



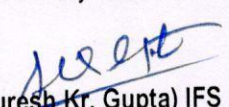
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190001 Tel/Fax No: 0194-2501069
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GOVERNMENT OF JAMMU & KASHMIR
OFFICE OF THE PR. CHIEF CONSERVATOR OF FORESTS (WILDLIFE)/
CHIEF WILDLIFE WARDEN

Subject: Proposal for Diversion of 4.37 Ha of forest land for construction of 132 KV/ D/C Ramban Sangaldan transmission line for providing power supply to Konkan Railway, District Ramban, UT of Jammu and Kashmir (Online proposal No. FP/JK/TRANS/145320/2021)

The Mitigation plan for Wildlife proposed with respect to transmission line mentioned in the subject, as prepared by the User Agency in consultation with Divisional Forest Officer, Ramban Forest Division, Divisional Forest Officer, Forest Division Botote, and Wildlife Warden, Chenab Division, Kishtwar has been examined and found to have the necessary components i.e. Vertical distance of 4 meters approximately between two conductors to avoid electrocution of large winged birds/ Bird diverter/coloured/ contrast marker devices for making it visible to birds from long distances/ Bird guard on towers to prevent sitting of birds on insulator strings and proper barricades and fence to prevent accidental falling of mammals in the vicinity of construction sites. The said mitigation plan for Wildlife is as such approved subject to following conditions:-

1. Divisional Forest Officer, Ramban Forest Division, shall ensure that all provisions as specified in the mitigation plan are constructed by the user Agency.
2. No harm to any Wildlife species shall be done, if found accidentally in the project area.
3. The User Agency shall keep Vertical distance of 4 meters approximately between two conductors to avoid electrocution of large winged birds/ Bird diverter/coloured/ contrast marker devices for making it visible to birds from long distances/ Bird guard on towers to prevent sitting of birds on insulator strings and proper barricades and fence to prevent accidental falling of mammals in the vicinity of construction sites at critical Wildlife passage areas to be specified by the concerned Wildlife Warden.
4. Divisional Forest Officer, Ramban Forest Division, shall ensure that all the provisions made in the mitigation plan are strictly executed by the User Agency.
5. The User Agency shall be responsible for obtaining requisite clearances under any other law in vogue.


(Suresh Kr. Gupta) IFS
Pr.Chief Conservator of Forests (Wildlife)/
Chief Wildlife Warden, J&K

No. WLP/Tech/2022-23/ 595-80

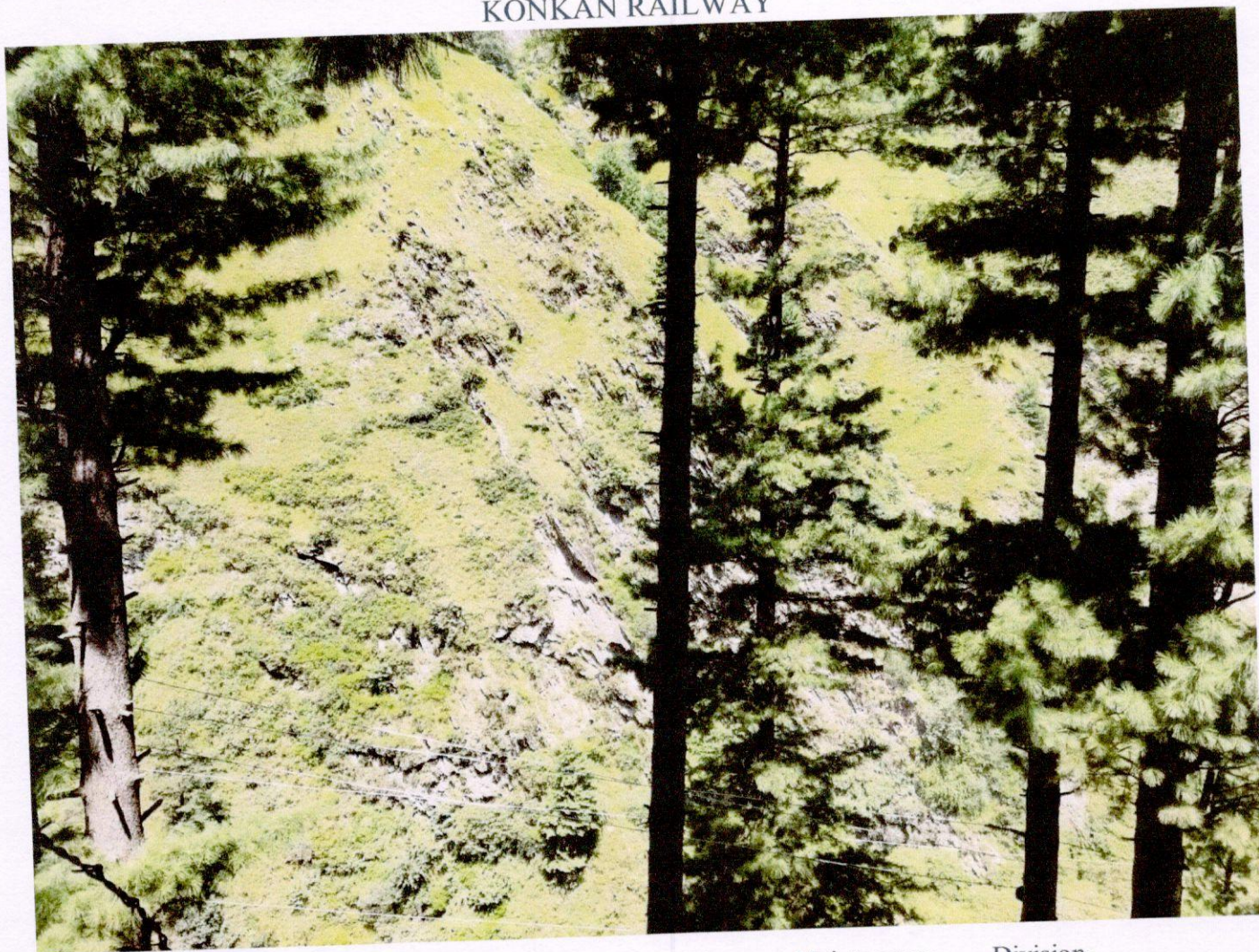
Dated. 30.11.2022

1. Copy for information and necessary action to the:-
 2. Chief Conservator of Forest (FCA), Nodal Officer in the o/o the Pr. Chief Conservator of Forests & HoFF. Regional Wildlife Warden, Jammu. This is in reference to his No: RWLWJ/2022/4706-07 dated: 21-11-2022.
 3. Chief Engineer, Power Development Department, System & Operation Wing, Jammu.
 4. Divisional Forest Officer, Ramban Forest Division. This is in reference to his No. RFD/FCA/22-23/6920 dated 16.11.2022.
 5. Divisional Forest Officer, Botote Forest Division.
 6. Wildlife Warden, Chenab Division, Kishtwar. This is in reference to his No. WLWKtr/2022-23/1965 dated 17.11.2022.
- Executive Engineer, TLMD-II, Transmission line, Udhampur.

