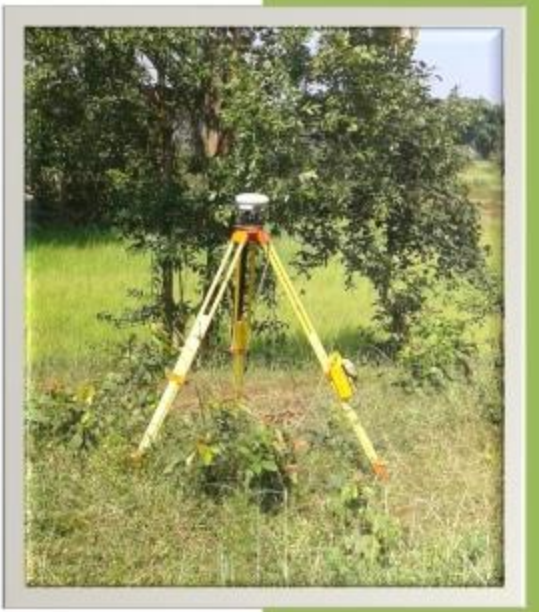
Preparation of the Geo-referenced map through DGPS survey of Forest land diversion in Kharsia, Tamnar,Raigarh,& Ghorghoda Ranges of Raigarh Forest Division over an area of 7.011 Ha. For 132kV D/C Gerwani to Karichhapar (TSS)Line by CSPTCL in Chhattisgarh State.



Consultant

IGLOBE SOLUTIONS
CONSULTANT, NEW DELHI

Preparation of the Geo-referenced map through DGPS survey of Forest land proposed for diversion in Kharsia, Tamnar,Raigargh & Ghorghoda Forest Range under Raigarh Forest Division over an area of 6.911 Ha. for 132kV D/C Germani to Karichhapar (TSS) Transmission line by Chhattisgarh State Power Transmission Company Limited (CSPTCL)

August, 2019

Executive Engineer
EHT (C) Dn. CSPTCL
Bilaspur

वन मण्डलाधिकारी
रायगढ़,वनमण्डल

Prepared for:

Chhattisgarh State Power Transmission Company Limited,
Project office: Raipur, Vikas Dangania, Chhattisgarh

Prepared by:

IGLOBE SOLUTIONS
C-194, Ishwar Nagar, *Okhla Railway Station, New Friends Colony, New Delhi-110053*

1. INTRODUCTION AND BACKGROUND INFORMATION

Chhattisgarh State Electricity Board (CSEB) was responsible for Generation, Transmission and Distribution of electricity in Chhattisgarh State. In accordance with the provisions contained in the Section 131-134 of Electricity Act 2003, Govt. of Chhattisgarh has reorganized erstwhile CSEB into following five companies vide Notification No. F1-8/ 2008/ 13/ 1 dated 19.12.2008:-

- Chhattisgarh State Power Holding Company Limited,
- Chhattisgarh State Power Generation Company Limited,
- **Chhattisgarh State Power Transmission Company Limited (CSPTCL)**
- Chhattisgarh State Power Distribution Company Limited and
- Chhattisgarh State Power Trading Company Limited

CSPTCL had invited agencies for participation in Tender of construction of 132kV D/C D/C Germani to Karichhapar (TSS) Transmission line. R.S Infraprojects Pvt. Ltd. had been participated in the international competitive bidding process for Transmission Line in Chhattisgarh and R.S.Infraprojects Pvt.Ltd. has been declared as the successful bidder.

Required approval for laying of said transmission line has been taken from Government of Chattisgarh for construction of transmission element by "Chhattisgarh State Power Transmission Company Limited" (Associated Transmission Lines are 132kV D/C Gerwani to Karichhapar Transmission Line.

The detail of line is mentioned here under:

1. **132KV D/C GERWANI TO KARICHHAPAR(TSS)LINE:** Above said line passes through Kharisa, Tamnar,Raigarh & Ghorghoda Forest Range of Raigarh Forest Division & Raigarh District of Chhattisgarh State.

Now, As per directives of Ministry of Environment & Forests dated 8th July 2011; all applications seeking diversion of forest land for non-forest purpose under Forest Conservation Act, 1980 must be accompanied with Geo-referenced Maps of the forest land proposed for diversion prepared using Differential GPS (DGPS).

As per Online Submission and Monitoring of Forests Clearances Proposals of MoEF & CC, the following maps and files are required to be uploaded

- Scanned copy of the Geo-Referenced map of the forest land proposed to be diverted by using DGPS or Total Station.
- KML file of the geo-reference forest land proposed to be diverted

In order to comply with the conditions of DGPS survey guideline, CSPTCL is entrusted this DGPS survey work to M/s IGLOBE Solutions, New Delhi, reputed firm specializing in such assignments.

1. SCOPE

The envisaged scopes of the assignments are described below

- Computation of Geo-referenced forest land through digitization and comparison with area indicated in the land schedule.
- Processing of DGPS observation and geo-referencing of the Forest land based on DGPS Surveyed co-ordinates.
- Generation of the shape file and kml file of the Forest land
- Printing of Hard copy maps and report.

2. DELIVERABLE

- Post processed DGPS observations data as well as raw data in RINEX format.
- Geo-referenced maps based on field observation.
- Geo-referenced shape, kml file (soft copy) of the Forest land with area statement.
- Submission of maps & report in 8 nos. hard copy along with soft copy and shape/kml file as per requirement of MoEF guidelines.

3. METHODOLOGY

3.1 INPUT DATA

The land Schedule and maps required for geo-referencing was provided by CSPTCL to M/s IGLBE SOLUTIONS along with the Forest area details for desk study. The following maps are used for the desk study.

- Survey of India Topo Sheets
- Land Schedule *(Table-1)*

TABLE-I : FOREST AREA DETAILS

A. Protected Forest & Reserve Forest Details for Raigarh Forest Division

Land Schedule of 132kV D/C GERWANI TO KARICHHAPAR(TSS)LINE FOR CHHATTISGARH STATE POWER TRANSMISSION FOREST AREA COMING IN RAIGARH FOREST DIVISION 132KV D/C GERMANI-KARICHHAPAR (TSS)LINE ,CSPTCL									
Sl. No.	Crossing Location		Crossing Details	Nos. of Crossing	Corridor	Sides	Length/ Width	Area in Sq Mtr formula	Forest area in Hectare	Remark
1	AP02	AP05	RAIGARH RANGE	1	27	2	2	634	1.5471	
4	AP20	AP22	KHARSIA RANGE	1	27	2	2	347	0.9369	
6	AP25	AP26	TAMNAR RANGE	1	27	2	2	165	0.4506	
4	AP32	AP33	GHARGHODA RANGE	1	27	2	2	536	0.7774	
Total Forest area under RAIGARH Forest DIVISION									3.712	
GRAND TOTAL (RAIGARH FOREST DIVISION)									3.712	

B. Revenue Forest & Orange Forest Details for Raigarh Forest Division

SCHEDULE OF FOREST LAND - REVENUE FOREST						
SR NO.	PATCH NO.	DISTRICT	TEHSIL	VILLAGE NAME	KHASRA NUMBER	DIVERSION AREA(IN HA.)
1	PATCH NO-1	RAIGARH	RAIGARH	PALI	49	0.046
2	PATCH NO-2			PALI	115	0.079
3	PATCH NO-3			DELARI	192/1	0.096
4	PATCH NO-4		TAMNAR	SARAIPALI	515/1	0.179
5	PATCH NO-5			SARAIPALI	515/2	0.370
6	PATCH NO-6			SARAIPALI	495	0.227
7	PATCH NO-7			BHUIKURI	27	0.040
8	PATCH NO-8			HARIDIH	76	0.022
9	PATCH NO-9		GHORGHODA	CHARRATANGAR	864	0.478
10	PATCH NO-10			CHARRATANGAR	951	0.021
11	PATCH NO-11			CHARRATANGAR	932	0.064
12	PATCH NO-12			CHARRATANGAR	747	0.005
13	PATCH NO-13			CHARRATANGAR	746	0.012
14	PATCH NO-14			CHARRATANGAR	229	0.081
15	PATCH NO-15			CHARRATANGAR	799/1	0.229
16	PATCH NO-16			CHARRATANGAR	561/1	0.127
17	PATCH NO-17			CHARRATANGAR	734	0.043
18	PATCH NO-18			CHARRATANGAR	822/1	0.162
19	PATCH NO-19			AMLIDIH	254	0.040
20	PATCH NO-20			BAIHAMUDA	6/1	0.081
21	PATCH NO-21			BAIHAMUDA	2/1	0.246
22	PATCH NO-22			TERAM	665	0.009
23	PATCH NO-23			TERAM	636/3	0.900
24	PATCH NO-24			TERAM	127/1	0.094
25	PATCH NO-25			FAGURAM	531/1	0.26
					TOTAL AREA:-	3.911 Ha

3.2 PRINCIPLE OF DGPS SURVEY

DGPS Survey is carried out by a pair of devices, one is called Base and other is called as Rover in order to eliminate the un-avoidable error which may occur during survey as transmission delays in the ionosphere, multipath signal due to foreign object which may induce in the DGPS observation.

Base is stationary and fixed in an ideal location (that has a clear line of sight to the sky in all directions away from vertical obstructions such as buildings, deep cuttings, site vehicles,

towers, or tree canopy) which is act as the Primary Control Point (PCP) while the rover collects the reading at target locations.

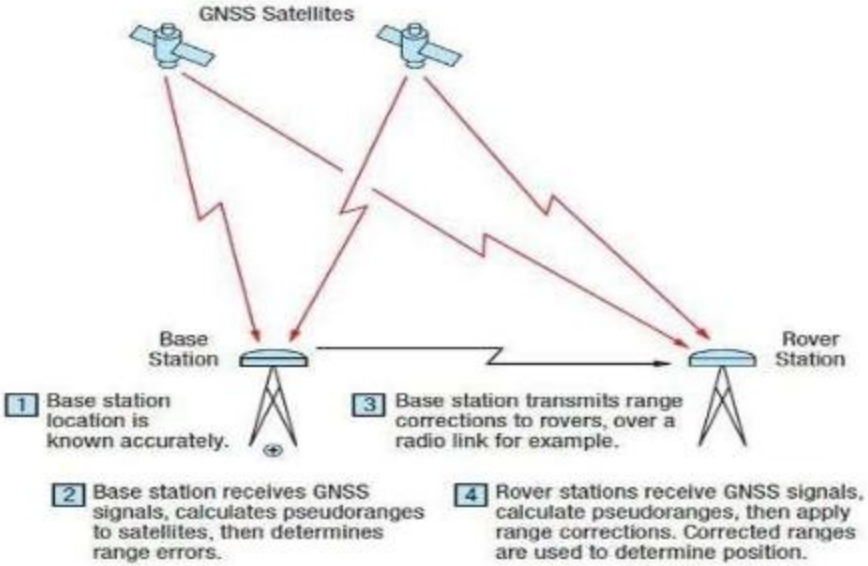


Fig: Concept of the DGPS survey

As the rover has no choice of sites and has to take reading at the pre fixed target location, it may induce error as discussed earlier. Therefore, the data received by the rover has to be processed with the observation received by the base rover in real time mode (through radio link) or during post process in a later stage to eliminate the error and get the final reading (coordinate value).

3.3 ESTABLISHMENT OF BASE STATION/PRIMARY CONTROL POINT (PCP)

The PCP was so planned to keep the entire project area within 3.0-4.0 Km from PCP for DGPS Survey.

GPS satellites complete one cycle of rotation around the earth in approximately 6 hours. Base Station was fixed through continuous observation of 12 hours (so that the base receives signals of all the satellite at least once) at the PCP on June2019 and further processing with the observed data of International GNSS Stations (IGS). The IGS processed report is enclosed at **Annexure-1**. As per the National Map policy is enclosed at **Annexure-2**, all the maps are

prepared with UTM Projection using the Datum WGS-1984 to seamless integration with new Open Series Maps (OSM) Topo Sheets published by Survey of India.

3.4 SECONDARY CONTROL POINT (SCP) SURVEY

The Secondary Control Points (SCPs) in the area of interest were planned at convenient location. SCPs are planned well distributing in the maps covering Tri-junction, Bi-junction, undistributed field bund.

DGPS observations were taken SCPs location (for 15 minutes each) using rover. The data observed by base and rover were post processed using advanced Trimble Business Centre software for obtaining the final SCP Co-ordinates. The SCPs with fixed solutions only were used for Geo-referencing of the maps.

3.5 PREPARATION OF GEO-REFERENCING OF FOREST LAND

With geo-referencing of maps, each and every parcel of the map also automatically geo-referenced. The forest patches were extracted from geo-referenced map as per land schedule provided by CSPTCL to prepare the geo-referenced forest land map.

DGPS observations were taken at all change point of the Forest boundary using Trimble R-6 Dual frequency (with Glonass) DGPS. The data observed by base and rover were post processed using advanced Trimble Business Centre software for obtaining the final change point Co-ordinates. These co-ordinates were plotted in GIS software to prepare the geo-reference forest land map.

The DGPS Survey of Protected Forest/ Reserve Forest / Revenue Forest is carried out with the help of Raigarh, Tamnar, Gharghoda & Kharsia Forest department staff after obtaining due permission for the DGPS Survey work from Divisional Forest Officer , Raigarh office.The Forest Officials identified on the ground the boundary of all the effected Protected/Reserve forest compartments and Revenue Forest khasra and DGPS readings are collected on the Forest Pillar.

DGPS reading were also collected at every Angle Point (Towers) of the 132kV Transmission Line and at prominent locations such as culverts, bridges etc, were recorded. For Geo Referencing villages maps on an average of 5-6 GCPs were collected for each village.

The static data is post processed using Trimble Business Centre software for obtaining the TBM Coordinates.

The Transmission Line centerline point's coordinates were provided to IGLOBE Solutions by the Client. The Tower centerline coordinates are plotted in the GIS Software and the centerline vector layer was created by joining the points. For 132kV Line, a corridor of 27 meter was created (13.5 M on either side from the centerline) in the GIS Software and the corridor boundary points are demarcated at the forest patches.

For Cadastral maps, Geo referencing of Cadastral maps and overlaying the 132kV Transmission line corridor layer, the revenue forest khasras are identified and their coordinates are extracted from the cadastral map (As per the Govt Record obtained from Tahsildar and patwari office). Using DGPS , the revenue forest khasra patch boundary is demarcated on the ground. The area of the revenue forest patch so obtained after demarcation is computed. A village wise list of revenue forest khasras is created along with the effected revenue forest area(i.e the area of revenue forest patch inside the Transmission Line Corridor).

