

Semi-Annual Environment Safeguard Monitoring Report

Loan Number : 3365-IND & 3375- IND

Reporting Period: January - June 2021

Green Energy Corridor and Grid Strengthening Project

Prepared by : ESMD, CORPORATE CENTRE, POWERGRID

Implementing Agency : POWERGRID

Executing Agency : POWERGRID

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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
EMR	–	Environment Monitoring Report
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/ SS	–	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 1212 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 8th Semi-annual Safeguard Monitoring Report for period January-June 2021 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 4.997km which is only 0.41 % 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 already 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. As regard Wildlife Mitigation Plan, POWERGRID has already deposited Rs 4 Crore to State Forest & Wildlife Dept. on March 23, 2019 for implementation of rail fencing as part compliance stipulated by the Chief Wildlife Warden (CWW)/ NBWL permission. 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 pollution 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.

All required safety measures are in place including due precautions/awareness programs as well as ensuring use of PPEs, which is evident from the fact that no fatal accidents 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 complaints 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 DESCRIPTION

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 ± 800 kV HVDC Station with 6000 MW HVDC terminals.
 - b) Establishment of Pugalur ± 800 kV HVDC Station with 6000 MW 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 - Thiruvallam 400 kV (quad) D/c line - **390 km**
- d) Pugalur HVDC Station - Edayarpalayam 400 kV (quad) D/c line - **57 km**
- e) Edayarpalayam - Uduimulpet 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 June 2021	Completion Schedule
Establishment of +800 kV, 6000 MW HVDC system between the Western (Raigarh) and Southern (Pugalur) Regions	<p>Substation:</p> <p>a) Establishment of Raigarh ±800 kV HVDC Station with 6000 MW HVDC terminals.</p> <p>b) Establishment of Pugalur ±800 kV HVDC Station with 6000 MW HVDC terminals</p>	4% progress during reporting period of January-June 2021 and overall progress is 99%	Pole-I, Pole-II & Pole-III commissioned in September 2020, March 2021 & July 2021. Pole- IV likely to be commissioned by August 2021
Establishment of Pugalur - Trichur 2000 MW VSC Based HVDC System	<p>Transmission Line:</p> <p>Establishment of VSC based ±320 kV, 2000 MW HVDC link between Pugalur & North Trichur (Kerala) (UG: 28 km)</p> <p>Substation:</p> <p>a) ±320 kV, 2000 MW VSC based HVDC terminal at Pugalur.</p> <p>b) ±320 kV, 2000 MW VSC</p>	11% progress during reporting period of January-June 2021.	Commissioned (June 2021)

	based HVDC terminal at North Trichur.		
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 Substation: a) 765/400 kV Substation at Bikaner.	Project Commissioned in March 2020	Commissioned (March 2020)
400 kV AC Power Transmission system associated with HVDC terminal stations at Pugalur, Tamil Nadu	Transmission Line: a) Pugalur HVDC Station- Pugalur 400 kV D/c. b) Pugalur HVDC Station – Arasur 400 kV D/c. c) Pugalur HVDC Station – Thiruvalem 400kV D/c. d) Pugalur HVDC Station- Edayarpalayam 400 kV D/c. e) Edayarpalayam- Udumulpet 400 kV D/c	During reporting period 3% tower foundation, 5% erection and 23 % stringing work has been made. The overall progress is approx. 100% of tower foundation & 100% of erection & 98% Stringing.	All lines have been commissioned except Pugalur -Thiruvalem line which is likely to be completed by August 2021

SECTION 2: COMPLIANCE STATUS WITH APPLICABLE 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 4.997 km (22.73 ha.) of forest land en-route of 1212 km. The details of sub-project wise forest involvement along with updated forest 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) Rules, 2001	To avoid/minimize lead pollution, Bulk consumers shall have the responsibility to 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.	Since the instant project is under implementation phase, no used batteries have been 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/reprocessors). 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. However, in order to avoid any risk of contamination due to spillage secondary containment in the form of secure and impervious sump pits of adequate size below each transformer has been made part of detailed

