

GEOREFERENCED DGPS MAPPING 765kV D/C TRANSMISSION LINE PROJECT

**Additional System
Strengthening Scheme
for Chhattisgarh IPPs (Part-B)**

PREPARED BY



Table of Contents

1. Project Details	4
1.1 Introduction.....	4
1.2 Project Scope	5
1.3 Location of the Project	5
1.4 Methodology / Philosophy of Route Selection	6
1.5 Route survey techniques:.....	7
1.6 DGPS Survey	11
1.7 Detailed DGPS Survey Report for Forest Area (Village-Wise)	13
1.8 Legal Frame Work.....	17
2. Environmental Assessment	18
2.1 Forest involvement / Clearance	18
3. Project Cost	19
4. Approvals and Clearances	19

ANNEXURES –

- I. Digitized Village Maps showing DGPS Coordinates & Statement of forest land



DECLARATION

This is the final report for the work of "DGPS SURVEY OF RAIPUR RAJNANDGAON WARORA TRANSMISSION LIMITED". This report presents the methodology of preparation of the Geo-referenced maps of the 765 kV D/C Raipur Rajnandgaon Warora Transmission Line Project.

Date: 31.01.2016

Place: Nagpur

For Gammon India Limited

Authorized Signatory



GAMMON INDIA LIMITED

T & D Business Headquarters : G - 55, MIDC, Buzbon, Nagpur - 441 105, (Maharashtra) India
Phone : + 91 - 7104 - 265761 - 63, Fax : + 91 - 7104 - 265765, • Email : contact@rastrailtd.com • Website : www.rastrailtd.com
CIN : L74939MH1922PLC000997

1. PROJECT DETAILS

1.1 Introduction

In accordance with the Electricity Act, 2003, Regional Power Committees (RPC) have been constituted by the Central Government for the specified Region(s) for facilitating the Integrated operation of the power system in the Region and to facilitate inter-state / inter-regional transfer of power and to facilitate all functions of planning relating to inter-state/ intrastate transmission system with CTU / STU.

As per the 36th Standing Committee meeting, it was decided that the additional system strengthening scheme for evacuation of power from Chhattisgarh IPPs is required. As part of the above reinforcement requirement of the transmission network the following transmission elements got evolved as “Additional System Strengthening Scheme for Chhattisgarh IPPs (Part-B)”.

- (i) Raipur (Pool) : Rajnandgaon 765 kV D/c line.
- (ii) Rajnandgaon : Pooling station near Warora 765 kV D/c line.
- (iii) Establishment of new substation
near Rajnandgaon : 765/400 kV, 2x1500 MVA substation.

Further, the empowered committee in its 33rd meeting decided that the above system shall be put into competitive bidding.

The Government of India, Ministry of Power, vide Gazette Notification dated July 08, 2014 has notified PFC Consulting Limited to be the Bid Process Coordinator (BPC) for the purpose of selection of Bidder as Transmission Service Provider (TSP) to establish Transmission System for “Additional System Strengthening Scheme for Chhattisgarh IPPs (Part-B)” through tariff based competitive bidding process.

Adani Transmission Ltd (ATL) became successful bidder and acquired the Special Purpose Vehicle (SPV) “Raipur-Rajnandgaon-Warora Transmission Ltd”.

1.2 Project Scope

The scope of this project will include:

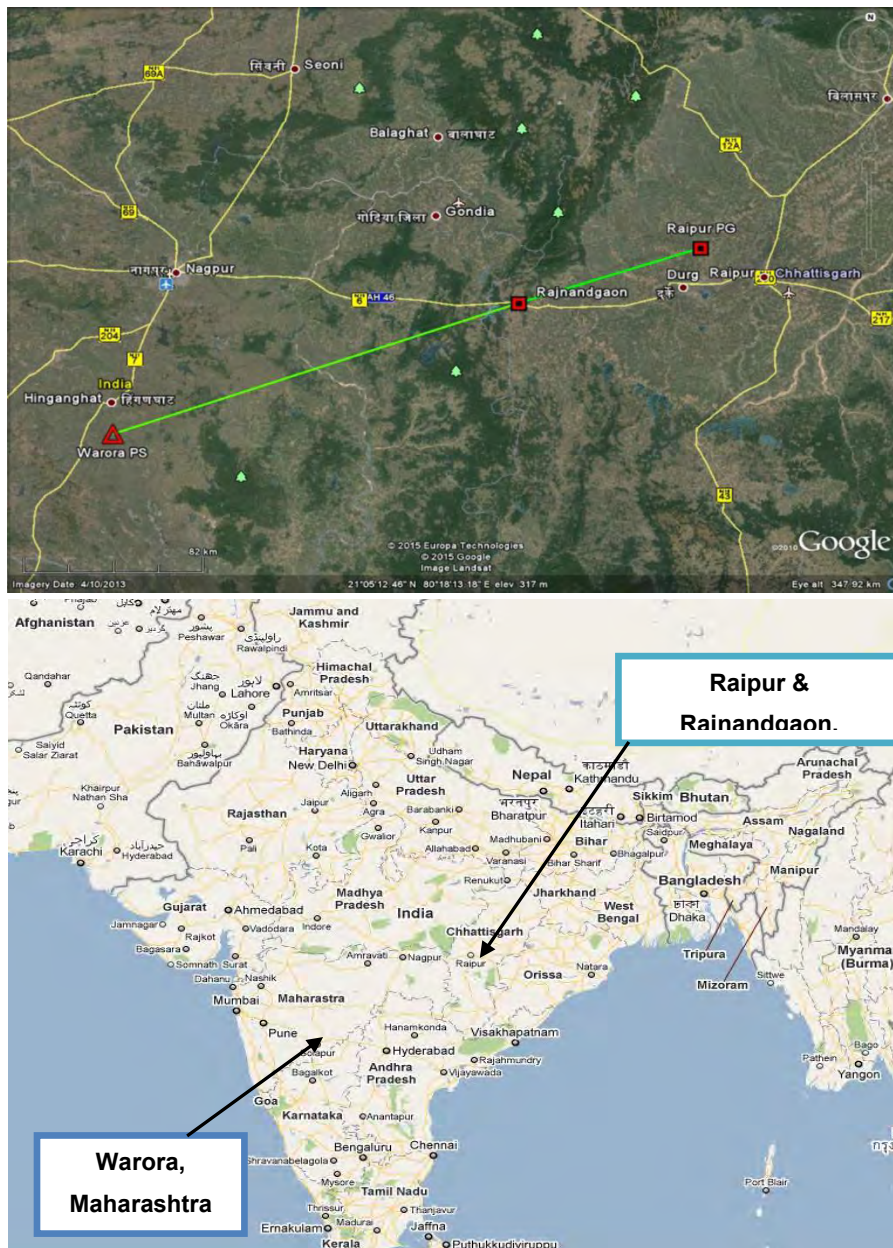
Sl.No.	Transmission System for “Additional System Strengthening Scheme for Chhattisgarh IPPs (Part-B)”
	Name of the Transmission Element
1.	Raipur Pool – Rajnandgaon 765kV D/c Line
2.	Rajnandgaon – New Pooling Station near Warora 765kV D/c Line
3.	<p>Establishment of new switching station near Rajnandgaon</p> <p>765kV Line bays – 6 nos. Bus reactor: 3 x 110 MVAR Bus reactor bay – 1 no. Line reactors: 7 x 110 MVAR (1 unit spare) (switchable for Warora line) Space for 765 kV bays – 4 nos. Space for 765 kV ICT bays – 3 nos.</p> <p>400kV Space for 400 kV ICT bays- 3 nos. Space for 400 kV bays – 4 nos.</p>

1.3 Location of the Project

Major element of this project is in the State of Maharashtra (70% of total line length) and rests of element is in the State of Chhattisgarh (30% of total line length).