Using the Coordinates of the forest boundary pillars the Protected Forest/Reserve Forest/Revenue Forest boundary is mapped in the GIS software and the PF/RF/Revenue boundary vector layer is created. In the GIS software the PF/RF/Revenue boundary layer, the 132kV TL corridor layers are plotted and the effected forest area is computed for each forest compartment. Finally a Right of Way (ROW) forest area statement is crated for the Raigarh Forest division.

Table-2: Forest Area details after DGPS Survey Work on 132KV D/C GERWANI TO KARICHHAPAR (TSS) LINE FOR CHHATTISGARH STATE POWER TRANSMISSION COMPANY LIMITED

A. Reserve Forest & Protected Forest Details for Raigarh Forest Division after DGPS Survey Work

Sr. No.	Name of Forest Range	Length of Line in Forest in Meter from Centre Line	Corridor as per MOEFCC Guideline in Meter	Forest Area in Square Meter	Forest Area in Hectare	Forest Type PF/RF	Remarks
1	Kharsia	Left Side:- 365 **Meter**	13.5 Meter	4927.5 Meter	0.49275 Ha	1183RF	Section 20-22.
		Right Side:-365 **Meter**	13.5 Meter	4927.5 Meter	0.49275 Ha	1183RF	Section 20-22.
	SUBTOTAL	365 Meter	**27 Meter**	9855.0 **Meter**	0.985 **Ha**		
2	Gharghoda	Left Side:- 300 **Meter**	13.5 Meter	4050 Meter	0.4050 Ha	1260PF	Section 32-33.
		Right Side:- 300 **Meter**	13.5 Meter	4050 Meter	0.4050 Ha	1260PF	Section 32-33.
	SUBTOTAL	**(Average:** 300 **Meter)**	**27 Meter**	810 **Meter**	0.810 **Ha**		
3	Tamnar	Left Side:- 150 **Meter**	13.5 Meter	2025 Meter	0.2025 Ha	829 RF	Section 25-26.
		Right Side:- 150 **Meter**	13.5 Meter	2025 Meter	0.2025 Ha	829 RF	Section 25-26.
	SUBTOTAL	150 **Meter**	**27 Meter**	4050 **Meter**	0.405 **Ha**		
4	Raigarh	Left Side:- **61 Meter**	13.5 Meter	823.5 Meter	0.08235 Ha	881 PF	Section 2-3.
		Right Side:-**85 Meter**	13.5 Meter	1147 Meter	0.1147 Ha	881 PF	Section 2-3.
		Left Side:- **487 Meter**	13.5 Meter	6574.5 Meter	0.65745 Ha	881 PF	Section 3-5.
		Right Side:-**487 Meter**	13.5 Meter	6574.5 Meter	0.65745 Ha	881 PF	Section 3-5.
	SUBTOTAL	**(Average: 560.5 Meter)**	**27 Meter**	15120 **Meter**	1.512 **Ha**		
	Grand Total	**1340.5 Meter**	**27 Meter**	37120 **Meter**	3.712 **Ha**		

B. Revenue Forest & Orange Forest Details for Raigarh Forest Division after DGPS Survey Work

DETAILS OF FOREST LAND - REVENUE FOREST							
SR NO.	PATCH NO.	DISTRICT	TEHSIL	VILLAGE NAME	KHASRA NUMBER	DIVERSION AREA (IN HA.)	Forest Type
1	PATCH NO-1	RAIGARH	RAIGARH	PALI	49	0.042	Jungle Jhari
2	PATCH NO-2			PALI	115	0.073	Jungle Jhari
3	PATCH NO-3			DELARI	192/1	0.096	Jungle Jhari
4	PATCH NO-4		TAMNAR	SARAIPALI	515/1	0.173	Jungle Jhari
5	PATCH NO-5			SARAIPALI	515/2	0.270	Jungle Jhari
6	PATCH NO-6			SARAIPALI	495	0.227	Jungle Jhari
7	PATCH NO-7			BHUIKURI	27	0.040	Jungle Jhari
8	PATCH NO-8			HARIDIH	76	0.022	Jungle Jhari
9	PATCH NO-9		GHORGHODA	CHARRATANGAR	864	0.378	Jungle Jhari
10	PATCH NO-10			CHARRATANGAR	951	0.021	Jungle Jhari

11	PATCH NO-11			CHARRATANGAR	932	0.064	Jungle Jhari
12	PATCH NO-12			CHARRATANGAR	747	0.005	Jungle Jhari
13	PATCH NO-13			CHARRATANGAR	746	0.012	Jungle Jhari
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15	PATCH NO-15			CHARRATANGAR	799/1	0.229	Jungle Jhari
16	PATCH NO-16			CHARRATANGAR	561/1	0.027	Jungle Jhari
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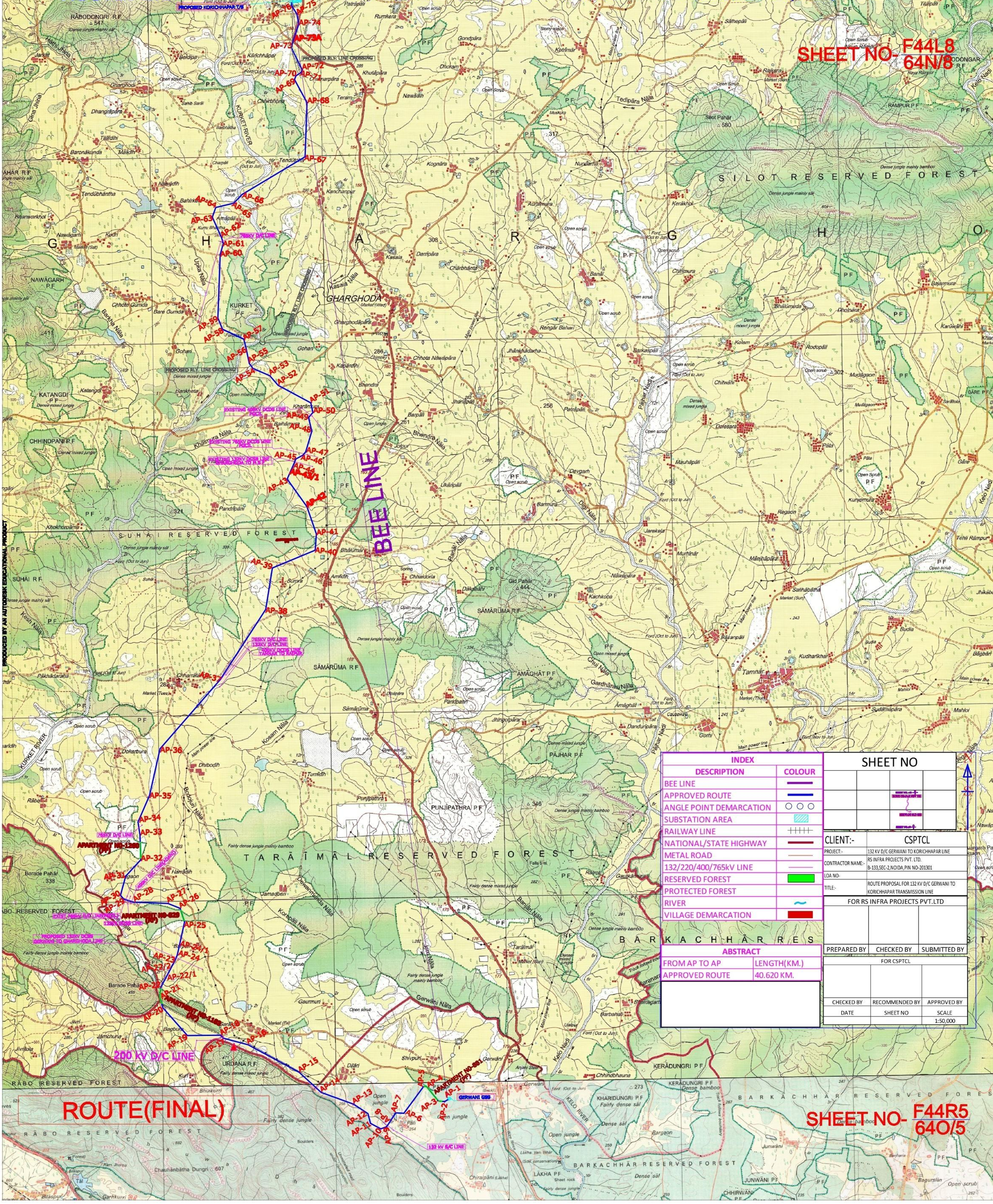
19	PATCH NO-19			AMLIDIH	254	0.040	Jungle Jhari
20	PATCH NO-20			BAIHAMUDA	6/1	0.081	Jungle Jhari
21	PATCH NO-21			BAIHAMUDA	2/1	0.146	Jungle Jhari
22	PATCH NO-22			TERAM	665	0.009	Jungle Jhari
23	PATCH NO-23			TERAM	636/3	0.800	Jungle Jhari
24	PATCH NO-24			TERAM	127/1	0.094	Jungle Jhari
25	PATCH NO-25			FAGURAM	531/1	0.164	Jungle Jhari
					TOTAL AREA:-	**3.299 Ha**	

Executive Engineer
EHT (C) Dn. CSPTCL
Bilaspur

वन मण्डलाधिकारी
रायगढ़, वनमण्डल

ROUTE ALIGNMENT MAP OF 132 kV D/C GERWANI TO PROPOSED KARICHHAPAR(TSS) LINE



F. No. 11-489/2013-FC
Government of India
Ministry of Environment and Forests
(FC Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi - 110 510.
Dated: 28th January, 2014

To

The Principal Secretary (Forests),

All States / Union Territory Governments except Jammu and Kashmir

Sub: Submission of Geo-referenced digital data for applications under Forest (Conservation) Act, 1980.

Sir,

I am directed to refer to this Ministry's letter No. 11-9/98-FC dated 8th July 2011 on the above-mentioned subject wherein this Ministry informed that applications seeking prior approval of Central Government under the Forest (Conservation) Act, 1980 for diversion of forest land for non-forest purpose must be accompanied with geo-referenced boundary in shape file. It was also informed that the application should also contain a digital map along with a hard copy duly authenticated by competent authority in the State Government, of the forest land proposed for diversion, prepared by using Total Station or differential GPS.

It was also stipulated in the said letter that in case the applicant desires, the above digital mapping of the area should be done by the respective State Forest Department by realizing appropriate cost from the user agency.

It has been brought to notice of this Ministry that preparation and authentication of geo-referenced maps is taking considerable time, resulting in delay in processing of proposals seeking prior approval of Central Government under the Forest (Conservation) Act, 1980.

Accordingly, I am directed to say that process of authentication of geo-referenced maps may be streamlined to expedite processing of proposals seeking prior approval of Central Government under the Forest (Conservation) Act, 1980.

Yours faithfully,

(H.C. Chaudhary)
Assistant Inspector General of Forests

Copy to-

1. Principal Chief Conservator of Forests, all State/UT Governments except Jammu and Kashmir.

F. No. 11-9/ 98-FC
Government of India
Ministry of Environment and Forests
(FC Division)

Paryavaran Bhawan,
CGO Complex, Lodhi Road,
New Delhi - 110 510.
Dated: 8th July, 2011

To

The Principal Secretary (Forests),
All States / Union Territory Governments except Jammu and Kashmir

Sub: Submission of Geo-referenced digital data for applications under Forest (Conservation) Act, 1980.

Sir,

I am directed to say that to ensure accurate delineation of the forest area proposed to be diverted, in future all applications seeking prior approval of the Central Government under the Forest (Conservation) Act, 1980 for diversion of forest land for non-forest purpose must be accompanied with geo-referenced boundary in shape file. The application should also contain a digital map along with a hard copy duly authenticated by competent authority in the State Government, of the forest land proposed for diversion, prepared by using Total Station or differential GPS. In case the applicant desires, the above digital mapping of the area should be done by the respective State Forest Department by realizing appropriate cost from the user agency.

Yours faithfully,

(H.C. Chaudhary)
Assistant Inspector General of Forests

Copy to:-

1. Principal Chief Conservator of Forests, all State/UT Governments except Jammu and Kashmir.
2. Nodal Officer, the Forest (Conservation) Act, 1980, all State/UT Governments except Jammu and Kashmir
3. All Regional Offices, Ministry of Environment & Forests.
4. All Assistant Inspector General of Forests in Forest Conservation Division, MoEF.
5. Dy. Secretary, R.O. (HQ), Ministry of Environment & Forests, New Delhi.
6. Guard File.

(H.C. Chaudhary)
Assistant Inspector General of Forests

कार्यालय प्रधान मुख्य वन संरक्षक (छ.ग.)

प्रधान कार्यालयः अरण्य भवन मेडिकल कॉलेज रोड, फाफाडीह, रायपुर–492001
दूरभाषः 0771–2552221, फैक्सः 0771–2552210
ई–मेलः cgpccf.forest@gmail.com, वेबसाईटः www.cgforest.nic.in

राम प्रकाश
भा.व.से.
प्रधान मुख्य वन संरक्षक एवं
वन बल प्रमुख

अ.शा.पत्र क्र./प्र.मु.व.सं/115-30/02
रायपुर, दिनांक 11-11-2014

क्र./भू–प्रबंध/विविध/115–30/ रायपुर, दिनांक 11/11/2014

प्रति,

समस्त वन मंडलाधिकारी (क्षेत्रीय)
छत्तीसगढ़

विषयः – वन संरक्षण अधिनियम – 1980 तहत व्यपवर्तन प्रस्तावों में आवेदित स्थल हेतु जियोरिफरेन्स डिजिटल बाउण्ड्री एवं डिजिटल नक्शा निर्माण के संबंध में।

संदर्भः 1. छ.ग. शासन, वन विभाग मंत्रालय का पत्र क्रमांक/एफ 5–20/2007/10–2 दिनांक 08.08.2012 एवं इस संबंध में विभाग द्वारा जारी अधिसूचना दिनांक 30.06.2012
2. कार्यालयीन पत्र क्रमांक/ भू–प्रबंध/ विविध/ 115–30 /1922 दिनांक 02.11.2012

=0=

छ.ग. शासन के अधिसूचना दिनांक 30.06.2012 द्वारा वन संरक्षण अधिनियम – 1980 के तहत वन भूमि के व्यपवर्तन प्रस्तावों के आवेदित स्थल के लिए जियोरिफरेन्स डिजिटल डाटा एवं नक्शा प्रस्तुत करने हेतु वन मंडलाधिकारी, वन प्रबंधन सूचना प्रणाली, रायपुर को प्राविकृत किया गया है। इस संदर्भ में तत्कालीन मुख्य वन संरक्षक (भू–प्रबंध) कार्यालय द्वारा भविष्य में गैर वानिकी कार्य हेतु व्यपवर्तित होने वाली वन भूमि के लिए निम्नानुसार जानकारी संलग्न किया जाना प्रावधानित किया गया है –

i. Geo reference boundary in shape file.
ii. Digital map along with hard copy.
iii. Forest land proposed for diversion, prepared by using Total Station of differential GPS.

