pruning of vegetation to maintain requisite electrical clearance No use of herbicides/ pesticides	Requisite clearance (meters)	Assessment in consultation with forest authorities- once a year (pre/post monsoon	POWERGRID	Operation	-do-
53	Noise related	Nuisance to neighbourin g properties	Substations sited and designed to ensure noise will not be a nuisance	Noise levels {dB(A)}	Noise levels at boundary nearest to properties & consultation with affected parties if any - once	POWERGRID	Operation	-do-

SECTION: 5 APPROACH AND METHODOLOGY ENGAGED FOR ENVIRONMENT MONITORING OF THE PROJECT

Environmental monitoring is a continuous process throughout the Project life cycle starting from site selection to construction and maintenance state. A Project Management Unit (PMU) has been set up headed by Executive Director (Corporate Planning) at headquarters to coordinate and implement all environment and social issues with the assistance of functional department like Environment & Social Management Deptt., Engineering etc. Apart from site managers review the progress on daily basis and regular project review meetings held at least on monthly basis, chaired by the Executive Director of the region wherein the environmental aspects of the projects are discussed and remedial measures taken wherever required. The exceptions of these meetings will be submitted to the Directors and Chairman & Managing Director (CMD).

POWERGRID has a separate monitoring department which carry out real time monitoring of all parameters of project implementation including the environment and social issues. Such issues are discussed in detail during every quarter in the Project Review Meeting (PRM) Chaired by Director (Project). CMD also takes periodic review of project implementation.

A summarized environmental monitoring plan with implementation schedule at different stage of subprojects implementation is presented in the table below

Environmental Monitoring Tasks	**Implementation Responsibility**	**Implementation Schedule**
Pre-Construction Phase		
Monitor contractor's detailed alignment survey to ensure relevant environmental mitigation measures in EMP have been included.	POWERGRID with assistance of project implementation unit	Prior to POWERGRID approval of contractor's detailed alignment survey.
Construction Phase		
Regular monitoring and reporting of contractor's compliance with contractual environmental mitigation measures.	POWERGRID with assistance of project implementation unit	Continuous as per IEER and EMP throughout construction period.
Operation and Maintenance Phase		
Observations during routine maintenance inspections of substations and transmission lines RoWs. Inspections will include monitoring implementation status of mitigation measures specified in EMP.	POWERGRID	As per POWERGRID inspection schedules and EMP provisions.

SECTION: 6 MONITORING OF ENVIRONMENTAL RECEPTORS/ ATTRIBUTES

It is evident that environmental impacts associated with power transmission project are not far reaching as these developmental activities are non- polluting in nature and do not involve any significant disposal of solid waste, effluents and hazardous substances on land, air and water. Although, there are some localized impacts on natural resources like forest whenever transmission line passes through forest area, however, it can be avoided or minimized through careful route and site selection.

By adopting careful route selection by using modern technique like GPS, GIS, remote sensing etc. the total forest involvement for proposed projects was restricted to 4.93 km which is only 0.40 % of total line length of 1212 km lines. However, a small stretch (0.49

km) of underground portion of ±320 kV Pugalur-North Trichur line is passing through Peechi Vazhani Wildlife sanctuary which is unavoidable as no other utility corridor is available to lay the power cable. Moreover, actual area involved/affected is very small to the tune of 0.098 ha. as the said line will be laid underground with RoW of 2m only. Further, the line is passing along the pre-existing NH-544 corridor in the wildlife area which is already disturbed/ fragmented and hence, no additional impact on wildlife and its habitat is anticipated. Additionally, conditions/recommendations of SBWL/NBWL as mentioned in wildlife permission shall be complied with, which in turn will further negate any residual impacts due to construction of said line.

The proposed project doesn't have much anticipated impact on environmental attributes like air, water, soil etc. and are mostly concentrated to construction stage. Air quality impact is restricted to the construction phase only as no emissions to air takes place during ordinary operations of transmission lines. Impacts on air quality due to airborne dust in the vicinity of the work sites (at points along the route of the transmission line where towers are located) mainly result from excavation and construction activities and tail gases from construction equipments and vehicles. Since all the proposed alignments are accessible, no construction of access roads is envisaged thereby avoiding any airborne dust pollution in the vicinity. The construction activities are small scale and of a temporary nature. Moreover, the activities are not concentrated to one place (localized) rather it is widely dispersed that provide adequate buffering to air environment. Therefore, impacts on air quality from construction activities are considered insignificant. Further, no liquid effluent is generated due to project activity. However, small quantities of domestic sewage from staff quarters and construction camp is generated which is discharged in local soak pits. Construction of transmission tower foundation, stringing and other activities are mostly manual in nature and use heavy equipment or blasting is not envisaged. The main noise sources during the construction phase are from equipments and transportation vehicles. However, no significant noise level variation from construction related activities is anticipated.

SECTION: 7 ANY OTHER MONITORING OF ENVIRONMENTAL ASPECTS, IMPACTS OBSERVED DURING IMPLEMENTATION

Except the predicted impacts as mentioned in EMP, no other unanticipated impacts were observed during the implementation of projects. As regard Safety, all required measures are in place including due precautions/awareness programs as well as ensuring use of PPEs, which is evident from the fact that no accidents (fatal or non-fatal) including major/minor injuries were reported during the reporting period from any of the construction sites.

SECTION: 8 DETAILS OF GRIEVENCE REDRESS COMMITTEE AND COMPLAINT RECEIVED AND ACTION TAKEN

Grievance Redress Mechanism (GRM) is an integral and important mechanism for addressing/resolving the concern and grievances in a transparent and swift manner. Many minor concerns of peoples are addressed during public consultation process initiated at the beginning of the project. For handling grievance, Grievance Redress Committee (GRC) has been established both at the project/scheme level and at Corporate/HQ level. The project level GRCs have been established include members from POWERGRID, Local Administration, Panchayat Members, Affected Persons representative and reputed persons from the society on nomination basis under the chairmanship of project head. The corporate level GRC functions under the chairmanship of Director (Projects) and includes one representative from corporate ESMD who is

conversant with the environment & social issues.

In the instant project, many concerns/grievances from affected persons/public both of verbal and written nature have been recorded by Site Offices which are also regularly tracked for early resolution. However, it has been observed that most of them were minor in nature and were resolved instantly and amicably by Site Officials after discussion & deliberation with affected person/ in consultation of revenue/district officials. Details of written & verbal complaints including court cases along with their current status is presented in **Appendix-3.**

SECTION: 9 CONCLUSION

It is may be noted from above that the subprojects activities are non-polluting in nature and don't have significant adverse impacts on environment except the involvement of 4.93 km of forest including 0.49 km of Wildlife sanctuary area. However, with the condition of raising the compensatory afforestation on double the area diverted and measures like extended tower to reduce tree felling will go a long way in mitigating the likely loss of vegetation. Besides, conditions/recommendations of forest & wildlife clearance shall be complied with, which in turn will further negate any residual impacts. Moreover, some environmental impacts are anticipated, mostly during construction period which have been mitigated successfully by implementing the EMP. POWERGRID approach of project implementation involving selection of optimum route before design stage, proper implementation of EMP and monitoring mechanism throughout project life cycle supported by strong institutional arrangement has considerably nullified the adverse impacts arising out of project activities. There will be optimization of RoW resulting in reduction in land requirement due to high power carrying capacity of these lines. Besides this, direct or indirect benefits of the subprojects like the employment opportunity, improved & uninterrupted power supply, improvement in infrastructure facilities, improved business opportunity will outweigh the negative impacts of the project. Since the Green Energy Corridor subproject is planned to evacuate clean and green energy through renewable sources, the benefits associated with such projects like reduction in emission of Green House Gases (GHGs) and resultant warming & climate change shall offset possible adverse impact if any