Topology of the Transmission system:

S.No.	Description	Tentative Line Length (km)	State involved
1	765 kV D/C Raipur (Pool) - Rajnandgaon	40	Chhattisgarh
2	765 kV D/C Rajnandgaon - Warora	262	Chhattisgarh Maharashtra
3	765kV Switching Station at Rajnandgaon	-	Chhattisgarh



1.4 Methodology / Philosophy of Route Selection

In order to execute such magnitude of transmission system, selection of the line route is a very important criteria, however while deciding the route all the guidelines, rules, acts, etc. of the state as well as central has been taken in to account.

As transmission lines have to traverse from generating stations to load centers and beneficiary states, the topographical & geographical nature of the terrains play significant influence in the implementation of project as well as the project cost.

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

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. There are new means available which are used to conduct route survey using Google, DGPS based survey etc.

Following are the major factors taken into account while deciding the line route of the project as per the provisions of the acts and rules –

- a. Major habitation & settlement area avoided.
- b. Wild Life Sanctuary's , Biosphere's, Dense forest avoided.
- c. Minimum vegetation / tree cutting in the line route
- d. Minimum no of River Crossings , Railway Crossings, Highway Crossings, Power Line Crossings are considered.
- e. Lowest minimum forest area demand in the proposed route
- f. Archeological structures, defense sites, airport area, etc are avoided.
- g. Accessibility of approach road to the project site.
- h. Rich gardens, plantations, notified industrial area, etc to be avoided.
- i. Economic viability of the route

1.5 Route survey techniques:

Three (3) alternate route alignments were carried out by help of satellite images available in google map. Physical walk over survey was conducted on all the three routes and DGPS / 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 Infrastructural details along the routes between Raipur to Rajnandgaon of 765Kv D/C line are as follows:

Name of Proposed Transmission line between	:	765 kV D/C between Raipur to Rajnandgaon	
District	:	Durg and Rajnandgaon	
Total No. Angle Points	:	15	
Total Route Length	:	40 KMS (bee length 37.221 KMS)	
Terminal points	:	<u>Raipur substation:</u> Latitude 21°22'33.353" Longitude 81°20'54.291" <u>Rajnandgaon substation:</u> Latitude 21°18'43.41" Longitude 80°59'45.55"	
Major Crossings along the route :			
Total H.T. Line	:	Total=2 Nos.	
Total Railway Line	:	Nil	
National Highway (NH)	:	Nil	
State Highway (SH)	:	Nil	
River Crossing	:	Major River :	Seonath, 101m at Amner
	:	Minor River:	NIL
Forest /Sanctuary	:	Forest Area 10.055Ha / Sanctuary- Nil	
Minerals in the route corridor	:	Nil	
Type of Crops, Fruits, Forest Land, Hill are along the route	:	a) Crops	Paddy, Gram and vegetables
	:	b)Soil	Clayey silt with sand
	:	c) land	Plain (100%)
	:	d) Hill	NIL (0%)
Land involvement	:		Combination of barren and agriculture

Climate	:	Seasons	Summer= March to June, Rain= July to October, Winter= November to February
	:	b) Maximum Temperature	42.5°C
	:	c) Minimum Temperature	5°C
Specific features	:	This alternative route-1 having comparatively less route length (39.909 km), well connected by road network which makes it convenient for construction and maintenance of T/L. There is less forest involvement involvement, no major habitation, less no of line crossing, etc. Hence, this alternative route is feasible & economical and considered for execution.	

The Infrastructural details along the routes between Rajnandgaon to Warora of 765Kv D/C Line are as follows:

Name of Proposed Transmission line between	:	765 kV between Rajnandgaon and Warora
District	:	Rajnandgaon, Gondia, Gadchiroli, Wardha, and Chandrapur
Total No. Angle Points	:	81
Total Route Length	:	262 KMS (bee length 194.498 KMS)
Terminal points	:	<u>Warora substation:</u> Latitude 20°24,21.349" Longitude 78°51,33.908" <u>Rajnandgaon substation:</u> Latitude 21°18'43.41" Longitude 80°59'45.55"
Major Crossings along the route :		
Total H.T. Line	:	Total=14 Nos.
Total Railway Line	:	4
National Highway (NH)	:	1 (NH 6) and 3 (SH 233 and 234)

State Highway (SH)	:	Nil	
River Crossing	:	Major River :	Wain Ganga River -761 M and Chulband River 230M))
	:	Minor River:	NIL
Forest /Sanctuary	:	Around 47 Kms. No involvement of sanctuary.	
Minerals in the route corridor	:	Nil	
Type of Crops, Fruits, Forest Land, Hill are along the route	:	a) Crops	Cotton, Lentil, Maize, Gram, Paddy
	:	b) Soil	Black cotton
	:	c) land	Plain (90%)
	:	d) Hill	Undiluted/ hill (10%)
Land involvement	:		Combination of agriculture and forest
Climate	:	Seasons	Summer= March to June, Rain= July to October, Winter= November to February
	:	b) Maximum Temperature	42.5°C
	:	c) Minimum Temperature	5°C
Specific features	:	This alternative route-1 is having minimum Route Length, Minimum Major Crossing, well connected by road network which makes it convenient for construction and maintenance of T/L. The said route has less involvement of forest, river crossings, highway crossings, railway crossings, and no major habitations. Hence, this alternative route is feasible & economical and considered for execution.	

1.6 DGPS Survey

DGPS is a satellite based system developed and maintained by US Department of Defence. In this system 28 satellites are orbiting round the globe in six different planes which gives the coordinates of any point on the globe. The technology gives high accuracy coordinates when observed in differential GPS mode. In the survey, differential GPS technology was used for maintaining the overall control and accuracy of the survey exercise. DGPS control stations were established in the proposed area for one hundred and twenty minute of observation time for each angle point. The observed data was post processed to get the final DGPS survey results in UTM map projection system with 44 North zone parameters and WGS84 datum.

Following methodology was adopted for the work. The accuracy of the DGPS instruments used was 5mm +/-1ppm in static mode, which is sufficient for the said project.

Preliminary study and Data preparation work :

- Locations of the DGPS Pillars fixed by the client were first studied.
- Location for camping of the team and their mobilization schedule was planned and the major town and accessibility from the town to the remotest rover location was assessed.
- Study of the existing available village maps, mine lease map and SOI toposheet.

Simultaneously the team was mobilized to site, so that they will have the feel of the project, feel of the site conditions, and they were also made aware of the purpose / importance of the project.

Planning of the Activities :

Planning of the work is the most important activity in DGPS survey. In this exercise satellite data of the location to be surveyed was collected for fifteen minutes of observation, to collect the ephemeris data. The Planning activity defines the working schedule of the GPS observation. The ephemeris data was processed to know the

availability of the satellite data for the working days. The time with good availability of satellites with minimum PDOP are selected for the work. The stages include

- First the ephemeris data was downloaded of the area of interest.
- All the activities were planned based on the best availabilities of the satellite vehicle and minimum PDOP value.

Identification of the Base and Reference:

After the reconnaissance survey and planning, next task was to identify and establish the main reference point for the survey work. For the Elevations, reference considered was from a Bench Mark inside the mine area as given by client. For horizontal reference the DGPS Survey in UTM/WGS 84 for the base data was used. The EPOCH was set at 15 sec and the data was collected in UTM/WGS84 projection system with 44N zone parameters. The elevation mask for the observation was kept as 13° with reference to the Horizon. Following is the list of the Base stations established in the area of interest.

The DGPS observations were carried out on all the angle point / entry & exit point of the proposed route through forest. The rover locations were established by the client. In all GCPs were fixed on site. The data for each GCP was recorded in the DGPS Detail Form and digital photographs were taken for future reference.