यहां यह विदित हो कि वन भूमि व्यपवर्तन से संबंधित सर्वे एवं डिजीटल डाटा निर्माण का कार्य एक महत्वपूर्ण प्रक्रिया है जिसको स्पष्ट रूप से परिभाषित किये जाने की आवश्यकता है। निर्धारित प्रक्रिया में भूमि की वैधानिक स्थिति, उसका स्वामित्व तथा क्षेत्रफल का क्षेत्रीय वन मंडल स्तर पर सत्यापन की व्यवस्था के साथ–साथ यह भी सुनिश्चित किया जाना आवश्यक है कि निर्मित डिजीटल डाटा प्रत्यावर्तित होने वाली भूमि का सही प्रतिनिधित्व करें। उपरोक्त पृष्ठभूमि के आलोक में वन भूमि व्यपवर्तन से संबंधित, सर्वे एवं डिजीटल डाटा निर्माण हेतु निम्नानुसार प्रक्रिया निर्धारित की जाती है –

1. आवेदक द्वारा आवेदन पत्र के साथ भूमि के संबंध में प्रस्तुत की जाने वाली जानकारी –

आवेदक द्वारा आवेदन पत्र के साथ इस अधिनियम अंतर्गत प्रेषित की जाने वाली अन्य जानकारी के साथ आवेदित क्षेत्र का विवरण निम्न प्रपत्र में प्रस्तुत की जावेगी:

आवेदित क्षेत्र का विवरण

क्र	वनखण्ड का नाम	वन विभाग के अधिपत्य की भूमि		राजस्व वन भूमि	निजी / गैर वन भूमि
		कक्ष क्रमांक	क्षेत्रफल		

क्रमशः 2

आवेदन के साथ सर्वे ऑफ इंडिया के 1:50,000 स्केल पर व्यपवर्तित होने वाली भूमि का नक्शा भी संलग्न होगा जिसके सभी vertices / nodes अर्थात मोड़ों (turning points) के अक्षांश – देशान्तर भी अंकित होंगे।

2. आवेदन प्राप्त होने पर संबंधित वन मंडलाधिकारी द्वारा अपनाई जाने वाली प्रक्रिया:–

व्यपवर्तन से संबंधित आवेदन प्राप्त होने पर वन मंडलाधिकारी कार्यालयीन अभिलेख से व्यपवर्तित हेतु प्रस्तावित भूमि के क्षेत्रफल भूमि की वैधानिक स्थिति एवं उसके स्वामित्व के संबंध में जानकारी का मिलान कर इसकी पुष्टि करेंगे। आवेदित भूमि का स्थल निरीक्षण भी वन मंडलाधिकारी द्वारा किया जायेगा। आवेदन में प्रस्तुत जानकारी एवं अभिलेख परीक्षण में जानकारी में अंतर पाये जाने पर वन मंडलाधिकारी द्वारा त्रुटियों को अंकित करते हुए आवश्यक कार्यवाही हेतु पत्र आवेदक संस्थान को लिखा जावेगा एवं मुख्यालय को पत्र की प्रतिलिपि प्रदान की जावेगी। वन मंडलाधिकारी के स्तर से यह कदम आवश्यक होगा क्योंकि संबंधित भूमि का अभिलेख वन मंडल कार्यालय में उपलब्ध रहता है, तथा भूमि से संबंधित जानकारी देने हेतु वे वैधानिक दृष्टिकोण से सक्षम होते है। आवेदन का उपरोक्तानुसार परीक्षण उपरांत आवेदित भूमि का वन मंडलाधिकारी द्वारा डी.जी.पी.एस सर्वे कराया जावेगा। डी.जी.पी.एस सर्वे हेतु एजेन्सी वन मंडलाधिकारी द्वारा नियुक्त की जा सकेगी अथवा आवेदक द्वारा एजेन्सी उपलब्ध करायी जाएगी परन्तु डी.जी.पी.एस सर्वे का कार्य क्षेत्रीय वन मंडलाधिकारी के निर्देशन में सम्पन्न होगा तथा सर्वे पर हुआ व्यय भी एजेन्सी द्वारा वहन किया जावेगा। डी.जी.पी.एस सर्वे उपरांत क्षेत्रीय वन मंडलाधिकारी द्वारा डी. जी.पी.एस सर्वे रिपोर्ट का सत्यापित प्रतिवेदन निम्न प्रपत्रों में भरी हुई जानकारी के साथ वन प्रबंधन सूचना प्रणाली रायपुर को प्रस्तुत किया जावेगा:–

प्रपत्र – "क"

आवेदित क्षेत्र का विवरण

क्र	वनखण्ड का नाम	वन विभाग के अधिपत्य की भूमि		राजस्व वन भूमि	निजी / गैर वन भूमि
		कक्ष क्रमांक	क्षेत्रफल		

प्रपत्र–"ख"

डी.जी.पी.एस सर्वे रिपोर्ट

अ. क्र.	पीलर / प्वाईंट आई.डी	अक्षांश	देशांतर

प्रपत्र–"ग"

डी.जी.पी.एस सर्वे रिपोर्ट के आधार पर क्षेत्रफल मिलान रिपोर्ट

क्र.	वन खण्ड का नाम	वन भूमि		राजस्व वन भूमि	निजि/ गैर वन भूमि
		कक्ष क्रमांक	क्षेत्रफल		

डी.जी.पी.एस. सर्वे के दौरान प्रत्येक मोड (Vertices) पर अस्थायी खूंटी लगाई जाएगी जिस पर सफेद पेन्ट से पुताई कर हरा पेन्ट से पिलर क्रमांक एवं डी.जी.पी.एस. से प्राप्त अक्षांश एवं देशांतर को अंकित किया जावेगा। प्रत्येक पिलर का फोटोग्राफ इस प्रकार लिया जावेगा कि फोटो ग्राफ में पिलर क्रमांक एवं उसका अक्षांश एवं

देशांतर स्पष्ट रूप से परिलक्षित हो। वन भूमि को प्रत्यावर्तन पर अंतिम स्वीकृति उपरांत उक्त लकड़ी के खूंटीयों को RCC के पिलर से प्रतिस्थापित किया जा सकेगा।

3. **क्षेत्रीय वन मंडलाधिकारी से जानकारी प्राप्त होने पर एफ.एम.आई.एस. द्वारा अपनाई जाने वाली प्रक्रिया –**

क्षेत्रीय वन मंडल से डी.जी.पी.एस. सर्वे रिपोर्ट की सत्यापित प्रति एवं तालिका क' 'ख' एवं 'ग' में जानकारी प्राप्त होने पर एफ.एम.आई.एस. द्वारा निम्नलिखित डिजीटल डेटा निर्माण का कार्य कराया जावेगा –

i. Geo reference boundary in shape file.
ii. Preparation of digital map along with hard copy.
iii. Preparation of vegetation map at 1:50,000 scale of the area and providing it to the applicant.

प्रस्तावित पद्धति से संभावित लाभ –

(1) व्यपवर्तन हेतु आवेदित भूमि के क्षेत्रफल, वैधानिक स्थिति तथा स्वामित्व के संबंध में जानकारी की वन मंडलाधिकारी स्तर से पुष्टि होगी।

(2) आवेदन अनुसार मांग भूमि का क्षेत्र में हू–बहू सीमांकन सुनिश्चित होगा। आवेदन अनुसार मांग क्षेत्रफल तथा क्षेत्र पर वास्तविक सीमांकन अनुसार डी.जी.पी.एस. से प्राप्त क्षेत्रफल का मिलान हो सकेगा तथा यह सुनिश्चित किया जा सकेगा कि आवेदित क्षेत्रफल एवं डी.जी.पी.एस. से प्राप्त क्षेत्रफल में कोई आधारभूत अंतर नहीं है।

(3) क्षेत्र को व्यपवर्तन हेतु अंतिम स्वीकृति मिलने की स्थिति में क्षेत्र को पुनः सीमांकन नहीं कराना होगा तथा क्षेत्र को आवेदक संस्थान को हस्तांतरण कराना आसान होगा।

अतः उपरोक्तानुसार तालिका क' 'ख' एवं 'ग' में जानकारी एवं डी.जी.पी.एस. सर्वे रिपोर्ट की सत्यापित प्रति FMIS को उपलब्ध कराना सुनिश्चित करें। क्षेत्रीय वन मंडलाधिकारी से जानकारी प्राप्त होने पर FMIS कार्यालय द्वारा जानकारी का तकनीकी रूप से परीक्षण किया जाकर बिन्दु क्रमांक 3 में वर्णित डिजीटल डाटा का निर्माण किया जावेगा। तत्पश्चात् आवेदक संस्थान को FMIS द्वारा वनस्पति मानचित्र प्रदाय किया जावेगा जिसके लिए अधिकतम एक सप्ताह से अधिक समय नहीं लिया जावेगा।

(राम प्रकाश) 11/11/14
प्रधान मुख्य वन संरक्षक
छत्तीसगढ़

पृ. क्र0/भू–प्रबंध/विविध/ 115–30/ 2577 रायपुर, दिनांक 11/11/2014

प्रतिलिपि सूचनार्थ एवं आवश्यक कार्यवाही हेतु:

- मुख्य वन संरक्षक, वन प्रबंधन सूचना प्रणाली कार्यालय, राजा तालाब, रायपुर, छत्तीसगढ़।
- मुख्य वन संरक्षक (क्षेत्रीय), रायपुर / बिलासपुर / दुर्ग / कांकेर / जगदलपुर एवं सरगुजा वृत्त।
- मुख्य वन संरक्षक (वन्यप्राणी) एवं क्षेत्र निदेशक, उदंती सीतानदी टाईगर रिजर्व, रायपुर / अचानकमार टाईगर रिजर्व, बिलासपुर / इन्द्रावती टाईगर रिजर्व, जगदलपुर।
- वन संरक्षक, हाथी रिजर्व (वन्य प्राणी) अंबिकापुर, (सरगुजा)।

11/11/14
प्रधान मुख्य वन संरक्षक
छत्तीसगढ़

AUSPOS GPS Processing Report

August 10, 2016

This document is a report of the GPS data processing undertaken by the AUSPOS Online GPS Processing Service (version: AUSPOS 2.2) . The AUSPOS Online GPS Processing Service uses International GNSS Service (IGS) products (final, rapid, ultra-rapid depending on availability) to compute precise coordinates in ITRF anywhere on Earth and GDA94 within Australia. The Service is designed to process only dual frequency GPS phase data.

An overview of the GPS processing strategy is included in this report.

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1 User Data

All antenna heights refer to the vertical distance from the Ground Mark to the Antenna Reference Point (ARP).

Station (s)	Submitted File	Antenna Type	Antenna Height (m)	Start Time	End Time
8850	88502171.16o	NONE NONE	1.200	2016/08/04 05:08:00	2016/08/04 10:06:00

2 Processing Summary

Date	User Stations	Reference Stations	Orbit Type
2016/08/04 05:08:00	8850	CHUN COAL DSNG FGMO HKKP HKSC HKSL HYDE IISC LHAZ PBRI POL2 URUM	IGS rapid

Remark: An IGS Rapid Orbit product has been used in this computation, IGS Rapid orbits are usually of very high quality. However, to ensure you achieve the highest quality coordinates please resubmit approximately 2 weeks after the observation session end to ensure the use of the IGS Final Orbit product.

3 Computed Coordinates, ITRF2008

All computed coordinates are based on the IGS realisation of the ITRF2008 reference frame. All the given ITRF2008 coordinates refer to a mean epoch of the site observation data. All coordinates refer to the Ground Mark.

3.1 Cartesian, ITRF2008

Station	X (m)	Y (m)	Z (m)	ITRF2008 @
8850	716114.234	5874203.390	2371921.202	04/08/2016
CHUM	1228950.483	4508079.981	4327868.536	04/08/2016
COAL	-2363061.257	5418784.893	2386861.961	04/08/2016
DSMG	-2363102.334	5416972.300	2390767.986	04/08/2016
FOMO	-2359952.455	5416530.097	2394688.429	04/08/2016
HKNP	-2392360.804	5400226.057	2400094.266	04/08/2016
HKSC	-2414267.463	5386768.808	2407459.842	04/08/2016
HKSL	-2393382.959	5393860.961	2412592.217	04/08/2016
HYDE	1208444.097	5966805.990	1897077.267	04/08/2016
IISC	1337935.960	6070317.122	1427877.183	04/08/2016
LHAZ	-106941.973	5549269.794	3139215.170	04/08/2016
PBRI	-295635.882	6240848.759	1278178.482	04/08/2016
POL2	1239971.053	4530790.138	4302578.857	04/08/2016
URUM	193030.269	4606851.304	4393311.546	04/08/2016

3.2 Geodetic, GRS80 Ellipsoid, ITRF2008

Geoid-ellipsoidal separations, in this section, are computed using a spherical harmonic synthesis of the global EGM2008 geoid. More information on the EGM2008 geoid can be found at http://earth-info.nga.mil/GandG/wgs84/gravitymod/egm2008/

Station	Latitude (DMS)	Longitude (DMS)	Ellipsoidal Height(m)	Derived Above Geoid Height(m)
8850	21 58 30.19019	83 02 58.07326	186.496	247.992
CHUM	42 59 54.60525	74 45 03.96870	716.344	759.334
COAL	22 07 14.46780	113 33 40.99173	169.427	173.848
DSMG	22 09 32.24497	113 34 07.59347	117.762	122.256
FOMO	22 11 50.69295	113 32 32.97422	56.637	61.322
HKNP	22 14 56.63109	113 53 37.97022	350.640	353.986
HKSC	22 19 19.81306	114 08 28.29654	20.221	22.677
HKSL	22 22 19.21119	113 55 40.75341	95.246	98.789
HYDE	17 25 02.14246	78 33 03.14498	441.690	518.495
IISC	13 01 16.21048	77 34 13.36939	843.696	929.617
LHAZ	29 39 26.40106	91 06 14.51124	3624.613	3659.304
PBRI	11 38 16.00959	92 42 43.69218	-22.493	38.441
POL2	42 40 47.17400	74 41 39.36803	1714.204	1754.270
URUM	43 48 28.61966	87 36 02.41392	858.895	922.274

3.3 Positional Uncertainty (95% C.L.) - Geodetic, ITRF2008

Station	Longitude(East) (m)	Latitude(North) (m)	Ellipsoidal Height(Up) (m)
8850	0.019	0.011	0.048
CHUM	0.009	0.006	0.015
COAL	0.012	0.008	0.026
DSMG	0.012	0.008	0.026
FOMO	0.012	0.008	0.026
HKNP	0.012	0.008	0.024
HKSC	0.012	0.008	0.025
HKSL	0.013	0.008	0.026
HYDE	0.010	0.006	0.016
IISC	0.010	0.007	0.017
LHAZ	0.009	0.006	0.017
PBRI	0.012	0.009	0.031
POL2	0.009	0.006	0.015
URUM	0.008	0.006	0.015

4 Ambiguity Resolution - Per Baseline

Baseline	Ambiguities Resolved	Baseline Length (km)
8850 - LHAZ	25.9 %	1171.215
CHUM - POL2	61.2 %	35.732
HYDE - PBRI	53.4 %	1649.361
CHUM - URUM	84.6 %	1042.674
HKNP - HKSC	76.5 %	26.744
COAL - HKNP	83.3 %	37.121
HKNP - URUM	21.4 %	3359.554
HKNP - HKSL	79.4 %	14.063
HKNP - PBRI	25.0 %	2522.221
COAL - DSMG	89.5 %	4.306
HYDE - LHAZ	53.4 %	1856.740
COAL - FOMD	80.6 %	8.718
HYDE - IISC	64.7 %	497.626
AVERAGE	61.4%	940.467

Please note for a regional solution, such as used by AUSPOS, ambiguity resolution success rate of 50% or better for a baseline formed by a user site indicates a reliable solution.

