DETAILED PROJECT REPORT

Hadoti Power Transmission Service Limited

Establishment of Transmission System for 220kV & 132kV Grid Substations along with associated schemes/works [RAJ/PPP-8]

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1. PROJECT DETAILS

1.1 Introduction

The introduction of Electricity act 2003, competition was brought into power sector and its sub sectors. Power generation business was delicensed which led to huge capacity addition by the private sector and this warranted transmission network to be reinforced so that all the power generated could be supplied to the end users. The provision for independent transmission licenses were created for private sector to get in to the business.

The Government of Rajasthan constituted a State Level Empowered Committee (SLEC) with a view to encourage competition in private sector participation for development of transmission projects in State. The Government of Rajasthan has notified the Rajasthan Rajya Vidyut Prasaran Nigam Limited (RRVPNL) for selection of Transmission Service Provider (TSP) to establish Transmission System for following 132kV grid sub-stations along with associated transmission lines and associated schemes. Hadoti Power transmission Services Limited a SPV has been created to construct works under Raj/PPP-8.

1) 220 KV GSS Ranpur , Kota
2) 132 kV GSS Peeplu Distt. Tonk
3) 132 kV GSS Chitri Distt. Dungarpur
4) 132 kV GSS Bambora Distt. Udaipur
5) 132 kV GSS Khatoti Distt. Bharatpur

The objective to plan, promote and develop an integrated and efficient power transmission system network in all its aspects including planning, investigation, research, design and engineering, preparation of preliminary, feasibility and definite project reports, construction, operation and maintenance of transmission lines, substations, load dispatch stations and communication facilities and appurtenant works, coordination of integrated operation of to meet the increasing demand and grid strengthening across the state of Rajasthan.

In this context, the Central Electricity Authority (CEA), Ministry of Power, Government of India has issued the administrative approval under Section 68(1) & 164 of Electricity Act, 2003 in favour of the Hadoti Power transmission Services Limited to establish to meet the increasing demand across the state of Rajasthan

132 KV Mahaveer Nagar Deoli Manjhi Line with bee line distance between the two points is about 8.760 kms. All the efforts were made to find a most feasible route which may involves minimum / least forest land through various alternative routes.

This alternative **Route-1** is having comparatively less route length when compare to route- 2 & 3. The details of comparisons are referred at **Annexure-I** for alternative routes.

1.2 Project Scope

Project scope will include:

Sr. No.	Scheme/ Transmission Works	Completion Target
1	Establishment of 220 kV GSS Ranpur, Kota & • LILO of 220 kV S/C Kota – Badod & KTPS- Modak line • LILO of 132 kV S/C Kota- Mandana Town line • LILO of 132 kV S/C Mahaveer Nagar Deoli Manjhi line	18 Months
2	Establishment of 132 kV GSS Peeplu Distt. Tonk & 132 kV S/C Malpura – Peeplu line	18 Months
3	Establishment of 132 kV GSS Chitri Distt. Dungarpur & LILO o 132 kV S/C Seemalwara- Sagwara line	18 Months
4	Establishment of 132 kV GSS Bambora Distt. Udaipur & 132 kV GSS Salumbar # S/C line associated with132 kV GSS Bambora (*# Line length of Salumbar to Bambora is 33 KM out of which 8 KM long 220 KV LILO Salumbar is available on the way to Salumbar to Bambora which will be utilized therefore cost of 25 KM, 132 kV S/C line has been considered*)	18 Months
5	Establishment of 132 kV GSS Khatoti Distt. Bharatpur & LILO of 132 kV D/C Nadbai – Weir line associated with132 kV GSS Khatoti Distt. Bharatpur	18 Months

1.3 Technical Specification

The technical requirements of this project has been evolved as per CEA technical standards and CTU practices. HPTSL is mandated to adhere to these requirements during design, engineering and execution.

1.4 Location of the Project

The project is in Rajasthan State. Location of various projects are shown in the sketch furnished below:

2. GEOGRAPHICAL INFORMATION

Climate Rajasthan

Broadly speaking, Rajasthan has a tropical desert climate. It is extremely cold from October to February while the scorching sun tortures the land from March to September. There are distinct temperature range variations diurnal and seasonally throughout the state, revealing the most typical phenomenon of the warm-dry continental climate. The summer begins in the month of March while the temperature keeps rising progressively through April, May and June. West of Rajasthan and the eastern side of Aravalli Range, in the region of Bikaner, Phalodi, Jaisalmer and Barmer, the maximum daily temperature hovers around 40°C to 50°C. Nights of summers see a considerable temperature fall with a minimum daily temperature around 20°C to 29°C. However, Udaipur and Mount Abu, have a pleasanter climate in summers with a relatively lower daily maximum temperature that reaches 38°C and 31.5°C, respectively. The daily minimum temperature at nights for these two stations hovers around 25°C and 22°C, respectively. The major portion of the state that consists of the arid west and the semi-arid mid-west has an average maximum of 45°C in June.

January is the coldest month in the state of Rajasthan. The minimum temperatures sometimes fall to -2°C in the night at places like Sikar, Churu, Pilani and Bikaner. The sandy land gets even colder with occasional secondary Western winds that cross the western, northern and eastern Rajasthan during winter months, and even cause light rainfall and chilly winds can be experienced during this period. Most of the Rajasthan, except the southeast Rajasthan comprising of Kota, Bundi and Baran and western Barmer have an average temperature of more than 10°C. Due to the cold western winds, the whole of Rajasthan sometimes come under the spell of the cold wave for 2 to 5 days during winters.

Rajasthan being the desert area, its climate varies mostly from arid to sub-humid. To the west of the Aravallis, the climate is marked by low rainfall, extreme diurnal and annual temperature, low humidity and high velocity winds. In the east of the Aravallis, the climate is semi-arid to sub-humid marked by lower wind velocity and higher humidity and better rainfall. The southwest monsoon begins in the last week of June in the eastern parts and may last till mid-September. There are occasionally pre-monsoon showers in mid-June while post-monsoon rains may occur in October. Winters may also receive a little rainfall with the passing of western distribution over the region. However, Rajasthan receives most of its monthly rainfall during July and August.

Area

Rajasthan is India's largest state by area (342,239 square kilometres or 10.4% of India's total area). It is located on the western side of the country, where it comprises most of the wide and inhospitable Thar Desert (also known as the "Rajasthan Desert" and "Great Indian Desert") and shares a border with the Pakistani provinces of Punjab to the northwest and Sindh to the west, along the Sutlej-Indus river valley. Elsewhere it is bordered by the other Indian states: Punjab to the north; Haryana and Uttar Pradesh to the northeast; Madhya Pradesh to the southeast; and Gujarat to the southwest.