The data from the DGPS was down loaded on day today basis through Trimble Data Transfer software. This data was then processed in Trimble Geomatic Office software to resolve the ambiguity using the UTM Standard 44 North zone parameters. The Base lines were processed to get the required accuracy.

Field Photographs**1.7 Detailed DGPS Survey Report for Forest Area (Village-Wise)**District : RajnandgaonTaluka : ChhuriyaVillage : Dama-Banjari

Itemwise Breakup of the forest land											
Name of Component	Name of Village	Name of Taluka	Gut No/Suv.no.	Forest Land Required				Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark
				Comp.No.	Length (m)	Width (m)	Area SQM				
765 KV DIC - RAJNANDGAON WARORA TRANSMISSION LINE	DAMA BANJARI	CHHURIA	94/1		134	67	6025	UNCLASSIFIED FOREST	0.6025		
			1	633	512	67	32299	PROTECTED FOREST	3.2299		
TOTAL					646		38324		3.8324	5.3533	

POINT ID	UTM		Degree, Minute Second	
	EASTING	NORTHING	LATITUDE	LONGITUDE
A1	453483.252	2310837.986	20°53'50"N	80°33'9.8"E
A2	453492.840	2310805.692	20°53'49"N	80°33'10.1"E
A3	453502.427	2310773.399	20°53'47.9"N	80°33'10.5"E
A4	453848.576	2310989.838	20°53'55"N	80°33'22.4"E
A5	453885.007	2310968.702	20°53'54.3"N	80°33'23.7"E
A6	453950.186	2310959.977	20°53'54"N	80°33'26"E
A7	454078.784	2311144.694	20°54'0"N	80°33'30.4"E
A8	454093.786	2311084.366	20°53'58.1"N	80°33'30.9"E
A9	454120.311	2311057.509	20°53'57.2"N	80°33'31.8"E
A10	454145.565	2311140.113	20°53'59.9"N	80°33'32.7"E
A11	454120.381	2311166.636	20°54'0.8"N	80°33'31.8"E
A12	454128.285	2311193.901	20°54'1.6"N	80°33'32.1"E
A13	454101.463	2311211.136	20°54'2.2"N	80°33'31.2"E
A14	454168.833	2311204.674	20°54'2"N	80°33'33.5"E
A15	454150.671	2311265.869	20°54'4"N	80°33'32.9"E
A16	454129.349	2311301.999	20°54'5.2"N	80°33'32.1"E
A17	454203.025	2311433.128	20°54'9.4"N	80°33'34.7"E
A18	454231.219	2311455.577	20°54'10.2"N	80°33'35.6"E

District : Rajnandgaon

Taluka : Chhuriya

Village : Kallu - Banjari

Itemwise Breakup of the forest land											
Name of Component	Name of Village	Name of Taluka	Gut No/Suv.no.	Forest Land Required				Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark
				Comp.No.	Length (m)	Width (m)	Area SQM				
765 KV DIC - RAJNANDGAON WARORA TRANSMISSION LINE	KALLU BANJARI	CHHURIA	105		137	67	9619	UNCLASSIFIED FOREST	0.9619		
TOTAL					137		9619		0.9619	14.8883	

POINT ID	UTM		Degree,Minute Second	
	EASTING	NORTHING	LATITUDE	LONGITUDE
A1	456717.996	2313352.536	20°55'12.1"N	80°35'1.6"E
A2	456763.033	2313343.924	20°55'11.8"N	80°35'3.1"E
A3	456813.341	2313340.999	20°55'11.7"N	80°35'4.9"E
A4	456815.640	2313425.256	20°55'14.5"N	80°35'4.9"E
A5	456871.968	2313427.855	20°55'14.5"N	80°35'6.9"E
A6	456949.370	2313444.294	20°55'15.1"N	80°35'9.6"E

District : Rajnandgaon

Taluka : Chhuriya

Village : Kesho - Tola

Itemwise Breakup of the forest land											
Name of Component	Name of Village	Name of Taluka	Gut No/Suv.no.	Forest Land Required				Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark
				Comp.No.	Length (m)	Width (m)	Area SQM				
765 KV D/C - RAJNANDGAON WARORA TRANSMISSION LINE	KESHOTOLA	CHHURIYA	308, 207	657	76	67	4697	PROTECTED FOREST	0.4697		
TOTAL					76		4697		0.4697	2.6592	

POINT ID	UTM		Degree,Minute Second	
	EASTING	NORTHING	LATITUDE	LONGITUDE
A1	460524.754	2317521.163	20°57'28.0"N	80°37'13.0"E
A2	460544.010	2317492.596	20°57'27.1"N	80°37'13.7"E
A3	460559.522	2317463.013	20°57'26.1"N	80°37'14.2"E
A4	460565.931	2317555.007	20°57'29.1"N	80°37'14.4"E
A5	460602.467	2317540.569	20°57'28.6"N	80°37'15.7"E
A6	460620.359	2317513.015	20°57'27.7"N	80°37'16.3"E

District : Rajnandgaon

Taluka : Chhuriya

Village : Lammeta

Itemwise Breakup of the forest land											
Name of Component	Name of Village	Name of Taluka	Gut No/Suv.no.	Forest Land Required				Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark
				Comp.No.	Length (m)	Width (m)	Area SQM				
765 KV DC - RAJNANDGAON WARORA TRANSMISSION LINE	LAMMETA	CHHUREYA	1	655	257	67	17174	PROTECTED FOREST	1,7174		
			289		234	67	15319		1,5319		
TOTAL					491		32493		3,2493	12,5359	

POINT ID	UTM		Degree,Minute Second	
	EASTING	NORTHING	LATITUDE	LONGITUDE
A1	461237.6019	2319904.769	20°58'45.6"N	80°37'37.5"E
A2	461272.999	2319915.112	20°58'45.9"N	80°37'38.7"E
A3	461317.2283	2319960.661	20°58'47.4"N	80°37'40.3"E
A4	461359.397	2320137.237	20°58'53.1"N	80°37'41.7"E
A5	461326.3721	2320143.137	20°58'53.3"N	80°37'40.6"E
A6	461292.5379	2320140.416	20°58'53.2"N	80°37'39.4"E
A7	461295.3002	2320157.052	20°58'53.8"N	80°37'39.5"E
A8	461328.2132	2320152.457	20°58'53.6"N	80°37'40.6"E
A9	461362.6398	2320151.075	20°58'53.6"N	80°37'41.8"E
A10	461421.3993	2320401.817	20°59'1.8"N	80°37'43.8"E
A11	461387.384	2320403.491	20°59'1.8"N	80°37'42.6"E
A12	461354.5367	2320408.178	20°59'2"N	80°37'41.5"E

District : Rajnandgaon

Taluka : Chhuriya

Village : Bhandarpur

Itemwise Breakup of the forest land											
Name of Component	Name of Village	Name of Taluka	Gut No/Suv.no.	Forest Land Required			Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark	
				Comp.No.	Length (m)	Width (m)					Area
											SQM
765 KV DC- RAJNANDGAON WARORA TRANSMISSION LINE	BHANDARPUR	CHHURIA	86		146		6785	UNCLASSIFIED FOREST	0.6785		
			226		210	67	8637		0.8637		
TOTAL					356		15422		1.5422	13.1978	

POINT ID	UTM		Degree,Minute Second	
	EASTING	NORTHING	LATITUDE	LONGITUDE
A1	464752.507	2325676.255	21°1'53.6"N	80°39'38.8"E
A2	464811.360	2325705.077	21°1'54.5"N	80°39'40.9"E
A3	464863.867	2325724.188	21°1'55.1"N	80°39'42.7"E
A4	464840.429	2325810.685	21°1'57.9"N	80°39'41.9"E
A5	464872.089	2325798.011	21°1'57.5"N	80°39'43.0"E
A6	464903.168	2325784.331	21°1'57.1"N	80°39'44.0"E
A7	465216.714	2326386.629	21°2'16.7"N	80°39'54.8"E
A8	465236.023	2326355.655	21°2'15.7"N	80°39'55.5"E
A9	465249.096	2326313.703	21°2'14.3"N	80°39'56.0"E
A10	465260.032	2326452.918	21°2'18.9"N	80°39'56.3"E
A11	465288.228	2326436.775	21°2'18.3"N	80°39'57.3"E
A12	465362.943	2326487.921	21°2'20.0"N	80°39'59.9"E

1.8 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.