5 Computation Standards

5.1 Computation System

Software	Bernese GNSS Software Version 5.2.
GNSS system(s)	GPS only.

5.2 Data Preprocessing and Measurement Modelling

Data preprocessing	Phase preprocessing is undertaken in a baseline by baseline mode using triple-differences. In most cases, cycle slips are fixed by the simultaneous analysis of different linear combinations of L1 and L2. If a cycle slip cannot be fixed reliably, bad data points are removed or new ambiguities are set up A data screening step on the basis of weighted postfit residuals is also performed, and outliers are removed.
Basic observable	Carrier phase with an elevation angle cutoff of 7° and a sampling rate of 3 minutes. However, data cleaning is performed a sampling rate of 30 seconds. Elevation dependent weighting is applied according to $1/\sin(\epsilon)^2$ where ϵ is the satellite elevation.
Modelled observable	Double differences of the ionosphere-free linear combination.
Ground antenna phase centre calibrations	IGS08 absolute phase-centre variation model is applied.
Tropospheric Model	A priori model is the GMF mapped with the DRY-GMF.
Tropospheric Estimation	Zenith delay corrections are estimated relying on the WET-GMF mapping function in intervals of 2 hour. N-S and E-W horizontal delay parameters are solved for every 24 hours.
Tropospheric Mapping Function	GMF
Ionosphere	First-order effect eliminated by forming the ionosphere-free linear combination of L1 and L2. Second and third effect applied.
Tidal displacements	Solid earth tidal displacements are derived from the complete model from the IERS Conventions 2010, but ocean tide loading is not applied.
Atmospheric loading	Applied
Satellite centre of mass correction	IGS08 phase-centre variation model applied
Satellite phase centre calibration	IGS08 phase-centre variation model applied
Satellite trajectories	Best available IGS products.
Earth Orientation	Best available IGS products.

5.3 Estimation Process

Adjustment	Weighted least-squares algorithm.
Station coordinates	Coordinate constraints are applied at the Reference sites with standard deviation of 1mm and 2mm for horizontal and vertical components respectively.
Troposphere	Zenith delay parameters and pairs of horizontal delay gradient parameters are estimated for each station in intervals of 2 hours and 24 hours.
Ionospheric correction	An ionospheric map derived from the contributing reference stations is used to aid ambiguity resolution.
Ambiguity	Ambiguities are resolved in a baseline-by-baseline mode using the Code-Based strategy for 180-6000km baselines, the Phase-Based L5/L3 strategy for 18-200km baselines, the Quasi-Ionosphere-Free (QIF) strategy for 18-2000km baselines and the Direct L1/L2 strategy for 0-20km baselines.

5.4 Reference Frame and Coordinate Uncertainty

Terrestrial reference frame	IGS08 station coordinates and velocities mapped to the mean epoch of observation.
Australian datum	GDA94 coordinates determined via Helmert transformation from ITRF using the Dawson and Woods (2010) parameters.
Derived AHD	For stations within Australia, AUSGeoid09 is used to compute AHD. AUSGeoid09 is the Australia-wide gravimetric quasigeoid model that has been a posteriori fitted to the Australian Height Datum.
Above-geoid heights	Earth Gravitational Model EGM2008 released by the National Geospatial-Intelligence Agency (NGA) EGM Development Team is used to compute above-geoid heights. This gravitational model is complete to spherical harmonic degree and order 2159, and contains additional coefficients extending to degree 2190 and order 2159.
Coordinate uncertainty	Coordinate uncertainty is expressed in terms of the 95% confidence level for both GDA94 and ITRF2008. Uncertainties are scaled using an empirically derived model which is a function of data span, quality and geographical location.

AUSPOS GPS Processing Report

August 10, 2016

This document is a report of the GPS data processing undertaken by the AUSPOS Online GPS Processing Service (version: AUSPOS 2.2) . The AUSPOS Online GPS Processing Service uses International GNSS Service (IGS) products (final, rapid, ultra-rapid depending on availability) to compute precise coordinates in ITRF anywhere on Earth and GDA94 within Australia. The Service is designed to process only dual frequency GPS phase data.

An overview of the GPS processing strategy is included in this report.

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Home Page: http://www.ga.gov.au

1 User Data

All antenna heights refer to the vertical distance from the Ground Mark to the Antenna Reference Point (ARP).

Station (s)	Submitted File	Antenna Type	Antenna Height (m)	Start Time	End Time
4851	48512180.16o	NONE NONE	1.500	2016/08/05 03:19:00	2016/08/05 09:27:00

2 Processing Summary

Date	User Stations	Reference Stations	Orbit Type
2016/08/05 03:19:00	4851	CHUN COAL POMO HKNP HKOH HKSC HKSL HYDE IISC LHAZ PBRI POL2 URUM	IGS rapid

Remark: An IGS Rapid Orbit product has been used in this computation, IGS Rapid orbits are usually of very high quality. However, to ensure you achieve the highest quality coordinates please resubmit approximately 2 weeks after the observation session end to ensure the use of the IGS Final Orbit product.

3 Computed Coordinates, ITRF2008

All computed coordinates are based on the IGS realisation of the ITRF2008 reference frame. All the given ITRF2008 coordinates refer to a mean epoch of the site observation data. All coordinates refer to the Ground Mark.

3.1 Cartesian, ITRF2008

Station	X (m)	Y (m)	Z (m)	ITRF2008 @
4851	699655.274	5874278.827	2376576.320	05/08/2016
CHUM	1228950.483	4508079.984	4327868.539	05/08/2016
COAL	-2363061.270	5418784.917	2386861.970	05/08/2016
FOMO	-2359952.471	5416530.107	2394688.434	05/08/2016
HKNP	-2392360.808	5400226.086	2400094.278	05/08/2016
HKOH	-2423817.442	5386056.906	2399883.181	05/08/2016
HKSC	-2414267.455	5386768.797	2407459.841	05/08/2016
HKSL	-2393382.968	5393860.939	2412592.209	05/08/2016
HYDE	1208444.095	5966805.988	1897077.269	05/08/2016
IISC	1337935.963	6070317.122	1427877.183	05/08/2016
LHAZ	-106941.974	5549269.787	3139215.166	05/08/2016
PBRI	-295635.881	6240848.759	1278178.485	05/08/2016
POL2	1239971.056	4530790.141	4302578.856	05/08/2016
URUM	193030.268	4606851.304	4393311.544	05/08/2016

3.2 Geodetic, GRS80 Ellipsoid, ITRF2008

Geoid-ellipsoidal separations, in this section, are computed using a spherical harmonic synthesis of the global EGM2008 geoid. More information on the EGM2008 geoid can be found at http://earth-info.nga.mil/GandG/wgs84/gravitymod/egm2008/

Station	Latitude (DMS)	Longitude (DMS)	Ellipsoidal Height(m)	Derived Above Geoid Height(m)
4851	22 01 13.58013	83 12 28.04577	173.799	235.034
CHUM	42 59 54.60525	74 45 03.96874	716.348	759.338
COAL	22 07 14.46774	113 33 40.99182	169.454	173.875
FOMO	22 11 50.69292	113 32 32.97459	56.654	61.339
HKNP	22 14 56.63109	113 53 37.96992	350.671	354.017
HKOH	22 14 51.66740	114 13 42.80779	166.377	168.254
HKSC	22 19 19.81321	114 08 28.29646	20.208	22.664
HKSL	22 22 19.21117	113 55 40.75400	95.229	98.772
HYDE	17 25 02.14255	78 33 03.14501	441.689	518.494
IISC	13 01 16.21050	77 34 13.36929	843.697	929.618
LHAZ	29 39 26.40106	91 06 14.51131	3624.605	3659.296
PBRI	11 38 16.00970	92 42 43.69214	-22.492	38.442
POL2	42 40 47.17390	74 41 39.36793	1714.207	1754.273
URUM	43 48 28.61963	87 36 02.41395	858.893	922.272

3.3 Positional Uncertainty (95% C.L.) - Geodetic, ITRF2008

Station	Longitude(East) (m)	Latitude(North) (m)	Ellipsoidal Height(Up) (m)
4851	0.012	0.008	0.030
CHUM	0.009	0.006	0.015
COAL	0.012	0.008	0.026
FOMO	0.013	0.008	0.026
HKNP	0.011	0.008	0.024
HKOH	0.012	0.008	0.025
HKSC	0.012	0.008	0.025
HKSL	0.013	0.008	0.026
HYDE	0.010	0.006	0.017
IISC	0.010	0.007	0.018
LHAZ	0.009	0.006	0.017
PBRI	0.011	0.009	0.026
POL2	0.009	0.006	0.015
URUM	0.008	0.006	0.015

4 Ambiguity Resolution - Per Baseline

Baseline	Ambiguities Resolved	Baseline Length (km)
HKOH - HKSC	100.0 %	12.211
CHUM - POL2	94.1 %	35.732
CHUM - URUM	88.2 %	1042.674
4851 - HYDE	57.1 %	705.228
COAL - HKNP	83.3 %	37.121
HKNP - URUM	28.6 %	3359.554
HKNP - HKSL	72.2 %	14.063
HKNP - PBRI	23.1 %	2522.221
4851 - LHAZ	47.4 %	1156.654
HKNP - HKOH	100.0 %	34.501
LHAZ - PBRI	62.5 %	1994.328
HYDE - IISC	77.8 %	497.626
COAL - FOMD	84.4 %	8.718
AVERAGE	70.7%	878.510

Please note for a regional solution, such as used by AUSPOS, ambiguity resolution success rate of 50% or better for a baseline formed by a user site indicates a reliable solution.

5 Computation Standards

5.1 Computation System

Software	Bernese GNSS Software Version 5.2.
GNSS system(s)	GPS only.

5.2 Data Preprocessing and Measurement Modelling

Data preprocessing	Phase preprocessing is undertaken in a baseline by baseline mode using triple-differences. In most cases, cycle slips are fixed by the simultaneous analysis of different linear combinations of L1 and L2. If a cycle slip cannot be fixed reliably, bad data points are removed or new ambiguities are set up A data screening step on the basis of weighted postfit residuals is also performed, and outliers are removed.
Basic observable	Carrier phase with an elevation angle cutoff of 7° and a sampling rate of 3 minutes. However, data cleaning is performed a sampling rate of 30 seconds. Elevation dependent weighting is applied according to $1/\sin(\epsilon)^2$ where ϵ is the satellite elevation.
Modelled observable	Double differences of the ionosphere-free linear combination.
Ground antenna phase centre calibrations	IGS08 absolute phase-centre variation model is applied.
Tropospheric Model	A priori model is the GMF mapped with the DRY-GMF.
Tropospheric Estimation	Zenith delay corrections are estimated relying on the WET-GMF mapping function in intervals of 2 hour. N-S and E-W horizontal delay parameters are solved for every 24 hours.
Tropospheric Mapping Function	GMF
Ionosphere	First-order effect eliminated by forming the ionosphere-free linear combination of L1 and L2. Second and third effect applied.
Tidal displacements	Solid earth tidal displacements are derived from the complete model from the IERS Conventions 2010, but ocean tide loading is not applied.
Atmospheric loading	Applied
Satellite centre of mass correction	IGS08 phase-centre variation model applied
Satellite phase centre calibration	IGS08 phase-centre variation model applied
Satellite trajectories	Best available IGS products.
Earth Orientation	Best available IGS products.

5.3 Estimation Process

Adjustment	Weighted least-squares algorithm.
Station coordinates	Coordinate constraints are applied at the Reference sites with standard deviation of 1mm and 2mm for horizontal and vertical components respectively.
Troposphere	Zenith delay parameters and pairs of horizontal delay gradient parameters are estimated for each station in intervals of 2 hours and 24 hours.
Ionospheric correction	An ionospheric map derived from the contributing reference stations is used to aid ambiguity resolution.
Ambiguity	Ambiguities are resolved in a baseline-by-baseline mode using the Code-Based strategy for 180-6000km baselines, the Phase-Based L5/L3 strategy for 18-200km baselines, the Quasi-Ionosphere-Free (QIF) strategy for 18-2000km baselines and the Direct L1/L2 strategy for 0-20km baselines.

5.4 Reference Frame and Coordinate Uncertainty

Terrestrial reference frame	IGS08 station coordinates and velocities mapped to the mean epoch of observation.
Australian datum	GDA94 coordinates determined via Helmert transformation from ITRF using the Dawson and Woods (2010) parameters.
Derived AHD	For stations within Australia, AUSGeoid09 is used to compute AHD. AUSGeoid09 is the Australia-wide gravimetric quasigeoid model that has been a posteriori fitted to the Australian Height Datum.
Above-geoid heights	Earth Gravitational Model EGM2008 released by the National Geospatial-Intelligence Agency (NGA) EGM Development Team is used to compute above-geoid heights. This gravitational model is complete to spherical harmonic degree and order 2159, and contains additional coefficients extending to degree 2190 and order 2159.
Coordinate uncertainty	Coordinate uncertainty is expressed in terms of the 95% confidence level for both GDA94 and ITRF2008. Uncertainties are scaled using an empirically derived model which is a function of data span, quality and geographical location.