R.K.SRIVASTAVA
General Manager (ESMD)

Appendix- 1: In-Principle (Stage-1) Forest Clearance

भारत सरकार
GOVERNMENT OF INDIA
पर्यावरण ,वन एवं जलवायु परिवर्तन मंत्रालय
MINISTRY OF ENVIRONMENT, FORESTS & CLIMATE CHANGE
Regional Office (Southern Zone),
Kendriya Sadan, IVth Floor, E& F Wings, 17th Main Road,
IInd Block, Koramangala, Bangalore – 560 034,
Tel.No.080-25635905, E.Mail: rosz.bng-mef@nic.in

सत्यमेव जयते

BY SPEED POST /92
F.No.4-KLB1153/2018-BAN/
Dated the 9th October, 2018

To

The Principal Secretary,
Government of Kerala,
Forests & Wildlife (C) Department,
Secretariat, Thiruvananthapuram,
Kerala, PIN – 695 001.

Subject: Diversion of 0.244 ha. (0.098 ha. from Peechi Wildlife Sanctuary & 0.146 ha. from Thrissur Forest Division) of forest land for laying of a ±320 KV HVDC underground Power Cable from Vadakkancherry to Thrissur in Kerala in the utility corridor of NH 544 (in a concrete duct bank of 2M width) in favour of M/s. Power Grid Corporation of India Ltd.

Sir,

Please refer to State Government letter No. C3/22/2018/F&WLD dated 02/04/2018 and PCCF (Wildlife) & Chief Wildlife Warden's letter No. WL4-40979/2017 dated 19/09/2018 seeking prior approval of the Central Government in accordance with Section'2' of Forest (Conservation) Act, 1980 for the above-mentioned project.

After careful consideration of the proposal of the State Government, I am directed to convey Central Government's approval in-principle **(Stage-I)** under Section'2' of Forest (Conservation) Act, 1980 for diversion of 0.244 ha. (0.098 ha. from Peechi Wildlife Sanctuary & 0.146 ha. from Thrissur Forest Division) of forest land for laying of a ±320 KV HVDC underground Power Cable from Vadakkancherry to Thrissur in Kerala in the utility corridor of NH 544 (in a concrete duct bank of 2M width) in favour of M/s. Power Grid Corporation of India Ltd, for a period of 20 years, subject to the following conditions:-

1. The legal status of forest land shall remain unchanged.

2. The demarcation of the forest area being diverted shall be carried out suitably at the cost of User Agency, before issue of Stage-II clearance, keeping in view the movement of wildlife.

3. The State Government shall charge the Net Present Value of the diverted forest land of 0.244 ha. from the user agency as per the orders of the Hon'ble Supreme Court dated 28.03.2008 and 09.05.2008 in IA Nos.826 in 566 with related IA's in Writ Petition (Civil) No.202/1995.

4. Additional amount of the Net Present Value (NPV) of the diverted forest land if any, becoming due after revision of the same by the Hon'ble Supreme Court of India in future, shall be charged by the State Government from the user agency. The user agency shall furnish an undertaking to this effect.

Continued...

5. User Agency should ensure that Compensatory levies are deposited in the State Compensatory Afforestation Fund notified under Compensatory Afforestation Fund Act, 2016 and explained in the Office Memorandum issued by Ministry of Environment, Forest & Climate Change vide No.11-100/2015-FC(Vol.III) dated 28/09/2018 (copy enclosed).

6. The total forest area utilized for the project shall not exceed 0.244 ha.

7. The wild life mitigation measures as approved by the Chief Wildlife Warden must be strictly implemented.

8. Any other condition that the Addl. P.C.C.F. (Central), Regional Office, Bangalore may impose from time to time for protection, improvement of flora and fauna in the forest area and public convenience, shall also be applicable.

9. Violation of any of the conditions shall invite penal action, as deemed fit by the Additional Principal Chief Conservator of Forests (Central), Regional Office, Bangalore.

After receipt of the compliance report on the above conditions, the proposal will be considered for final approval. This in-principle approval shall be valid for a period of 5 years and the forest land shall not be transferred to the User Agency prior to the issue of final approval.

Yours faithfully,

(M.K. Shambhu)
Conservator of Forests (Central)

Copy to:-

1. The Director General of Forests & Special Secretary to Govt. of India, Ministry of Environment, Forests and Climate Change, Government of India, Agni Wing, Indira Paryavaran Bhavan, Jor Bagh Road, Lodhi Colony, New Delhi – 110 003.

2. The Principal Chief Conservator of Forests, Forests Deptt, Government of Kerala, 'Vanalakshmi', 1st Floor, Forest Headquarters, Vazhuthacaud, Thiruvananthapuram-695 014, Kerala.

3. The Additional Principal Chief Conservator of Forests (Special Afforestation) & Nodal Officer (FCA), Office of the Principal Chief Conservator of Forests, Forests Department, Government of Kerala, 'Vanalakshmi', 1st Floor, Forest Headquarters, Vazhuthacaud, Thiruvananthapuram, PIN- 695 014, Kerala.

4. M/s. Power Grid Corporation of India Ltd, SRTS-II, RHQ, Near RTO Driving Test Track, Singanayakanahalli, Yelhanka Hobli, Bangalore -560 064.

5. Guard file.

08/6/15

(M.K. Shambhu)
Conservator of Forests (Central)

Appendix- 2 : MoEFCC Recommendation/Permission of for Peechi Vazhani Wildlife Sanctuary Area

सत्यमेव जयते

Government of India
Ministry of Environment, Forest and Climate Change
(Wildlife Division)

6th Floor, Vayu Wing
Indira Paryavaran Bhawan
Jor Bag Road
New Delhi 110 003
Date: 08 Feb 2018

F.No. 6-4/2018 WL

To
The Principal Secretary
Kerala Forest Department
Vazuthacaud
Thiruvananthpuram 695 014

Sub: Minutes of the 47th Meeting of Standing Committee of National Board for Wildlife- reg.

Sir,

The 47th Meeting of Standing Committee of National Board for Wildlife was held on 25th January 2018 under the chairmanship of Hon'ble Minister for Environment, Forest and Climate Change. The following policies and proposals pertaining to your State were considered:

Monitoring Terms and Conditions Mentioned while Approving Projects

The DIGF(WL) briefed the Committee and stated that the Standing Committee of NBWL considers and recommends the developmental activities / projects inside the Protected Areas along with site specific mitigation measures to safeguard the interest of wildlife. During the field visits by different Committees constituted by the Standing Committee of NBWL, it has been observed that such projects were implemented without implementing some of the terms and conditions. In other words, the interests of wildlife conservation were ignored sometimes intentionally. The conservationists are of the view that the Protected Areas (PAs) have suffered due to sanctioning of the developmental projects inside the PAs in the recent years while the project proponents ignored the conditions mentioned for protection of wildlife while recommending the projects.