2. ENVIRONMENTAL ASSESSMENT

2.1 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.

2.1.1 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 tribal.
- iv. It does not affect any Public Utility Services like Play Ground, School, etc.
- v. It does not pass through any Wildlife Sanctuaries, Nation Park, etc.
- 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. Length in Kms.)
765kV D/C Raipur Pool – Rajnandgaon Line	1.5 kms
765kV D/C Rajnandgaon – Warora Line	47 Kms

3. PROJECT COST

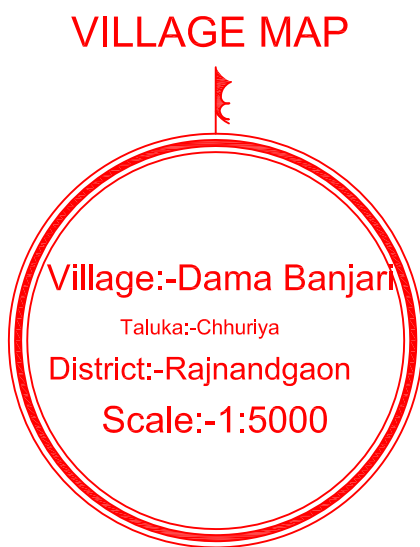
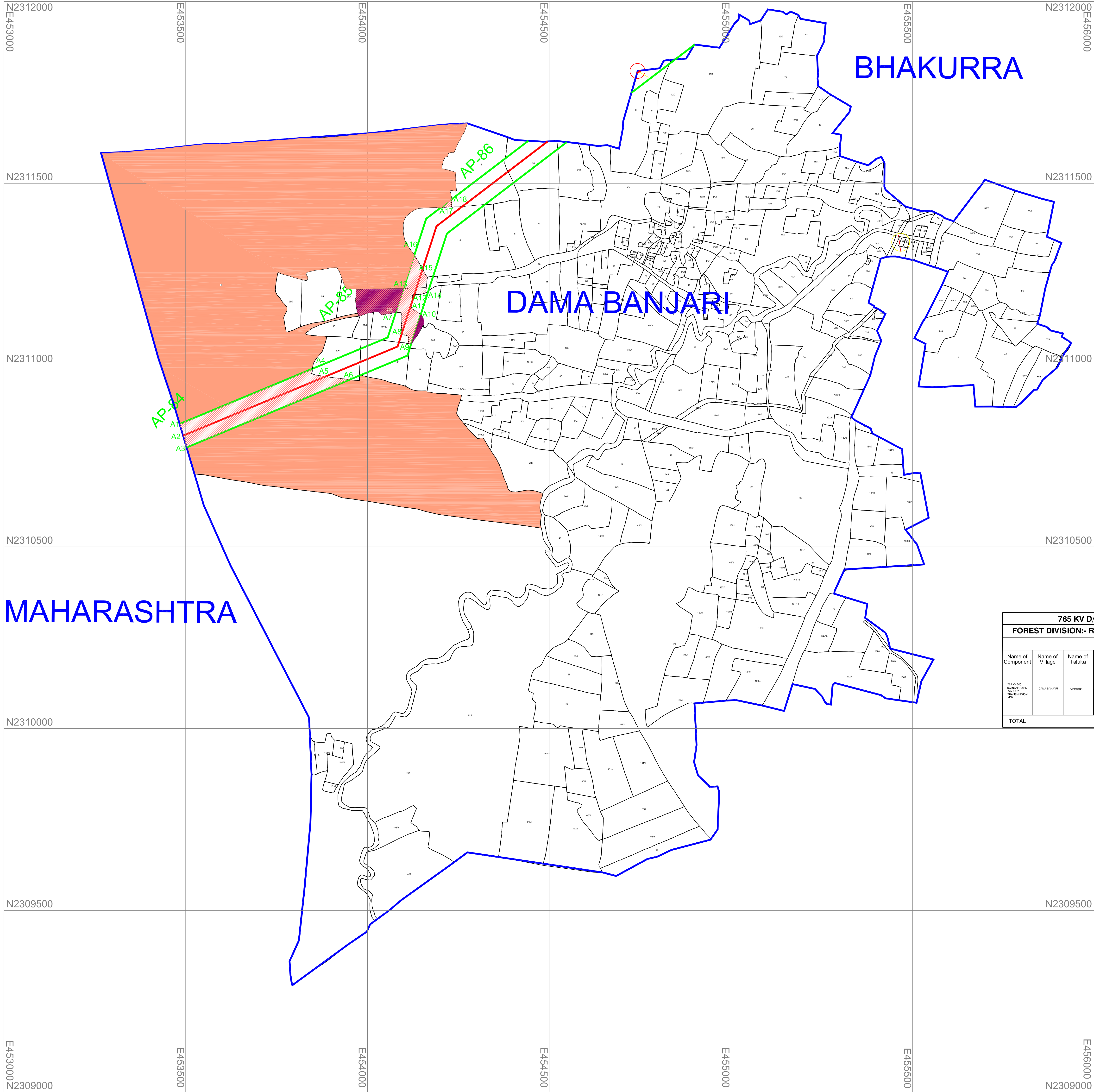
The total project cost including taxes and duties works out to INR 750 crores for Transmission line project from Raipur to Rajnandgaon to Wardha (Maharashtra).

4. 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.

Sr No	Statutory Clearances	Concerned Authority
1	Approval Under section 68 of E.A 2003	MoP
2	Transmission License	CERC
3	Tariff Adoption	CERC
4	Forest Approval	MoEF
5	Aviation	AAI
6	PTCC clearance	CEA
7	Power Line Crossing	Concern Utility
8	Railway Crossing	Railway Authority
9	National Highway Crossing	NHAI
11	Final Charging Clearance approval	CEA

ANNEXURE I



COORDINATE STATEMENT OF REQ. AREA OF RESERVED FOREST				
POINT ID	UTM		Degree,Minute Second	
	EASTING	NORTHING	LATITUDE	LONGITUDE
A1	453483.252	2310837.986	20°53'50"N	80°33'9.8"E
A2	453492.840	2310805.692	20°53'49"N	80°33'10.1"E
A3	453502.427	2310773.399	20°53'47.9"N	80°33'10.5"E
A4	453848.576	2310989.838	20°53'55"N	80°33'22.4"E
A5	453885.007	2310968.702	20°53'54.3"N	80°33'23.7"E
A6	453950.186	2310959.977	20°53'54"N	80°33'26"E
A7	454078.784	2311144.694	20°54'0"N	80°33'30.4"E
A8	454093.786	2311084.366	20°53'58.1"N	80°33'30.9"E
A9	454120.311	2311057.509	20°53'57.2"N	80°33'31.8"E
A10	454145.565	2311140.113	20°53'59.9"N	80°33'32.7"E
A11	454120.381	2311166.636	20°54'0.8"N	80°33'31.8"E
A12	454128.285	2311193.901	20°54'1.6"N	80°33'32.1"E
A13	454101.463	2311211.136	20°54'2.2"N	80°33'31.2"E
A14	454168.833	2311204.674	20°54'2"N	80°33'33.5"E
A15	454150.671	2311265.869	20°54'4"N	80°33'32.9"E
A16	454129.349	2311301.999	20°54'5.2"N	80°33'32.1"E
A17	454203.025	2311433.128	20°54'9.4"N	80°33'34.7"E
A18	454231.219	2311455.577	20°54'10.2"N	80°33'35.6"E