Rajasthan is positioned between 23 degrees and 30' and 30 degrees and 11' on the northern latitude and 69 degrees and 29' and 78 degrees and 17' on the east longitude. The total population of Rajasthan state is 6,85,48,437, according to the census of 2001. The density of population in the state is 200 per sq. km.

Topography

Rajasthan has varying topographic features though a major part of the state is dominated by parched and dry region. The extensive topography includes rocky terrain, rolling sand dunes, wetlands, barren tracts or land filled with thorny scrubs, river-drained plains, plateaus, ravines and wooded regions. In a more broad way the topography of Rajasthan can be divided in the following regions- the Aravalli or the Hilly regions, the Thar and the other arid regions, the Plateaus including Vindhaya and the Malwa, the Fertile plains including the Mewar, the Forest Regions and the Water ponds including Rivers.

Rajasthan Desert

The Thar Desert or the Great Indian Desert encompasses about 70% of total landmass of Rajasthan and hence it is identified as the "Desert State of India". The Rajasthan desert which forms a major portion of the Thar Desert is the biggest desert in India and encompasses the districts of Jaisalmer, Barmer, Bikaner and Jodhpur. In fact the Rajasthan Desert comprises the desert triangle of three cities - Jaisalmer, Bikaner and Jodhpur. The desert becomes very hot during the summer and it experiences extreme climate with an average annual rainfall less than 25 cm. Days are hot and the nights are cold. Vegetation consists of thorny bushes, shrubs and xerophilous grass. Various species of lizards and snakes are found here.

Soil & Vegetation

The soil and vegetation of Rajasthan alters with its wide-ranging topography of the state and the availability of water. The varied kind of soils available in Rajasthan are mostly sandy, saline, alkaline and chalky (calcareous). Clay, loamy, black lava soil and nitrogenous soils are also found.

Owing to the limited rainfall seasonal vegetation such as a few grass species, shrubs and dwarf trees can be found. However food crops are grown in the plains that are drained by the rivers and streamlets owing to the alluvial and clay soil deposits. The hilly tracts of the Aravali are characterized by the black, lava soils that sustain the growth of cotton and sugarcane.

3. TRANSPORT

3.1 Roads

Rajasthan is sufficiently linked with all the major cities in India like Ahmedabad, New Delhi, and Indore through both National and State Highways.

The Rajasthan State Road Transport Corporation (RSRTC), which is a state-owned organization, offers regular bus services to different parts of the state. Privately owned operators also run bus services.

The national highways system in Rajasthan encompasses an overall span of 5,585 km. The NH8, the most well-known highway in the state, joins major cities such as Ajmer, Jaipur, Udaipur, and Chittorgarh. The length of the NH 8 is around 688 km inside the borders of the state. At present, the number of state highways in the state is 85 and the combined span of these thoroughfares is 11,716 km. There are 19 national highways passing through the state which are together 5,585 km in length. This includes NH 3, NH 18,NH 11,NH 11A,NH 11B,NH 12,NH 14,NH 15,NH 65,NH 71B,NH 76,NH79, NH 79A, NH 89, NH 90, NH 112, NH 113, NH 114 and NH 116.

3.2 Rail network

The railway network over the state comes under the geographical jurisdiction of the North Western Railway Zone of Indian Railways centered in Jaipur, which is the zonal headquarters of this zone. The main divisions are Jaipur, Ajmer, Bikaner and Jodhpur. T Rajasthan is connected with the main cities of India by rail. Jaipur, Jodhpur, Kota, Bharatpur, Bikaner, Ajmer, Alwar, Abu Road and Udaipur are the principal railway stations in Rajasthan. Kota City is the only Electrified Section served by three Rajdhani Expresses and trains to all major cities of India. Palace on Wheels is a specially designed luxury tourist train service, frequently hauled by a steam locomotive, for promoting tourism in Rajasthan. Royal Rajasthan on Wheels a luxury tourist train service covers various tourist destinations in Rajasthan.

3.3 Air Ports

There are three main airports at Rajasthan- Jaipur International Airport, Jodhpur Airport and Udaipur Airport. These airports connect Rajasthan with the major cities of India such as Delhi and Mumbai. There are three other airports in Kota, Jaisalmer and NAL (Bikaner) but are not open for commercial/civilian flights yet. One more airport at Kishangarh, Ajmer .i.e. Kishangarh Airport is being constructed by the Airport Authority of India.

4. METHODOLOGY/ PHILOSOPHY OF ROUTE SELECTION

In order to execute such transmission system, precise planning, costing, scheduling etc. were required. Optimum deployment of resources also was of prime target in implementing this transmission system.

It is essential that at the planning stage itself various alternative routes and technical solutions for transmission lines be examined in detail.

For undertaking such studies, one of the major requirements is obtaining adequate information regarding physical constrains, environmental factors etc. along the route so that optimum solutions

are identified. Subsequently, during implementation of the project, it is required to obtain elaborate details about terrain, soil conditions, constraints etc. of the route for proper resource planning, costing etc. as well as reduction in implementation time.

Presently, conventional methods of survey like walk over survey, preliminary survey and detailed survey are carried out at various stages from conceptualization of the project to implementation, which are time consuming tasks. There are new means available which is used to conduct route survey using Google, DGPS based survey etc.

4.1 Preliminary & Route Alignment Survey

Preliminary Survey included the following steps:

- Map study
- Walkover survey

Route survey was carried out for following benefits:

- To select optimal route from the alternatives for ease of construction followed by O&M with economy.
- Maintenance & additional construction cost can be brought to the minimum.
- Material Estimation and procurement can be done fairly on realistic basis. Any possible delay/hindrance likely to come during the execution of the work, can be avoided, after taking due care of various statutory provisions during the course of selecting route alignment.
- Limited Reserve/Protected/Private Forest Area.
- Proper planning can be done for networks keeping provision for future routes etc.
- Approvals from Railways, Civil Aviation, Forest authorities etc. can be obtained faster.
- Preparation of Master Network and fixing construction/erection targets can be done on realistic basis, which will help in the judicious planning of materials flow, cash flow and manpower requirements.
- Appreciable time can be saved during construction & maintenance of roads, if selection of Rivers, route along hill sections and power line etc., are properly made.

4.2 Map Study

After drawing various routes of alignment network within the topo maps, a comparative study was made on the basis of the following data:

- Route length.
- Nos. and type of important road points in each indicating alignment of each road as measured on the map.
- Nature and number of major crossings.