Dr. H S Singh, Member, NBWL was of considered view that there is a need to establish a mechanism of monitoring to ensure that the development activities / projects are taken up inside the Protected Areas only after implementing the terms and conditions. In the background of this fact, it is necessary to develop a format of the certificate from the Chief Wildlife Wardens of the States for each project for fulfilling the terms and conditions as mentioned in the approval before implanting the project. It should be mandatory for submitting the certificate for each such project by the State Chief Wildlife Warden in time so that the interests of wildlife are secured fully.

The Member Secretary, NBWL mentioned that in case of diversion of forestland for non-forestry uses and in case of Environmental Clearances a condition is being stipulated that annual compliance report of the compliance of the stipulated conditions shall be submitted by the user agency. Further in the green portal of the Ministry software is under development which will help in monitoring the implementation of terms and conditions stipulated in approval / recommendations given under the Forest (Conservation) Act 1980, Environmental (Protection) Act 1986 and Wildlife (Protection) Act 1972.

1 | Page

Laying of ±320 kv HVDC underground power cable from Vadakkancherri to Thrissur

The DIGF(WL) briefed the Standing Committee on the proposal and stated that the project involves the diversion of 0.098 ha forestland from the Peechi Vazhani Wildlife Sanctuary for underground laying of power cable of 12" diameter of length of 490 m and width of 2 m from Vadakkancherri to Thrissur. The project would provide electricity to the households and for irrigation purpose in the region. He added that the State CWLW has recommended the proposal with the condition that the project proponent would construct rail fence barrier in the stretch that is falling in the Peechi Vazhani Wildlife Sanctuary.

After discussions, the Standing Committee decided to recommend the proposal along with the conditions and mitigation measures stipulated by the CWLW with the condition that Wildlife Mitigation Plan will be prepared and implemented by the CWLW / State Government at the project cost and standard mitigation measures should be adopted by the user agency in consultation with the CWLW.

Construction of Jetty along the west bank of Mattancherry Channel in Fort Kochi for Indian Coast Guard

The DIGF(WL) briefed the Standing Committee on the proposal and stated that the project involves the construction of Jetty along the west bank of Mattancherry Channel in the Kochi Fort for Indian Coast Guard located at 3.3 km away from boundary of Mangalavanam Bird Sanctuary. He added that the proposal requires the recommendation of Standing Committee as part of Environment Clearance. He added that the State CWLW has recommended the proposal without imposing conditions.

After discussions, the Standing Committee decided to recommend the proposal.

The above recommendation(s) are subject to the existing directives of Hon'ble Supreme Court and provisions of Forest (Conservation) Act, 1980.

Yours faithfully,

(Dr. Pasupala Ravi)
Scientist C
E-mail: ddwlmef@gmail.com

Copy to

1. Chief Wildlife Warden, Kerala Forest Department, Vazuthacaud, Thiruvananthpuram 695 014
2. Additional Principal Chief Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (SZ), Kendriya Sadan, 4th Floor, E&F Wings, 17th Main Road, Koramangala II Block, Bangalore 560 034
3. Joint Secretary, IA Division, MoEF&CC
4. Inspector General of Forests, FC Division, MoEF&CC

(Dr. Pasupala Ravi)

Appendix -3 : Details of Court Cases and Complaints:

SN	Name of the line	Location No.	Name of complainants	Date of complaints/ Court case	Main Issue of complaints	Status of complaint
A.	**Court Cases**					
1.	Ajmer – Bikaner 765 kV D/C	87/0	Ms. Sushila Devi	06.01.18	Land Compensation	Matter under consideration of Additional District & Session Court, Bikaner. POWERGRID and Govt. of Rajasthan have already submitted reply to the court. Next hearing scheduled on 30.03.19
2.	Pugalur HVDC– Pugalur (existing 400KV D/C	36/0	Sh. K.S. Natarajan	WP No. 15040 of 2018 filed on 28.06.18 to Madurai Bench of Madras High court	Seeking order of interim injunction restraining POWERGRID installing towers in their lands	Hon'ble Madras High Court issued stay for status quo order on 12.07.18. Counter statement filed by POWERGRID on 06.08.18 to dismiss the stay order. High court vacated stay & disposed the case on 17.09.18.
3.		35/3	Sh. Saminathan			
4.		35/4	Sh. Ramasamy			
5.	Pugalur-Thiruvallam 400KV D/C	142/5	Sh. Periyasamy			
6.		141/2	Sh. K.Mani			
7.		142/1	Sh. K.Krishna Moorthy			
B.	**Written Complaints**					
1.	Pugalur HVDC– Arasur 400KV D/C		Tamil Nadu Farmers Association, Coimbatore through District Collector (DC), Coimbatore.	29.12.17	To stop line construction works/ route diversion	POWERGRID submitted reply on 25.01.18 to District Collector, Coimbatore informing that due to technical reason route diversion is not possible.
2.		73/0	Representation from ARC School received through DC, Coimbatore	14.03.18	Route diversion	POWERGRID submitted reply on 24.03.18 informing that due to technical reason route diversion is not possible.
3.			From Sh. C. Vengatachalam received through DC, Tirupur	29.07.18	Route diversion to avoid stream	Tahasildar inspected the site and reported to District Collector, Tirupur that Stream is away from alignment.
C.	**Verbal Complaints**					
1.	Ajmer – Bikaner 765kV D/c	80/1	Mr. Tola Ram	15.11.17	Basis of assessment of Crop Compensation	Compensation framework explained to Complainant. Matter Resolved through discussion.
2.	Pugalur HVDC– Thiruvallam 400KV D/c	57/1	Sh. S. Kanda samy Gounder	25.05.18	To stop line construction works/ route diversion	Efforts are underway to resolve the issue amicably in co-ordination with district administration
3		56/4	Sh. M. Selvaraj			
4.	Pugalur-Edayarpalayam 400 KV D/C		Land owners of Suryanallur village	28.06.18	Route Diversion	Issue being resolved amicably with villagers through meeting/ discussion in coordination with District Collector.

Plate 1: Facilities for Construction Worker

Plate -2 : Use of PPEs & Safe Working Practices

Safety Awareness/Training

EHS INDUCTION TRAINING

Name of Site: ± 320 Kv HVDC PTTL — BU/Segment/Cluster: C Chennai

Training Imparted by: Mr. Anand Kumar — Date & Location: 10/05/18 A1 Store.

Topics: Foundation activity.