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An overview of the GPS processing strategy is included in this report.

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1 User Data

All antenna heights refer to the vertical distance from the Ground Mark to the Antenna Reference Point (ARP).

Station (s)	Submitted File	Antenna Type	Antenna Height (m)	Start Time	End Time
4851	48512190.16o	NONE NONE	1.500	2016/08/06 04:02:30	2016/08/06 05:14:30

2 Processing Summary

Date	User Stations	Reference Stations	Orbit Type
2016/08/06 04:02:30	4851	CHUN COAL POMO HKNP HKOH HKSC HKSL HYDE IISC LHAZ PBRI POL2 URUM	IGS rapid

Remark: An IGS Rapid Orbit product has been used in this computation, IGS Rapid orbits are usually of very high quality. However, to ensure you achieve the highest quality coordinates please resubmit approximately 2 weeks after the observation session end to ensure the use of the IGS Final Orbit product.

3 Computed Coordinates, ITRF2008

All computed coordinates are based on the IGS realisation of the ITRF2008 reference frame. All the given ITRF2008 coordinates refer to a mean epoch of the site observation data. All coordinates refer to the Ground Mark.

3.1 Cartesian, ITRF2008

Station	X (m)	Y (m)	Z (m)	ITRF2008 @
4851	691688.723	5874080.814	2379503.836	06/08/2016
CHUM	1228950.485	4508079.981	4327868.533	06/08/2016
COAL	-2363061.253	5418784.881	2386861.965	06/08/2016
FOMO	-2359952.458	5416530.092	2394688.438	06/08/2016
HKNP	-2392360.807	5400226.070	2400094.277	06/08/2016
HKOH	-2423817.438	5386056.900	2399883.186	06/08/2016
HKSC	-2414267.459	5386768.786	2407459.842	06/08/2016
HKSL	-2393382.958	5393860.977	2412592.226	06/08/2016
HYDE	1208444.094	5966805.986	1897077.268	06/08/2016
IISC	1337935.962	6070317.119	1427877.185	06/08/2016
LHAZ	-106941.977	5549269.789	3139215.168	06/08/2016
PBRI	-295635.879	6240848.759	1278178.488	06/08/2016
POL2	1239971.056	4530790.141	4302578.858	06/08/2016
URUM	193030.265	4606851.303	4393311.536	06/08/2016

3.2 Geodetic, GRS80 Ellipsoid, ITRF2008

Geoid-ellipsoidal separations, in this section, are computed using a spherical harmonic synthesis of the global EGM2008 geoid. More information on the EGM2008 geoid can be found at http://earth-info.nga.mil/GandG/wgs84/gravitymod/egm2008/

Station	Latitude (DMS)	Longitude (DMS)	Ellipsoidal Height(m)	Derived Above Geoid Height(m)
4851	22 02 55.62848	83 17 03.10047	221.344	282.425
CHUM	42 59 54.60516	74 45 03.96861	716.343	759.333
COAL	22 07 14.46809	113 33 40.99180	169.417	173.838
FOMO	22 11 50.69327	113 32 32.97438	56.637	61.322
HKNP	22 14 56.63126	113 53 37.97012	350.656	354.002
HKOH	22 14 51.66762	114 13 42.80773	166.373	168.250
HKSC	22 19 19.81335	114 08 28.29673	20.201	22.657
HKSL	22 22 19.21129	113 55 40.75313	95.264	98.807
HYDE	17 25 02.14254	78 33 03.14504	441.686	518.491
IISC	13 01 16.21058	77 34 13.36928	843.695	929.616
LHAZ	29 39 26.40110	91 06 14.51140	3624.607	3659.298
PBRI	11 38 16.00978	92 42 43.69209	-22.492	38.442
POL2	42 40 47.17393	74 41 39.36793	1714.208	1754.274
URUM	43 48 28.61947	87 36 02.41408	858.887	922.266

3.3 Positional Uncertainty (95% C.L.) - Geodetic, ITRF2008

Station	Longitude(East) (m)	Latitude(North) (m)	Ellipsoidal Height(Up) (m)
4851	0.318	0.141	0.778 *
CHUM	0.006	0.005	0.012
COAL	0.010	0.006	0.019
FOMO	0.010	0.006	0.018
HKNP	0.010	0.005	0.017
HKOH	0.010	0.005	0.018
HKSC	0.010	0.005	0.018
HKSL	0.010	0.005	0.017
HYDE	0.007	0.005	0.013
IISC	0.008	0.005	0.013
LHAZ	0.007	0.005	0.013
PBRI	0.009	0.006	0.019
POL2	0.006	0.005	0.012
URUM	0.006	0.005	0.011

*WARNING:
The estmated coordinates have precision outside of the boundary of 0.085 m
Please use this solution with caution

4 Ambiguity Resolution - Per Baseline

Baseline	Ambiguities Resolved	Baseline Length (km)
HKOH - HKSC	100.0 %	12.211
CHUM - POL2	70.0 %	35.732
HYDE - PBRI	70.5 %	1649.361
CHUM - URUM	87.5 %	1042.674
4851 - HYDE	0.0 %	713.000
HKNP - URUM	6.7 %	3359.554
HKNP - HKSL	97.2 %	14.063
HKNP - PBRI	21.4 %	2522.221
HKNP - HKOH	100.0 %	34.501
FOMD - HKNP	93.8 %	36.679
LHAZ - PBRI	86.7 %	1994.328
HYDE - IISC	76.4 %	497.626
COAL - FOMD	96.9 %	8.718
AVERAGE	69.8%	916.974

Please note for a regional solution, such as used by AUSPOS, ambiguity resolution success rate of 50% or better for a baseline formed by a user site indicates a reliable solution.

***WARNING:**

This solution has not resolved any ambiguities for your submitted data. Please use this solution with caution.

5 Computation Standards

5.1 Computation System

Software	Bernese GNSS Software Version 5.2.
GNSS system(s)	GPS only.

5.2 Data Preprocessing and Measurement Modelling

Data preprocessing	Phase preprocessing is undertaken in a baseline by baseline mode using triple-differences. In most cases, cycle slips are fixed by the simultaneous analysis of different linear combinations of L1 and L2. If a cycle slip cannot be fixed reliably, bad data points are removed or new ambiguities are set up A data screening step on the basis of weighted postfit residuals is also performed, and outliers are removed.
Basic observable	Carrier phase with an elevation angle cutoff of 7° and a sampling rate of 3 minutes. However, data cleaning is performed a sampling rate of 30 seconds. Elevation dependent weighting is applied according to $1/\sin(\epsilon)^2$ where ϵ is the satellite elevation.
Modelled observable	Double differences of the ionosphere-free linear combination.
Ground antenna phase centre calibrations	IGS08 absolute phase-centre variation model is applied.
Tropospheric Model	A priori model is the GMF mapped with the DRY-GMF.
Tropospheric Estimation	Zenith delay corrections are estimated relying on the WET-GMF mapping function in intervals of 2 hour. N-S and E-W horizontal delay parameters are solved for every 24 hours.
Tropospheric Mapping Function	GMF
Ionosphere	First-order effect eliminated by forming the ionosphere-free linear combination of L1 and L2. Second and third effect applied.
Tidal displacements	Solid earth tidal displacements are derived from the complete model from the IERS Conventions 2010, but ocean tide loading is not applied.
Atmospheric loading	Applied
Satellite centre of mass correction	IGS08 phase-centre variation model applied
Satellite phase centre calibration	IGS08 phase-centre variation model applied
Satellite trajectories	Best available IGS products.
Earth Orientation	Best available IGS products.

5.3 Estimation Process

Adjustment	Weighted least-squares algorithm.
Station coordinates	Coordinate constraints are applied at the Reference sites with standard deviation of 1mm and 2mm for horizontal and vertical components respectively.
Troposphere	Zenith delay parameters and pairs of horizontal delay gradient parameters are estimated for each station in intervals of 2 hours and 24 hours.
Ionospheric correction	An ionospheric map derived from the contributing reference stations is used to aid ambiguity resolution.
Ambiguity	Ambiguities are resolved in a baseline-by-baseline mode using the Code-Based strategy for 180-6000km baselines, the Phase-Based L5/L3 strategy for 18-200km baselines, the Quasi-Ionosphere-Free (QIF) strategy for 18-2000km baselines and the Direct L1/L2 strategy for 0-20km baselines.

5.4 Reference Frame and Coordinate Uncertainty

Terrestrial reference frame	IGS08 station coordinates and velocities mapped to the mean epoch of observation.
Australian datum	GDA94 coordinates determined via Helmert transformation from ITRF using the Dawson and Woods (2010) parameters.
Derived AHD	For stations within Australia, AUSGeoid09 is used to compute AHD. AUSGeoid09 is the Australia-wide gravimetric quasigeoid model that has been a posteriori fitted to the Australian Height Datum.
Above-geoid heights	Earth Gravitational Model EGM2008 released by the National Geospatial-Intelligence Agency (NGA) EGM Development Team is used to compute above-geoid heights. This gravitational model is complete to spherical harmonic degree and order 2159, and contains additional coefficients extending to degree 2190 and order 2159.
Coordinate uncertainty	Coordinate uncertainty is expressed in terms of the 95% confidence level for both GDA94 and ITRF2008. Uncertainties are scaled using an empirically derived model which is a function of data span, quality and geographical location.

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1 User Data

All antenna heights refer to the vertical distance from the Ground Mark to the Antenna Reference Point (ARP).

Station (s)	Submitted File	Antenna Type	Antenna Height (m)	Start Time	End Time
4851	48512200.16o	NONE NONE	1.500	2016/08/07 04:24:30	2016/08/07 10:06:00

2 Processing Summary

Date	User Stations	Reference Stations	Orbit Type
2016/08/07 04:24:30	4851	CHUN COAL POMO HKNP HKOH HKSC HKSL HYDE IISC LHAZ PBRI POL2 URUM	IGS rapid

Remark: An IGS Rapid Orbit product has been used in this computation, IGS Rapid orbits are usually of very high quality. However, to ensure you achieve the highest quality coordinates please resubmit approximately 2 weeks after the observation session end to ensure the use of the IGS Final Orbit product.

3 Computed Coordinates, ITRF2008

All computed coordinates are based on the IGS realisation of the ITRF2008 reference frame. All the given ITRF2008 coordinates refer to a mean epoch of the site observation data. All coordinates refer to the Ground Mark.

3.1 Cartesian, ITRF2008

Station	X (m)	Y (m)	Z (m)	ITRF2008 @
4851	685764.609	5874074.026	2381290.956	07/08/2016
CHUM	1228950.483	4508079.978	4327868.535	07/08/2016
COAL	-2363061.260	5418784.875	2386861.967	07/08/2016
FOMO	-2359952.449	5416530.079	2394688.417	07/08/2016
HKNP	-2392360.813	5400226.074	2400094.273	07/08/2016
HKOH	-2423817.446	5386056.893	2399883.176	07/08/2016
HKSC	-2414267.462	5386768.779	2407459.832	07/08/2016
HKSL	-2393382.959	5393860.967	2412592.206	07/08/2016
HYDE	1208444.095	5966805.988	1897077.270	07/08/2016
IISC	1337935.961	6070317.123	1427877.185	07/08/2016
LHAZ	-106941.978	5549269.795	3139215.168	07/08/2016
PBRI	-295635.883	6240848.732	1278178.475	07/08/2016
POL2	1239971.057	4530790.145	4302578.863	07/08/2016
URUM	193030.269	4606851.308	4393311.544	07/08/2016

3.2 Geodetic, GRS80 Ellipsoid, ITRF2008

Geoid-ellipsoidal separations, in this section, are computed using a spherical harmonic synthesis of the global EGM2008 geoid. More information on the EGM2008 geoid can be found at http://earth-info.nga.mil/GandG/wgs84/gravitymod/egm2008/

Station	Latitude (DMS)	Longitude (DMS)	Ellipsoidal Height(m)	Derived Above Geoid Height(m)
4851	22 03 57.98003	83 20 28.27375	246.849	307.847
CHUM	42 59 54.60529	74 45 03.96866	716.341	759.331
COAL	22 07 14.46817	113 33 40.99208	169.415	173.836
FOMO	22 11 50.69284	113 32 32.97426	56.615	61.300
HKNP	22 14 56.63107	113 53 37.97027	350.660	354.006
HKOH	22 14 51.66737	114 13 42.80808	166.365	168.242
HKSC	22 19 19.81310	114 08 28.29693	20.192	22.648
HKSL	22 22 19.21079	113 55 40.75332	95.247	98.790
HYDE	17 25 02.14257	78 33 03.14501	441.690	518.495
IISC	13 01 16.21053	77 34 13.36934	843.698	929.619
LHAZ	29 39 26.40100	91 06 14.51144	3624.613	3659.304
PBRI	11 38 16.00955	92 42 43.69226	-22.521	38.413
POL2	42 40 47.17395	74 41 39.36793	1714.215	1754.281
URUM	43 48 28.61953	87 36 02.41394	858.896	922.275

3.3 Positional Uncertainty (95% C.L.) - Geodetic, ITRF2008

Station	Longitude(East) (m)	Latitude(North) (m)	Ellipsoidal Height(Up) (m)
4851	0.012	0.008	0.030
CHUM	0.008	0.006	0.015
COAL	0.012	0.008	0.025
FOMO	0.012	0.008	0.026
HKNP	0.012	0.008	0.023
HKOH	0.012	0.008	0.024
HKSC	0.012	0.008	0.024
HKSL	0.012	0.008	0.024
HYDE	0.010	0.006	0.016
IISC	0.010	0.007	0.017
LHAZ	0.008	0.006	0.016
PBRI	0.011	0.009	0.028
POL2	0.008	0.006	0.015
URUM	0.008	0.006	0.015

4 Ambiguity Resolution - Per Baseline

Baseline	Ambiguities Resolved	Baseline Length (km)
HKOH - HKSC	85.0 %	12.211
CHUM - POL2	77.8 %	35.732
CHUM - URUM	81.2 %	1042.674
4851 - HYDE	50.0 %	718.510
COAL - HKNP	73.7 %	37.121
HKNP - URUM	13.3 %	3359.554
HKNP - HKSL	84.2 %	14.063
HKNP - PBRI	20.0 %	2522.221
4851 - LHAZ	40.9 %	1143.823
HKNP - HKOH	73.7 %	34.501
LHAZ - PBRI	70.5 %	1994.328
HYDE - IISC	76.4 %	497.626
COAL - FOMD	87.5 %	8.718
AVERAGE	64.2%	878.545

Please note for a regional solution, such as used by AUSPOS, ambiguity resolution success rate of 50% or better for a baseline formed by a user site indicates a reliable solution.