765 KV D/C RAJNANDGAON-WARORA TRANSMISSION LINE										
FOREST DIVISION:- RAJNANDGAON					DISTRICT:-RAJNANDGAON					
Itemwise Breakup of the forest land										
Name of Component	Name of Village	Name of Taluka	Gut No/Suv.no.	Forest Land Required			Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark
				Comp.No.	Length (m)	Width (m)				
765 KV D/C - RAJNANDGAON-WARORA TRANSMISSION LINE	DAMA BANJARI	CHHURLIYA	847	154	47	6005	UNCLASSIFIED FOREST	5.0005		
			1	623	47	32289	PROTECTED FOREST	3.2289		
			TOTAL			646		38324		3.8324

INDEX	
LINE CORRIDOR	33.5 M
PROTECTED FOREST	
RESERVED FOREST	
UNCLASSIFIED FOREST	
REQUIRED FOREST AREA	
VILLAGE BOUNDARY	
KHASRA BOUNDARY	
NALA/RIVER	
S/GUT NO	47
POINT ID	A'

RAIPUR RAJNANDGAON WARORA TRANSMISSION LTD.

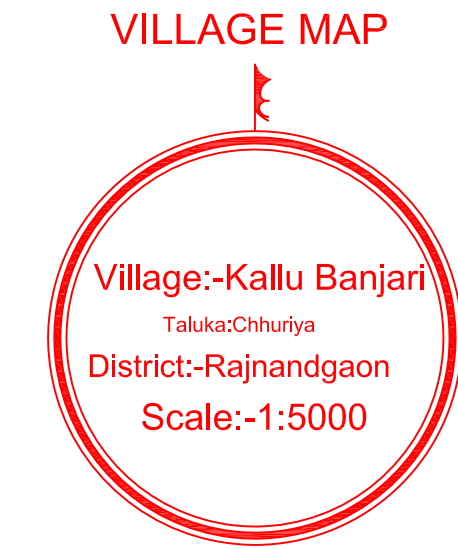
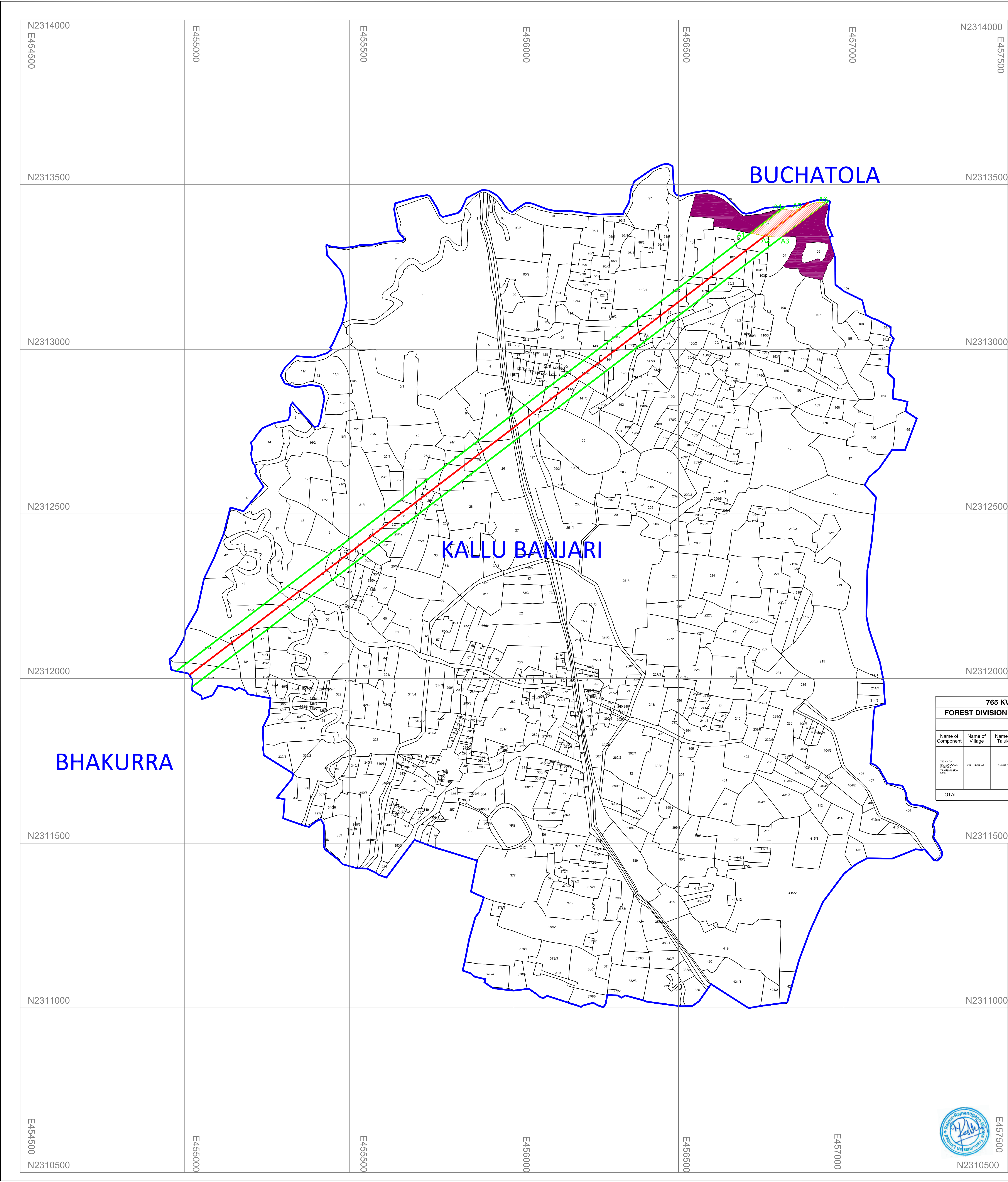
PROJECT NAME: 765 KV D/C - RAJNANDGAON WARORA TRANSMISSION LINE PROJECT

VILLAGE MAP- DAMA BANJARI

**FOR RRWL**

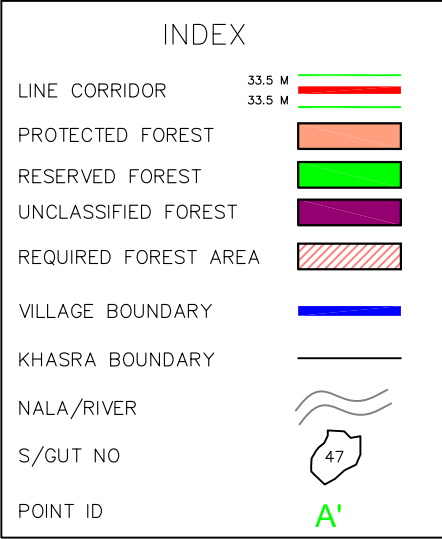
FOR FOREST DEPT.

DRAWING NO.: RRRWL/FC/VM/114



COORDINATE STATEMENT OF REQ. AREA OF RESERVED FOREST				
POINT ID	UTM		Degree,Minute Second	
	EASTING	NORTHING	LATITUDE	LONGITUDE
A1	456717.996	2313352.536	20°55'12.1"N	80°35'1.6"E
A2	456763.033	2313343.924	20°55'11.8"N	80°35'3.1"E
A3	456813.341	2313340.999	20°55'11.7"N	80°35'4.9"E
A4	456871.640	2313425.256	20°55'14.5"N	80°35'4.9"E
A5	456871.968	2313427.855	20°55'14.5"N	80°35'6.9"E
A6	456949.370	2313444.294	20°55'15.1"N	80°35'9.6"E

765 KV D/C RAJNANDGAON-WARORA TRANSMISSION LINE											
FOREST DIVISION:- RAJNANDGAON					DISTRICT:-RAJNANDGAON						
Itemwise Breakup of the forest land											
Name of Component	Name of Village	Name of Taluka	Gut No/Suv.no.	Forest Land Required			Area SQM	Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark
				Comp.No.	Length (m)	Width (m)					
765KV TRANSMISSION LINE Right of Way	KALLU BANJARI	CHHURIA	108		107	47	9619	UNCLASSIFIED FOREST	0.9619	14.8883	
TOTAL					137		9619		0.9619	14.8883	



RAIPUR RAJNANDGAON WARORA TRANSMISSION LTD.

