

## ADDENDUM TO IEER

(REF- ESMD/IEER/HVDC PUGALUR-NORTH TRISSUR/R1 OF NOV.'18) UNDER LOANS -3365 & 3375-IND

The ADB Mission<sup>1</sup> visited India from 8 to 13 May 2019 to review (i) Loans 3365 and 3375-IND: Green Energy Corridor and Grid Strengthening Project and Loan 2787-IND: National Grid Improvement Project, and (ii) Loans 3521 and 8325-IND: Solar Transmission Sector Project and sites to have on the spot assessment of actual conditions particularly the Underground Cable (UG) portion of  $\pm 320$ kV VSC Pugalur - Thrissur HVDC System passing through 730m of forest area & 490m of Peechi Vazhani Wildlife Sanctuary (WLS) proposed along NH-544 (**Annexure-I**).

The mission members also interacted with the concerned contractors viz. **M/s Sumitomo Electric Industries Ltd., Japan** carrying out UG Cable works & **M/s Siemens Ltd., Germany** engaged for Thrissure HDVC Terminal Station and have a detailed discussion on E & S issues/measures. Based on detailed discussion/deliberation, it was agreed that clarifications/measures on various issues discussed during the meeting shall be made part of already submitted IEER as an addendum for ADB review and to facilitate final go ahead to start the work in Wildlife area. Accordingly, the clarification/additional information on the issues discussed are presented as follows:

### 1. Distribution of *Aglaia malabarica* an endemic species in project area:

**Aglaia malabarica** Sasidh is a less explored plant sp. endemic to the northern region of Western Ghats in Kerala and also reported from Wayanad, Kollam & Thrissur districts of Kerala. As per information gather from local forest officials, *Aglaia malabarica* is not reported in project area which can be further corroborated from the different site inspection reports submitted by concerned Divisional Forest Officer (DFO), Conservator of Forest (CF) & Wildlife Warden made part of forest/wildlife proposal (**Annexure - II**).

Accordingly this endemic species shall not be impacted anyway during laying of UG cables in forest/wildlife area.

### 2. Records of Elephant accident on NH-544 or in Project area:

The Wildlife Warden, Peechi vide letter dated 31 May 2019 (**Annexure - III**) has duly certified that no elephant accident has been reported from NH-544 area passing through Peechi Wildlife sanctuary.

### 3. Rail fencing design and implementation:

The design and implementation of proposed rail fence is sole responsibility of wildlife authority and POWERGRID has very limited role in such matter except providing cost of Rs, 4.0 Crore which stand deposited to State Forest & Wildlife department. (**Annexure -IV**). Further, Wildlife Warden, Peechi vide letter dated 31 May 2019 (**Annexure -II**) has also confirmed that the design and estimation is under preparation and progress in this regard shall be intimated in due course of time. Besides, POWERGRID shall provide update/progress on rail fencing in the semi-annual monitoring report.

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<sup>1</sup> The Mission comprised Takayuki Sugimoto, Mission Leader/Energy Specialist, Energy Division, South Asia Department (SAEN); Zhaojing Mu, Environment Specialist, SAEN; Yoojung Jang, Social Development Specialist, SAEN; Vallabha Karbar, Team Leader (Energy), INRM; Girish Mahajan, Senior Environment Officer, INRM; Avesh Prakash Patil, Investment Specialist, PSOD; Meenakshi Aggarwal, Associate Investment Officer, PSOD; Melissa M. Manguiat, Senior Safeguards Officer, PSOD; and Rhea B. Reburiano-Javier, Social Development Officer, PSOD.

**4. Traffic Management during construction and permission from NHAI:**

POWERGRID in consultation with National Highway Authority of India (NHAI) has finalized a traffic management plan (**Annexure - V**) which will be implemented during UG Cable construction works in forest & wildlife area.