5 Computation Standards

5.1 Computation System

Software	Bernese GNSS Software Version 5.2.
GNSS system(s)	GPS only.

5.2 Data Preprocessing and Measurement Modelling

Data preprocessing	Phase preprocessing is undertaken in a baseline by baseline mode using triple-differences. In most cases, cycle slips are fixed by the simultaneous analysis of different linear combinations of L1 and L2. If a cycle slip cannot be fixed reliably, bad data points are removed or new ambiguities are set up A data screening step on the basis of weighted postfit residuals is also performed, and outliers are removed.
Basic observable	Carrier phase with an elevation angle cutoff of 7° and a sampling rate of 3 minutes. However, data cleaning is performed a sampling rate of 30 seconds. Elevation dependent weighting is applied according to $1/\sin(\epsilon)^2$ where ϵ is the satellite elevation.
Modelled observable	Double differences of the ionosphere-free linear combination.
Ground antenna phase centre calibrations	IGS08 absolute phase-centre variation model is applied.
Tropospheric Model	A priori model is the GMF mapped with the DRY-GMF.
Tropospheric Estimation	Zenith delay corrections are estimated relying on the WET-GMF mapping function in intervals of 2 hour. N-S and E-W horizontal delay parameters are solved for every 24 hours.
Tropospheric Mapping Function	GMF
Ionosphere	First-order effect eliminated by forming the ionosphere-free linear combination of L1 and L2. Second and third effect applied.
Tidal displacements	Solid earth tidal displacements are derived from the complete model from the IERS Conventions 2010, but ocean tide loading is not applied.
Atmospheric loading	Applied
Satellite centre of mass correction	IGS08 phase-centre variation model applied
Satellite phase centre calibration	IGS08 phase-centre variation model applied
Satellite trajectories	Best available IGS products.
Earth Orientation	Best available IGS products.

5.3 Estimation Process

Adjustment	Weighted least-squares algorithm.
Station coordinates	Coordinate constraints are applied at the Reference sites with standard deviation of 1mm and 2mm for horizontal and vertical components respectively.
Troposphere	Zenith delay parameters and pairs of horizontal delay gradient parameters are estimated for each station in intervals of 2 hours and 24 hours.
Ionospheric correction	An ionospheric map derived from the contributing reference stations is used to aid ambiguity resolution.
Ambiguity	Ambiguities are resolved in a baseline-by-baseline mode using the Code-Based strategy for 180-6000km baselines, the Phase-Based L5/L3 strategy for 18-200km baselines, the Quasi-Ionosphere-Free (QIF) strategy for 18-2000km baselines and the Direct L1/L2 strategy for 0-20km baselines.

5.4 Reference Frame and Coordinate Uncertainty

Terrestrial reference frame	IGS08 station coordinates and velocities mapped to the mean epoch of observation.
Australian datum	GDA94 coordinates determined via Helmert transformation from ITRF using the Dawson and Woods (2010) parameters.
Derived AHD	For stations within Australia, AUSGeoid09 is used to compute AHD. AUSGeoid09 is the Australia-wide gravimetric quasigeoid model that has been a posteriori fitted to the Australian Height Datum.
Above-geoid heights	Earth Gravitational Model EGM2008 released by the National Geospatial-Intelligence Agency (NGA) EGM Development Team is used to compute above-geoid heights. This gravitational model is complete to spherical harmonic degree and order 2159, and contains additional coefficients extending to degree 2190 and order 2159.
Coordinate uncertainty	Coordinate uncertainty is expressed in terms of the 95% confidence level for both GDA94 and ITRF2008. Uncertainties are scaled using an empirically derived model which is a function of data span, quality and geographical location.

NATIONAL MAP POLICY - 2005

1. PREAMBLE

All socio-economic developmental activities, conservation of natural resources, planning for disaster mitigation and infrastructure development require high quality spatial data. The advancements in digital technologies have now made it possible to use diverse spatial databases in an integrated manner. The responsibility for producing, maintaining and disseminating the topographic map database of the whole country, which is the foundation of all spatial data vests with the Survey of India (SOI). Recently, SOI has been mandated to take a leadership role in liberalizing access of spatial data to user groups without jeopardizing national security. To perform this role, the policy on dissemination of maps and spatial data needs to be clearly stated.

2. OBJECTIVES

- To provide, maintain and allow access and make available the National Topographic Database (NTDB) of the SOI conforming to national standards.
- To promote the use of geospatial knowledge and intelligence through partnerships and other mechanisms by all sections of the society and work towards a knowledge-based society.

3. TWO SERIES OF MAPS

To ensure that in the furtherance of this policy, national security objectives are fully safeguarded, it has been decided that there will be two series of maps namely

(a) Defence Series Maps (DSMs)- These will be the topographical maps (on Everest/WGS-84 Datum and Polyconic/UTM Projection) on various scales (with heights, contours and full content without dilution of accuracy). These will mainly cater for defence and national security requirements.

This series of maps (in analogue or digital forms) for the entire country will be classified, as appropriate, and the guidelines regarding their use will be formulated by the Ministry of Defence.

(b) Open Series Maps (OSMs) – OSMs will be brought out exclusively by SOI, primarily for supporting development activities in the country. OSMs shall bear different map sheet numbers and will be in UTM Projection on WGS-84 datum. Each of these OSMs (in both hard copy and digital form) will become "Unrestricted" after obtaining a one-time clearance of the Ministry of Defence. The content of the OSMs will be as given in **Annexure 'B'**. SOI will ensure that no civil and military Vulnerable Areas and Vulnerable Points (VA's/VP's) are shown on OSMs.

The SOI will issue from time to time detailed guidelines regarding all aspects of the OSMs like procedure for access by user agencies, further dissemination/sharing of OSMs amongst user agencies with or without value additions, ways and means of protecting business and commercial interests of SOI in the data and other incidental matters. Users will be allowed to publish maps on hard copy and web with or without GIS database. However, if the international boundary is depicted on the map, certification by SOI will be necessary.

In addition, the SOI is currently preparing City Maps. These City Maps will be on large scales in WGS-84 datum and in public domain. The contents of such maps will be decided by the SOI in consultation with Ministry of Defence.

4. NATIONAL TOPOGRAPHICAL DATA BASE (NTDB)

SOI will continue to create, develop and maintain the National Topographical Data Base (NTDB) in analogue and digital forms consisting of following data sets:

(a) National Spatial Reference Frame,

(b) National Digital Elevation Model,

(c) National Topographical Template,

(d) Administrative Boundaries, and

(e) Toponomy (place names).

Both the DSMs and OSMs will be derived from the NTDB.

5. MAP DISSEMINATION AND USAGE

Open Series Maps of scales larger than 1:1 million either in analogue or digital formats can be disseminated by SOI by sale or through an agreement to any agency for specific end use. This transaction will be registered in the Registration database with details of the receiving agency, end use etc.

- Through the agreement, SOI will allow a user to add value to the maps obtained (either in analogue or digital formats) and prepare his own value-added maps.

- The user should be able to share these maps with others – the information of all such sharing will also require to be logged in the Map Transaction Registry.

6. APPLICABILITY OF PREVIOUS INSTRUCTIONS:

The Ministry of Defence has from time to time issued detailed guidelines on various aspects of map access and use. These instructions shall continue to hold good but for the modifications cited herein..

Executive Engineer
EHT (C) Dn. CSPTCL
Bilaspur

वन मण्डलाधिकारी
रायगढ़, वनमण्डल

CONTENTS OF OSM

Annexure 'B'

Sl.NO.	CATEGORY/LAYER		SUB DETAILS
1.	GENERAL		Latitude/Longitude Name of State/District/Administrative index Topo sheet Number/Year of Survey/Edition No./Index to topo sheets Magnetic variation from true North direction Map reference Bar scale/Representative Factor
2.	ADMINISTRATIVE BOUNDARIES	Names Boundary Boundary Pillars	Administrative/Locality or tribal International to village, Forest, all boundary pillars, village trijunctions
3.	COMMUNICATIONS/ ROADS	Roads Tracks Railways Embankments Other Lines	All Roads All Tracks, pass, footpath All gauges with stations, tunnels Light railways or tramway, All embankments, Road/rail/tank
4.	HYDROLOGY	Stream/Canals Dams Rivers & Banks Wells, Water Features	All streams/canals All earthwork dams All rivers with details, banks, islands All wells/tube wells/springs All Tanks (excluding overhead tanks), Lightship, buoys, anchorages
5.	SETTLEMENT/ CULTURAL DETAILS	Towns or Villages Offices Settlements	Village inhabited, deserted and forts Huts, Tower, Antiquities Religious places, tombs/grave All post/telegraphic/Police stations hut All Bungalows
6.	TRANSMISSION LINE		
7.	RELIEF/HYPSOGRAPHY	Contours Sand Features Ice Forms Heights Benchmarks	Contours with sub features All sand features Ice forms (all features) Spot height, Approximate height Bench marks (Geodetic tertiary, canal)
8.	VEGETATION	Plantations, Trees	All trees, Vine on trellis, grass, scrub.
9.	FOREST		Reserved/Protected

* Contours & heights will not be available in restricted zones as per MOD's instructions.

DATASHEET

TRIMBLE SPS855 GNSS MODULAR RECEIVER

FLEXIBLE RECEIVER FOR JOBSITE MEASUREMENT

Whether you need a reliable GNSS base station or a rugged rover, the Trimble® SPS855 GNSS Modular Receiver gives you the flexibility to perform all of your construction site measurements. As a permanent or semi-permanent base station, it provides GNSS corrections for site measurements and machine control. As a rover, it can move easily from a site supervisor truck to a pole mount for grade checking, site measurement and stakeout.

The versatile SPS855 receiver is available in a range of options to suit your jobsite or marine construction performance requirements. Simply purchase the receiver that you need today, and upgrade as your needs change.

Secure and Easy to Use

The Trimble SPS855 is comprised of an integrated GNSS receiver and radio plus a choice of external antenna. The receiver can be placed in a secure environment such as the job trailer or boat cabin where it is protected from theft and weather. The less expensive antenna can be placed in a location with clear visibility to the sky and maximum radio coverage.

You don't have to be a GNSS expert to use the SPS855. Integrated 450 or 900 MHz license-free radio and interface with Trimble SCS900 Site Controller Software make the SPS855 easy to use, fast to setup and more productive on the job. Trimble Autobase™ technology means anyone on the jobsite can perform daily base station set up with one button push.

For more advanced troubleshooting, the receiver's web interface allows your GNSS manager to remotely monitor base station performance, availability, and configuration. No need for time-consuming and costly visits to the base station to set up each day or diagnose issues that may arise.

The fully upgradable SPS855 GNSS Modular Receiver can be configured in a variety of ways. For example:

- As a base station only
- As a rover only with SBAS, Location, or Precision Real-Time Kinematic (RTK) accuracy
- As a flexible base or rover with Precision RTK accuracy

The SPS855 can be combined with the Trimble SPS555H Heading Add-on Receiver, for applications on cranes, construction vessels, and dredges where real-time position and orientation are important.

Trimble

The Construction Technology Standard

www.trimble.com

TRIMBLE SPS855 GNSS MODULAR RECEIVER

GENERAL

Keyboard and display ..... Vacuum fluorescent display 16 characters by 2 rows
Dimmable. On/Off key for one-button startup
Dimensions (L x W x D) ..... 24 cm x 12 cm x 5 cm (9.4 in x 4.7 in x 1.9 in)
Weight ..... 1.65 kg (3.64 lb) receiver with internal battery and radio
1.55 kg (3.42 lb) receiver with internal battery and no radio

ANTENNA OPTIONS

GAS90 ..... L1/L2/L2C GPS, SBAS, and OmniSTAR
GA810 ..... GPS, Glonass, OmniSTAR, SBAS, Galileo (optimized for OmniSTAR)
Zephyr™ 2 Models ..... L1/L2/L2C/L5 GPS, Glonass, OmniSTAR, SBAS, Galileo, BeiDou

ENVIRONMENTAL

Operating[1] ..... -40 °C to +65 °C (-40 °F to +149 °F)
Storage ..... -40 °C to +80 °C (-40 °F to +176 °F)
Humidity ..... MIL-STD 810F, Method 507.4
Waterproof ..... IP67 for submersion to depth of 1 m (3.3 ft), dustproof
Pole drop ..... Designed to survive a 1 m (3.3 ft) pole drop onto a hard surface

MEASUREMENTS[2]

MEASUREMENTS[2]

- 440-channel L3CDA, L1/L2/L2C GPS and QZSS. Upgradable to L5 and GLONASS L1/L2CDA, L1/L2P Full Cycle Carrier
- Galileo
- BeiDou
- OmniSTAR
- Trimble EVEREST™ multipath signal rejection
- 4-channel SBAS (WAAS/EGNOS/MSAS/QZSS)

CODE DIFFERENTIAL GPS POSITIONING[3]

Horizontal accuracy ..... 0.25 m + 1 ppm RMS (0.8 ft + 1 ppm RMS)
Vertical accuracy ..... 0.50 m + 1 ppm RMS (1.6 ft + 1 ppm RMS)

REAL-TIME KINEMATIC (RTK UP TO 30 KM) POSITIONING[3]

Horizontal accuracy ..... 8 mm + 1 ppm RMS (0.026 ft + 1 ppm RMS)
Vertical accuracy ..... 15 mm + 1 ppm RMS (0.05 ft +1 ppm RMS)

TRIMBLE XFILL

Horizontal accuracy ..... RTK[4] + 10mm/minute RMS
Vertical accuracy ..... RTK + 20mm/minute RMS

INITIALIZATION TIME

Initialization reliability[5] ..... >99.9%

POWER

Internal ..... Integrated internal battery 7.2 V, 7800 mA-hr, Lithium-ion
External ..... Power input on 7-pin 6-shell Lemo connector is optimized for lead acid batteries with a cut-off threshold of 11.5 V
Power input on the 26-pin Dsub connector is optimized for Trimble Lithium-ion battery input with a cut-off threshold of 10.5 V
Power consumption ..... 6.0 W in rover mode with internal receive radio
8.0 W in base mode with internal transmit radio

OPERATION TIME ON INTERNAL BATTERY

Rover ..... 13 hours; varies with temperature
Base station
450 MHz systems ..... Approximately 11 hours; varies with temperature[6]
900 MHz systems ..... Approximately 9 hours; varies with temperature