- Mapping the industrial installations, structures, and important places for identification of Roads.
- Approach to the line in general for construction & maintenance.
- Reaches through protected or Reserved Forests
- Continuously long stretches in paddy fields.
- Close parallelism with Railway lines.
- Restricted areas such as civil and military airfield are avoided.
- Aircraft landing approaches are avoided.

Walkover Survey was carried out going over the area associated with the routes and collecting features observed other than those existing on the map. In addition the indications on following features are also checked.

- Communication lines
- Accessibility and smoother approach.
- Logistics of the route.
- Economic viability of the route.
- Existing and Present course of River
- Power lines (existing)
- Expanding villages and towns
- Rich gardens and plantations
- Reserved forests and high tree areas
- National Parks & Wild life sanctuaries
- Archeological monuments
- Aerodromes, radar centers etc.
- Steep sloping terrain, Areas prone to landslides, soil instability etc.
- Prohibited areas declared under statutory regulations

4.3 Remote Sensing

Remote Sensing is modern technique in mapping sciences. It is now a major tool to map any area on earth's surface for transmission of power. The planning for installation of large transmission towers needs proper planning. For this, updated base maps are required. Remote sensing imageries can help in updating of the available topographic maps. The recently launched satellites like IKONOS, IRS-1C, 1D(PAN) having its very good spatial resolution of 1mt and 5.8mts through digital image processing techniques; it is able to identify even small features with the resolution as given above.

To select site for putting new transmission towers and lines especially in hilly terrains, the density of trees, elevation differences has to be carefully studied in detail. In such cases, remote sensing is the main technology, plays a vital role for the preparation of database on landforms, land use / land cover and related database. Integrating these informations in GIS platform, it is able to generate three

dimensional terrain model (DTMs) of the area, which can be further updated with the multi dated satellite images and aerial photographs also. Digital Photogrammetry is the potential technology to provide the information's on terrain elevation which has to be studied before locating site for transmission towers and lines. This has found great success in many European countries but yet to be implemented in the developing countries like India.

4.4 Satellite Image (Google Map)

Satellite Images were used as most authoritative document to record latest topographical changes along the surveyed routes. This involved the initiations of the following activities.

- Transferring of images to studios for processing and detailed measurements.
- Ground Verification was undertaken to study the authenticity of the images.

Camera is supposed to see topographic details vividly, that is the only reason, why satellite images are used in detailed survey in comparison to the traditional field work. The ground profile in digital form could be obtained from satellite images, which in turn enable the user to estimate various types earthwork involved like benching, revetments etc. could be computed by using the relevant software.

Appropriate techniques for obtaining soil conditions, depth of ground water, terrain conditions etc. for correct estimation of civil works could be explored.

Due to "Shadow Effect", some errors crop up in the satellite imageries, which affect the preliminary surveys, and it becomes difficult to differentiate between the forests and other greenery, consequently it becomes difficult to mark the forest boundaries etc.

- Proper resolution plays an important role in interpreting satellite images; higher resolution improves the quality of visual Context and may differentiate the ground realities closely.
- Relief data and subsoil data cannot be assessed from Satellite imageries.
- Digitization of Complete Zonal maps, rather selected features would provide a complete replica in integrated environment.
- Satellite data of resolution 1 – 5.8m will be preferable. However, the overall cost economy shall have to be worked out, as this data will be more costly, but will avoid field assignment in many places.
- Symbols of physical features in satellite imageries are not easily recognized by transmission line engineers.

4.5 Updating of Base map using Satellite Imageries

Digital maps prepared are subjected to refinement by using imagery. Details of Topography which might have undergone changes between the period of topographic survey and input of satellite imagery, like the rivers and nala courses, forestry and vegetation, highways and rail routes are re-incorporated in the digitized drawings, by using satellite imageries. The regions where the topography

does not match with the imageries, ground verification survey is undertaken. IRS 1D PAN & LISS III images were procured from NRSA. The satellite imagery rectifications include Geo-referencing, ortho-rectification, transformation and projections. The images are rectified using ERDAS Imagine Software. The digitization process involves on screen digitization of imagery using AutoCAD Map and Map Info Software.

i. Satellite Data Selection

For updating of base maps NRSA Pan (5.88 m) and LISS-III (23.5 m) merged imagery are used.

ii. Satellite Data Pre-Processing

This phase includes the standard operations of geometric correction and registration of the satellite images into the required Co-ordinate System. Ground control points (GCP's) on the satellite images and on the topographic/paper maps are identified and the liner geometric correction functions available in the ERDAS Images 8.3.1 are applied.

iii. Satellite Data Classification

For unsupervised classification, the ISODATA methods are applied, and for supervised classification, the Maximum Likelihood Classification (MLC) is preferred. To identify the sample areas for supervised classification, specific procedures and information from topographic/paper maps are used together with thematic maps and expert knowledge of the terrain after field checking.

iv. Satellite Data Interpretation and Vectorization of the Resulting Units

Interpretation and vectorization on the screen, available in Arc View shape format are preferred because polygons created have vector format and can be directly transformed to a land base maps. In order to update line features (railroads, roads, streams) the ERDAS Imagine's Edge Enhancement filter is used.

v. Classification

A Comprehensive and standardized classification system would be created for mapping exercises. The classification of features would use a set of criteria that would allow correlation with existing classifications and legends for creation of land base map.

vi. Field Checking

Field visits would be undertaken in all areas under study to collect terrain information and interpretation keys useful for image interpretation. Later, field checking would be carried out to test accuracy of image interpretation at selected sites and to clarify interpretation assumptions. GPS would be used to precisely locate the ground sites investigated.

vii. Composition of final Land Base Maps

Vector shape files would be created manually, in Arc View using both the original image and the result of the supervised classification in the background to provide a basis for visual interpretation.

5. SEISMIC AND WIND ZONE DETAILS

India has been divided into five seismic zones depending on the intensity of earthquake. Zone 1 representing the safest zone while the Zone 5 is the most vulnerable and prone to high intensity Earthquake.