“WILDLIFE MITIGATION PLAN”

FOR

CONSTRUCTION OF 132 KV D/C RAMBAN SANGALDAN
TRANSMISSION LINE FOR PROVIDING POWER SUPPLY TO
KONKAN RAILWAY



IMPLEMENTING AGENCY

Transmission Line Maintenance Division-
III (TMLD) Udhampur JAMMU AND KASHMIR
STATE POWER DEVELOPMENT CORPORATION
LIMITED (JKSPDC)

Executive Engineer,
TMLD-III, Udhampur
Transmission Line Section, Div-III,
Udhampur

D.F.O. Batote
Forest Divn. Batote

Divisional Forest Officer
Ramban Forest Division
Ramban

Wildlife Warden
Kishtwar

Government of Jammu & Kashmir

POWER DEVELOPMENT DEPARTMENT SYSTEM & OPERATION WING JAMMU

REVISED PROJECT REPORT FOR CONSTRUCTION OF 132 KV D/C TRANSMISSION LINE FROM RAMBAN TO SANGALDAN FOR PROVIDING POWER SUPPLY TO UPCOMING GRID SUB-STATION OF KRCL AT SANGALDAN

Application for obtaining Techno Economic Clearance

- | | |
|---|---|
| 1. Name of project. | Revised Project report for construction of 132 KV D/C Transmission line from Ramban to sangaldan for providing power supply proposed Grid station of KRCL at Sangaldan. |
| 2. Authority to accord Techno Economical Clearances | Techno. Economic Committee. |
| 3. Status of | |
| a. PTCC Clearance | NA |
| b. Forest Clearance | NA |
| c. Clearance of Pollution Control Board and other clearance if, required. | Not required |
| 4. Particulars of the project. | |
| a) Scope of Project. | construction of 17.58 KM, 132 KV D/C Transmission line from Ramban to sangaldan for providing power supply proposed Grid station of KRCL at Sangaldan. |
| b) Estimated Cost. | Rs. 2418.56 lacs. |

c) If the project is revised, given the following information.

i) Scope of project anticipated originally

construction of 132 KV D/C Transmission line from Ramban to sangaldan for providing power supply proposed Grid station of KRCL at Sangaldan

ii) Estimated cost envisaged originally

Rs. 1187.38 lacs

iii) PDD Who have originated the project report.

System & Operation wing Jammu.

iv) Reference of letter regarding

Not Applicable yet

v) Status of work

Yet to start

vi) State if the revision in estimated costs has been done in respect of un-executed items of material equipment/work only.

YES

d) If the scheme proposed in 11th Five Year plan

N.A

e) Year-wise phasing of Exp.

Subject to availability of funds

f) Necessity of the Project/Justification for revision.

The revision of project is based on the Latest survey conducted for laying of tr. Line from Ramban to sangaldan line.

g) System study if done.

Yes

5. Salient features of the project

Enclosed

6. Technical particulars.

Enclosed

Documents/Drawing attached (give list documents drawing attached) such as

7. Geological report profile of the line / Tower and its foundation drawing single line diagram/layout plant cross section details of Grid Station

Enclosed

8. Any other additional information/documents necessary for assessing project report.

9. Date of Start.

Asstt. Ex. Engineer

Executive Engineer,
Trans. Line Maintt. Div. III
Jammu

Superintending Engineer,
System & Operations circle-I
Jammu

Chief Engineer,
System & Operation Wing
Jammu.

Executive Engineer,
TLMD-II, Jammu
Transmission Line Maintt. Div-III,
Jammu

D.F.O. Balote
Forest Divn. Balote

Divisional Forest Officer
Ramban Forest Division
Ramban

INTRODUCTION AND NECESSITY FOR REVISION OF THE PROJECT :-

M/S Konkan Railway Corporation Ltd. Started execution of Udhampur-Srinagar-Baramulla-Rail Link Project on behalf of Northern Railway and had approached the Jammu and Kashmir Power Development Department in the year 2006 for meeting out their power requirement which includes the providing of 132 KV D/C power supply for their upcoming railway traction sub-station at Sangaldan. A meeting was convened in the office chamber C.E. EM&RE Wing Jammu on 27-10-2006 which was attended by the Engineers from KRCL, Chief Engineer S&O Wing Jammu, Superintending Engineer S&O Cr-I Jammu, Executive Engineer TLMD-III Udhampur alongwith other concerned PDD authorities. In the meeting proposals were discussed to meet out the power requirements of KRCL. On the basis of minutes issued by the Chief Engineer Electrical (Projects) vide his number KR/CO/EL/10/10/5 DATED 1-11-2006, it was requested by KRCL to provide power as per their requirement from Udhampur end and proposal contained therein the augmentation of 120 MVA, 220/132 KV Transformer Bank to 150 MVA, Construction of 2 no 132 KV Feeding bays at G/S Udhampur for evacuation of power upto Barala, Construction of 132 KV D/C Udhampur-Barala Tr. Line, Construction of 2x20 MVA Grid Station at Barala.

Later on this proposal got reviewed by the KRCL and had requested to provide them power for their proposed Grid station at Sangaldan from Proposed Grid station at Ramban to be constructed by the JKPDD under PMRP by way of constructing two no. 132 KV feeding bays at upcoming Grid station Ramban and evacuation of power through 132 KV D/C Ramban-sangaldan tr. Line upto their proposed Grid substation at Sangaldan.

Executive Engineer,
TLMD-III, Jammu
Transmission & Distribution Div-III,
Udhampur

Wildlife Warden
Chenab Kishtwar

D.F.O. Batote
Forest Divn. Batote

Divisional Forest Officer
Ramban Forest Division
Ramban

Accordingly a DPR was framed by this office based on the approved cost data of 2006-07 amounting to Rs. 1496.62 lacs envisaging below mentioned works :-

1. Construction of 02 no 132 KV Feeding bays at Upcoming 220/132/33 KV Grid Station Ramban
2. Construction of 18.8 KM 132 KV D/C Ramban- sangaldan tr. Line upto their proposed Grid substation at Sangaldan

The projected cost did not cover the cost of forest/ land /trees compensation and it was to provided by the railway/KRCL authorities at the time of assessment by the Revenue /forest authorities.

Due to non committal approach and non -allocation of funds by KRCL for the number of years together, the upcoming transformation capacity of 120 MVA at 220/132 KV Level was relooked and system study was re- conducted to make the optimum use of this capacity for the betterment and stability of power supply system at EHV Level in Erstwhile Doda District. This transformation capacity got booked in full as detailed below :-

S.NO	NAME OF GRID STATION	CAPACITY AT 132/33 KV VOLTAGE LEVEL	REMARKS
1	GRID STATION RAMBAN	20 MVA	Already proposed to be fed on this station
2	GRID STATION KHELLANI	40MVA	Before undertaking fresh system study, G/S Khellani being fed on 132 KV S/C UDH- DHP Transmission line of NHPC. In the re-conducted system study Khellani G/S Proposed to be fed through under construction 132 kv D/C Ramban-Kishtwar Tr. Line by way of making LLO of one circuit at Grid station Khellani. This arrangement will relieve the department from its dependability on NHPC for providing power supply to entire Doda District through only Grid station Khellani. In

3	GRID STATION KISHTWAR	40MVA	past many awkward positions were faced by the deptt. When this tr. Line got out of service due to damages or any other reasons.
4	GRID STATION BHALLESSA	20MVA	Already proposed to be fed on this station through under construction 132 kv D/C Ramban-Kishtwar Tr. Line
	TOTAL	120 MVA	Already proposed to be fed on this station through under construction 132 KV S/C Thathri-Bhallestsa tr. line to be tapped from 132 kv D/C Ramban-Kishtwar Tr. Line at tapping station Barshalla

Besides this scheme for the augmentation of G/S Khellani from 40 MVA to 70 MVA stands TEC Cleared and construction of 10 MVA additional transformer bank at Grid station Kishtwar under progress, thus there is no scope to fed the proposed G/S Sangaldan of Railways from G/S Ramban.

Due to space constraints at G/S Ramban for the augmentation of said Grid station, the scope of works necessitated revision and also on the basis of directions of worthy Development commissioner (P), the division has explored the possibility of providing stable power supply and the most technically viable proposal which also vetted by the Chief Engineer S&O Wing Jammu and forwarded to the Worthy Development Commissioner Power vide no CE/S&O/J/T-10062-67 dated 13-10-2012 is as under.

Upcoming KRCL Grid station at Sangaldan is proposed to be fed on 220/132/33 KV G/S Udhampur after augmentation from 240 MVA to 320 MVA through CSTL which has Loop in -Loop out arrangement at Ramban Grid station with creation of already projected 02 no 132 KV Feeding Bays through this 132 KV D/C Transmission line from Ramban Grid to Proposed Grid of sangaldan.(envisaged in the original DPR as well) .

The project has been revised due to the fact of lapsing out of considerable period from the time of last submission of original DPR and booking of the corridor adopted in the initial survey.

Need for the fresh survey has been felt by the division and KRCL, and accordingly an amount of Rs. 10.00 lacs as deposited by the KRCL for conducting of fresh survey. The survey and geotechnical study got done by this office from M/S Shardia Engineering Associates, a Himachal Pradesh based firm through open bidding.