REGULATORY APPROVALS

- FCC Part 15 Subpart B (Class B Device) and Subpart C, Part 90
- Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.
- Canadian RSS-310, RSS-210, and RSS-119.
- Cet appareil est conforme à la norme CNR-310, CNR-210, et CNR-119 du Canada.
- ACMA: AS/NZS 4295 approval
- CE mark compliance
- C-tick mark compliance
- UN ST/SG/AC.10.11/Rev. 3, Amend. 1 (Lithium-ion Battery)
- UN ST/SG/AC. 10/27/Add. 2 (Lithium-ion Battery)
- RoHS compliant
- WEEE compliant

- WEEE compliant

COMMUNICATIONS

Lemo (Serial) ..... 7-pin 05 Lemo, Serial 1, 3-wire RS-232
Modem 1 (Serial) ..... 26-pin Dsub, Serial 2, Full 9-wire RS232, using adaptor cable
Modem 2 (Serial) ..... 26-pin Dsub, Serial 3, 3-wire RS-232, using adaptor cable
1PPS (1 Pulse-per-second) ..... Available on Marine versions
Ethernet ..... Through a multi-port adaptor
Bluetooth wireless technology ..... Fully-integrated, fully-sealed 2.4 GHz Bluetooth module[7]
Integrated radios (optional) ..... Fully integrated, fully-sealed
Internal 450 MHz (UHF) TxRx Internal 900 MHz TxRx
External GSM/GPRS cell phone support ..... For Internet-based correction streams
Receiver position update rate ..... 1 Hz, 2 Hz, 5 Hz, 10 Hz, and 20 Hz positioning
Correction data input/output ..... CMR™, CMR+™, CMRx™, RTCM v 2.x & 3.x
Data outputs ..... NMEA, GSOF, 1PPS Time Tags (Marine version)

1 Receiver will operate normally to -40 °C. Internal batteries are rated to -20 °C.
2 The Trimble SPS855 GNSS Modular Receiver is capable of supporting existing and planned GNSS satellite signals, including GPS, GLONASS, Galileo, Quasi-Zenith Satellite System and BeiDou, and existing and planned augmentations to these GNSS systems. Support for the Galileo system is developed under a license of the European Union and the European Space Agency.
3 Accuracy and reliability may be subject to anomalies such as multipath, obstructions, satellite geometry, and atmospheric conditions. Always follow recommended practices.
4 RTK refers to the last reported position before the correction source was lost and xFill started.
5 May be affected by atmospheric conditions, signal multipath, and satellite geometry. Initialization reliability is continuously monitored to ensure highest quality.
6 For receivers with the Z-boot upgrade, reduced battery performance should be expected compared to the Z-Max solution.
7 Bluetooth type approvals are country specific. For more information, contact your local Trimble office or representative.

Specifications subject to change without notice.

Bluetooth CE




YOUR 5TECH HEAVY CIVIL CONSTRUCTION TECHNOLOGY PROVIDER

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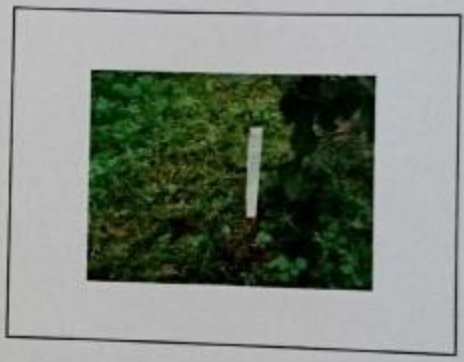
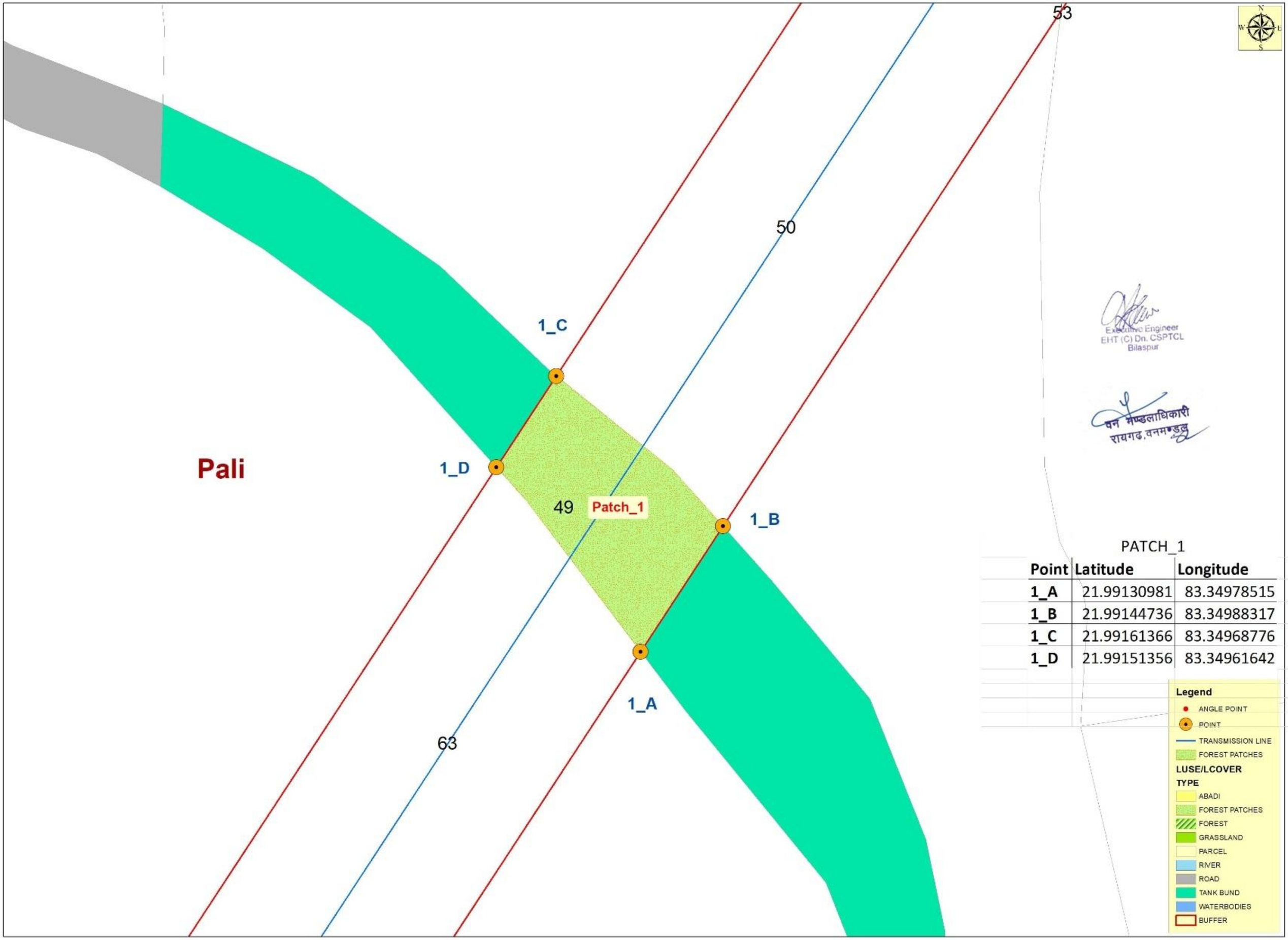
+65 6348 2232 Fax

Trimble

www.trimble.com



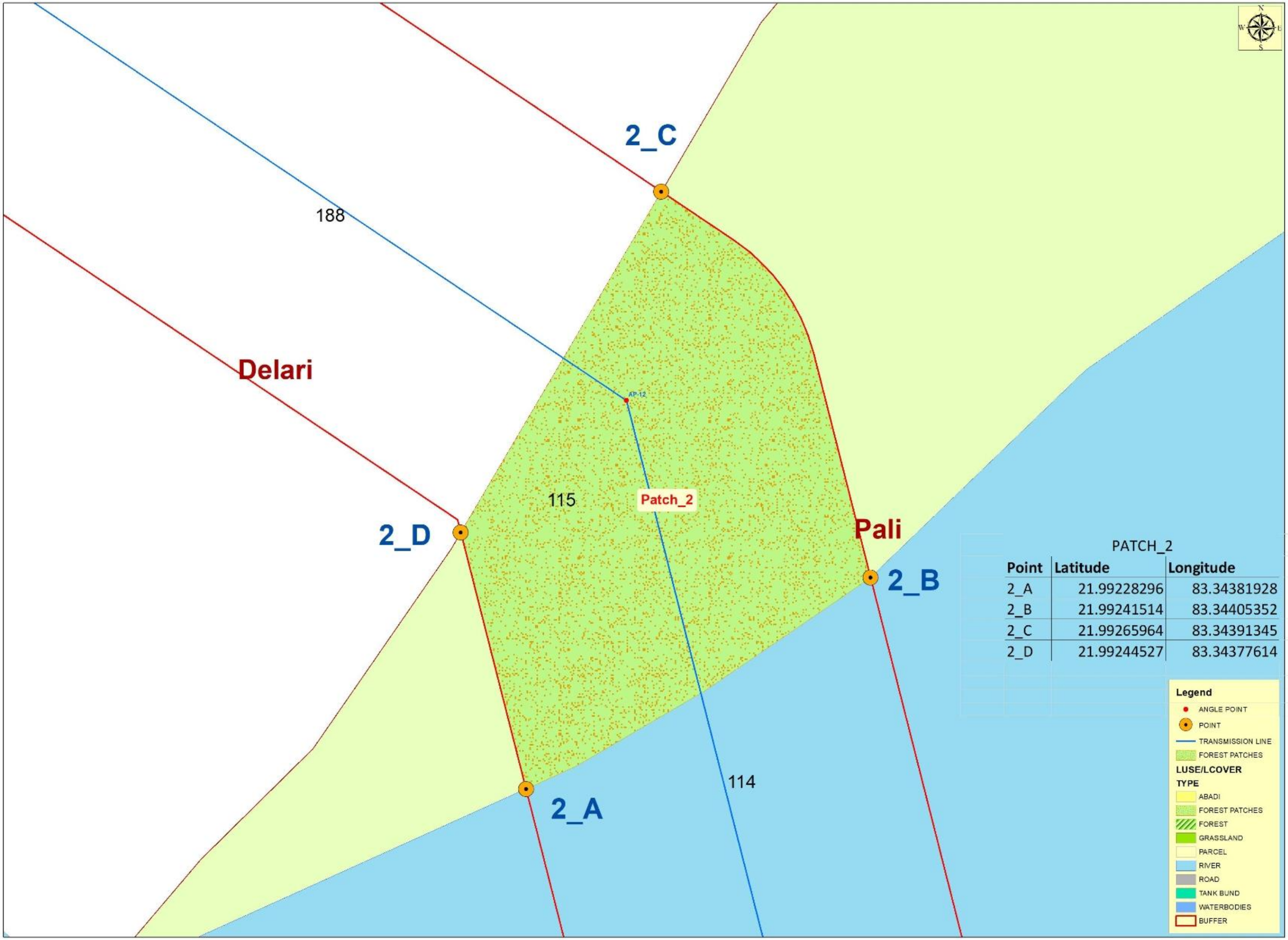
TRANSMISSION LINE FOREST PATCHES



PATCH_1

Point	Latitude	Longitude
1_A	21.99130981	83.34978515
1_B	21.99144736	83.34988317
1_C	21.99161366	83.34968776
1_D	21.99151356	83.34961642

TRANSMISSION LINE FOREST PATCHES



PATCH_2

Point	Latitude	Longitude
2_A	21.99228296	83.34381928
2_B	21.99241514	83.34405352
2_C	21.99265964	83.34391345
2_D	21.99244527	83.34377614

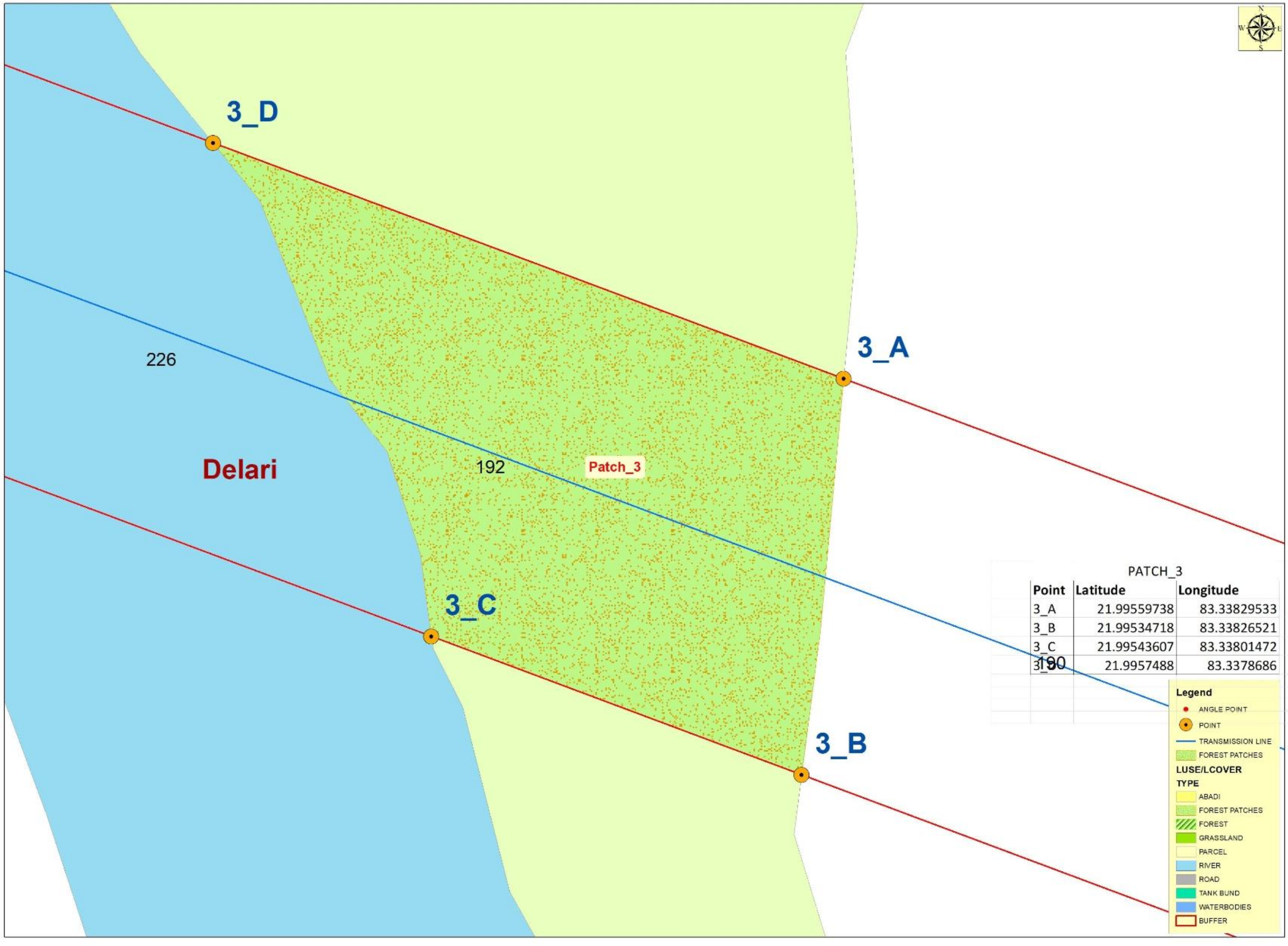
Legend

- ANGLE POINT
- POINT
- TRANSMISSION LINE
- FOREST PATCHES

LUSE/LCOVER TYPE

- ABADI
- FOREST PATCHES
- FOREST
- GRASSLAND
- PARCEL
- RIVER
- ROAD
- TANK BUND
- WATERBODIES
- BUFFER

TRANSMISSION LINE FOREST PATCHES



PATCH_3

Point	Latitude	Longitude
3_A	21.99559738	83.33829533
3_B	21.99534718	83.33826521
3_C	21.99543607	83.33801472
3_D	21.9957488	83.3378686