S. No.	Legal Requirements	Applicable Attributes	POWERGRID's Compliance Status
			substation design (refer clause no. 44 of EMP).
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			
<i>Transmission line not covered under funding</i>				
2.	Establishment of Pugalur - Trichur 2000 MW VSC Based HVDC System			
a.	±320 kV 2000MW VSC based HVDC link between Pugalur and North Trichur (Kerala)	0.244 (0.146 ha. forest + 0.098 ha. Peechi WLS)	Kerala	Forest area (0.244 ha.): Stage-II (Final) approval obtained on 24.09.19 (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). Further, POWERGRID already deposited Rs. 4.0 Crores to State Forest & Wildlife department on 29.03.19 towards cost for Wildlife Mitigation Plan.
3.	Green Energy Corridor (Part-D)			
a.	Ajmer (New) – Bikaner (new) 765 kV D/c	1.5766	Rajasthan	Forest area involved only strip plantation along road crossings (National/ State Highway). Stage-II (final) approval obtained on 05.09.19.
b.	Bikaner (New) – Moga (POWERGRID) 765 kV D/c	9.12 5.50	Punjab Rajasthan	Stage-II (final) approval obtained 17.09.18. Forest area (5.50 ha.) involved only strip plantation along road crossings (National/ State Highway). For 2.01 ha. (Bikaner Division)- Stage-II approval obtained on 21.01.20. For 3.49 ha. (Hanumangarh Division)- Stage-II approval obtained on 18.09.20.

c.	LILO of 400 kV D/c Bhadla- Bikaner Line at Bikaner	0.9079	Raja sthan	Stage-II approval obtained on 31.07.19.
4.	400 kV AC Power Transmission system associated with HVDC terminal stations at Pugalur, Tamil Nadu			
a.	Pugalur HVDC - Pugalur 400kV	-	-	No forest involved
b.	Pugalur HVDC - Arasur 400kV D/c			
c.	Pugalur HVDC - Thiruvalam 400kV D/c	5.382	Tamil Nadu	Stage-II approval obtained on 21.01.21. For felling of spontaneously grown trees permission of Hon'ble Supreme Court obtained on 17.12.2020.
F	Pugalur HVDC Edayarpalayam 400kV D/c	-	-	No forest involved
e.	Edayarpalayam – Udumulpet 400kV			

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
<p>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.</p>	<p>LA, Sch. 5, para. 13</p>	<p>Complied/Being complied.</p> <p>For details of compliance status refer section - 2, 4 & 7.</p>
<p>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.</p>	<p>LA, Sch. 5, para. 14</p>	<p>Complied.</p> <p>For details of compliance status refer section - 2.</p>
<p>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.</p>	<p>LA, Sch. 5, para. 18</p>	<p>Complied.</p> <p>All such provisions are integral part of approved IEARs & CPTDs and are being implemented.</p>
<p>The Borrower shall ensure that all bidding documents and contracts for Works contain provisions that require contractors to:</p> <ul style="list-style-type: none"> (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. (c) provide the Borrower with a written notice of any unanticipated environmental, resettlement or indigenous peoples risks or impacts that 	<p>LA, Sch. 5, para. 19</p>	<p>Complied/Being complied.</p> <p>Point (a) to (d) complied and point (e) is being complied as it is completed with project implementation at site.</p>

<p>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.</p> <p>(d) adequately record the condition of roads, agricultural land and other infrastructure prior to starting to transport materials and construction;</p> <p>(e) reinstate pathways, other local infrastructure, and agricultural land to at least their pre-project condition upon the completion of construction.</p>		
<p>The Borrower shall do the following:</p> <p>(a) submit semiannual Safeguards Monitoring Reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission;</p> <p>(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;</p> <p>(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</p> <p>(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.</p>	<p>LA, Sch. 5, para. 20 & Clause 17.5 (a) (LA-3375-IND)</p>	<p>Monitoring reports are being submitted in due time and disclosed on website after ADB clearance.</p> <p>POWERGRID's corrective measures in response to COVID-19 have already been shared with ADB in May' 20 and regular update on such measures are also being provided in Semiannual reports</p> <p>Will be complied in case of any breach.</p> <p>Will be complied if such situation warrants.</p>
<p>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.</p>	<p>LA, Sch. 5, para. 21</p>	<p>Compliance ensured</p>

Any changes to the location, land alignment, or environment impacts because 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.
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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/EMP and in accordance with ESPP & ADB's Safeguard Policy Statement, 2009. POWERGRID has prepared Initial Environmental Examination (IEE) reports including Environmental Management Plans (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./stage	Project activity	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 is 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			
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. Noise level of maximum 80dB specified in Transformer specification.