Sl.	Name	Designation	Name of Cluster /Project	Signature
1	Rukesh	Workman / Labor	Kovilavazhi	Rukesh
2	Rohit Salam	"	"	Rohit Salam
3	Sathish Murugan	"	"	Satish Dhurvex
4	Dinesh	"	"	Dinesh
5	Chandrasekhar	"	"	Chandrasekhar
6	Rajendra Murugan	"	"	Rajendra
7	Vijay	"	"	Vijay
8	Saran pants	"	"	Saran pants
9	Suresh	"	"	Suresh
10	Ezhilmuthu	Workman / Labor	Kovilavazhi	
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

SAFETY

Signature: Larsen & Toubro Limited ±320kv Pugalur - Trichur HVDC TL - TW01 Site Engineer

Larsen & Toubro Limited ±320kv Pugalur - Trichur HVDC TL - TW01 EHS Engineer

Larsen & Toubro Limited ±320kv Pugalur - Trichur HVDC TL - TW01 Giri Prasad S Project Manager

S. MOHAN GANDHI / CHIEF MANAGER / POWERGRID / PALLADAM TLC

L&T CONSTRUCTION
POWER TRANSMISSION & DISTRIBUTION IC

Ref: IM- 8.1.2.2-A Rev 05

PEP TALK REPORT AND ATTENDANCE SHEET

Name of the project : 320kv HVDC PTTL.

Location : 145/0.

Name of the Section Incharge : Mr. Vinoth kumar

Name of the EHSO : Mr. Shrikanth Raj.

Name of the Sub-Contractor/Dept : M/s. Lakshmi Constructions.

Number of workmen present : Ten.

Date & Time : 14/06/18. 9.10Am.

Topics discussed :

> Safe movement while Entering and leaving to the excavated pit.
> Safe distance above face from height while removing boulder of pit.
> Importance of barricading.
> Safe Carriage of pick fixing rod.

SAFETY

Response of workmen : Good response from the workmen.

Remark / Any significant problem identified: Need Rain Coat for Erecting foundation activity.

Signature: Larsen & Toubro Limited ±320kv Pugalur - Trichur HVDC TL - TW01 Site Engineer

Larsen & Toubro Limited ±320kv Pugalur - Trichur HVDC TL - TW01 EHS Engineer

Larsen & Toubro Limited ±320kv Pugalur - Trichur HVDC TL - TW01 Giri Prasad S Project Manager

S. MOHAN GANDHI / CHIEF MANAGER / POWERGRID / PALLADAM TLC

(P.T.O)

Compliance of Safety Checklists

POWER GRID CORPORATION OF INDIA LTD.,
SOUTHERN REGION TRANSMISSION SYSTEM - II

SITE SAFETY INSPECTION REPORT

EXCAVATION & FOUNDATION

1. DATE OF INSPECTION: 30.01.19
2. LOCATION NO: 71/0.
3. NAME OF THE LINE : 1320kV HVDC PTTL.
4. NAME OF THE AGENCY: L&T Construction.
5. SITE ENGINEER / SUPERVISOR OF THE AGENCY: Mr. M. Sivashankaran.

S.NO:	CHECKLIST	YES / NO	REMARKS, IF ANY
1	Sufficient Angle of Repose / slope provided to prevent collapse of soil at vulnerable locations.	No.	Not done.
2	Adequate shoring and shuttering provided in collapsible soil conditions.	No.	Not required.
3	(a) Drilling and Blasting, if any, carried out with adequate precautions. (b) Whether the blaster is a valid license holder?	No.	Not required.
4	Dewatering of the pits is being done, wherever required.	No.	Not required.
5	Adequate warning / protection to public / live stock moving nearby ensured.	yes.	Tape barricading provided.
6	Clear edges to prevent fall of objects inside the pit – the excavated earth, stones and tools dumped atleast one metre away from the pit edges.	yes.	One mtr distance maintained from the pit.
7	Check List / Instructions in the language understood by the workers available.	Yes.	provided.
8	All ladders used are of sound construction, free from any defect.	Yes	4 mtr rigid ladder available
9	All the workers inside the pit are provided with good quality Safety Helmets.	Yes.	Adequate no of Standard helmet provided.
10	All the workers engaged in steel work are provided with Leather Safety Gloves.	Yes.	Cotton hand gloves are provided.
11	The workers engaged in concreting work inside the pit are provided with gumboots.	yes.	Adequate no. of gum boot provided.
12	Appropriate safety posters / messages / warnings are displayed properly.	Yes.	Box class poster displayed.
13	Adequate site briefings to the workers being done by the Supervisor / Engineer of the Agency.	Yes	Daily pep talk observed to workmen.
14	(a) First aid box with adquate contents available. (b) Number of First Aid Trained persons and their names.	Yes.	1 no. of F.A Box available Mr. Nitesh Ahmed
15	Concreting completed within 48 hours of excavation, in water logged / collapsible locations, as the stability of the pit decreases with increase in time.	NO	—
16	Machines like concrete mixer, vibrator, etc, placed sufficiently away from the pit to avoid collapse of the pit due to vibrations produced by these machines.	Yes	One mtr distance provided from edge of pit.
17	The steel plate (chute)used for pouring the concrete into the pit properly anchored to prevent the same from falling into the pit, endangering the persons inside the pit.	Yes.	PP ropes are provided for chute.
18	Jacks used for supporting the template are properly positioned to avoid sliding down of the template from the jacks and endangering the workers.	NA	Not applicable

30/1/19

SIGNATURE / NAME / DESIGNATION OF POWERGRID REPRESENTATIVE

Larsen & Toubro Limited
Trichur
TW01
Site Engineer

SIGNATURE / NAME / DESIGNATION OF AGENCY'S REPRESENTATIVE

Copy To:

(1) PROJECT MANAGER, M/s _____ (2) VP / GM, M/s _____

(2) AGM(CONST) _____ (3) CM (SAFETY) / BANGALORE

Safety Check List TL Const - 03, Revision- 1
(May,2014)

POWER GRID CORPORATION OF INDIA LIMITED

(CORPORATE OPERATION SERVICES)

SITE SAFETY INSPECTION/AUDIT CHECKLIST

TOWER ERECTION

DATE OF INSPECTION: 14.12.18 NAME OF THE LINE: 400kV D/C (Quad) Pugalur-Arasur TL - Arasur TL

LOCATION NO: 1/0

CLASSIFICATION OF SOIL: DFR

NAME OF THE AGENCY: KEC International Ltd

TYPE OF TOWER: DD+0

SITE ENGINEER/SUPERVISOR OF THE AGENCY: R. MANIKANDAN

SAFETY OFFICER OF THE AGENCY: Basanth Nanda

SL NO	CHECK LIST	YES/NO	REMARKS, IF ANY
1	Check list to be verified by the Agency's Site supervisor / Gang leader is available at site and updated.	Yes	
2	Safe work Procedures / Instructions in the language understood by the workers available with site supervisor / Gang leader and workers are aware of the safe work procedure.	Yes	
3	Pep talk on safety issues (Importance of safety, inspection of T&P and PPE's, proper use of PPE's, safe tower erection practices, safe shutdown practices / safe material handling / house keeping etc.) to the workers being done by the Safety Stewards / Supervisor / Engineer / Safety Officer of the Agency.	Yes	
4	Adequate warning / protection to public / children moving nearby ensured (RED FLAGS / CAUTION TAPE / ROPE / BOARDS).	Yes	
5	Appropriate safety message / warnings are displayed at site to caution the workers.	Yes	
6	Back filling of soil completed before taking up tower erection.	Yes	
7	All the workers are provided with good quality SAFETY HELMETS confirming to BIS Standard IS:2925.	Yes	Brand: Karam
8	The workers engaged in Tower Erection work at height are provided with good quality FULL BODY DOUBLE LANYARD SAFETY BELTS confirming to BIS Standard IS: 3521/ EN 361.	Yes	Brand: —