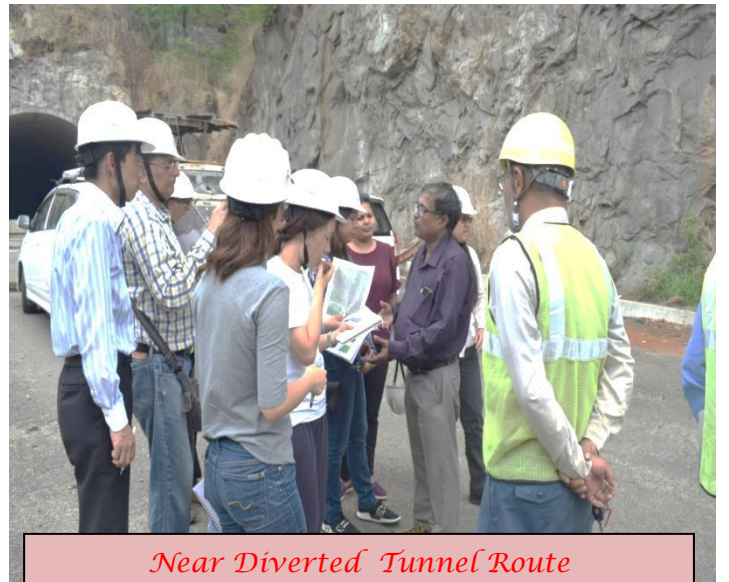
**5. Standard Operating Procedure (SOP) for the handling, storage and disposal of the cooling water package membrane prior to start of project's operation:**

The original manufacturer M/s FST Industrie GmbH, Germany has duly certified that de-ionised water used as coolant in valve cooling system is not hazardous in nature and hence no additional precautions or its scientific disposal is required (**Annexure - VI**)

**6. Publicize information about grievance receiving focal at major project sites for easier access of the affected people to the grievance redress mechanism:**

To facilitate easier access, display board with details of grievance redressal committee along with contact nos. have been placed in prominent work sites (**Annexure-VII**). Moreover, recording of grievances have been further strengthened by including minor verbal complaints and monitoring the same for early resolution.

## Annexure - I : Review Mission Site Visit



## Annexure - II : Site Inspection Reports by Wildlife Warden, DFO and CF

### SITE INSPECTION REPORT OF WILDLIFE WARDEN PEECHI

I have inspected the proposed area on 07/08/2017. The proposed land is lying along with the existing NH 544. The proposed land has already been diverted for NH 544

Power Grid Corporation of India Ltd (A Government of India Enterprises) has applied for permission to lay their proposed  $\pm$  320 KV under Ground Power Cable from Vadakkamcheri to Thrissur to draw bulk Power by Kerala. Total length of the Power Cable is 32 Km of which only 490m. length with a width of 2 metre is passing through Peechi-Vazhani Wildlife Sanctuary area.

About 0.098 Ha of Forest land is required to be utilized for the proposed project which is already diverted to NH 544 by the Forest Department.

The above proposed land is lying along the existing NH 544, devoid of any tree growth and Vegetation. Also does not involve any endangered species of flora and fauna. The adjoining Forest type is RF of Moist Deciduous coming under the category of 0.5 to 0.7 density. The proposed area is a stretch of land running parallel to the existing NH, devoid of any tree growth. The Forest land on either side of the existing NH consists of species like Terminalia paniculata, Macaranga peltata, Haldenia cordifolia, Xylia xylocarpa, Bamboos Spp. etc and is having a density of 0.5 to 0.7. The proposed area is a linear stretch and is not passing through National Park, Elephant Corridor or Tiger Reserve. However the area falls within Peechi-Vazhani Wildlife Sanctuary

The requirement of Forest land as proposed by the user agency, is unavoidable and is the barest minimum for the project. In view of above, the proposal is recommended for acceptance as the underground Power Cable is passing through the Forest land which is already been diverted and is the barest minimum extent

  
2/8/2017  
Wildlife warden  
Peechi

**SITE INSPECTION REPORT OF CHIEF CONSERVATOR OF FORESTS  
(WILDLIFE) & FIELD DIRECTOR, PALAKKAD**

I have inspected the proposed area on 31/08/2017. The proposed area falls within the land already diverted for NH 544.

Power Grid Corporation of India Ltd (a Government of India Enterprise) has submitted application for permission to lay  $\pm$  320 KV under Ground Power Cable from Vadakkamcheri to Thrissur to draw bulk Power by Kerala. The total length of the Power Cable is 32 Km of which only 490 metre length with a width of 2 metre is passing through Peechi-Vazhani Wildlife Sanctuary area.