Cl. No./stage	Project activity	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./stage	Project activity	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 (SMR).
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./stage	Project activity	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	The lines covered under GEC Part-D neither pass through of any wildlife areas nor overlap with GIB priority/ potential area as demarcated recently by WII. However, as per forest clearance condition, bird diverters shall be installed in Ajmer - Bikaner & Bikaner-Moga lines for which award of contract has already been placed and installation of the same is likely to be completed by September, 2021.
			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. Route alignment finalised by taking consideration of minimum impact on forest area after consultation with concerned authorities. However, in spite of best efforts, an
			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./stage	Project activity	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			area of 22.73 ha. (4.997 km) forest land ³ could not be avoided. However, as per regulation, forest clearance under Forest (Conservation) Act, 1980 already 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,	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. Noise level

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 all subprojects involving diversion of forest land which are also available publicly on MoEFCC website following link:

400 kV D/c Pugalur-Thiruvalam : http://forestsclearance.nic.in/DownloadPdfFile.aspx?FileName=0_0_1113012381214481CAScheme.pdf&FilePath=../writereaddata/DivertedLand/GirthFile/
320kV HVDC Pugalur-North Thrissure: http://forestsclearance.nic.in/DownloadPdfFile.aspx?FileName=0_0_81117121412171291certificate17817.pdf&FilePath=../writereaddata/DivertedLand/GirthFile/
765 kV D/c Ajmer –Bikaner : http://forestsclearance.nic.in/DownloadPdfFile.aspx?FileName=0_0_1112912491210541CAScheme.pdf&FilePath=../writereaddata/DivertedLand/GirthFile/
765kVD/c Bikaner-Moga : http://forestsclearance.nic.in/DownloadPdfFile.aspx?FileName=0_0_111412371216251ca.pdf&FilePath=../writereaddata/DivertedLand/GirthFile/ &
http://forestsclearance.nic.in/DownloadPdfFile.aspx?FileName=0_0_1113012101215381CAScheme.pdf&FilePath=../writereaddata/DivertedLand/GirthFile/
LILO of 400 kV D/c Bhadla-Bikaner at Bikaner: http://forestsclearance.nic.in/DownloadPdfFile.aspx?FileName=0_0_5111412331214131CAScheme.pdf&FilePath=../writereaddata/DivertedLand/GirthFile/

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			which are also compatible with the EHS guidelines of the World Bank.					measured in Arasur substation in reporting period was found to be well within permissible limit (Plate -1) .
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. 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 firefighting equipment	Substation design compliance with	Tender document to mention detailed	POWERGRID	Part of detailed substation layout and	Complied.

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			Provision of firefighting equipment to be located close to transformers	fire prevention and control codes	specifications – once		design /drawings	Firefighting equipments are integral part of Substation design.
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. Use of low noise producing machineries/ equipments ensured.
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. Construction on farm land were 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. No complaint reported during construction period.
		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	

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
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	Complied. Most sites were easily accessible and existing road were used for construction activity.
		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	
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 were not reported. 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. Excavated earth were stored in designated area only and subsequently utilized as refilling material. Hence, no such incident dumping in sensitive area reported during construction.

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
22	Site clearance	Vegetation	Marking of vegetation to be removed prior to clearance, and strict control on clearing activities to ensure minimal clearance. No use of herbicides and pesticides	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. No herbicides and pesticides were used.
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 was carried out with permission of owner & revenue authority keeping required electrical clearance as per CEA's regulation, 2010 (Measures related to safety and electric supply). In remaining RoW area, only pruning/pollarding is done to maintain electrical clearance. All felled trees were handed over to owner for disposal. POWERGRID has no role in storage and disposal of felled tree/wood.
		Loss of vegetation and deforestation	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	
		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		

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
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. 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. Already explained at clause no.21.
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. Excess soil/ borrowed earth not required for construction of proposed substation as excavated soil was completely utilized for levelling and refilling work.
		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. No water body was created and even no waste water was discharged to any waterbody nearby which might result in likely contamination.

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
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) Statutory approvals	Amount of ground disturbance – every 2 weeks Statutory approvals for tree clearances-once for each site	POWERGRID (Contractor through contract provisions)	Construction period	Complied. Already explained at clause no. 23.
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. Already explained at clause no. 21 & 26.
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	Complied. Regular monitoring undertaken to ensure that such materials are stored securely at designated places only along with sufficient containment as part of compliance of applicable contract provisions by the contractor.
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	Complied. Since, construction activities were restricted to day time only, no nuisance to nearby community was reported.