Based on the survey report, geotechnical study, and transmission line design already in vogue vetted by the Central Electricity authority and trends of Protection of tower footing, this revised DPR has been framed amounting to Rs. 2163.78 Lacs on the basis of Cost data for the year 2012-13 to cover the cost of construction of 132 KV D/C Tr. Line from Ramban to Sangaldan inclusive of the cost for forest /land/crop compensation. The said DPR was forwarded by the Chief Engineer S&O Wing Jammu to Chief Engineer Planning & Design Wing Jammu vide letter No. CE/S&O/J/T-5074-78 dated 09-09-2015 for checking and placing it before the Techno-economic Committee for its TEC. But the Chief Engineer Planning & Design Wing Jammu raised observations on the DPR stating reasons for non-approval of Cost Data for the year 2012-13 from competent authority & directed to revised the DPR on the basis of Cost Data for the year 2006-07. Moreover, as deliberated in the TEC meeting held on 03-10-2015, and as intimated by the EPD Wing Jammu vide No. EP&D/Div-II/J/364-66 dated 25-01-2016, the DPR needs to be revised on the Cost data of 2006-07 for Electrical works and Civil SSR for Civil works like foundations and protections.

Meanwhile, the profiles were submitted to CEA for checking and vetting and during checking the CEA has recommended the strengthening of some more no. of towers from provision of 9 Nos. in the DPR to 25 nos. (Copy of the CEA letter enclosed).

Complying to the instructions and as checked in the EP&D Wing Jammu, NIT for the construction of 132KVD/C Ramban-Sangaldan Transmission Line on Turnkey Basis was floated by this Division with reserved price of Rs. 1100.00 Lacs, but the Nit has not received any response from the bidders till date.

It has been observed by the Superintending Engineer S&O Circle-I Jammu and the worthy Chief Engineer S&O Wing Jammu and concluded that the reserved price which has been based on the cost data of 2006-07 with 20% Price escalation, may be less and the reason for not bidding the tender from the bidders.

As directed, the costing of the DPR has been revised on the Cost data for the year 2012-13 alongwith incorporating the strengthen of Towers as desired by the CEA and increase of protection volume.

The revised cost of the project is worked out to the tune of Rs.2418.55 lacs.

Assistant Executive Engineer
Sub Division Batote

Superintending Engineer
System & Operation Circle-I
Jammu

Executive Engineer
TLMD-III Udhampur

Chief Engineer
System & Operation Wing
Jammu

Executive Engineer,
TLMD-III, Engineer,
Transmission Line, Div-III,
Udhampur

D.F.O. Batote
Forest Divn. Batote

Divisional Forest Officer
Ramban Forest Division
Ramban

**SCHEDULE OF PRICES AND QUANTITIES AS PER COST DATA 2012-13 AND
INCORPORATING THE OBSERVATIONS OF CEA REGARDING STRENGTHENING OF TOWERS (SPECIAL
TOWERS)**

ANNEXURE-B

S.NO	PARTICULARS	SCHEDULE OF PRICES AND QUANTITIES	AMOUNT
PART A			
	SUPPLY OF MATERIALS & ACCESSORIES.		
1	ENGINEERING DESIGN, SUPPLY OF TOWER ACCESSORIES, LATTICE TYPE TOWER STRUCTURES, LINE MATERIALS & ACCESSORIES.	SCHEDULE-A	62338469
PART B			
	ERECTION, TESTING AND COMMISSIONING OF TRANSMISSION LINE INCLUDING CASTING OF FOUNDATIONS AND PROTECTION WORKS		
4	SURVEY AND CHECK SURVEY, crop, trees compensation	SCHEDULE-B	7290000
5	CASTING OF TOWER FOUNDATIONS	SCHEDULE-C	31904418
6	ERECTION OF TOWERS	SCHEDULE-D	11362343
7	STRINGING OF TR. LINE	SCHEDULE-E	8951420
8	PROTECTION WORKS OF TOWER FOOTINGS	SCHEDULE-F	33702000
9	TOTAL		155548650
	Add T&P @1%		1555486.50
10	TOTAL		157104136.50
	Add contingencies @3%		4713124.10
11	TOTAL		161817260.60
	Add 9.5% Supervision Charges on Rs. 161817260.60		15372639.76
12	TOTAL		177189900.35
	Add consultancy charges @3% on Rs. 155548650.00 for the finalization of GTP's drawings, profiles from Central Electricity Authority		4666459.50
13	TOTAL		181856359.85
	Forest Compensation a& Land Compensation		60000000.00
	GRAND TOTAL		241856359.85
	Say Rs. 2418.56 Lacs		

Asst. Executive Engineer

Superintending Engineer
System & Operation Cr-I
Jammu

Executive Engineer
JMD-III Udhampur

Chief Engineer
System & Operation Wing
Jammu

112KV DCL Transmission Line from Grid Station RAMBAN to SANJALIAN

SCHEDULE OF PROVISINAL QUANTITIES & PRICES

SCHEDULE-A

S.no	Description	Unit	Qty	Per Units in MT./Nos./Kms	Total	Total Unit Rate	Total Price	Remarks
1	2	3	4	5	6	7	8	9
1	ENGINEERING DESIGN, SUPPLY TOWER ACCESSORIES i.e.							
1.1	Danger plate	Nos	49		49	250	12250	
1.2	Number plate	Nos	49		49	250	12250	
1.3	Phase plate	Nos	294		294	250	73500	
1.4	Circuit plate	Nos	98		98	250	24500	
1.5	Anti-climbing device	Nos	49		49	3420	167580	
1.6	Bird Guards	Nos	49		49	430	21070	
1.7	Earthing material		49		49	3420	167580	
1.8	viii Nuts & Bolts with washers	Tons	10		10	62403	624030	
2	TOWER MATERIAL							
2.1	Tangent tower (0 deg - 2 deg)							
2.2	Normal tower with stubs	Nos	2	3.29	6.58			
2.3	3Mtr. Extension tower with stubs	Nos	0					
2.4	6 Mtr. Extension tower with stubs	Nos	0					
2.5	9 Mtr. Extension tower with stubs	Nos	0					
2.6	SMALL ANGLE TOWERS (0 deg. - 15 deg.)							

Executive Engineer,
Transmission Line Cr-I, Div-III,
Udhampur

D.F.O. Batote
Forest Divn. Batote

Divisional Forest Officer
Ramban Forest Division
Ramban

Wildlife Warden

SECTION-II: DETAILS OF FOREST AREA

MAJOR HABITAT, FLORA AND FAUNA:-Gool and Gandri range

Gool Range is part of the Ramban Forest Division and Gandri Range is part of Batote Forest Division. The main mammal species found in the area are *Canis aureus* (The Jackal) *Felis chaus* (The Jungle Cat), *Herpestes aurpuctatus* (Mongoose-The small Indial Mongoose), *Panthera pardus* (Leopard or Panther). The faunal species found in the area are *Vulpes bengalensis* (The Indian Fox) *Vulpus vulpus* (The Red Fox): *Funambulus pennanti* (The Five Striped Palm Squirrel) *Hystrix indica* (The Indian Porcupine) *Gennacus ramiltoni* (The White crested Kalej pheasant): *Gallus gallus* (Jungle Fowl): *Francolinus francolinus* (Black Partridge): *Francolinus pendicerianus* (The Grey Partridge): *Streptopetia decaocto* (Ring Dove): *Pseudogyps bengalensis* (White Backed Bengal Vulture): *Gyps himalayensis* (The Himalayan Griffon): *Gyps fulvus* (Fulvous or Indian Griffon Vulture): *Corvus splendens* (House crow): *Corvus macrorhynchos* (Jungle crow) : *Eudynamys scolopacea* (Koel) : *Acridotheres tristis* (Indian myna) etc

Flora:

The main species found are *Accacia catechu*, *Dalbergia sissoo*, *Olea cuspidata*, *Accacia modesta*, *Cassia fistula*, *Terminalia belerica*, *Anogeissus latifolia*, *Mallotus phillipinensis*, *Lannea cormandalica* with occasional *Phoenix humillis*, *Toona ciliata*, *Bombax ceiba*, *Syzygium cumini* etc. *Quercus leucotrichophora*, *Quercus incana*, *Aesculus indica*, *Pyrus pashia*, *Quercus semicarpifolia*. Undergrowth mainly consists of *Adhatoda vasica* and *Dodonaea viscosa* which gets replaced on favourable sites by *Woodfordia fruticicosa*, *Carissa opaca* and *Cotinus coggygria* etc.. Also Chir is the predominant species of this zone, occupying low lying sub-tropical belt along the Chenab around Anji and other Chenab tributaries. The common associates are *Quercus leucotrichophora*, *Pyrus pashia*, *Vasica*, *Rubus ellipticus*, *Prunca granatum*, *Indigofara pulchella*. Undergrowth mainly consists of the *Carissa opaca*, *Dodonaea viscosa*, *Rubus ellipticus*. The ground flora comprises of *Viola serpens* and variety of grasses and ferns.