About 0.098 Ha of Forest land is required to be utilized for the proposed project and this is within the land already diverted to NH 544 by the Forest Department.

The proposed land lying along the existing NH 544, is devoid of any tree growth and vegetation. This area does not support any endangered species of flora and fauna. The adjoining forest is Reserve Forests of Moist Deciduous type coming under the category of 0.5 to 0.7 density with species like *Terminalia paniculata*, *Macaranga peltata*, *Halderia cordifolia*, *Xylia xylocarpa*, Bamboos Spp. etc. The proposed area is a linear stretch and is not passing through National Park or Tiger Reserve. However the area falls within Peechi-Vazhani Wildlife Sanctuary

The requirement of Forest land as proposed by the user agency is unavoidable and is the barest minimum for the project. In view of above, the proposal is recommended for acceptance.



  
Chief Conservator of Forests (Wildlife) &  
Field Director, Palakkad

## The Site Inspection report of Divisional Forest Officer , Thrissur

I have inspected the proposed area on 12.08.2017. The Assistant General Manager , Power Grid Corporation , East Fort PO, Thrissur, has applied for seeking permission under Section 2 of forest Conservation Act 1980 for laying 730 metre (0.146 Ha) linear  $\pm$ 320 KV Under Ground Power Cable Transmission lane from Vadakkenchery to Thrissur in Paravattani Hill reserve forest in Pattikkad range under this Thrissur Forest Division for the project of HDVC link from Pugalur to Thrissur. **No tree felling is required to execute the work. Also it does not involve any endangered species of fauna and flora.** Since the utility area is a part of the National Highway -544 which passes through the Forest Land, no alternative is available apart from the NH corridor. The project is in linear stretch of reserve Forest

The requirement of Forest Land as proposed by user agency is unavoidable and is the barest minimum for the scheme. In view of the above, the proposal is recommended for acceptance as underground power cable transmission lane passing through Forest Land which is using barest minimum extent.

  
DIVISIONAL FOREST OFFICER THRISSUR

### **Site Inspection Report**

Sub:- Laying of  $\pm 320$  KV HVDC underground cable from Wadakkenchery to Thrissur in the utility corridor of NH 544 in favour of Power Grid Corporation of India Ltd.

Inspected the proposed site along with Sri. Joseph Thomas, Technical Assistant to Chief Conservator of Forests, Central Circle, Range Forest Officer, Pattikkad & Staff of the Range on 07.10.2017. The proposed site is by the side of NH 544.

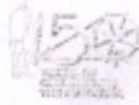
Power Grid Corporation of India is entrusted with the task of establishing 2000 MW  $\pm 320$ KV HVDC link from Pugalur to Thrissur to facilitate drawal of bulk power by Kerala. This  $\pm 320$  KV link is a combination of overhead line from Pugalur to Wadakkenchery and underground cable from Wadakkenchery to Thrissur. Out of the 0.244 Ha forest land to be diverted for laying the  $\pm 320$  KV underground power cable from Wadakkenchery to Thrissur. 0.146 Ha is within the Paravattany Hill Reserve Forest of Thrissur Division and the length of under ground cable which is to be laid through the above forest area is 730 Meters.

The proposed work would not pose any threat to the animal / bird population of the locality and it does not involve any felling of trees in the area. As such, I recommend the project for inception.

  
**Chief Conservator of Forests,**  
**Central Circle, Thrissur**

**Annexure -III : Letter from Wildlife Warden regarding Elephant Accidents  
and Implementation of Rail Fence**

PW2-2123/2017



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

Date:31/05/2019

From

A.O. Sunny  
Wildlife Warden

To

The General Manager \*  
Power Grid Corporation of India Ltd.  
Thrissur

Sir,

Sub:- Laying of +/- 320 HVDC underground cable from Wadakkancherry to Thrissur-  
crossing of Peechi wildlife sanctuary area at Kuthiran-furnishing details as required  
by ADB reg

Ref:- That office letter No. RPT/HVDC/TCR/F/230/2018 dated 30-05-2018.