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
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	Complied. Regular monitoring is undertaken to ensure provisions of proper sanitation, water supply, waste disposal facilities and other basic facilities in worker camp by contractor.
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/ Local workforce were engaged by construction contractor based on skill in compliance with the contract provision 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	Complied. No complaints received from local peoples/ authorities
			Ensure existing irrigation facilities are maintained in working condition	Status of existing facilities				
			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)				

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
		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	Complied. Tried to minimise the loss and due compensation as per assessment done by revenue/ forest authorities paid to affected land owners/ farmers. Details of tree, crop compensation paid is provided separately in Social Monitoring Report.
34	Uncontrolled erosion/silt runoff	Soil loss, downstream siltation	<p>Need for access tracks minimised, use of existing roads.</p> <p>Limit site clearing to work areas</p> <p>Regeneration of vegetation to stabilise works areas on completion (where applicable)</p> <p>Avoidance of excavation in wet season</p> <p>Water courses protected from siltation through use of bunds and sediment ponds</p>	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. Compliance of same ensured through incorporation of good design and management practices in contract provision.
35	Nuisance to nearby properties	Losses to neighbouring land uses/ values	<p>Contract clauses specifying careful construction practices.</p> <p>As much as possible existing access ways will be used</p>	<p>Contract clauses</p> <p>Design basis and layout</p>	<p>Incorporating good construction</p> <p>Incorporating good design engineering practices– once for each site.</p>	POWERGRID (Contractor through contract provisions)	Construction period	Complied. Compliance of same ensured through incorporation of good design/ construction management practices in contract provision.

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			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. Good construction management practices employed at sites to avoid blockage of natural drainage and resultant flooding.
37	Equipment submerged under flood	Contamination 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	Complied. All equipment foundations have been designed above HFL.
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	Complied. Required aggregates were sourced through approved/ registered borrow/ quarry area only.

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
39	Health and safety	Injury and sickness of workers and members of the public	<p>Safety equipment's (PPEs) for construction workers</p> <p>Contract provisions specifying minimum requirements for construction workers camps</p> <p>Contractor to prepare and implement a health and safety plan.</p> <p>Contractor to arrange for health and safety training sessions</p>	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	<p>Complied with project specific safety plan and general conditions of contract, which covers all applicable regulations.</p> <p>Compliance to safety measures like safety training along with safety checklists is placed as Plate-2.</p> <p>Further, due to COVID-19 pandemic all precautionary measures in respect of health & hygiene, sanitation, adequate PPEs and social distancing norms are strictly followed as per Govt. of India guidelines and COVID specific guidelines issued by POWERGRID's Corporate Safety Cell (refer Annexure-1)</p>
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	<p>Provided proper training and have very good env. monitoring process.</p> <p>Provides proper training and have very good env. monitoring process. Training program are</p>

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			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			regularly conducted. During reporting period such training programs were conducted online on 27 January 2021 and 11 & 12 March 2021. Training module is placed as Plate-3 .
			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			Appropriate clause incorporated in contact 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	Complied during survey. Route alignment criterion is part of survey contract which was followed thoroughly during construction and no such exposure to safety related risks is anticipated.
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	Complied/ Being complied. Though route of Ajmer - Bikaner & Bikaner - Moga under GEC Part-D do not overlap with GIB priority/ potential area as demarcated recently by WII bird diverters shall be installed in the forest stretches of both lines as part compliance to forest clearance condition.

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
								Moreover, no incident of bird electrocution/collision has been reported so far.
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	Complied. Already part of detailed substation design. However, no flooding/submergence of substation/ equipment has been reported so far.
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 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)	Substation bunding (Oil sump) ("as-built" diagrams)	Bunding (Oil sump) capacity and permeability - once	POWERGRID	During operations	Complied/ being complied Oil sump of sufficient capacity already provided for each transformer which was also part of detailed substation design (sample photograph placed as Plate-4). However, no spillage of transformer oil is reported so far.
45	SF ₆ management	Emission of most potent GHG causing climate	Reduction of SF ₆ emission through awareness, replacement of old seals, proper handling & storage by	Leakage and gas density/level	Continuous monitoring	POWERGRID	During Operations	Complied/ being complied. Regular monitoring and controlled inventory is

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
		change	controlled inventory and use, enhance recovery and applying new tech. to reduce leakage					ensured to avoid any leakage of SF6.
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	Complied/ being complied. All safety related precautions/ systems/ plans are in place. Proper safety training for workers are conducted on regular interval including mock drills on fire and other occupational hazards.
			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			
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	Complied/ being complied. Used of technology like tripping line/substation in milliseconds in case of any hazards. Boundary and Security fences are maintained at substation. Sufficient barriers with warning signages are maintained
			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				