MAJOR ACTIVITIES INVOLVED IN THE TRANSMISSION PROJECT:-

The major construction activity envisages in the proposed transmission project are as follows:-

- ❖ Construction of Tower Foundation (An average of 7 M x 7 M tower base and activities involves excavation of soil and concreting)
- ❖ Erection of transmission towers (involves joining of tower members/lattice structure)
- ❖ Stringing of electrical conductor wires between adjacent towers.

The above activities will be carried out by engaging suitable Contractor. For tower foundation works, local gangs/manpower are usually engaged as petty Contractor and temporary makeshift camps are set nearby the construction site till completion of work. For hill areas construction of new approach road generally not encouraged & the existing village tract or jungle tract are used for head loading of tower materials. Tower erection and stringing of conductor is generally carried out by specialized gangs and temporary construction camps are also required to be set up for this purpose.

JUSTIFICATION & BENEFIT OF THE PROJECT:-

The project will provide the power supply to the prestigious **Udhampur-Baramulla Rail Link Project (USBRL) Project** for its operation. In Batote Forest Division land measuring 7.2765 ha. for tower no.: 26, 27, 32, 33, 34, 37, 39, 40, 41, 42 got already diverted vide FST no. 400/FST/of 2018 Dated:- 27.12.2018. under the erstwhile Jammu and Kashmir Forest (Conservation) Act 1997. Now land measuring 1.34 ha. for tower foundation and line corridor for tower no. 32-A, 40-B, 40-C, needs to be diverted. In forest division Ramban, land measuring = 6.272 ha. for tower no.: 43, 44, 45, 46, 47, 48, 49, 50, 51 got already diverted vide FST no. 290/FST/of 2019 Dated:- 24.09.2019. land measuring 3.03 ha. for tower foundation and line corridor for tower no. 44-A, 44-B, 44-C, 47-D needs to be diverted. The diversion of the forest land is unavoidable as it will supplement and augment the already existing towers. Initially 49 No. of the towers were to be installed but during the final and check survey it was necessitated that to insert the additional towers to achieve the mandatory ground clearance as per the J&K Electricity and Indian Electricity Act. Since the existing towers are already existing on the forest land, the newly erected towers are automatically to be installed on the forest land and hence the forest land is unavoidable.

Executive Engineer,
TLAD-II, Udhampur
Transmission Line Section, Div-III,
Udhampur

Balraj
D.F.O. Batote
Forest Divn. Batote

Wildlife Warden
Chenab Kishtwar

[Signature]
Divisional Forest Officer
Ramban Forest Division
Ramban

REQUIREMENT OF WILDLIFE CLEARANCE: -

In order to minimize impact on forest and wildlife, detailed survey of the route of the construction of 132 KV D/C Ramban Sangaldan Transmission line for providing power supply to Konkan Railway. The proposed route is the shortest and the most feasible route from all aspects which has been selected among all the alternatives routes explored during detail survey. The alignment will pass through 44/Ar and 43/Ar of Gool Range and 54/G, 55/G, 56/G and 57/Ar. There is no Wildlife Area involved in the project. The Regional Office Chandigarh raised a EDS vide File No. 09-JKB-052/2022-Jammu Dated:-Oct 2022 and asked for the submission of the Wildlife Mitigation plan. The technical details of the proposed route & status of forest/wildlife clearances are states as below:

Name of project for which WL clearance is required	Construction of 132 KC/DC Ramban Sangaldan transmission line for providing power supply to Konkan railway
Total Line Length	499 m in Gandari Range and 1122 m in Gool Range
Details of wildlife area involved	No Wildlife area involved
Total no of towers to be erected in WL area	04 in Ramban Division and 04 in Batote Forest Division
Total wildlife area involved	Nil
Present Status of Forest proposal	Submitted online on 27-07-2021. Presently under process at DFO Level.
Likely impact of the project on protected area (PA)	The overall impact of the project on forest area and wildlife is assessed as minimum which can be addressed through proper mitigation measures as recommended.

Executive Engineer,
TLMD-II, EXPTCL, Engineer
Transmission Line, Div-III,
Jammu

Wildlife Warden
Chenab Kishtwar

Divisional Forest Officer
Ramban Forest Division
Ramban

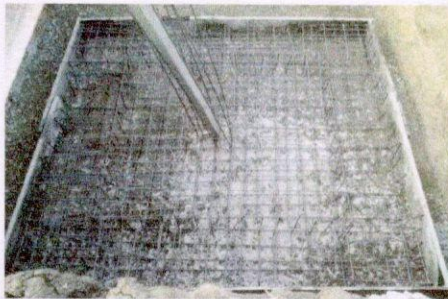
D.F.O. Batote
Forest Divn. Batote

TOWER FOUNDATION:

Foundation of a transmission tower is the basic structure to support the tower in its position. It plays an important role in safety and satisfactory performance of the structure as it transmits mechanical loads of the electrical transmission system to earth. The foundations in various types of soils have to be designed to suit the soil conditions of particular type. In addition to foundations of normal towers, there are situations where considering techno-economical aspect for special towers required or river crossing which may be located either on the bank of the river or in the mid stream or both, pile foundation may be provided. The various activities involved in the foundation work are illustrated below:-

Transmission Tower Foundation

Raft Concrete



Transmission Tower Foundation

Stub Footing concrete



Stub Concrete



Transmission Tower Foundation

Stub setting & Template Assembly



TOWER ERECTION:

There are four main methods of erection of steel transmission towers which are as below:

- ❖ Build-up method or Piecemeal method
- ❖ Section method
- ❖ Ground assembly method.
- ❖ Helicopter method.

Build Up Method of Tower Erection

- ❖ This method is most commonly used in India for the erection of 66kV, 220 kV and 400 kV

transmission line towers. This method consists of erecting the towers, member by member. The tower members are kept ground serially according to erection sequence to avoid search or time loss. The erection progresses from the bottom upwards. The four main corner leg members of the first section of the tower are first erected and bolted with the stub.

Transmission Tower Erection

Tower Erection in progress

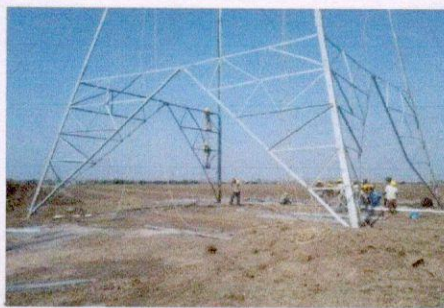


Transmission Tower Erection

Cross Arms Erected



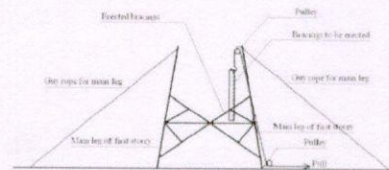
Transmission Tower Erection



Transmission Tower Erection

Build Up Method of Tower Erection

Source: Kishore, 2008, op. cit. Method of Erection of Lattice Tower (Part II)