PROJECT NAME: 765 KV D/C - RAJNANDGAON WARORA TRANSMISSION LINE PROJECT

VILLAGE MAP- KALLU BANJARI

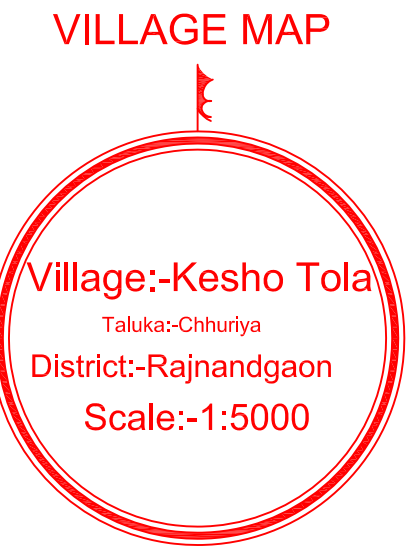
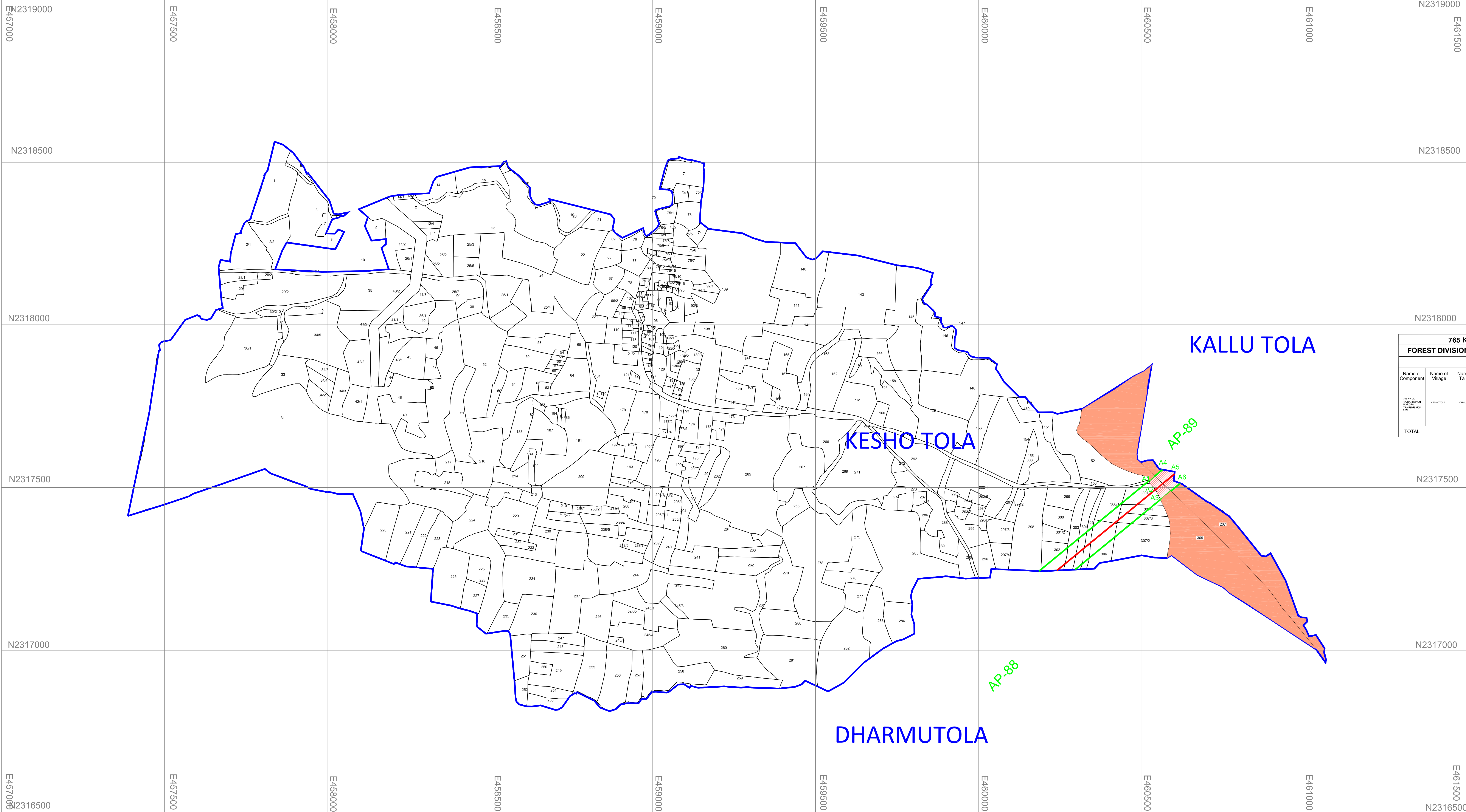
FOR RRWTL

FOR FOREST DEPT.

DRAWING NO.:

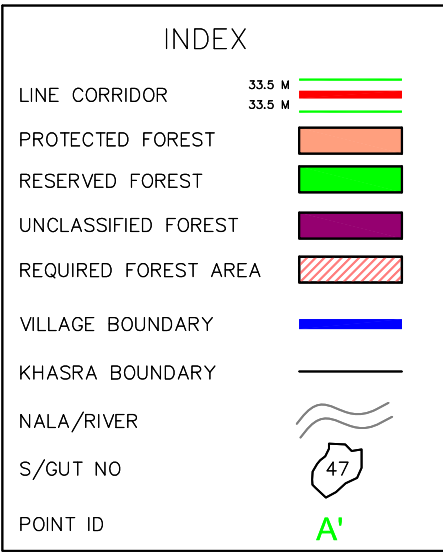
RRWTL/FC/VM/116





COORDINATE STATEMENT OF REQ. AREA OF RESERVED FOREST					
POINT ID	UTM		Degree,Minute Second		
	EASTING	NORTHING	LATITUDE	LONGITUDE	
A1	460524.754	2317521.163	20°57'28.0"N	80°37'13.0"E	
A2	460544.010	2317492.596	20°57'27.1"N	80°37'13.7"E	
A3	460559.522	2317463.013	20°57'26.1"N	80°37'14.2"E	
A4	460565.931	2317555.007	20°57'29.1"N	80°37'14.4"E	
A5	460602.467	2317540.569	20°57'28.6"N	80°37'15.7"E	
A6	460620.359	2317513.015	20°57'27.7"N	80°37'16.3"E	

765 KV D/C RAJNANDGAON-WARORA TRANSMISSION LINE										
FOREST DIVISION:- RAJNANDGAON						DISTRICT:-RAJANDGAON				
Itemwise Breakup of the forest land										
Name of Component	Name of Village	Name of Taluka	Gut No/Surv.no.	Forest Land Required			Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark
				Comp.No.	Length (m)	Width (m)				
765KV D/C RAJNANDGAON-WARORA TRANSMISSION LINE	KESHOTOLA	DHARMUTOLA	280-287	807	76	87	4697	PROTECTED FOREST	0.4697	
TOTAL					76		4697		0.4697	2.6592