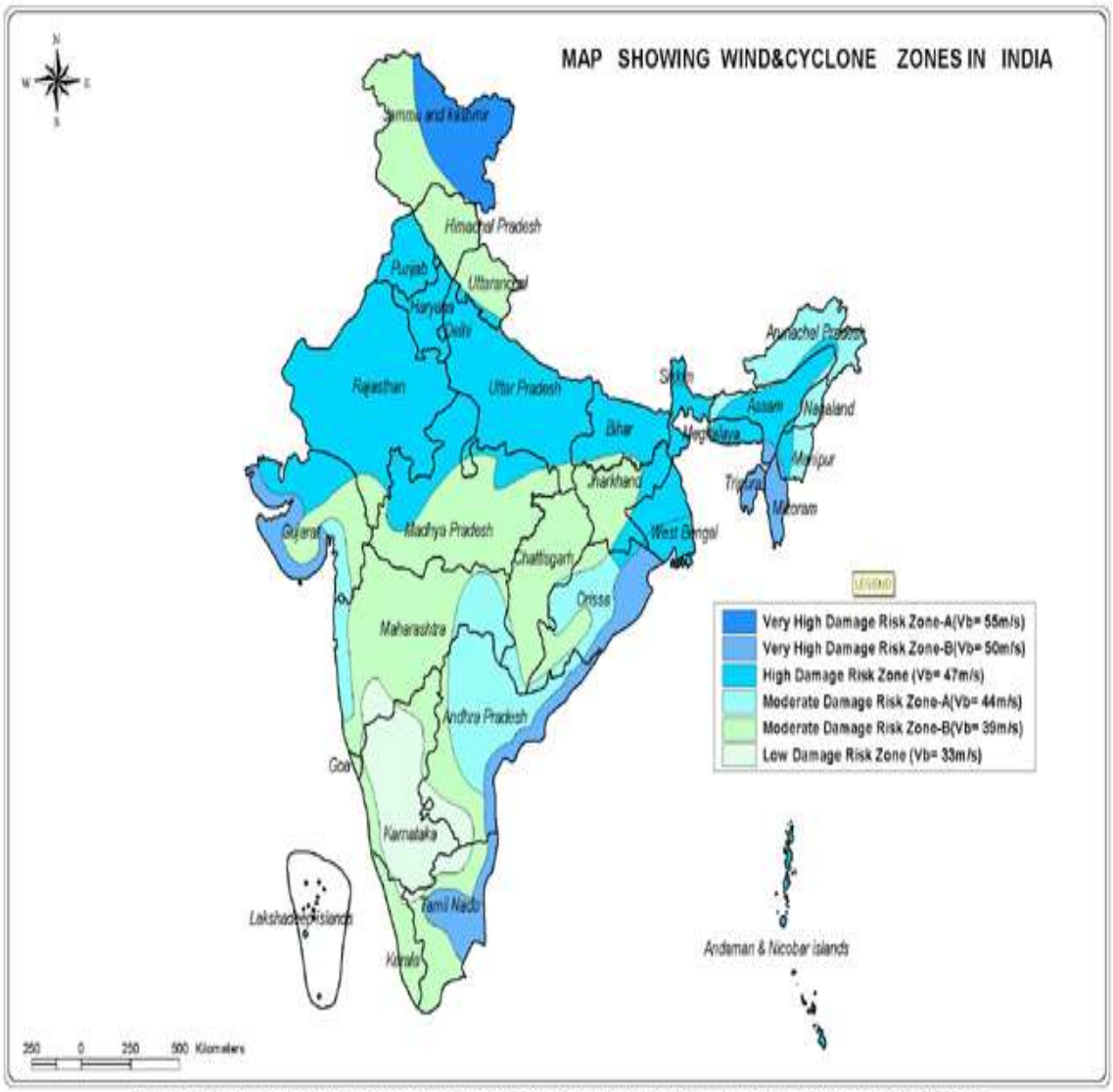
Location showing the Seismic zones of India is shown below.

6. WIND ZONE DETAILS

The proposed line routes passing through the following:

Kota, Tonk, Dungarpur, Udaipur and Bharatpur districts falls under wind zone- IV (47m/s) and location showing the seismic zone of India is attached below.

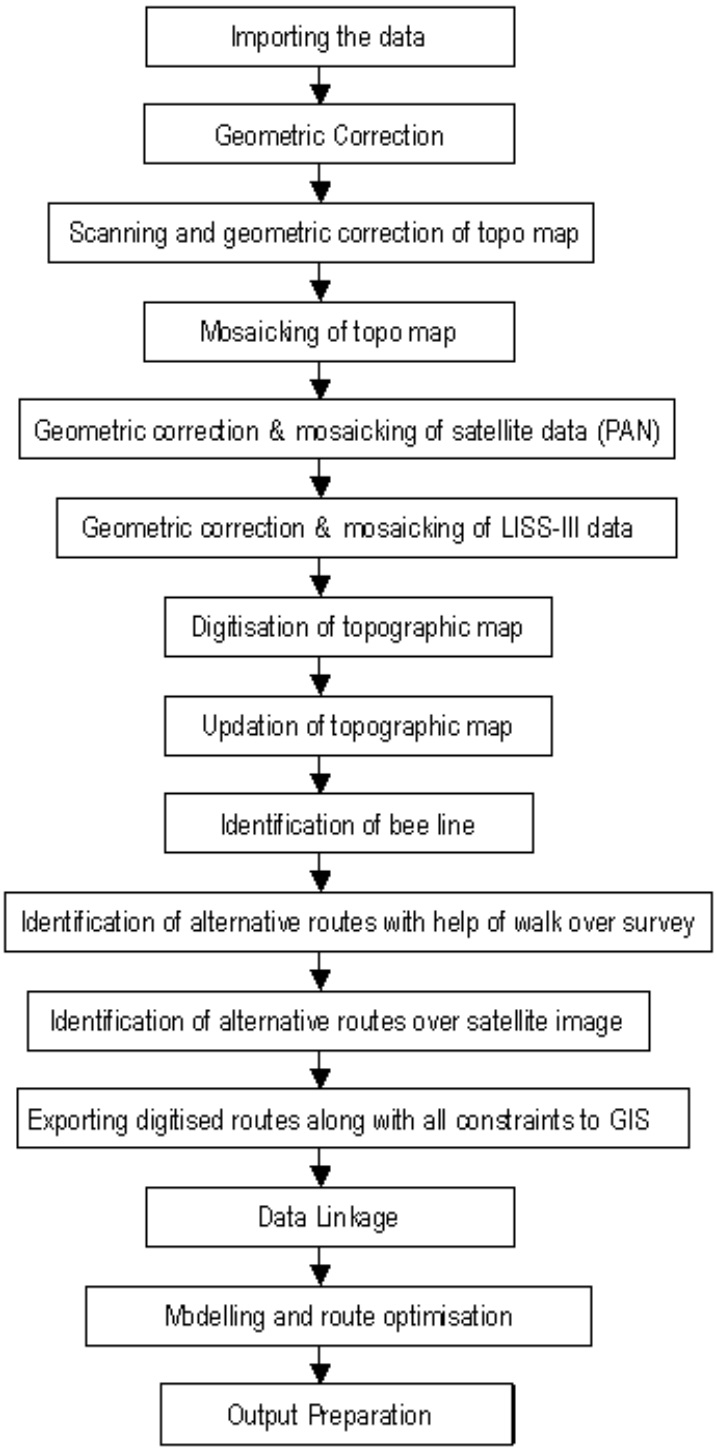
Location showing the Wind zones of India is attached below.