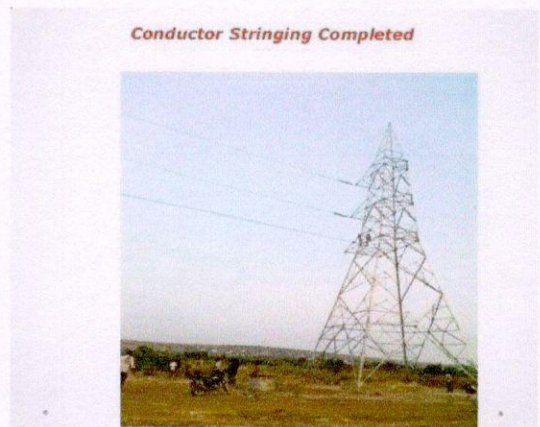
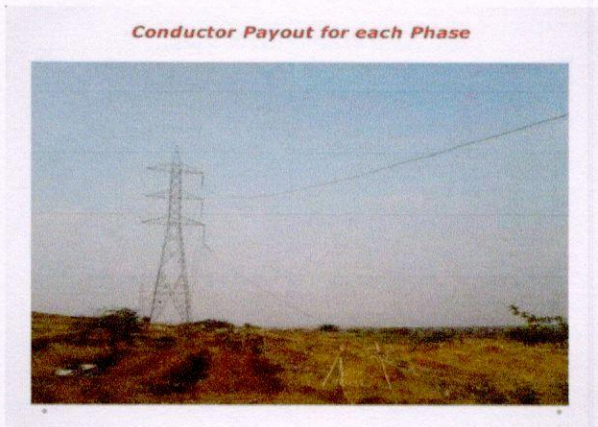
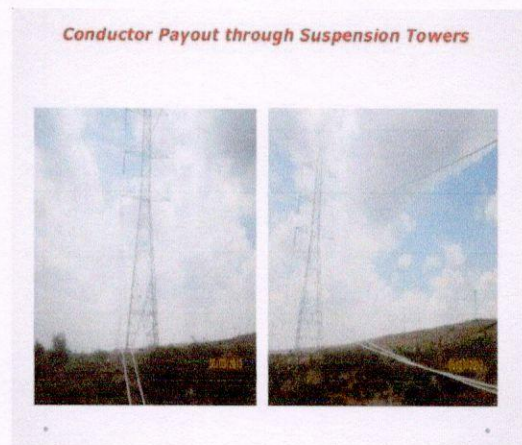


TOWER STRINGING:

- ❖ Stringing of Transmission line a process of joining and fixing of the electrical conductor wires from tower to tower and various other assemblies for transmission of electricity.
- ❖ Stringing overhead conductors in transmission is a very specialized type of construction requiring years of experience as well as equipment and tools that have been designed, tried and proven to do the work.

Steps of stringing

- Proper guying
- Insulator Hoisting
- Paying out of pilot wire & conductor
- Rough sagging of conductor
- Clipping & spacing
- Finishing activities
- Jumpering
- Final checking



3. LIKELY IMPACT OF THE PROJECT ON WILDLIFE OF THE AREA:-

The impact on the forest and wildlife associated with power transmission project with specific reference to the proposal is summarized as below:

HABITAT LOSS AND FRAGMENTATION:-

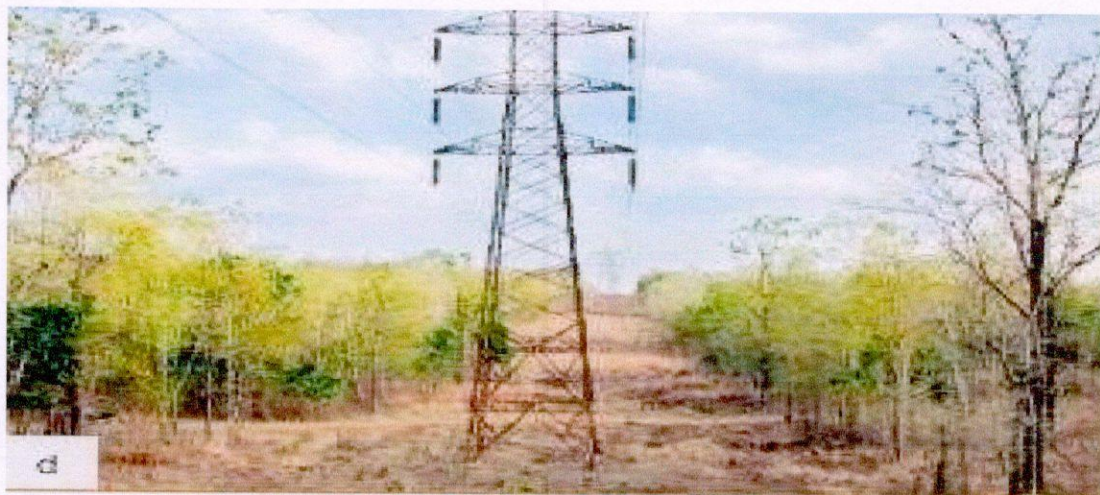
Powerlines or specially powerline corridors, are known to affect many different animal groups, predominantly birds. These impacts are largely associated with fragmentation & degradation of wildlife habitats along the powerline corridor i.e. Right of Way. In case of 132 KV, the RoW is considered as 27 meter wherein the standing trees are required to be either felled, looped/pruned as necessary for casting of tower foundation, tower erection & electrical conductor stringing. The large scale felling of trees along the line corridor might impact the nesting sites of birds as well as habitat and movement of other arboreal species like monkeys, primates etc. available in that areas.

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ELECTROCUTION & ACCIDENTAL COLLISION OF BIRDS.

As per available/listed data risk of electrocution of birds are mostly related to distribution/transmission lines up to 110 kV due to dimensions and spacing between two conductors, electrocution of Bird/Raptor by EHV lines of 132 kV & above is quite rare. Moreover, collision of birds are mostly reported during landing and take off in area close to water bodies, designated bird areas/ sanctuary having large congregation of birds or line intersecting identified bird fly or migratory paths hence bird diverter even if placed on EHV line can only be effective if it is installed in the fly path of birds. POWEGRID following its cardinal principle of avoidance take utmost care to avoid such areas while selecting the optimum line route of new transmission line.

INDUCED IMPACT ON WILDLIFE FROM CONSTRUCTION WORKERS.

Construction manpower will be required for execution of the project and makeshift construction camps and will be set up at the tower foundation/erection sites as per site requirement. Generally for tower foundation works, local manpower/workers will be engaged. However, for specialized works like tower erection and stringing, migrant labourers are usually engaged. The induced impact on the wildlife of the area from such construction workers is the likelihood of involvement in hunting/trafficking of wild animals and other unlawful activity during the execution of the project.

SECTION-4: PROPOSED MITIGATION MEASURES

SAFEGUARD OF WILDLIFE PASSAGE AT SOME PLACES

As per Indian Electricity rule, the minimum ground clearance for 132 KV Transmission line is 6.1 meter i.e. the lower most electrical conductor wire between two adjacent towers will be stringed in such a way that the minimum height from actual ground level is always more than 6.1 meter which is sufficient for safe passage of animals and others mammals.

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SAFEGUARD OF BIRDS FROM ELECTROCUTION AND ACCIDENTAL COLLISION:-

Since Gool and Gandri Ranges have a significant population of birds therefore, the following mitigation measures are proposed for safeguard of birds: -

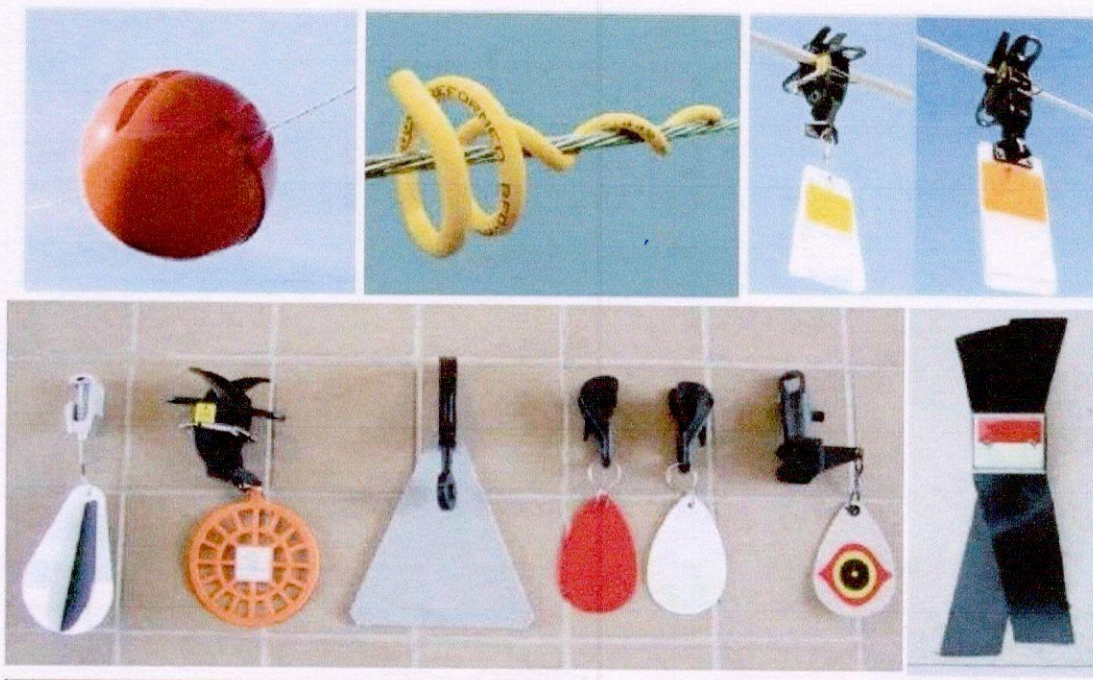
- A. The Stringing of conductor for the transmission line shall be carried out maintaining a separation between energized conductors as follows:

Vertical distance between two conductors: **4 m** (appx.)

The above arrangement, will nullify the likelihood of electrocution of large winged birds like hornbill, because the distance between energized conductors will be always more than the maximum wing span of the bird. *A figure showing the above arrangement is shown in Annexure-II*

- b. To prevent accidental collision of birds with the conductor **bird diverter/colored/contrast marker devices** will be installed on the earth wire to make it visible to birds from long distance as shown in the photographs as below *from AP 37 to AP 72 (In between Lallen to Phulbial)* where the birds are flying and taking water from water bodies/small ponds which are available in the above vicinity.

Bird Guard will be provided on towers as per requirement to prevent birds from sitting in the insulator strings which may result in puncture of insulator due to defecation by birds.



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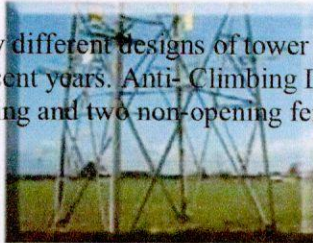
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c. SAFEGUARD OF ACCIDENTAL FALLINGS OF ANIMALS IN EXCAVATED PITS FOR TOWER FOUNDATION:-

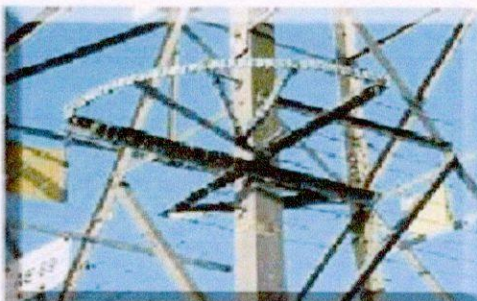
The excavated pits shall be properly barricaded and fenced so as to prevent accidental falling of mammals in the vicinity of the construction sites

d. 132 KV TOWER ANTI-CLIMBING DEVICES:-

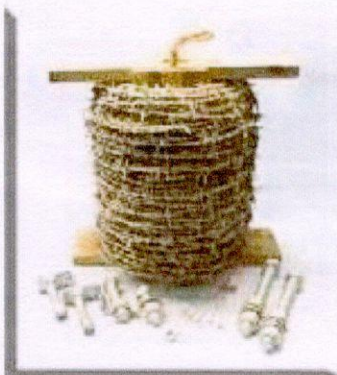
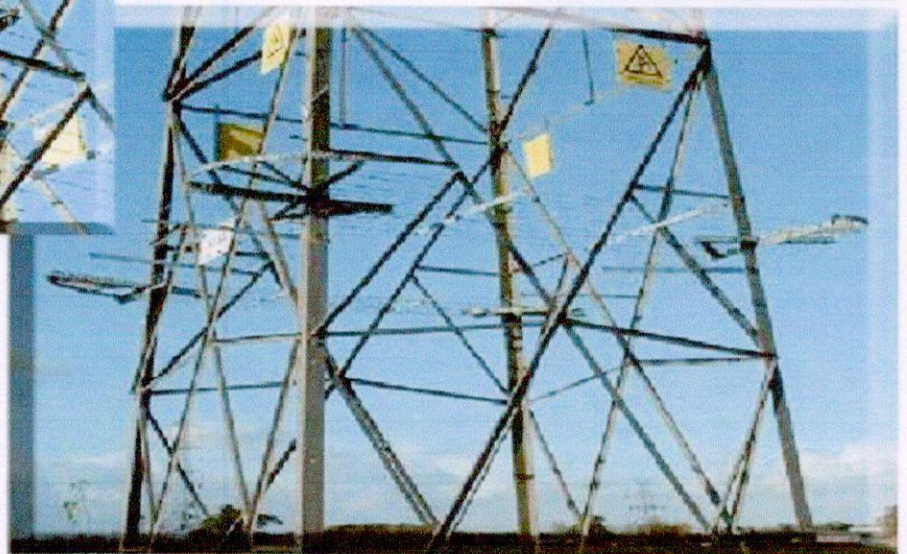
Many different designs of tower exist for 132 kV lines with standardization becoming more focused in recent years. Anti-Climbing Devices (ACD's) are being used at tower four corners gates with two opening and two non-opening fenced by using barbed wire and accessories.



132KV TOWER ANTI-CLIMBING DEVICES



132KV TOWER ACD's



BARBED WIRE AND ACCESSORIES

6. Line markers should be as large as possible. The spacing between them should not be more than 5 to 10 m. Marker devices should be chosen to contrast with the background colours (Figure 12.8), and, importantly, should be visible at night: most bird collisions are said to occur at night.