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
			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			at appropriate places of line/substation (sample photograph placed as Plate-4). Further, regular awareness/ mock drill on electrical safety and other occupational hazards are being undertaken
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. Preparation and training in the use of O&M manuals and standard operating practices	Training/awareness programs and mock drills for all relevant staff	Number of programs and per cent of staff covered – once each year	POWERGRID	Operation	Being complied. Regular trainings are being imparted to O & M staffs based on their skill at regular interval
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	Complied/being complied. During reporting period total 86 mandays training impacted on E & S aspects (refer Plate -3).
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	Complied. Only CFCs free equipments are installed.
51	Transmission line maintenance	Exposure to electromagnetic 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	Complied. Designed as per guidelines of ICNIRP and ACGIH and checked by CPRI &M/s PTI, USA

Cl. No./stage	Project activity	Potential Impact	Proposed mitigation measures	Parameter to be monitored	Measurement & frequency	Institutional responsibility	Implementation schedule	Compliance Status
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	Being complied
53	Noise related	Nuisance to neighbouring 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	Complied/ being complied. The average noise level of DG sets installed at Arasur is found to be 76.6 dB which is well within permissible limit (Plate-1).

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 4.997 km

which is only 0.41 % of total line length of 1212 km line. 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 also 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 of 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

The COVID-19 outbreak which is a totally unforeseen/unexpected pandemic has not only created unprecedented situation all over world but also impacted every aspects/ activities including project implementation. Since such events are difficult to envisage impacts associated with such pandemic situations have not been specifically mentioned in existing EMPs which were prepared long back. However, the existing safety plan and other contract conditions particularly related to labours have provisions to deal with such extraordinary situations

Moreover, with the enforcement of The Disaster Management Act, 2005 and Epidemic Diseases Act, 1897, w.e.f March,2020 in whole of India which empower the Gol & State governments to take special measures and prescribe regulations in an epidemic to control the spread of the virus. Provisions of these acts which are also enforceable on all provide that all the protocols of Govt of India and State Govt in respect of COVID-19 are to be mandatorily followed. Individual protocols also required necessary permission from Govt. Therefore, POWERGRID and all its contractors are duty bound to follow the instructions of government including closing of all construction activities during lockdown and the guidelines issued after detailed assessment regarding unlock which allows work to start with certain conditions. Accordingly, POWERGRID Corporate Safety Cell has prepared a

detailed guidelines/plan to be followed at all its establishments, Construction sites and O&M during resumption of work in COVID-19 situation (details already shared with ADB in May' 20) and site officials/contractors directed for ensuring strict implementation of the said guidelines. It is may be noted that no symptomatic/ positive COVID case has been reported from any construction sites during reporting period. Some photographs related proper health & hygiene, sanitization, availability of PPEs and adherence to social distancing norms including daily awareness on COVID during Tool Box Talk etc. are placed as **Annexure-1**.

As regard workplace Safety all required measures including COVID specific requirements are in place including due precautions/ awareness programs as well as ensuring use of PPEs. It is noteworthy to mention that no accidents (fatal or non-fatal) including major/minor injuries have been 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. Some of these complaints 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. During reporting period of January-June 2021, only 1 court case is registered which was also dismissed by the court. Details of open cases along with their status as of June 2021 are presented at **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 4.997 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

Dr. S.S. Singh
Chief General Manager (ESMD)

Appendix-1: Stage-II (Final) 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



BY SPEED POST
F.No.4-KLB1153/2018-BANI/968
Dated the 24th September, 2019

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 the State Government's 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 on the above mentioned subject seeking prior approval of the Central Government under Section '2' of the Forest (Conservation) Act, 1980. The in-principle (Stage-I) approval to the project was accorded by the Central Government vide letter of even number dated 9th October, 2018. The State Government vide letter No. C3/22/2018/F&WLD dated 22/06/2019 and PCCF's letter No. FC2-27056/2017 dated 04/09/2019 have reported compliance to the conditions stipulated by the Central Government in the in-principle approval.

After careful consideration of the proposal of the State Government, I am directed to convey Central Government's approval (Stage-II) 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, subject to the following conditions:-

1. The legal status of forest land shall remain unchanged.
2. The boundary of the forest land to be diverted shall be suitably demarcated on ground at the project cost as per the directions of concerned Divisional Forest Officer, keeping in view the movement of wildlife.
3. 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...