R. Manikandan

(R. MANIKANDAN)

9	Other PPE's provided to the workers: SAFETY SHOES / COTTON HAND GLOVES / for material handling / ELECTRICAL SAFETY GLOVES for S/D works.	Yes	
10	The workers engaged in Tower Erection work at height are provided with FALL PROTECTION SYSTEMS like Rope Grab Mobile Fall arrestor for ascending/ descending the Tower / Retracatable Fall Arrestor (for vertical movement) / Horizontal Life Line Rope for moving from one member to another member (Horizontal movement within the Towers).	Yes	
11	The fitters working on the tower have been trained on safety for work at height before deployment for tower erection works and training Record maintained.	Yes	
12	The workers engaged in Tower Erection work at height are anchoring the LIFE LINE Rope/ Lanyard of the Safety Belts to rigid support.	Yes	
13	(a) First aid box with listed items as per BOCW Act, 1996 available. (b) Numbers of First Aid Trained persons and their names. (c) First Aid Register is available at site. (d) Nearby medical facilities for use during exigencies identified (Location / Phone No.)	Yes	
14	Shutdown of state EB Power Lines, whatever required, are taken and no shortcut methods used and chances taken.	NA	
15	All tie members/ diagonal members and all bolts are fixed as the tower is erected progressively upwards to avoid uneven transmission loads.	Yes	
16	All the nuts and bolts of STUB have been properly tightened.	Yes	
17	All step bolts have been properly tightened.	Yes	
18	Adequate guying arrangement provided at different levels to ensure proper stability of the tower being erected progressively.	Yes	
19	Atleast one vehicle (four wheeler) is available for use in case of emergencies.	Yes	
20	(a) Condition of derricks, pulleyes and other load bearing T & Ps are found to be sound and free from any defect. (b) Whether all lifting T&P have been tested for safe working and valid test certificates available and checked?	Yes	

21	The polypropylene / wire ropes are adequate strength & free from any damage. The damaged / discarded ropes and steel wires are removed and not kept alongwith the other usable T&P, to prevent their use.	Yes	
22	The Pulleyes are of adequate strength/ proper size (diameter). In open type pulleyes, the locking arrangement and the safety pin are found to be healthy and fool proof.	Yes	
23	The derricks are provided with adequate guys and are properly tyed to the tower main leg to prevent from slipping.	Yes	
24	In case erection of tower is done with central derrick / Gin pole, adequate precautions are taken for guying/ anchoring arrangement.	Yes	
25	Adequate no. of fitters/ ground helpers are deployed for the tower erection work.	Yes	
26	Whether the persons working in the ground are sufficiently away from the tower when erection is in progress?	Yes	
27	Whether adequate precautions are taken when working near Road/ Rail/ River/ adjoining Power Line?	Yes	

SIGNATURE / NAME / DESIGNATION OF POWERGRID REPRESENTATIVE

M.SUGUMAR, Dy.Manager
POWERGRID,Palladam TLC

SIGNATURE / NAME / DESIGNATION OF AGENCY'S REPRESENTATIVE

(P. MANIKANDAN)
Sr. ENGINEER
Lotec International Ltd.

Copy To:

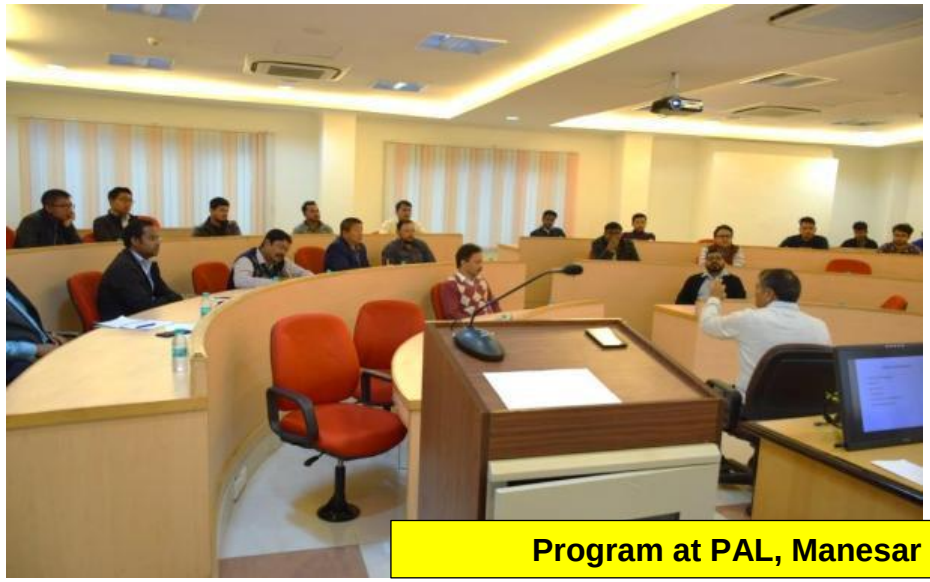
(1) Regional In-charge / POWERGRID / _____

(2) Projects In-charge (Region) / POWERGRID / _____

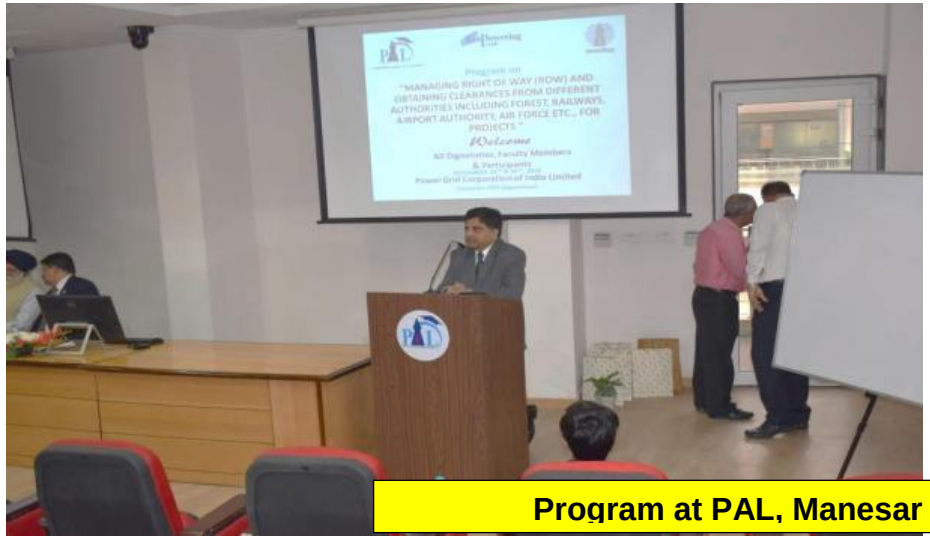
(3) Site In-charge / POWERGRID / _____

(4) Projects In-charge / AGENCY / _____

Plate 3 : E & S Training Programmes during Reporting Period



Program at PAL, Manesar from 11th to 13th December 2018



Program at PAL, Manesar on 29th and 30th November 2018

Training Module

TRAINING PROGRAMME ON ENVIRONMENT & SOCIAL SAFEGUARD MANAGEMENT OF NERPSIP
Venue: POWERGRID Academy of Leadership (PAL), Manesar, Gurugram
Date: 11th -13th December, 2018