Disclaimer : All efforts have been made to make this image accurate. However UNDP do not own any responsibility for the correctness or authenticity of the same Source: BMTPC, India

7. METHODOLOGY FOR ROUTE IDENTIFICATION

Fig.: Flow Chart of the Methodology for Route Identification



7.1 Route survey techniques:

The route alignments were carried out by help of satellite images available in google map. Physical walk over survey was conducted on final routes and GPS coordinates were collected at every 100 meters along with soil strata. Based on the information so collected, the best route was selected after evaluation of factors like, minimum forest coverage, angle points, river crossing, power line crossing, habitation etc. the final route length is more or less closer to the bee line route. It shall also be noted that the transmission line route do not have any R & R issues and the crossing of NH, other power lines, river / canal are minimal.

7.2 Legal Frame Work

It is proposed to execute the above entire transmission system as per provisions contained in the Indian Electricity Act 2003 and the rules made there under and the Electricity (Supply) Act 1910 and 1948, so far as these are applicable.

The following regulatory and Government approval will be taken. :-

- Transmission License from Rajasthan Electricity Regulatory Commission (RERC).
- Approval of under section 68 of Indian Electricity Act 2003.
- Approval of under section 164 of Indian Electricity Act 2003.
- Tariff Adoption from RERC.

8. ENVIRONMENTAL IMPACT ASSESSMENT

8.1 Forest involvement / Clearance

As per the practice, preliminary route selection is done based on such documents as the Forest Atlas and the survey of India maps using “bee” line method followed by field clarification through walk over survey. All possible steps are taken to avoid the route alignment through forest. In case where it becomes unavoidable due to the geography of terrain, the alignment is made in such a way that the route through the forest is the barest minimum.

8.1.1 For selection of optimum routes following points are taken into consideration:

i. The route of the transmission line does not involve any human rehabilitation.
ii. Any monument of culture or historical importance is not getting affected.
iii. The route does not create any threat to the survival of any community with special reference to tribals.
iv. It does not affect any Public Utility Services like Play Ground, School, other Establishment, etc.
v. It does not pass through any sanctuaries, Nation Park etc. if any alternative route is feasible.
vi. It does not infringe with areas of natural resources.

vii. 15 kms away from major towns to account for future urban expansion

In case where it becomes unavoidable due to the geography of terrain, the alignment is made in such a way that the bare minimum line route through forest is selected.

Name of Transmission line	Forest – Involvement (Approx. Area in km)
LILO of 132 kV S/C Mahaveer Nagar Deoli Manjhi line	11.338

9. PROJECT COST

The total project cost including taxes and duties works out to INR **9.285** Crores.

10. APPROVALS AND CLEARANCES

Following approvals and clearances need to be obtained from the various authorities at the different stages of the project. Close follow up will be exercised for the timely approval of the below items.

Sl. No.	Statutory Clearances	Concerned Authority	Remarks
	Required prior to construction:		
1	Approval Under section 68 of E.A 2003	GOR	Obtained
2	Approval Under section 164 of E.A 2003	GOR	Obtained
3	Transmission License	RERC	Obtained
4	Tariff Adoption	RERC	Obtained
	Required during/after construction.		
5	Forest Approval	MoEF	Under Process
6	Aviation	AAI	Under Process
7	PTCC clearance	GOR	Under Process
8	Power Line Crossing	Concern Utility	During Construction. Required for particular crossing span.
9	Railway Crossing	Railway Authority	During Construction. Required for particular crossing span.
10	National Highway Crossing	NHAI	During Construction. Required for particular crossing span.
11	Final Charging Clearance approval	CEA/ GOR	Before Charging of System

(GOR- Government of Rajasthan)

Annexure – I

COMPARATIVE STATEMENT OF ALTERNATIVE ROUTES

Sl. No.	DESCRIPTION	Route-I	Route-II	Route-III
1	**Route Particulars**			
	(i) Bee Line (KM)	**8.760 Km**	**8.760 Km**	**8.760 Km**
	(ii) Length (KM)	**11.338 Km**	**12.128 Km**	**13.317 Km**
	(iii) Angle Points	**15 Nos**	**18 No.s**	**17 No.s**
	(iv) Terrain	Plain Terrain- 95% Hilly / Undulation terrain- 5%	Plain Terrain- 90% Hilly / Undulation terrain- 10%	Plain Terrain- 80% Hilly / Undulation terrain- 20
2	**Environmental Impact**	Minimum	Moderate	High
3	**Houses within R.O.W.**	Away from Human settlements	Passing near to human settlement areas	Passing through human settlement areas
4	**Forest involvement**			
	Details of Forest involved	The forest involved of Protected forest. No reserved forest, Archeological / industrial Defence/ Aviation sites, wildlife Sanctuaries, national parks, Eco sensitive zone, Buffer Zone, Biosphere is involved in this alignment	The forest involved of Protected . No reserved forest, Archeological / Defence/ Aviation sites, wildlife Sanctuaries, national parks, Eco sensitive zone, Buffer Zone, Biosphere is involved in this alignment	Involving more forest area compared to route 1 & 2. No Reserved forest, Archeological / Defence/ Aviation sites, wildlife Sanctuaries, national parks, Eco sensitive zone, Buffer Zone, Biosphere is involved in this alignment
	State Involved	Rajasthan	Rajasthan	Rajasthan
	Length of forest area	8.0245 Km	10.752 Km	12.693 Km
	Reserved Forest	-	-	-
	Protected Forest	21.6661 Ha	29.0304 Ha	34.2711 Ha
	Revenue Forest			
	Total Forest area	**21.6661 Ha**	**29.0304 Ha**	**34.2711 Ha**
	No of trees in forest	50	100	300
	Flora	Some scattered trees flora through most of the alignment commonly	Dense and diverse flora in the alignment species like scattered	Very Dense and diverse flora in the alignment trees like Babool, Bair,