Sd/-

4. The wildlife mitigation measures as approved by the Chief Wildlife Warden must be strictly implemented.
5. The layout plan of the proposal shall not be changed without prior approval of Central Government.
6. The total forest area utilized for the project shall not exceed 0.244 ha. The Forest land shall be used only for the purpose for which it is diverted.
7. The forest land proposed to be diverted shall under no circumstances be transferred to any other agencies, department or person without prior approval of Government of India.
8. Any other condition that the Ministry of Environment, Forest and Climate Change may stipulate from time to time in the interest of conservation, protection and development of Forest and Wildlife.
9. Violation of any of these conditions will amount to violation of Forest (Conservation) Act, 1980 and action would be taken as per the MoEF&CC Guideline F.No.11-42/2017-FC dated 29/01/2018.
10. The State Government and user agency shall comply the provisions of the all Acts, Rules, Regulations, Guidelines, NGT order & Hon'ble Court Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.

Yours faithfully,



(M.K.Shambhu)

Deputy Inspector General of Forests (Central)

Copy to:-

1. The Director General of Forests & Special Secretary to Govt. of India, Ministry of Environment, Forests and Climate Change, Indira Paryavaran Bhavan, Agni Wing, Aliganj, Jor Bagh Road, 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.



(M.K.Shambhu)

Deputy Inspector General of Forests (Central)

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



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
Thiruvananthapuram 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.

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.

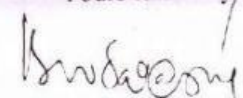
Construction of Jetty along the west bank of Mattancherry Channel in Fort Kochi for Indian Coast Guard

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.

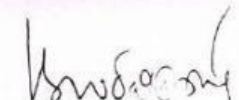
Yours faithfully,


(Dr. Pasupala Ravi)
Scientist C

E-mail: ddwlmeff@gmail.com

Copy to

1. Chief Wildlife Warden, Kerala Forest Department, Vazuthacaud, Thiruvananthapuram 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)

PW2-2123/2017



Office of the Wildlife Warden,
Peechi Wildlife Division,
Peechi P.O., Pin: 680653, E-mail:
ww-peechi.for@kerala.gov.in
Ph: 0487-2699017,

Date: 29-03-2019

Acknowledge Receipt

Received and deposited of Rs.4,00,00,000/- (Rupees Four Crore Only) from POWERGRID CORPORATION OF INDIA LTD. to the Account of Forest Development Agency, Peechi (A/c No.67248658937) on 29-03-2019 for the purpose of Mitigation plan for Diversion of 0.244 Ha (0.098Ha from Peechi Wildlife Sanctuary & 0.146 Ha from Thrissur Forest Division) of forest land for laying of \pm 320KV HVDC Underground Power Cable from Wadakanchery to Thrissur.




Wildlife Warden,
Peechi.

Appendix - 3: Details of Court Cases and Complaints as of June 2021

S N	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. Hearing could not be held on 30.03.19, 27.08.19, 11.10.19, 27.03.20 and 26.03.21 due to non-appearance of petitioner. Next hearing scheduled on 15.09.21
2.	Pugalur-Thiruvallam 400KV D/C	86/6-86/7	Sh. G. Anbalagan	W.P. No. 21235/2019	Diversion of Line	Matter pending for hearing.
3		AP 13/0	Subbaraya Gounder	W.P. No. 32473/2019		Counter affidavit filed by POWERGRID. Matter is pending for hearing.
4		19/0	Sri. Selladurai & Sri. Jaganatham	06.11.2020/08.01.2021	Change of alignment & demanding for higher compensation	POWERGRID submitted reply on 08.12.20. Matter dismissed on 16.02.21.
B. Verbal Complaints						
All written & verbal complaints are resolved. No further complaints received during reporting period						

Plate 1: Noise level monitoring



Enviro Care
 INDIA PRIVATE LIMITED
ISO 9001:2015 Certified Company
 ISO 14001:2015 Certified Company
 OHSAS 18001:2007 Certified Company

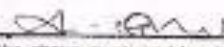
TEST REPORT

Accredited by **NABL** (Chemical & Physical)
 Accredited by DIS Sample ID: 145012018

