DETAILED PROJECT REPORT AND JUSTIFICATION OF THE PROJECT IN FOREST AREA
(400 KV D/C (QUAD) JIGMELLING-ALIPURDUAR TRANSMISSION LINE (ASSAM PORTION)

PROJECT BACKGROUND

In the meeting of the Standing Committee on Power System Planning in Eastern Region held on 2nd May 2014 at NRPC, New Delhi, transmission system for power evacuation from following 4 HEP's in Bhutan was discussed.

- Punatsangchhu-I HEP (1200MW)
- Punatsangchhu-II HEP (990MW)
- Mangdechhu HEP (720MW)
- Wangchhu HEP (570MW)

The said transmission systems were evolved as part of the National Transmission Grid Master Plan (NTGMP) for Bhutan corresponding to 2020 and 2030 time frames.

Following additional system strengthening in Indian Grid for the above 4 HEP's, was finalised in the meeting:

i. **Jigmeling-Alipurduar 400kV D/c(Quad) line (Indian Portion)**
ii. Alipurduar-Siliguri 400kV D/c (2nd) (Quad) line
iii. Kishanganj-Darbhanga 400kV D/c (Quad) line

The matter was further discussed and approved in the 27th TCC & ERPC meeting held on 30th & 31st May 2014 at Gangtok, Sikkim.

Subsequently, in the 33rd Empowered Committee meeting held on 30th Sept 2014 in CEA, New Delhi, following was decided with respect to subject scheme:

- Transmission elements mentioned above at (i) may be implemented by POWERGRID, whereas (ii) & (iii) may be implemented through TBCB route. Further, it was also decided that only the Indian portion of Jigmeling - Alipurduar 400kV D/c (Quad) line would be implemented by POWERGRID.

- POWERGRID is to provide following line bays and reactors associated with transmission lines to be implemented through TBCB route {mentioned at (ii) & (iii) above} :
  - 2 nos. 400kV line bays at Alipurduar substation for termination of Alipurduar –Siliguri 400kV D/c (Quad) line
  - 2 nos. 400kV line bays at Siliguri substation for termination of Alipurduar – Siliguri 400kV D/c (Quad) line
  - 2 nos. 400kV GIS line bays at Kishanganj substation for termination of Kishanganj – Dharbhanga 400kV D/c (Quad) line
  - 80MVAr switchable line reactor (with 400ohm NGR) on either circuit of Kishanganj – Dharbhanga 400kV D/c (Quad) line at Kishanganj end

This DPR is for Indian Portion of Jigmeling - Alipurduar 400kV D/c (Quad) line alongwith associated line bays at Alipurduar.

JUSTIFICATION

Punatsangchhu-I (1200MW), Punatsangchhu II(990MW), Mangdechhu (720MW) and Wangchhu (570MW) HEPs in Bhutan are at various stages of development. Generations from these projects would be transferred to India after meeting small local demand in Bhutan. The associated transmission systems were evolved as part of the National Transmission Grid Master Plan (NTGMP) for Bhutan corresponding to 2020 and 2030 time frames. The project specific transmission system is as given below :

- **Mangdechhu HEP (720MW) (expected by 2017)**

Bhutan Portion:

- 400kV step-up voltage
- 400kV Mangdechhu- Goling 2x (S/C on D/C) tower line with twin mooseconductor (stringing of 2P circuit in each line under Nikachhu HEP)
- 400kV Goling – Jigmeling 2x (S/C on D/C) twin moose tower lines
- 400kV Jigmeling - Alipurduar D/C Quad moose line (Bhutan portion).
- 400/220kV, 4X167MVA Jigmeling pooling station (GIS).
- 1X80 MVAr, 420kV Bus Reactor at Mangdechhu
- 1X80 MVAr, 420kV Bus Reactor at Jigmeling
- 132kV Mangdechhu-Yurmu D/C line
- 400/132kV, 4X67 MVA ICT (1st) at Mangdechhu

Indian Portion:

- **400kV Jigmeling - Alipurduar D/C Quad moose line (Indian portion beginning from Jigmeling near Bhutan border)**

The objective of the project is to facilitate power transfer from *Mangdhechhu HEP generation project in Bhutan,*to various beneficiaries in ER.

LEGAL FRAMEWORK

The Prior approval of the Government of India under Section 68 of the Electricity (Supply) Act, 2003 for the subject project has been obtained vide MoP's letter dated 27.11.2014. It is proposed to execute the above entire transmission scheme as per provisions contained in the Indian Electricity Act, 2003 and the rules made there-under and the Electricity (Supply) Act, 1910 and 1948, in so far as these are applicable.

ENVIRONMENTAL IMPACT ASSESSMENT

Environmental Risk

Transmission line projects are environmentally friendly and do not involve any disposal of solid effluents and hazardous substance in land, air and water. Moreover, in forest areas trees are felled below each conductor to facilitate stringing. On completion of construction only one such strip is maintained for O&M purpose. Therefore the actual loss of forest is restricted to some selected area only. However, as per the requirement of Forest (Conservation) Act, 1980 approval of Ministry of Environment & Forests, Govt of India for diversion of forest land shall be taken before construction of line and compensatory afforestation shall be done on double the area of degraded forest land to compensate the loss of vegetation, due to diversion of forest land if there is any after detailed survey.

As per the assessment based on Detail survey in forest area/joint inspection by Forest Department and Topo-sheet reference, an area of ***208.807*** Hectare is unavoidably passing through Reserved Forest area of two (2) forest divisions in the state of Assam. The extent of the forest area is completely unavoidable owing to the physiography of the area and presence of reserved Forest area across the route of the proposed transmission line. However, the forest area involved is minimum extent required for the execution of the project in the state of Assam.

Social Issues/R&R measures

As per the prevailing law, land below transmission line is not required to be acquired and only land for substation is required to be acquired for each substation depending upon the type and voltage level. However, POWERGRID will pay the compensation of the damages as per prevailing guidelines and as per assessment of the State Govt.

In the instant project, construction of any new substation is not envisaged. Hence no fresh land acquisition and R&R issues are involved.