DATE/ TIME	9.30- 9.45	9.45 -11.30		11.45 -13.00		14.00 - 1530		15.45 - 17.00
Day-1	Registration	Program Inauguration/ Light of Lamp and Inaugural Address by Chief Guest *Sh. H. S. Sohal, IFS* *PCCF & CVO, EIL*		WB Policies vis-a-vis E & S Management in Transmission Projects *Sh. G. Joshi* *Sr. Env. Specialist,* *World Bank*		Global Best practices in managing E & S issuses in T & D Projects & Case Study *Sh. K. Khumujam* *Env. Consultant* *World Bank*		Gender Issues and Policy Framework of WB *Ms. Sangeeta Kumari* *Sr. Soc. Specialist & Gender Expert, WB*
Day-2	10.00 -11.30			11.45 -13.00		14.00 - 1530		15.45 - 17.00
	Engaging with Indigenous People (Tribal) & aaddressing Gender Issues with special reference to NER States *Sh. R. Swarankar,* *Former Sr. Social Specialist ADB*		TEA BREAK	Environmental laws of India vis-à-vis Forest & Wildlife Clearance *Sh. S.S.Singh* *General Manager (ESM)*	LUNCH BREAK	Engineering/Design Measures to meet safeguard e.g. - Slope stabilization including bio-engg measures - Bird Guards - Innovative Towers - Wildlife/Elephant protection *Sh. Vinay* *General Manager (Engg.)*	TEA BREAK	RoW Compensation and Diminution of Land Value due to placing of Transmission Line/Tower *Sh. R. Ranjan* *Manager (ESM)*
Day-3	10.00 -11.00			11.15-12.30		13.30- 14.30		
	Environmental and Social Policy & Procedures Framework (ESPPF) - An Overview *Sh. S.K. Kar* *Manager (ESM)*			EMP Implementation, Monitoring & Reporting Frameworks as per WB requirements e.g. Preparation of E & S Safeguard Documents e.g. IEAR/ FEAR/ CPTD Report *Sh. S.K. Kar* *Manager (ESM)*		Panel Discussion, Valedictory & feedback		

Attendance

POWER GRID CORPORATION OF INDIA LIMITED

CORPORATE HRD DEPARTMENT, POWERGRID ACADEMY OF LEADERSHIP (PAL) - MANESAR

"Managing Right of Way (ROW) and obtaining clearances from different Authorities including Forest, Railways, Airport Authority, Air Force etc., for Projects (E2-E5)

Venue: PAL, MANESAR **Date: 29TH & 30TH NOVEMBER, 2018**

ATTENDANCE

Sl. No.	Name	Emp. No.	Designation	Region	Location	Signature		E Mail Id
						29.11.2018	30.11.2018	
1	Prakashayya	30520	Dy. Manager	SR-II	Narendra			Prakashayya@gmail.c
2	Chandrakant	60186	Manager	SR-II	Salem			Chandrakant.Powergrid@gmail.com
3	DHORANI KR DEB	50205	Ch. Mgr.	NER	Rangia			dhorani1965@gmail.com
4	Ranjit Bhattoray	60003411	Asst. Manager	ER-II	Angul			ranjitbhattoray.s@powergrid.co
5	O.P. mishra	11036	Dy. Mgr (Law)	NER	shillong			opmisra@powergridindia.c
6	Atul Ku Kulshreshtha	10814	Dy Mgr	NER-II	Manipur			ak kulshreshtha@powergrid
7	S.K. Mall	20597	Dy. Mgr.	NR-III	Azamgarh			Sanjaymall@powergrid.co.in Sanjay20587@gmail.com
8	V.K. CHAUDHARY	41512	Engineer	ER-I	Biharshariff			VKchaudhary@Powergridindia.co
9	M.K. Halam	51336	engineer	NER	Byrnihat			mkthehalam@Powergridindia
10	A. PAVAN KUMAR	51174	MANAGER	SR-I	Maheswaram			ankampavankumar@Powergridindia.co
11	D. Sampath	02830	Dy. Mgr	SR-II	Bellandrally			dudasata.Sampath@powergridindia.com
13	AJAY DAULTANI	20904	Mgr	WR-II	Pune			ajaymdaultani@powergridindia
14	S.C. Bharati	51084	Asst Mgr	NR-I	Neemrana			S.C.bharati@powergrid India.com

Contd Page No 2

Sl. No.	Name	Emp. No.	Designation	Region	Location	Signature		E Mail id
						29.11.2018	30.11.2018	
15	C.S. Meena	51077	Asst. Mgr.	NR-1	Kankroli			
16	Mohan Kudhi	02718	Dy. Mgr	WR-1	Seoni			mohanpadhi@powergridindia.com
17	Deepak Hurde	02054	Manager	WR-1	Hinganghat			deepak24april@yahoo.co.in
18	Yogesh D. Naik	20580	Manager	NR-2	Panipat			Yogeshdnaik@powergridindia.com
19	Manish Kumar	20915	MGR	WR-I	Raipur			manish_kumar@powergrid.co.in
20	Santhoshkumar.	40165	mgr	SR-2	THRISSUR			Santhoshkumar125@gmail.com
21	Omanakuttan. B	10472	Asst Manager	SR-2	Kottayam			omanakuttan66@rediffmail.com
22	Ramesh Pal Singh	00238	DGM	NR-III	Lucknow			rameshpal@powergridindia.com
23	JYOTI BEYONG	03160	Asst. Mgr.	NER	NIRJULI			jottibeyong@gmail.com
24	Uttam kr. Pegu	03175	Asst. Mgr	NER	NIRJULI			upegu92@gmail.com
25	G.S. CHOUDHARY	D1933	mgr	NR-1	JAIPUR			gsc@powergridindia.com
26	Ajay Kumar Singh	11898	Asst mgr	NR-3	[illegible]			ajay kumar.singh@powergridindia.com
27	Akhyud Gogoi	50179	Manager	NER	Dimapur			a.gogoi@powergridindia.com
28	Nurul Huda Laskar	50232	Manager	NER	Ziro			nurullaskar45@gmail.com
29	Amit Thakur	16651	Engineer	NR-2	Manimajra			amitthakur@powergridindia.com
30	Ajay Chand Bag	01340	Dy Mgr	ER-II	TBCB Gaborbeta			ac.bag@powergridindia.com

Attachment 1: Comments-Responses Matrix

India: Green Energy Corridor and Grid Strengthening Project
Environmental and Social Safeguard Monitoring Reports
(July-December 2018)