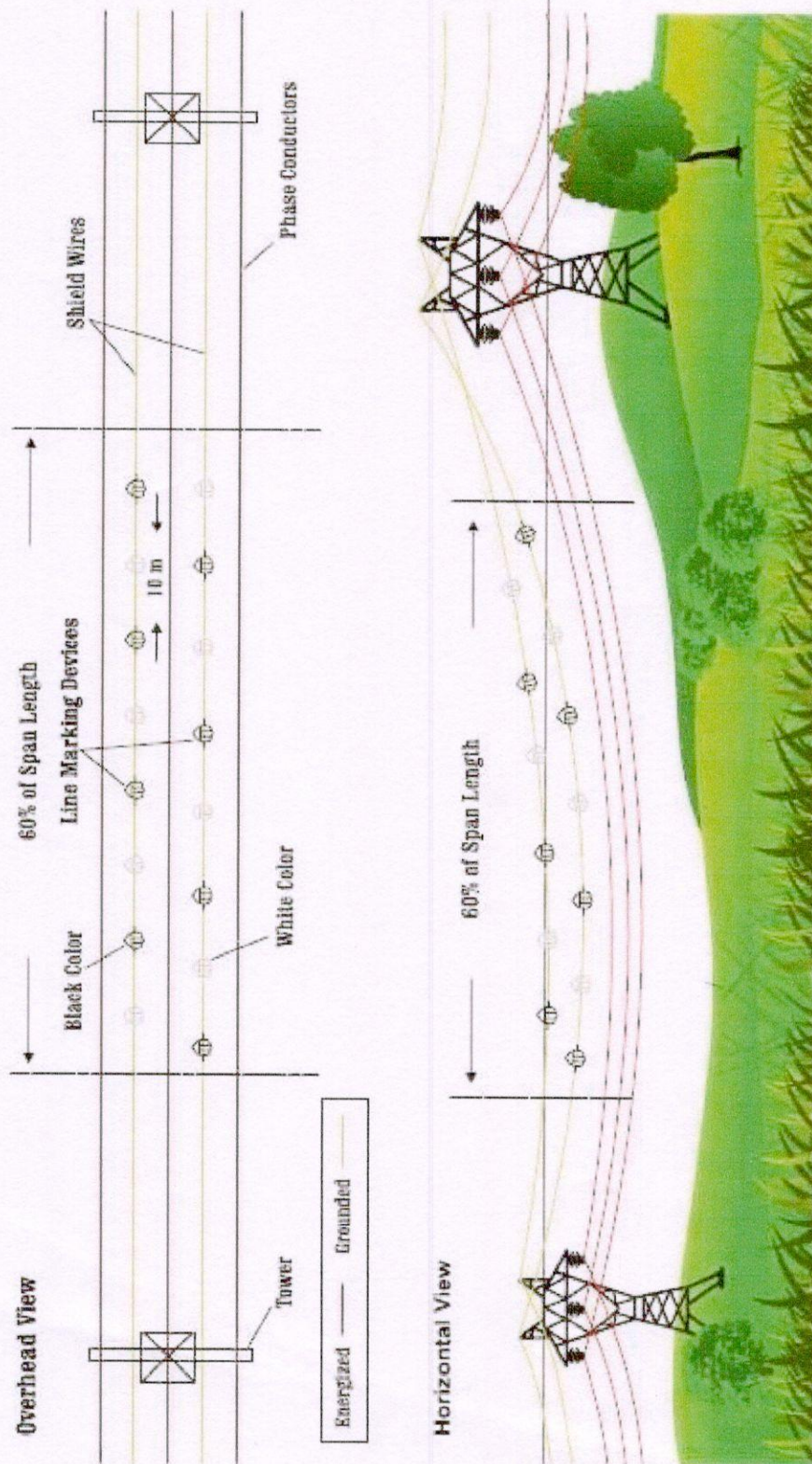


Figure 12.8. Design and configuration of markers to reduce bird collisions (after Elvorn Transmission [South Africa 2009]).
Source: APUC 2012.

4. GENERAL MITIGATION MEASURES FOR PROTECTION OF FOREST AND WILDLIFE: -

In addition to the above specific measures for animals and birds, the following mitigation measures will be adopted by TLMD 3 during execution of the project for protection of wildlife. Before start of work in the area awareness campaign will be taken up by TLMD 3 in association with Forest Dept. to create maximum awareness among the construction workers regarding safeguard of forest and wildlife.

No work shall be allowed at nights (i.e. between sunset & sunrise) in the forest area.

No permanent labour camps will be set up inside the forest area.

Tree felling will be minimized along the line corridor and only those trees which are unavoidable for tower foundation & erection will be felled under the supervision of Forest department. The guideline of MoEF dtd. 5th May, 2014 with regard to "construction of transmission line in forest area" will be strictly adhered to during execution of project.

The trees on the remaining part of the transmission line corridor will be mostly loped and pruned which are required for stringing of conductor. In case of towers falling in hill top locations where enough ground clearance is available, tree will not be felled. This will minimize the impact on nesting sites of birds as well as habitat of arboreal species.

The specific and important tree species as identified by the Forest department will be marked separately and protected during the construction of the transmission line.

To minimize the disturbance to wildlife, no new approach road will be constructed in the forest area. The existing village tracts/paths will be utilized for carrying of tower materials and also manual excavation of tower foundation will be done.

Ecofriendly engineering practices in the construction works and due care be taken properly so as to avoid injury to wildlife.

All pollution related aspects and waste management will be duly taken care during the implementation of the project.

In addition to above, any other measures as envisaged by the State Board of Wildlife/national Board of Wildlife and as per provisions of wildlife (Protection) Act, 1972 will be strictly adhered to during execution of the project by TLMD 3.

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SECTION -5: CONCLUSION

The proposed construction of 132 KV D/C Ramban Sangaldan Transmission line for providing power supply to Konkan Railway project is a very important sub-project which is conceived by Govt. of India located in Ramban district of the State. This project is a major step towards meeting power supply to the prestigious USBRL Project.

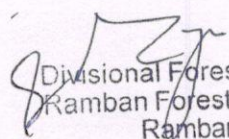
The construction of the above transmission line requires forest clearance as the project falls in forest land. The EIA and environmental clearance is not required for this project since power transmission lines are kept outside the purview of EIA 2006 as per MoEF notification and considered as green project due to its pollution free nature.

Considering the importance of conservation of biodiversity and the wildlife habitat, flora and fauna of Gool and Gandri Ranges, it is found that there will be some temporary and permanent impact from the aforesaid transmission project on the wildlife of the area. However, the User Agency TLMDI-III has made a holistic approach towards protection of the wildlife through the principle of avoidance, minimization and mitigation in their project activity and committed for implementation of various mitigation measures for wildlife including general measures for overall protection of the forest and wildlife.

Therefore, it is summarized that the overall impact on biodiversity due to the proposed transmission project is assessed as low which can be minimized through proper mitigation measures as per guidelines.


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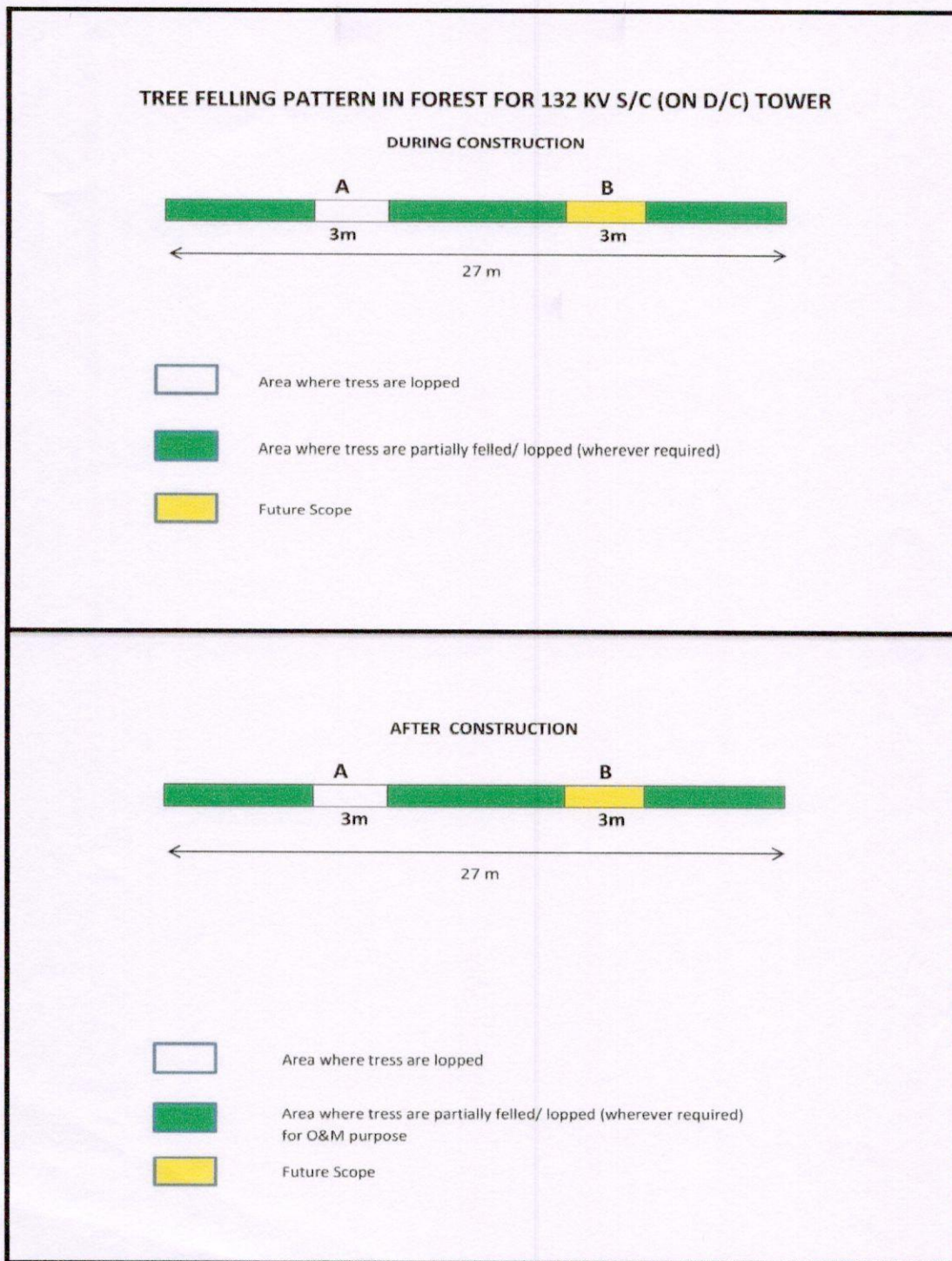