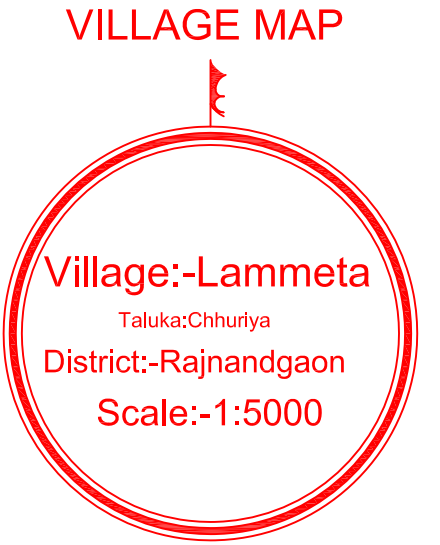
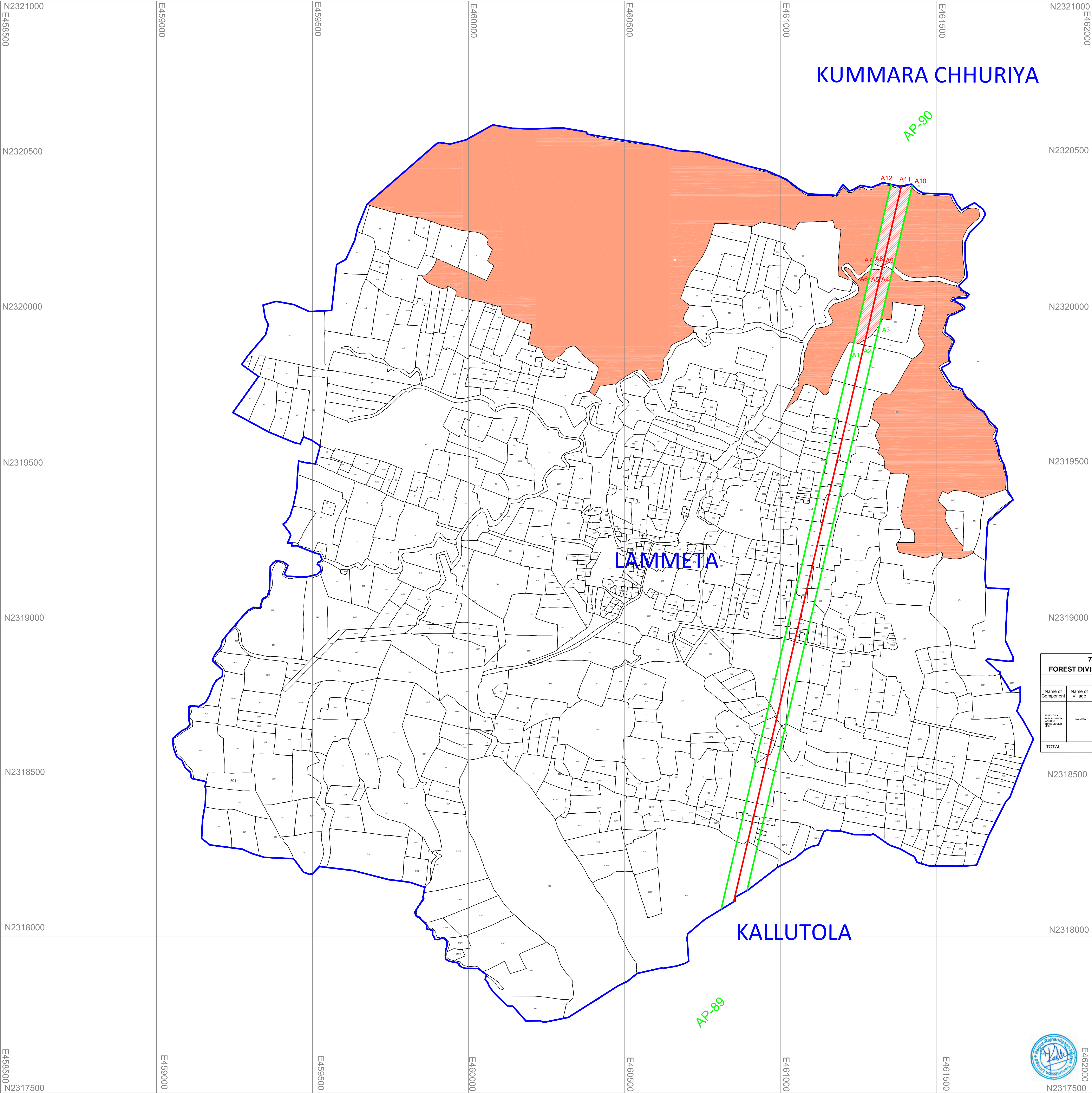
RAIPUR RAJNANDGAON WARORA TRANSMISSION LTD.