Report No.:	ECI-NM-202105068	Report Date:	21.05.2021
Customer Name & Address	M/s. Power Grid Corporation of India Limited 400/230 KV Substation, Karunathampatti, Coimbatore-641 658		
Customer Reference:	I/O Dt: 17.05.2021	Sample Reference No.:	ECI-NM-202100000
Sample Description:	Noise	Monitoring Date:	17.05.2021
Monitored By:	ECI	Data Received On:	18.05.2021

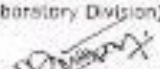
S.No	Locations	Day Time	
		Minimum	Maximum
Source:			
1.	DG Set 180 HP (Running Door Close)	78.9	79.5
2.	DG Set 180 HP (Running Door Open)	80.6	81.3
3.	DG Set 250 KVA (Running Door Close)	73.6	74.7
4.	DG Set 250 KVA (Running Door Open)	69.9	69.5
Unit		dB (A)	
Max. Permissible Limit for Noise (Factories Rules, 1950)		90	
Reference Method		IS 9599	

<--- End of Report --->


Verified By: 

Remarks: In the above mentioned locations does not meet the requirements of Factories Act Rules.

For ENVIRO CARE INDIA PRIVATE LIMITED
(Laboratory Division)



Authorized Signatory



CHENNAI Tel: +91 (0) 41170704
 Phone: 984936127
 E-mail: ecichennai@envirocareindia.com

CHENNAI Tel: +91 (0) 41151001
 Phone: 812004800
 E-mail: ecichennai@envirocareindia.com

COIMBATORE Tel: +91 (0) 426665
 Phone: 985416194
 E-mail: ecicoimbatore@envirocareindia.com

Note:

1. The report is valid only for the specific test.
2. Any correction or modification should be done in the report.
3. Reproduction and use of the report is prohibited without the prior written permission of the laboratory.
4. The report is valid only for the specific test.
5. Any dispute regarding the report should be referred to the Management.




Plate 2: Health Check-up/ Safety Awareness & Training




Safety awareness & PIP Talk at Site of Pugalur-Thiruvalem line



Traffic Management during stringing activity over road & ensuring availability of First Aid Kit

Compliance of Safety Checklists



पावर ग्रीड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(Power Grid Corporation of India Limited)
(A Government of India Enterprise)

TOWER ERECTION Annexure-H

DATE OF INSPECTION: 19/01/2021

NAME OF THE LINE: 400kV Pugadur Turwalum TL

LOCATION NO: 163/0

CLASSIFICATION OF SOIL & TYPE OF TOWER: DD+0 Total MP = 24 Nos


NAME OF THE AGENCY: M/S APS Pvt Ltd Fit out = 06 Nos

SITE ENGINEER / SUPERVISOR OF THE AGENCY: M. Suresh Das Ground Fit out = 04 Nos

SAFETY OFFICER OF THE AGENCY: M. Rajesh

S.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 procedures.	Yes	
3	Pep talk on safety issues (importance of safety, inspection of T&P and PPEs, proper use of PPEs, safe tower erection practices, safe shut down 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	Tape available Flags should be used
5	Appropriate safety messages / warnings are displayed at site to caution the workers.	Yes	for warning
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: KARAN
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: KARAN
9	Other PPEs provided to the workers: SAFETY SHOES / COTTON HAND GLOVES for material handling / ELECTRICAL SAFETY GLOVES for S/D works	Yes	Some 10 Nos of labour working without shoes to be ensured all different spots globe to be maintained

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 Safety Officer
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पावर ग्रीड कॉर्पोरेशन ऑफ इंडिया लिमिटेड
(Power Grid Corporation of India Limited)
(A Government of India Enterprise)

TOWER ERECTION Annexure-H

DATE OF INSPECTION: 18/01/2021

NAME OF THE LINE: 400kV Pugadur Turwalum TL

LOCATION NO: 163/0

CLASSIFICATION OF SOIL & TYPE OF TOWER: DD+2.5 Total MP = 29 Nos

NAME OF THE AGENCY: M/S APS LTD. Fit out = 12 Nos

SITE ENGINEER / SUPERVISOR OF THE AGENCY: M. Suresh Das Ground Fit out = 6 Nos

SAFETY OFFICER OF THE AGENCY: M. Rajesh

S.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 procedures.	Yes	
3	Pep talk on safety issues (importance of safety, inspection of T&P and PPEs, proper use of PPEs, safe tower erection practices, safe shut down 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	Flags available additional one and tape to be used in Road crossing
5	Appropriate safety messages / 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: KARAN 3
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: KARAN
9	Other PPEs provided to the workers: SAFETY SHOES / COTTON HAND GLOVES for material handling / ELECTRICAL SAFETY GLOVES for S/D works	Yes	Some 06 Nos of labour working without shoes to be ensured all