Sl. No.	DESCRIPTION	Route-I	Route-II	Route-III
		found species like Babool, Bair, etc The said selected corridor consist mostly barren land compared to route 2&3 hence the said route has very less damage to crop & trees	trees Babool, Bair, Lime, Jamun etc, Involving of very less farming land	Lime, Jamun etc., Involving of farming land and the same will be unavoidable
	Fauna	Commonly found species like Rabbit, common monkey, Langur, Squirrel, etc.,	Rabbit, Deer, Langur, Rhesus, etc.,	Antelope, Rabbit, common monkey, Langur, Porcupine, etc.,
5	Highway Crossing	02	02	02
6	Power Line Crossing:	2 Nos	2 Nos	2 Nos
7	Industrial Corridor	Nil	Nil	Nil
8	Site Connectivity	Good	Moderately Good	Not Good
9	**Recommendations**	This route length are comparable minimum involvement of forest well connected by road network which is convenient for construction /O&M. this route has no wildlife sanctuaries Biosphere, ESZs, Defence & Aviation zones, Industrial corridors. This route has less vegetation, away from settlements areas and least forest land involved Least no of trees will be impacted. Hence this route is more feasible economical, environment friendly and goo road connectivity to project location and **Beaning Recommended.**	This route is ruled out due to ecological reasons as forest land involved is more compared to Route I, The proposed corridor is passing through some of the settlements areas, Involvement of populated areas, industrial area and cultivation and no proper approach roads to project sites alternative route is uneconomical & unfeasible.	This route is ruled out due to longest route length compared to Route I & II Impact on ecology is expected to be high due to higher forest area, Involvement of populated areas, Intuitional area and cultivation lands most of the area is not feasible in terms of constructability and approach roads.

Government of Rajasthan
Energy Department

F.15(13)Energy/2017 Dated: 11/9/2017

NOTIFICATION

The State Government has notified new transmission projects (1 No. 220kV GSS & 15 Nos. 132kV GSS) on PPP mode for execution through 100% subsidiaries (SPV) of RVPN in three packages namely Raj/PPP-08, Raj/PPP-09 & Raj/PPP-10 for meeting out the increasing demand of power in future. Accordingly, "Hadoti Power Transmission Services Ltd", "Barmer Power Transmission Services Ltd" and "Thar Power Transmission Services Ltd" all 100% subsidiaries (SPV) of RVPN, have been created by RVPN for installation of specific utilities in public interest.

"Hadoti Power Transmission Services Ltd", "Barmer Power Transmission Services Ltd" and "Thar Power Transmission Services Ltd" have requested the State Government to issue gazette notification u/s 164 of Electricity Act, 2003 for Establishing Transmission System for 220 KV & 132 KV GSS along with associated transmission lines and associated schemes/ works under RAJ/PPP-8, RAJ/PPP-9 and RAJ/PPP-10 respectively.

The approval of the State Government under Section 68 of the Electricity Act, 2003 for overhead transmission lines as a part of proposed projects has been issued vide Energy Department's letters dated 5.6.2015, dated 31.7.2015 and dated 6.10.2016.

The matter has been considered at the State Government level and in exercise of powers conferred by Section 164 of Electricity Act, 2003 (Central Act No. 36 of 2003), the State Government for the purpose of placing electric lines or electric plants for the transmission of electricity or for the purpose of telephone or telegraphic communications necessary for the proper coordination of works or for the purpose of establishing Transmission System for 220 KV & 132 KV GSS along with associated transmission lines and associated schemes/works under RAJ/PPP-9, RAJ/PPP-10 and RAJ/PPP-8, is hereby authorized "Hadoti Power Transmission Services Ltd", "Barmer Power Transmission Services Ltd" and "Thar Power Transmission Services Ltd", 31(A), 6th Floor, Plot No.5, Swej Farm, Mahima Trinity, New Sanganer Road, Jaipur (Raj.)-302019 respectively, subject to the Indian Telegraph Act, 1885 (Central Act 13 of 1885) hereinafter referred to as the said Act. The details of transmission lines along with details of villages is as under :-

PPP-8 Hadoti Power Transmission Services Limited

1 A) LILO of 220 kV S/C Kota – Badod Line & KTPS- Modak line associated with 220 kV Ranpur GSS , Kota		
Name Of Village	**Tehsil**	**District**
Ranpur, Lakhava, Khera Jagpura, Dharampura, Baorikhara, Pachankul, Banda	Ladpura	Kota
1 B) LILO of 132 kV Mahaveer Nagar Deoli Manjhi Line associated with 220 kV Ranpur GSS, Kota		
Name Of Village	**Tehsil**	**District**
Ranpur, Khera Jagpura, Lakhava, Rojnn, Dadhdevi, Anandpura, Rangbari, Prem Nagar, Kansuwa, Kanwarpura, Ummedganj	Ladpura	Kota
1 C) LILO of 132 kV S/C Kota- Mandana Town Line associated with 220 kV Ranpur GSS, Kota		
Name Of Village	**Tehsil**	**District**
Ranpur, Lakhava, Khera Jagpura, Dharampura	Ladpura	Kota
2. 132 kV S/C Malpura – Peeplu Line associated with 132 kV Peeplu GSS Distt. Tonk		
Name Of Village	**Tehsil**	**District**
Dorahi, Bhairwa Dhani, Malpura, Hatgi, Sadarpura, Brijlalnagar, Shastrinagar, Hanumangarh, Jhila ki Dhani, Pindni, Chandsen ki Dhani, Chandsen, Meliyon ki Dhani, Prahladpura, Bhipur, Dhaula ka Khera, Amli, Digginukkar, Ganeshpura, Dholi, Narayanpura, Chorpura,	Malpura	Tonk
Sondiphal, Kalyanpura, Imamnagar, Borkhandi, Gordhanpura, Ahmedganj, Samadpura, Hanpura, Sitarampura, Sandera, Bhurawali, Loharwara, Amritnagar, Banwara,Jaikishanpura	Peeplu	
3) LILO O 132 kV S/C Seemalwara- Sagwara Line, 132 kV Chitri GSS Distt. Dungarpur		
Name Of Village	**Tehsil**	**District**
Dhala, Hindoliya, Damriya Dahala, Dhalaubli, Bhemai, Bhik Talai, Khumanpur, Kadaiya Fala, Khuntwara, Jogpur, Semliya, Ghata ka Gaon, Chitri	Galiyakot	Dungarpur

4) 132 kV GSS Salumbar # S/C Line Associated With132 kV Bambora GSS Distt. Udaipur