PROJECT NAME: 765 KV D/C - RAJNANDGAON WARORA TRANSMISSION LINE PROJECT

VILLAGE MAP-KESHO TOLA

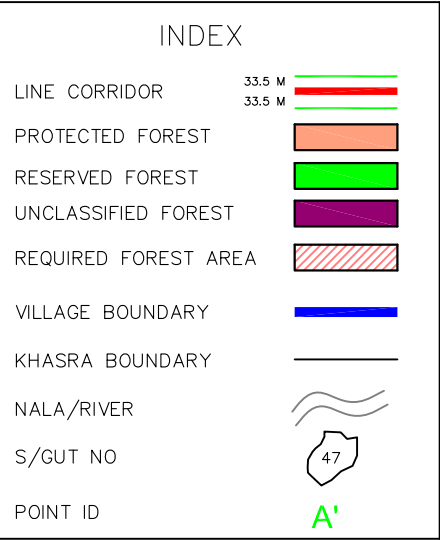


DRAWING NO.: RRWL/FC/VM/119

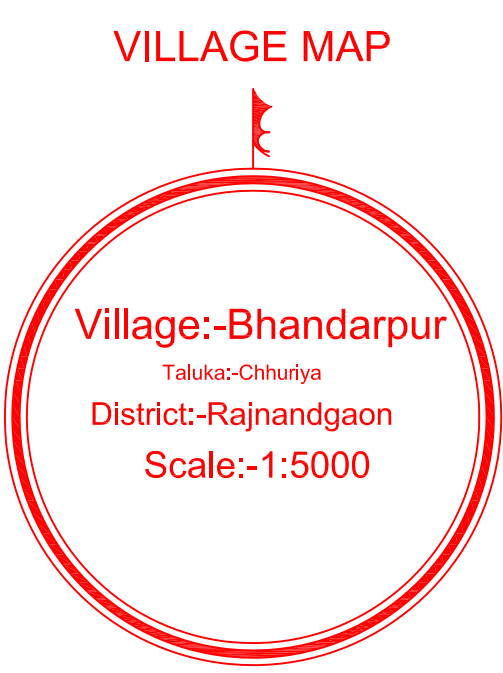
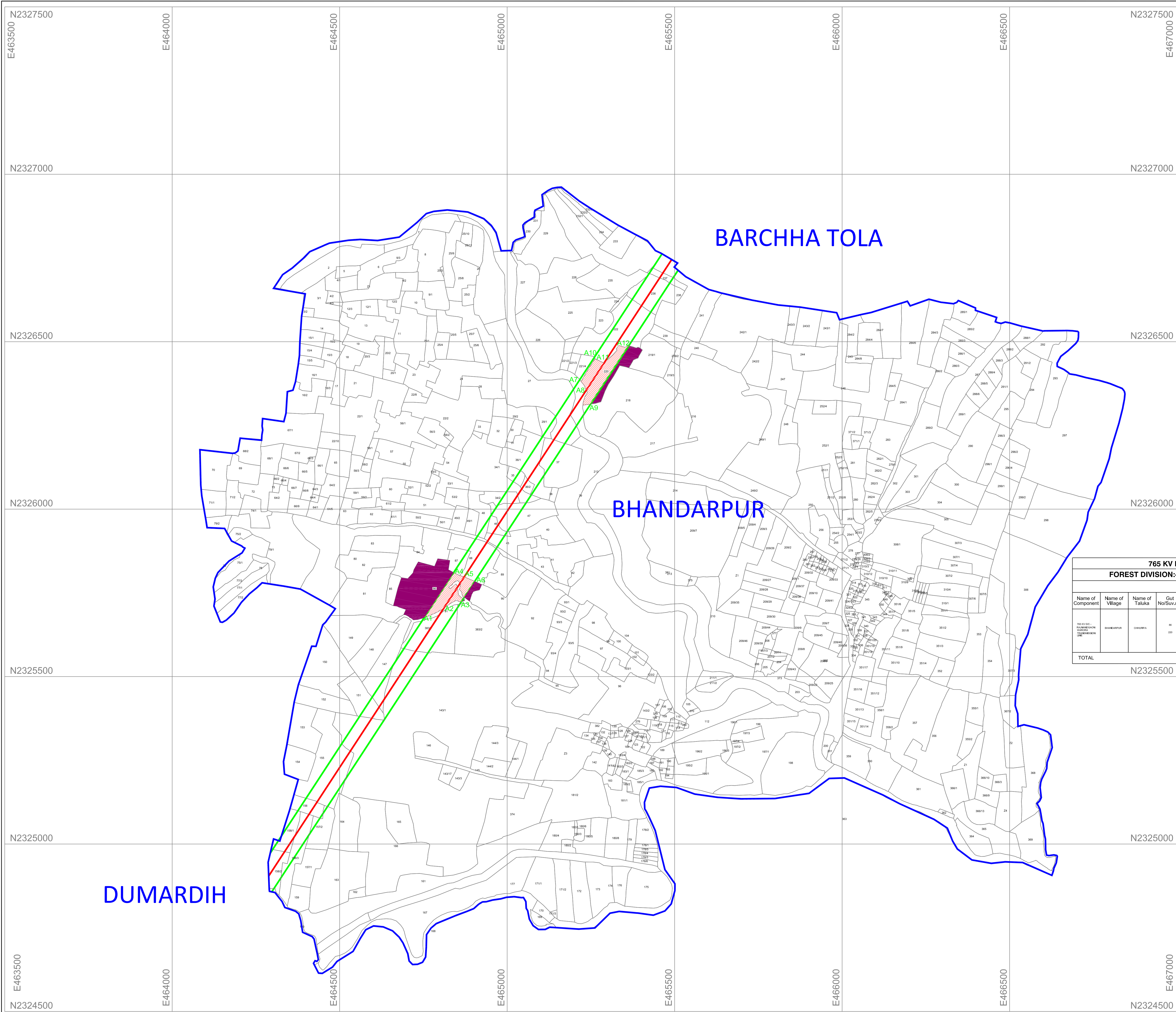


COORDINATE STATEMENT OF REQ. AREA OF RESERVED FOREST				
POINT ID	UTM		Degree,Minute Second	
	EASTING	NORTHING	LATITUDE	LONGITUDE
A1	461237.6019	2319904.769	20°58'45.6"N	80°37'37.5"E
A2	461272.999	2319915.112	20°58'45.9"N	80°37'38.7"E
A3	461317.2283	2319960.661	20°58'47.4"N	80°37'40.3"E
A4	461359.397	2320137.237	20°58'53.1"N	80°37'41.7"E
A5	461326.3721	2320143.137	20°58'53.3"N	80°37'40.6"E
A6	461292.5379	2320140.416	20°58'53.2"N	80°37'39.4"E
A7	461295.3002	2320157.052	20°58'53.8"N	80°37'39.5"E
A8	461328.2132	2320152.457	20°58'53.6"N	80°37'40.6"E
A9	461362.6398	2320151.075	20°58'53.6"N	80°37'41.8"E
A10	461421.3993	2320401.817	20°59'1.8"N	80°37'43.8"E
A11	461387.384	2320403.491	20°59'1.8"N	80°37'42.6"E
A12	461354.5367	2320408.178	20°59'2"N	80°37'41.5"E

765 KV D/C RAJNANDGAON-WARORA TRANSMISSION LINE									
FOREST DIVISION:- RAJNANDGAON					DISTRICT:-RAJNANDGAON				
Itemwise Breakup of the forest land									
Name of Component	Name of Village	Name of Taluka	Gut No/Surv.no.	Forest Land Required		Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark
				Comp.No.	Width (m)				
765 KV D/C RAJNANDGAON-WARORA TRANSMISSION LINE	LAMMETA	CHHURIYA	1	001	107	107	107	107	PROTECTED FOREST
			209	001	124	124	124	124	PROTECTED FOREST
			TOTAL					491	



RAIPUR RAJNANDGAON WARORA TRANSMISSION LTD.	
PROJECT NAME: 765 KV D/C - RAJNANDGAON WARORA TRANSMISSION LINE PROJECT	
VILLAGE MAP- LAMMETA	
FOR RRWTL	FOR FOREST DEPT.
DRAWING NO.:	RRWTL/FC/VM/121



COORDINATE STATEMENT OF REQ. AREA OF RESERVED FOREST				
POINT ID	UTM		Degree,Minute Second	
	EASTING	NORTHING	LATITUDE	LONGITUDE
A1	464752.507	2325676.255	21°1'53.6"N	80°39'38.8"E
A2	464811.360	2325705.077	21°1'54.5"N	80°39'40.9"E
A3	464863.867	2325724.188	21°1'55.1"N	80°39'42.7"E
A4	464840.429	2325810.685	21°1'57.9"N	80°39'41.9"E
A5	464872.089	2325798.011	21°1'57.5"N	80°39'43.0"E
A6	464903.168	2325784.331	21°1'57.1"N	80°39'44.0"E
A7	465216.714	2326386.629	21°2'16.7"N	80°39'54.8"E
A8	465236.023	2326355.655	21°2'15.7"N	80°39'55.5"E
A9	465249.096	2326313.703	21°2'14.3"N	80°39'56.0"E
A10	465260.032	2326452.918	21°2'18.9"N	80°39'56.3"E
A11	465288.228	2326436.775	21°2'18.3"N	80°39'57.3"E
A12	465362.943	2326487.921	21°2'20.0"N	80°39'59.9"E

765 KV D/C RAJNANDGAON-WARORA TRANSMISSION LINE										
FOREST DIVISION:- RAJNANDGAON					DISTRICT:-RAJNANDGAON					
Itemwise Breakup of the forest land										
Name of Component	Name of Village	Name of Taluka	Gut No/Surv.No.	Forest Land Required			Legal status of Land	Total Forest Area (Ha)	Total non-Forest Area (Ha)	Remark
				Comp.No.	Length (m)	Width (m)				
765 KV D/C RAJNANDGAON-WARORA TRANSMISSION LINE	BHANDARPUR	CHURIYA	90/220		140/210	67	4755	UNCLASSIFIED FOREST	15422	
TOTAL					356		15422		1,5422	13,1978

INDEX	
LINE CORRIDOR	33.3 W 33.4 W
PROTECTED FOREST	
RESERVED FOREST	
UNCLASSIFIED FOREST	
REQUIRED FOREST AREA	
VILLAGE BOUNDARY	
KHASRA BOUNDARY	
NALA/RIVER	
S/GUT NO	
POINT ID	A'

RAIPUR RAJNANDGAON WARORA TRANSMISSION LTD.

PROJECT NAME: 765 KV D/C - RAJNANDGAON WARORA TRANSMISSION LINE PROJECT

VILLAGE MAP- BHANDARPUR

FOR RRWTL

FOR FOREST DEPT.

DRAWING NO.: RRWTL/FC/VM/126