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Plate - 3: E & S Training Programme conducted online during reporting period

Training Program on “Overview of Forest & Wildlife Clearance”

Date	11:00-12:00	12:00 – 13:00	13:00-14:00	LUNCH BREAK	15.00:16:00
27.01.21	Inauguration & Key Note Address by Director (Projects)	Forest Clearance under Forest (Conservation) Act 1980 <i>(Dr. S.S. Singh, CGM (ESMD), CC)</i>	Wildlife Clearance under Wildlife (Protection) Act, 1972 <i>(Dr. R K Srivastava, Consultant & Ex. CGM (I/c) (ESMD), CC)</i>		

TRAINING PROGRAM ON “OVERVIEW OF FOREST & WILDLIFE CLEARANCE, ROW ISSUES & COMPENSATION AND LAND ACQUISITION FOR PUBLIC PURPOSE” ON 11 & 12 MARCH 2021

Date	10:00-10:15	10:15-11:30	11:30-11:45	11:45-13:00	13:00 - 13:30	13:30-14:45
11.03.21	Inauguration & Key Note Address <i>(Dr. R K Srivastava, Ex. CGM (I/c), ESMD)</i>	Forest Clearance under Forest (Conservation) Act 1980 <i>(Dr. S.S. Singh, CGM (ESMD)/ Sh. Saurabh Gupta, CM (ESMD), CC)</i>	Break	Submission of Forest Proposal <i>(Sh. Saurabh Gupta, Chief Mgr (ESMD), CC)</i>	Lunch	Wildlife Clearance under Wildlife (Protection) Act, 1972 <i>(Suvendu Kumar Kar, Chief Mgr (ESMD), CC)</i>
12.03.21	10:00-11:15		11:15-11:30	11:30-12:45	12:45-13:00	
	RoW Issues & Compensation <i>(Ritesh Ranjan, Chief Mgr (ESMD), CC)</i>		Break	The Right to Fair compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 & Direct Purchase <i>(Vivek Kumar, Mgr (ESMD), CC)</i>	Feedback	

Plate - 4: Photos of Sump pit and warning signage

Transformer Oil Sump Pit at Vadamancheri Substation



Warning Signage displayed at construction site of Pugalur-North Thrissure U/G cable work



Annexure-1: Photographs related Covid- 19 Specific Measures Implemented at various Sites



COVID testing of Workers at Site



Sanitization



Thermal Scanning



COVID-19 Awareness Signage



Safe disposal site for used mask and gloves

Details of COVID-19 cases during reporting period

Sl. No.	Name of Site/ Location	Total no. of Workers engaged	No. of Worker identified with COVID symptoms	No. of test carried out	No. of confirmed cases	No. of recovered cases	No. of Active cases	No. of Deceased
1	400 KV D/C QUAD Pugalur - Thiruvallur	200	Nil	173	Nil	NA	NA	NA

Other Proactive COVID-19 measures undertaken by POWERGRID

- Provided Medical Ventilators to Govt. Hospitals worth of Rs.84 lakhs in Salem (14 no.), Vellore (5 no.) & Ranipet (1 no.) at the time when COVID-19 cases were highest in Tamil Nadu.
- DG Set worth Rs.4.54 lakhs have been provided to newly constructed Corona Ward at Govt. Hospital, Kallakurichi, Tamil Nadu to ensure uninterrupted functioning of all medical instruments during critical hours.
- Tied up with Local PHCs for arrangement of free Covid Testing for contractual labours including domestic helps coming to the residential colonies.
- A COVID Control Room is set up wherein the health of Contractual labours, Employees and Family Members are being monitored during the Covid-19 times on a regular basis.
- A two-bedded temporary COVID Care Centre is set up at Regional Office with basic medical facilities to deal with emergency requirements of contract labour's, employees and family members.
- Contract labours were paid ex-gratia amount for 25,265 mandays in addition to food relief during Lockdown period.
- Distributed 2 lakh kg Food Ration and 20,000 cooked meal packets to migrant labours, contractual labours, daily wagers and weaker sections of society



Medical Ventilators provided to Govt Hospital, Salem



DG Set for Govt. Hospital, Kallakurichi, Tamil Nadu



Free COVID testing for employees & family members



Distribution of Relief Materials to Workers