No.	Comments by ADB	Responses and/or Actions Taken by POWERGRID
	Environmental Monitoring Report (EMR)	
1	EMR Section 4: Environmental Management and Monitoring Plan (comments on *Table 2 - Construction* on pages 18-25), please provide the results of the monitoring conducted during this period for the parameters mentioned.	Detailed explanation provided as comments in the EMR (Comments and responses in the EMR file are copied below from items 2.01 to 2.24)
2	Please address the questions and comments included in the EMR file.	
2.01	Page 1, Executive Summary: "…required clearance/permission for diversion of forest and wildlife area as per the applicable provisions of The Forest (Conservation) Act, 1980 and The Wildlife (Protection) Act, 1972 respectively are being obtained from Ministry of Environment, Forest & Climate Change (MoEFCC)" – Is there another permit that the client is still waiting for aside from the recommendation/permission from the MoEFCC shown in Appendix 2? If the document shown in Appendix 2 is the only requirement, please amend this sentence.	As per provisions of FC Act, 1980, forest clearance is a two stage process wherein Stage-1 clearance is issued after detailed scrutiny and review of diversion proposal by MoEFCC. Stage-2/final clearance is issued after complying the conditions as enlisted in Stage-I clearance. However, as per MoEFCC guidelines dated 08.08.14, provision has been made for issuance of working permission after stage -1 clearance, once all the financial levies such as cost for Compensatory Afforestation, Net Present Value, Medicinal Plantation etc are deposited by user agencies. In the instant project, the forest clearance for different lines are at different stages, details of which are clearly reflected in Table no-1. As far as wildlife clearance is concerned, this is applicable only for one line for which final permission/clearance in the form of NBWL recommendation has already been obtained. Details are available in the same table.
2.02	Page 15, EMP table, row 8: "Avoidance of established/ identified migration path (Birds & Bats). Provision of flight diverter/ reflectors, bird guard, elevated perches, insulating jumper loops, obstructive perch deterrents, raptor hoods etc., if applicable" – Can the client please confirm that no transmission lines cross identified migration pathways or forest areas? It is noted that part of the 3.64km overhead transmission line (that pass through some tiger corridors in Maharastra) crosses the Malewada Forest Range. Can the client please ensure that these mitigation measures are implemented in this area?	We would like submit that the line mentioned in the comment is not covered under scope of funding and hence details not being reported in EMR/SMR. Moreover as shown in the compliance status column the route of line doesn't infringe any identified bird area/ elephant corridor. As regard wildlife mitigation measures, it is to inform that the recommendation/permission letter issued by National Board for Wildlife (NBWL) prescribes all required safeguard measures as per the law of land which are to be complied mandatorily by the user agencies.
2.03	Page 15, EMP table, row 9: "…an area of 22.406 ha. (4.93 km) forest land could not be avoided" – Can the client please ensure that the measures to	As explained in earlier comments, MoEFCC while issuing forest/wildlife clearance prescribes enough mitigation measures taking into consideration local

<table>
<tr><th>No.</th><th>Comments by ADB</th><th>Responses and/or Actions Taken by POWERGRID</th></tr>
<tr><td></td><td>avoid collision and electrocution of birds and bats (as above) are implemented in these areas?</td><td>conditions, vulnerability of flora and fauna and possible impacts of project on forest and wildlife. Accordingly, for the lines covered under scope of the project, forest dept. has mandated installation of bird diverter in certain section of Bikaner-Moga line inspite of the fact that the line is not routed through IBAs, migratory paths. Action has already been initiated to comply the same.</td></tr>
<tr><td>2.04</td><td>Page 16, EMP table, row 11: “Substations sited and designed to ensure noise will not be a nuisance and shall comply with National Ambient Noise Standards, which are also compatible with the EHS guidelines of the World Bank.” -- Please clarify if the location and technical specifications of the substations ensures that any sensitive receptors are not subjected to noise levels above the WB EHS guidelines (below):
Table 1.7.1- Noise Level Guidelines[54]
<table><tr><th rowspan="2">Receptor</th><th colspan="2">One Hour L_{Aeq} (dBA)</th></tr><tr><th>Daytime 07:00 - 22:00</th><th>Nighttime 22:00 - 07:00</th></tr><tr><td>Residential; institutional; educational[55]</td><td>55</td><td>45</td></tr><tr><td>Industrial; commercial</td><td>70</td><td>70</td></tr></table></td><td>It is to clarify that the mentioned noise limit of 80 dB is the maximum limit of noise emanating from transformer and are not comparable with ambient noise values. Moreover, as mentioned in several places including IEAR, environmentally and socially sensitive areas are avoided while selecting TL route and substation sites. Additionally, transformer is located in the switchyard of substation which is a prohibited area for all except the authorized employees only. It is worth mentioning that in real time monitored value of noise level inside our substation premises remain within 45-50 dB which is well within prescribed limits including WB EHS Noise level.</td></tr>
<tr><td>2.05</td><td>Page 18, EMP table, row 16: “Noise and vibrations” – Please clarify if any construction work is being conducted in areas near sensitive receptors (e.g. households, schools, temples, etc.). In addition, please clarify how noise levels during construction are monitored to avoid/mitigate exceedances of the guidelines below, if required:
Table 1.7.1- Noise Level Guidelines[54]
<table><tr><th rowspan="2">Receptor</th><th colspan="2">One Hour L_{Aeq} (dBA)</th></tr><tr><th>Daytime 07:00 - 22:00</th><th>Nighttime 22:00 - 07:00</th></tr><tr><td>Residential; institutional; educational[55]</td><td>55</td><td>45</td></tr><tr><td>Industrial; commercial</td><td>70</td><td>70</td></tr></table></td><td>As vivid from earlier comment, all construction sites are away from sensitive receptors.</td></tr>
<tr><td>2.06</td><td>Page 18, EMP table, row 17: “Construction on farm land undertaken mostly during post-harvest period.” – Please detail instances where this measure has not been complied with, including a discussion of the impact of not conducting the construction work post-harvest.</td><td>No non compliances have been observed till date. It is to mention that compliance with all applicable conditions including those of EMP is regularly ensured by Site In charge. Moreover, the regional environmental officer and official from corporate ESMD regularly do site visit with an aim to verification of compliance.</td></tr>
<tr><td>2.07</td><td>Page 20, EMP table, row 24: “No complaints received on illegal harvesting [Wood/vegetation]” – Please confirm if the contractor is monitoring for evidence of illegal harvesting or only relying on complaints to monitor compliance with this measure.</td><td>Besides complaints, monitoring of compliance with respect to all applicable conditions is the responsibility of Site In Charge as mentioned in earlier comment. Nos. of complaint is just an indicator as mentioned in EMP and also agreed with ADB.</td></tr>
<tr><td>2.08</td><td>Page 20, EMP table, row 25: “90-95% of the</td><td>We are bit surprised by this comment as the point</td></tr>
</table>