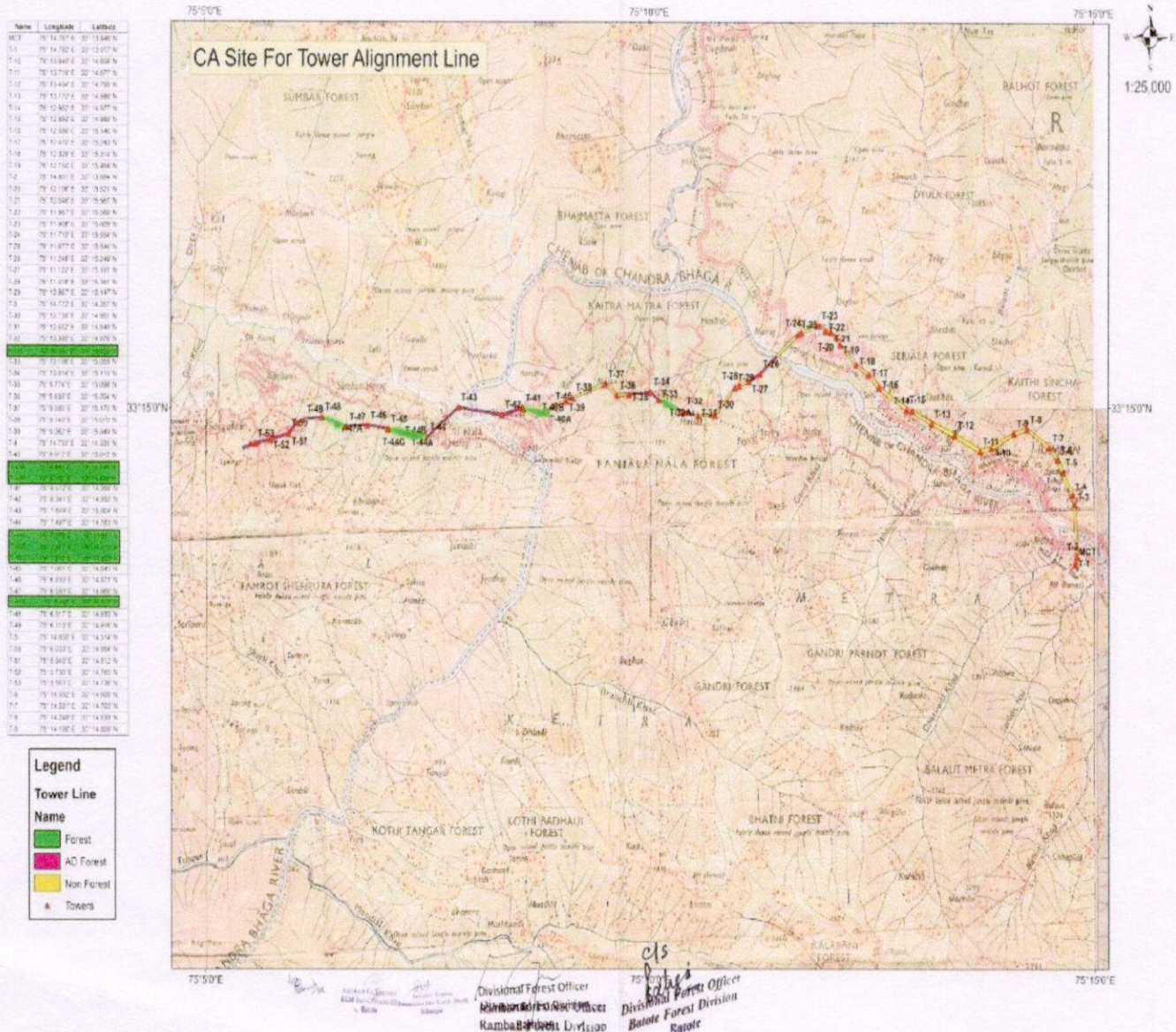
FIGURE-3 : TREE FELLING ARRANGEMENT IN THE PROJECT AS PER GUIDELINE OF MOEF

SECTION -V: ANNEXURES

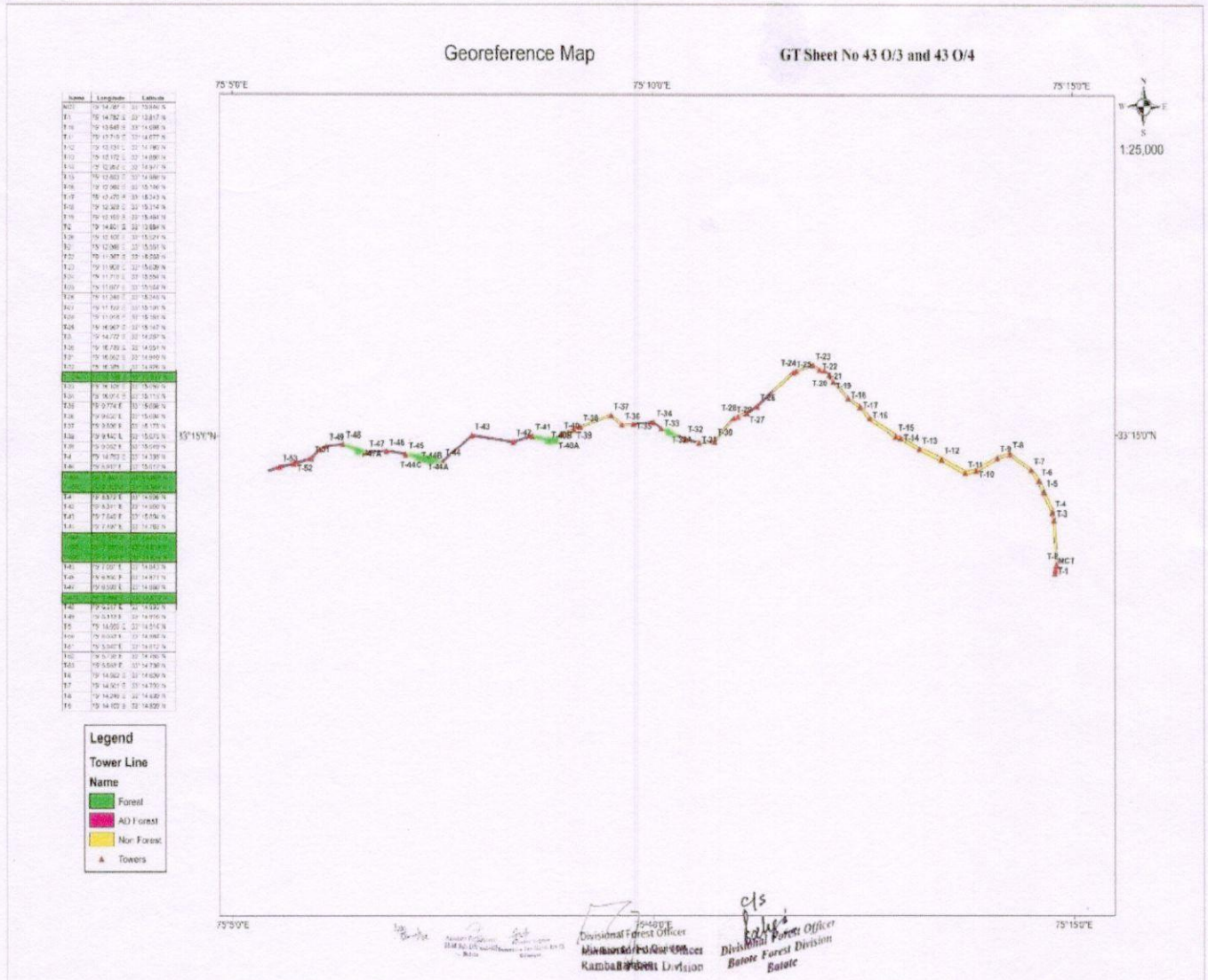
Annexure-I

SOI Map For CA Site

GT Sheet No 43 O/3 and 43 O/4



Annexure-II



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