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As desired in the letter under reference the details required by ADB are furnished below for  
necessary further action.

1. No elephant accidents has been reported from NH 544 area passing through Peechi  
Wildlife Sanctuary of Peechi Wildlife Division.
2. Design and estimation of the project is under preparation by the competent authority.  
The progress in this matter shall be intimated in due course.

Yours faithfully,

WILDLIFE WARDEN,  
Peechi



**Annexure - IV : Deposition of Wildlife Mitigation Cost by POWERGRID**

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.



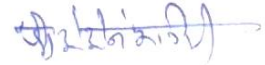
Wildlife Warden,  
Peechi.

## **Annexure - V : Traffic Management Plan**

### **Traffic Management Plan for the cable duct works in the Peechi Vazhani WLS** **( Kuthiran Hill)**

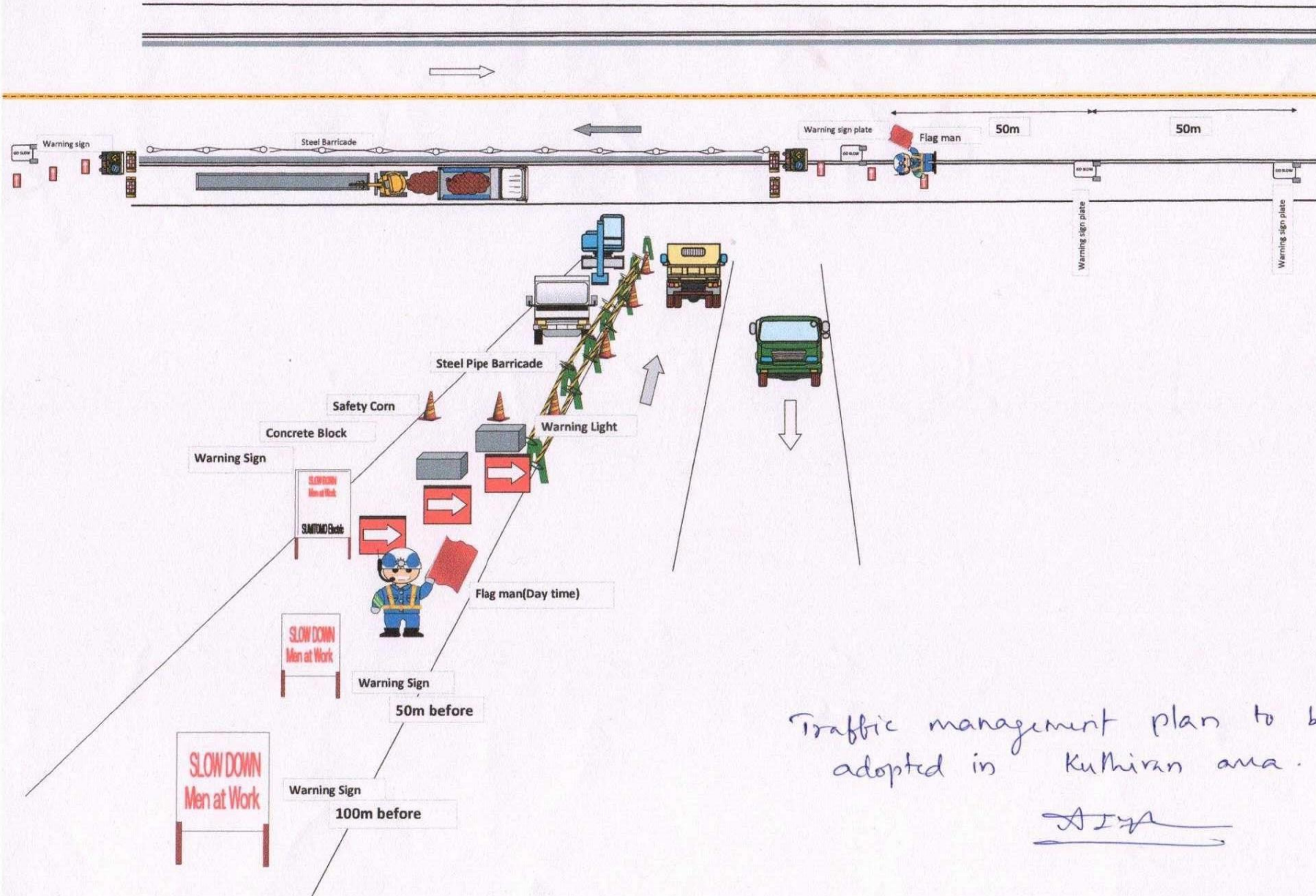
The traffic management plan, finalised in consultation with NHAI, for the cable duct works in the Peechi Vazhani WLS is as detailed below:

1. Safety barricade using steel pipes and stands with reflective stickers will be set along the existing road. Machineries and equipment like excavator, RMC truck etc. used for construction works will be operated inside the barricaded area.
2. Warning sign boards will be placed before and after the construction area for easy identification of construction activities by vehicle drivers. Further concrete blocks with reflective stickers will be set at a comfortable distance before the barricading area to guide the drivers.
3. A flag man with Red Flag will be present at the site during day time, guiding the public, when the construction activities are going on. After the work activities warning flash lights will be installed at the corners of barricaded area.
4. Any vehicle going into the barricaded area and out from there shall be led by flag man without disturbing carriage way traffic.



**ईश्वरन नंबूतिरि पी.ई. / EASWARAN NAMBOOTHIRI P.E.**  
**महा प्रबंधक / GENERAL MANAGER**  
**त्रिश्शूर, एच वी डी सी / THRISSUR, HVDC**  
**पावरग्रिड / POWERGRID**

Safety Measures for Cable duct/Manhole works



Traffic management plan to be adopted in Kuthiram area.

*[Signature]*

**Annexure - VI : Manufacturer Certification regarding disposal of water use in valve cooling system**

TECHNOLOGY IS OUR PASSION

**FST**  
INDUSTRIE

FST Industrie GmbH, Gartenfelder Straße 28, D - 13599 Berlin, Germany

Siemens AG  
Gas and Power  
EPC Projects  
Mrs. Andrea Warkus  
Freyeslebenstraße 1  
91058 Erlangen  
Germany

Name	Volker Gniosdorz
Department	Project Management
Phone	+49 (0)30 / 310 103 – 202
Fax	+49 (0)30 / 310 103 – 129
E-Mail	<a href="mailto:volker.gniosdorz@fst-industrie.de">volker.gniosdorz@fst-industrie.de</a>
Your reference	PK2000
Our reference	81710179 – PK2000
Date	19.06.2019

**P-015097 – HVDC Pugalur-Kerala PK2000  
Cooling liquid in the Converter Water Cooling System (CWC)**

Dear Mrs. Warkus,

The Converter Water Cooling System (CWC) delivered for the project PK2000, your order number 3313385014, operates with de-ionised water as coolant. The de-ionised water is classified in Water hazard class 0, that means that it is not hazardous to water. Therefore additionally precautions and devices for collecting of leaking media are not required for the operating of the converter water cooling system.

Sincerely yours

FST Industrie GmbH

*i. A. V. Gniosdorz*  
i. A. Volker Gniosdorz

*Comments received from Original manufacturer of valve cooling system certifying that deionised water is not hazardous.*

*[Signature]*  
DGM, Thissur HVDC.

Head Office: Berlin  
Director:  
Frank Hermann

Registration Court:  
AG Berlin-Charlottenburg  
Registered No.: HRB 112437B  
VAT-No.: DE258996593

Banking Details:  
Hypovereinsbank Berlin  
SWIFT (BIC): HYVEDEMM488  
IBAN:  
DE90100208900610132901

Mailing Address:  
FST Industrie GmbH  
Gartenfelder Straße 28  
D - 13599 Berlin  
Germany

Street Address:  
FST Industrie GmbH  
Building HW2  
Gartenfelder Straße 28  
D - 13599 Berlin  
Germany

## Annexure - VII : Display of Grievance Redressal Details at Work sites



*At Vadakancheri (Manhole no. 36-37)*



*At Pattikad (Manhole no. 12-13)*



*At Kuthiran (Manhole no. 24-25)*