Name Of Village	Tehsil	District
Har, Isarwas, Bonora,Kerpura, Biljon ka Gura, Gamrapal, Rathoron ka Gura, Chivora, Dolpura, Bhimpura, Jambura, Makarsima, Borla, Ghati, Karavall, Singawali, Sarari, Kaduni, Panikotra, Odwadia, Dantrai, Pratappura, Dhulji ka Gura ,Gingla, Samatiamagri, Kharka, Loda, Gurel, Pipiya, Idana, Kenpura, Jetpura,	Salumbar	Udaipur
Phila, Somakhera, Patukhera, Kardia, Kalodiya, Karankala, Darji Magri, Jamun, Mala ka Gura, Bombora, Kotlia, Nadivala, Sulawas, Bilwa	Girwa	

5) LILO of 132 kV D/C Nadbai – Weir line (15 kM) associated with132 kV Khatoti GSS Distt. Bharatpur

Name Of Village	Tehsil	District
Badhwari Khurd, Badhwari Kalan, Khera, Nam, Gudawaji, Maliyan ka Nagla, Kawai ka Nagla, Bailara, Kheri Devisingh, Kheri ka Nagla, Lalchah, Kasganj, Khangri, Katra, Nadbai, Milkipura, Wajitpura, Bhutpura, Piprau, Kishanpura, Karoy, Garhi, Nagla Wakta, Sogriya,Kolupura, Jhaurol,Khatauti, Kawai	Nadbai	Bharatpur

PPP-9 Barmer Power Transmission Services Limited

1) LILO of 132 kV S/C Beawar -Merta line associated with 132 kV GSS Riyabari (Alniyawas) Distt. Nagaur (13 KM)

Name of Village	Tehsil	District
Jhintiya, Badayali, Kiran ki Dhani, Rian, Sunyas, Lungiyan, Purohitasoi	Merta	Nagaur
Kodiya	Degana	Nagaur

2) 132 kV S/C line from 132 GSS Undoo to 132kV GSS Baytu associated with132 kV GSS Baytu (Kanod) Distt. Barmer (36 KM)

Name of Village	Tehsil	District
Undoo, Champoniyon ki dhani, Borli Thali, Gorsiyon ki Dhani, Chaibchi Thali,	Sheo	Barmer
Paima ki thali, Beraron ki Dhani, Baldon ka tala, Patali Talai, Rateu, Taje ki dhani, Hudon ki Dhani, Dipanion ki Dhani, Shahar, Ganganawali thali, Saranon ki Dhani, Sandhewala Dhora, Chorlia Dhora, Puniyo ka Tala,Dugero Ka Dhora, Ghetalo Dhora, Mata ki Dhani, Madiya Dhora, Sindhiya ka Dhani, Kanor	Baytu	Barmer

3. 132 kV S/C line from 220 kV GSS Dhorimanna to 132 kV GSS Ram Ji Ki Gol associated with132 kV GSS Ram Ji Ki Gol Distt. Barmer (30 KM)

Name of Village	Tehsil	District
Dhonmana ki khard, Ajoniyon ki Dhani, Samartha ki Beri, Kojaji ki Beri, Bhimthal, Kataria, Mudhsar, Suda beri, Kothala, Pabubara, Piprali, Tejiyawas, Ramji ka Gol, Sinawara	Gudha Malani	Barmer

4. LILO of 132 kV S/C Beawer- Jaitaran line associated with132 kV GSS Bar (Birathiya Kalan) Distt. Pali (3.5 KM)

Name of Village	Tehsil	District
Lakshmangarh, Hajiwas, Dhulkot, Bogasani, Birantiya Kalan,Dholidher	Raipur	Pali
Samauki, Prithigarh	Jaitaran	Pali

5. LILO of 132 kV S/C Pali-Jodhpur line associated with132 kV GSS Ghumati (Bhaton Ki Dhani Giradara) Distt. Pali (10 KM)

Name of Village	Tehsil	District
Bandai, Tikhi Magri, Chotila, Modi Magri, Kerla, Kharda, Gajangarh,	Rohat	Pali
Baldon ki Dhani, Bhat ki Dhani, Gujron ki Dhani, Shekhawaton ki Dhani, Jawariya, Ghumti	Pali	Pali

6. 132 kV S/C line from 220 kV Jalore to 132 kV GSS Ahore (Bhenswara) associated with132 kV GSS Ahore (Bhenswara) Distt. Jalore (14 KM)

Name of Village	Tehsil	District
Leta, Ratanpura	Jalore	Jalore
Sakarna, Godhan, Kaniwara, Bichhawari, Samuja, Bhainswara,	Ahor	Jalore

PPP-10 Thar Power Transmission Services Limited

1) 132 kV S/C Dechu Rajmathai line associated with 132 kV GSS Rajmathai (Satapur) Distt. Jaisalmer

Name of Village	Tehsil	District
Kumharon Ki Dhani, Sagran, Bhikhariya ki Dhani, Untwaliya, Shivpura, Chandsama, Nagsingh Pura, Burkiya, Bakasar, Sanwalon ki Dhani, Saktaniyon ki dhani, Kalau, Charan thali, Kasargarh,	Shergarh	Jodhpur
Ratariya, Indiranagar, Padrora, Pemabhambhi Ki Dhani, Khejaria gaon, Khema ki Dhani, Khartha ki Dhani, Phojdaran ki Dhani, Gulewalithali, Punanan ki dhani, Jhalora, Nangana Tala, Dolanian ki Dhani, Ratansingh ki Dhani, Rajshing ki dhani, Kalu khan ki Dhani, Chainjira ki Dhani, Bharatsingh Ki Dhani, Khanadio ki Dhani, Rajmathai, Hemraj Ki dhani, Khushal Singh ki Dhani, Moodji ki Dhani, Kanaji ki Dhani, Hussain khan ka Tala	Pokaran	Jaisalmer

2) 132 kV S/C line Phalodi Bengantikalan associated with 132 kV GSS Bengantikalan Distt. Jodhpur

Name of Village	Tehsil	District
Phalodi, Mainly Babul, Ekan Bhatiya, Bhojka, Sadavata, Jagriya, Bhojka, Gopa, Chhoti Bavri, Mayakor, Bagji ka Par, Lakayat ki Dhani, Bengti Kalan	Phalodi	Jodhpur

3) 132 kV S/C Loonkaransar associated with 132 kV GSS Shekhsar Distt. Bikaner

Name of Village	Tehsil	District
Lunkaransar, Kakarwala, Pilawala Dhora, Bilthar Dhora, Kalubas, Nathwana, Goplan, Shaikhsar, Uchchharang Desarwali Delwa, Chak 10 LKD, Chak 8 LKD, Chak 5 LKD	Lunkaransar	Bikaner