No.	Comments by ADB	Responses and/or Actions Taken by POWERGRID
	excavated soil is used for refilling/ resurfacing and rest is being disposed of along with other debris at selected location." – Please clarify what kind of debris is disposed off with the excess soil. Further, please clarify how the locations are selected for the disposal of the soil and debris.	itself is related to surplus earthwork/soil. After reusing the excavated soil for the purpose of refilling/resurfacing, the leftover materials is disposed off nearby areas with the consent of land owner.
2.09	Page 21, EMP table, row 26: "[Loss of soil mitigation measures] Complied/Being Complied" – Please clarify if soil has had to be sourced from other sources during this construction period. If so, please summarize where the soil has been taken from.	In the instant project no excess soil was needed for any substation construction as the process of cutting, levelling and filling resulted in soil balance.
2.10	Page 21, EMP table, row 26: "[Water pollution] PH, BOD /COD, Suspended solids, others" – Please provide an example monitoring report.	In the instant case such monitoring is not required as no water bodies is located in near vicinity of substation sites
2.11	Page 21, EMP table, row 28: "Location and amount (m^3) of fill disposal" – Please provide an example log/register of this measure.	At every locations where excess fill is generated we are following the agreed upon process as mentioned in IEAR. As an example please consider the case of Underground Cabling being done in 320 KV HVDC Pugalur-North Thrissure line where an understating with National Highway Authority of India (NHAI) has been agreed upon and excess soil generated in the UG Cable work is being utilized by NHAI for road construction purpose.
2.12	Page 22, EMP table, row 29: "[Storage of chemicals and materials] Stored at designated place only." – Please clarify if compliance with this measure has been verified by the client. If so, please provide a copy of the verification documents/notes. Please provide the environmental incident register and an example spill report.	The only material used during construction stage which can be termed as hazardous (though not by law) is small quantity of diesel for DG set for which enough safeguard measures including secondary containment is applied apart from sufficient provisions of fire fighting equipments.
2.13	Page 22, EMP table, row 30: "Noise nuisance to neighbouring properties" – Please see comment above in relation to noise guidelines.	Already explained.
2.14	Page 22, EMP table, row 31: "[Provision of facilities for construction workers] No complaints received." – Please confirm whether the workers are informed of the grievance mechanism when work commences (or as part of the site induction).	Information about the grievance redress mechanism is an integral part of induction programme of every worker. Moreover, every day before start of the work, tool box talk is organised where the workers are encouraged to share their grievances/concerns and suggestion.
2.15	Page 22, EMP table, row, 33: "[Lines through farmland] Complaints" – Please confirm how communities are informed of the grievance mechanism.	The grievance redressal mechanism has been discussed in great details in chapter -6 of IEAR and also in section-8 of instant report. Further, complaints/grievances provided in appendix-3 clearly depict that the grievance redressal mechanism is fully functional and complainant has easy accessibility to register his/her complaint.
2.16	Page 23, EMP table, row 33: "Protect /preserve topsoil and reinstate after construction completed" – Please confirm if this is monitored during construction. Please provide documentation of	Since this activity I monitored that is the reason it has been included in the EMP at the first place. However, we are unable to understand what type of documentation will be applicable in such cases.

No.	Comments by ADB	Responses and/or Actions Taken by POWERGRID
	examples of successful reinstatement, if the work has been done.	
2.17	Page 23, EMP table, row 33: "Repair /reinstate damaged bunds etc. after construction" – As above. completed" "	Same as above.
2.18	Page 23, EMP table, row 34: "suspended solids in receiving waters; area re-vegetated in m^2; amount of bunds" – Please provide an example register/log for the monitoring of these parameters. "Regeneration of vegetation to stabilise works areas on completion (where applicable)" – Please provide an example photograph of this, if available.	In the instant project such measure is not required till date as all construction sites are located in plan area.
2.19	Page 23, EMP table, row 34: "Water courses protected from siltation through use of bunds and sediment ponds" – Please provide an example photograph of this, if available.	Please refer our comment at 20
2.20	Page 24, EMP table, row 36: "BOD/COD in receiving water" – Please provide an example register/report of this monitoring.	No such case of blockage of natural drainage/flooding reported from any of the construction site till date in the instant project. Whenever, such rare cases are encountered and where the natural flow/drainage is affected, flow will be trained and guided to safe zones.
2.21	Page 30, summarized environmental monitoring plan table, construction phase: "Continuous as per IEER and EMP throughout construction period." – Please provide an example monitoring report from the contractor.	It is to submit that the compliance status of EMP included in this report itself is based on the compliance report certified by the respective contractors and site in charge. A sample copy of certified EMP is attached as "A" for ready reference.
2.22	Page 31, section 6: "However, small quantities of domestic sewage from staff quarters and construction camp is generated which is discharged in local soak pits." – Please provide example photographs of these soak pits and how potential health risks are monitored and addressed.	Septic tank and Soak pits are integral part of every substation design. A Copy of the drawing is attached for ready reference.
2.23	Page 37, Details of Court Cases and Complaints table, row B-1: "[Complaint] Tamil Nadu Farmers Association, Coimbatore through District Collector (DC), Coimbatore - POWERGRID submitted reply on 25.01.18 to District Collector, Coimbatore informing that due to technical reason route diversion is not possible." – Please share the feedback from the farmer's association upon receipt of this statement from PowerGrid. Was this resolved? Please provide details.	We are yet to receive any feedback either from office of DC or farmer association after submission of our reply. Since no further communication received from associated parties and there is no hindrance in the ongoing work , the issue can be considered as closed.
2.24	Page 37, Details of Court Cases and Complaints table, row B-1: "[Complaint] Representation from ARC School received through DC, Coimbatore - POWERGRID submitted reply on 24.03.18 informing that due to technical reason route	As explained above.

No.	Comments by ADB	Responses and/or Actions Taken by POWERGRID
	diversion is not possible." – Please share the feedback from the school upon receipt of this statement from PowerGrid. Was this resolved? Please provide details.	
	Social Monitoring Report (SMR)	
3	The coverage of the SMR as stated in the title page is July – December 2018 period. However, the Table in Section 1.5 (pages 5 and 6) refers to "Progress as on June '18". Please correct if this should be "Progress as of December 2018"? Please provide an example log/register of this measure.	Noted & corrected
4	The SMR claims that land acquisition for the Project was done on a willing seller-willing buyer basis. However, there is no explanation as to what constitutes willing seller-willing buyer in the actual land acquisition process for the reporting period of July December 2018. Please elaborate on the process and results of negotiation (and please do so for future reporting as well).	It is to submit that this has already been explained several times (refer our communication dated16.08.18 & 7.6.19 enclosed as C & D) including detailed deliberation during CSS assessment process. Kindly refer "***Appendix 3: Social Safeguards Acceptability Matrix***" dated 7 September 2016 and & "***Report on the Equivalence and Acceptability Assessments for the Power Grid Corporation of India, Ltd."*** *on 9 September 2016 prepared by ADB CSS team (Copy enclosed as E & F for ready reference)*
5	The explanation of willing seller-willing buyer negotiation process is important as this will help readers understand that actually (and quite expectedly) only very few people filed complaints through formal adjudication process, and also very few people filed written or verbal complaints through the District Collector and/or Project's GRM. This has to be highlighted in the SMR.	
6	The Report mentions about the MoP Guidelines for Land Compensation being applicable only in the States of Chattisgarh, Tamil Nadu and Kerala. As such, please clarify which project components or specific sections of project components that are not applying MoP Guidelines during the reporting period. How has the Project dealt with the situation?	Kindly refer Table-3 where these details are clearly mentioned i.e. which States are yet to adopt these guidelines and consequently which lines don't attract the provisions of the said guidelines
7	SMR Section 5: GRM (page 32) – Please provide a few sentences about when and how many people were consulted (men and women) during the monitoring period.	Already explained in our comment
8	Please address the questions and comments included in the SMR file.	All questions/comments are addressed/explained