4) LILO of 132 kV S/C Suratgarh Padampur line associated with 132 kV GSS Ghamurwali (Bhinjhbayala) Distt. Sri Ganganagar

Name of Village	Tehsil	District
Chak 14 ML, Chak 30 ML	Raisinghnagar	Sriganganagar
Lalewala, Chak 60 LNP, Chak 59 LNP1,Chak 27 ML, Rirmalsar Mandi, Chak 12 ML, Chak 58 LNP, Chak 45 LNP, Chak 61 LNP, Chak 56 LNP, Harkhewala, Chak 42 LNP(Kishanpura), Binjbayla, Huntpura, Chak 39 LNP, Chak 29 ML	Padampur	Sriganganagar

5) LILO of 132 kV S/C Reodar Badgaon line associated with 132 kV GSS Sorda Distt. Sirohi

Name of Village	Tehsil	District
Pithapura, Morvada, Sorada	Reodar	Sirohi

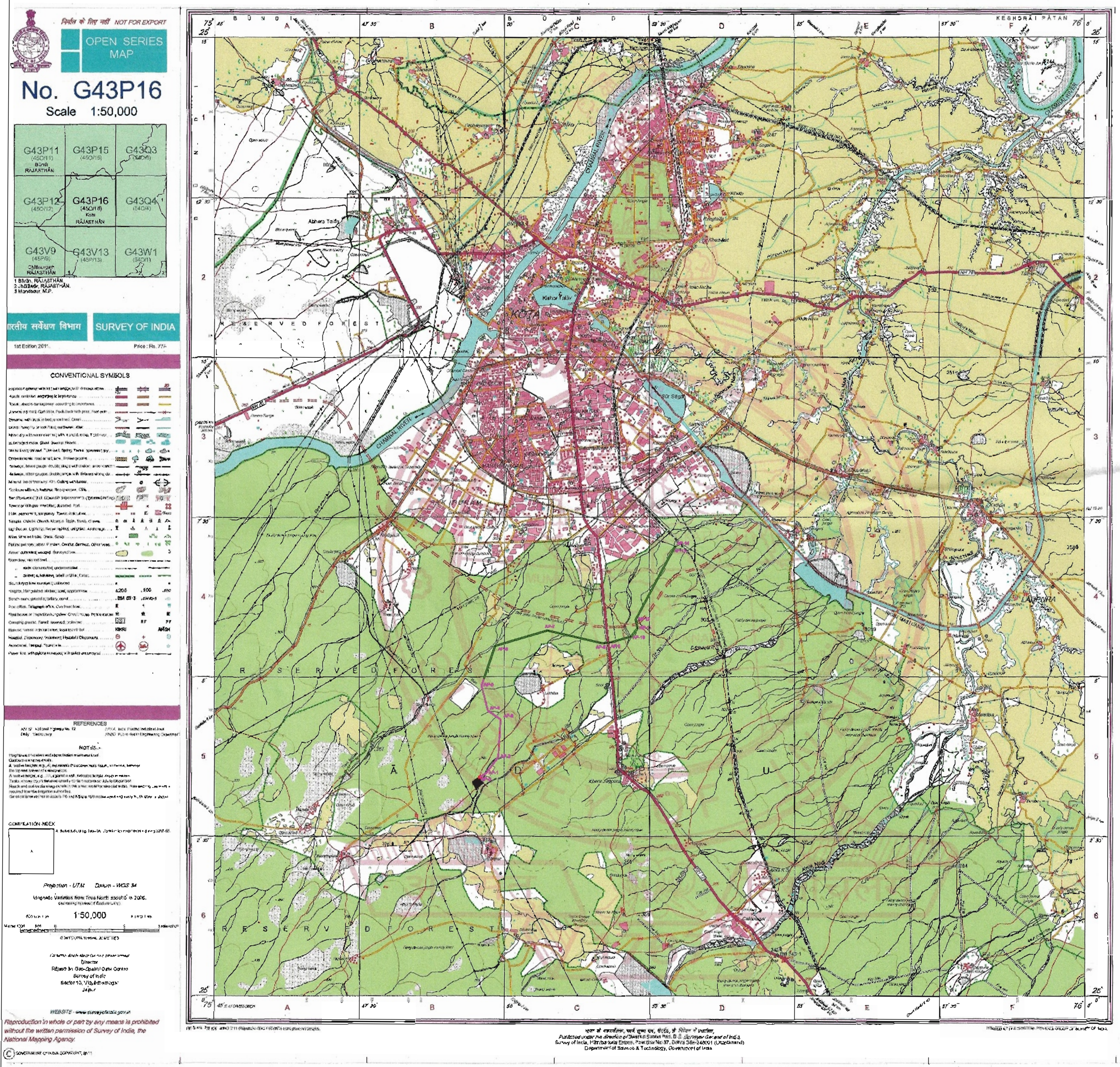
By order,

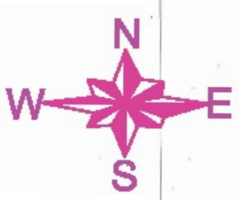
(Sanjay Malhotra)
Pr. Secretary to Government

Copy to :-

1. CMD RVPN
2. Collector, Nagaur/Barmer/Pali/Jalore/Jodhpur/Jaisalmer/Bikaner/Ganganagar/Sirohi/Kota/Tonk/Dungarpur/Udaipur/Bharatpur
3. Director, Printing & Stationery with the request to please get the notification published in the next Rajasthan Extraordinary Gazette.
4. Hadoti Power Transmission Services Ltd., Barmer Power Transmission Services Ltd. and Thar Power Transmission Services Ltd., 31(A), 6th Floor, Plot No.5, Swej Farm, Mahima Trinity, New Sanganer Road, Jaipur (Raj.)-302019
5. Guard File.

Pr. Secretary to Government





45O/11	45O/15	54C/3
45O/12	45O/16	54C/4
45P/9	45P/13	54D/1

LEGENDS

SL. NO	DESCRIPTION	SYMBOL
1	PROPOSED ROUTE	
2	FOREST AREA	

ROUTE LENGTH

SL. NO	ROUTE NAME	ROUTE LENGTH Km)
1.	BEE LINE	8.760 KM
2.	PROPOSED ROUTE	11.338 KM

SCALE:

Hadoti Power Transmission Service Ltd.

PROJECT	LILO of 132 kV SC Mahaveer Nagar Deoli Manjhi line
TITLE	Proposed Route Alignment on SOI Toposheet

FOR HPTSL	FOR FOREST DEPARTMENT