Legend

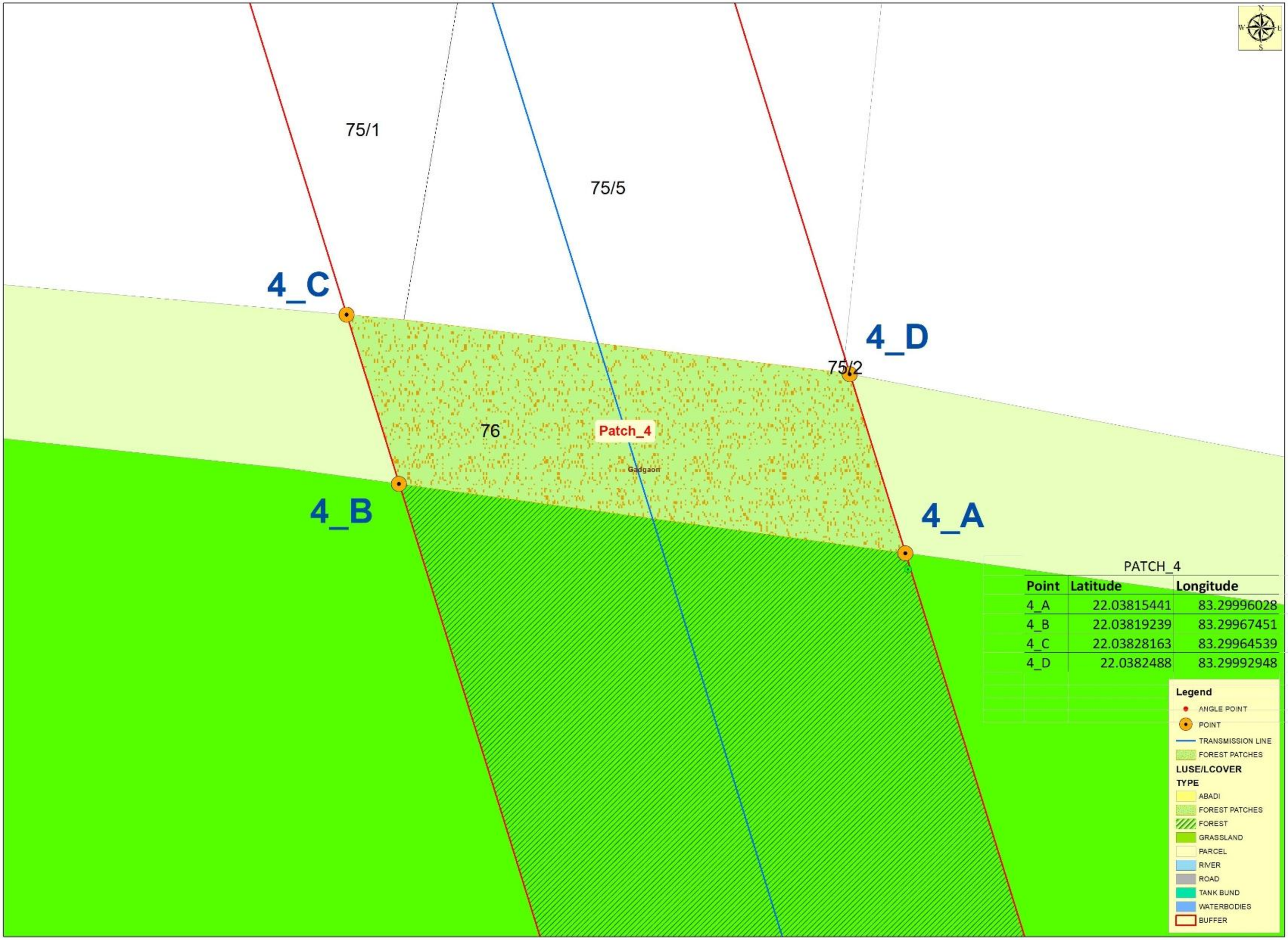
- ANGLE POINT
- POINT
- TRANSMISSION LINE
- FOREST PATCHES

LUSE/LCOVER

TYPE

- ABADI
- FOREST PATCHES
- FOREST
- GRASSLAND
- PARCEL
- RIVER
- ROAD
- TANK BUND
- WATERBODIES
- BUFFER

TRANSMISSION LINE FOREST PATCHES



PATCH_4

Point	Latitude	Longitude
4_A	22.03815441	83.29996028
4_B	22.03819239	83.29967451
4_C	22.03828163	83.29964539
4_D	22.0382488	83.29992948

Legend

- ANGLE POINT
- POINT
- TRANSMISSION LINE
- FOREST PATCHES

LUSE/LCOVER TYPE

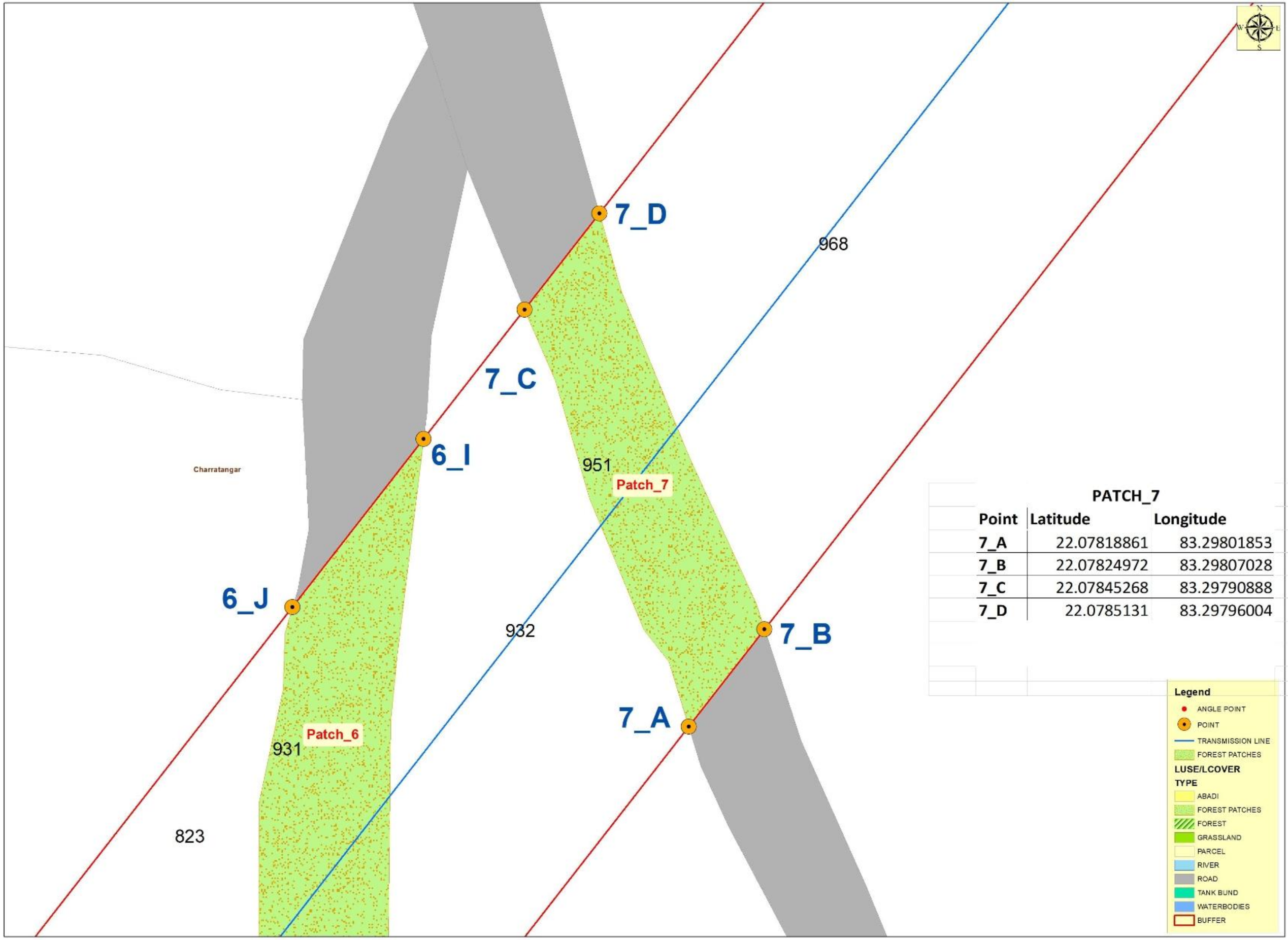
- ABADI
- FOREST PATCHES
- FOREST
- GRASSLAND
- PARCEL
- RIVER
- ROAD
- TANK BUND
- WATERBODIES
- BUFFER

TRANSMISSION LINE FOREST PATCHES

PATCH_5

Point	Latitude	Longitude
5_A	22.05551631	83.29021862
5_B	22.05604044	83.29007007
5_C	22.0560421	83.28995818
5_D	22.05592227	83.28992945
5_E	22.05425838	83.28997858
5_F	22.05420587	83.29024108

TRANSMISSION LINE FOREST PATCHES



PATCH_7

Point	Latitude	Longitude
7_A	22.07818861	83.29801853
7_B	22.07824972	83.29807028
7_C	22.07845268	83.29790888
7_D	22.0785131	83.29796004

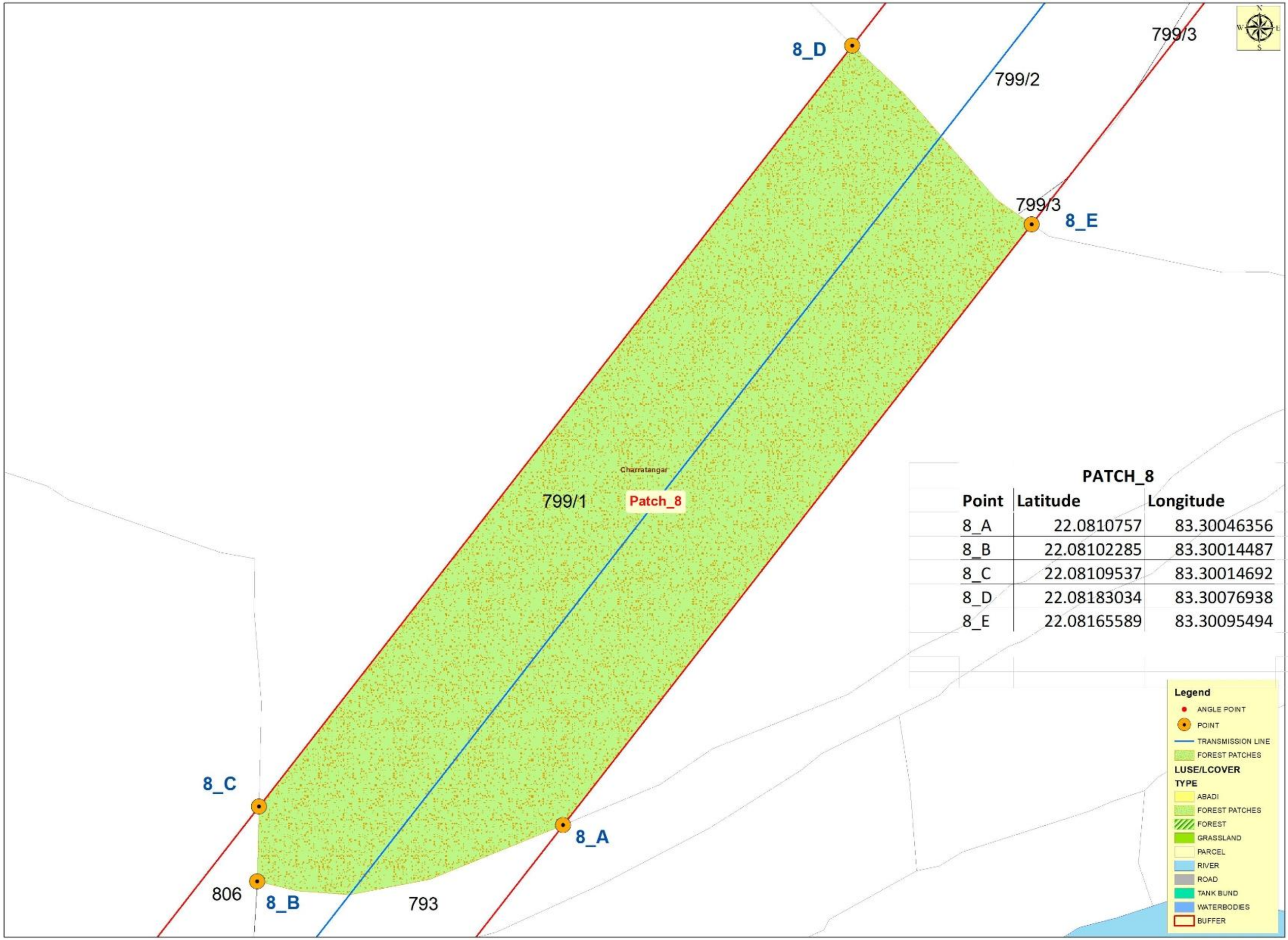
Legend

- ANGLE POINT
- POINT
- TRANSMISSION LINE
- FOREST PATCHES

LUSE/LCOVER TYPE

- ABADI
- FOREST PATCHES
- FOREST
- GRASSLAND
- PARCEL
- RIVER
- ROAD
- TANK BUND
- WATERBODIES
- BUFFER

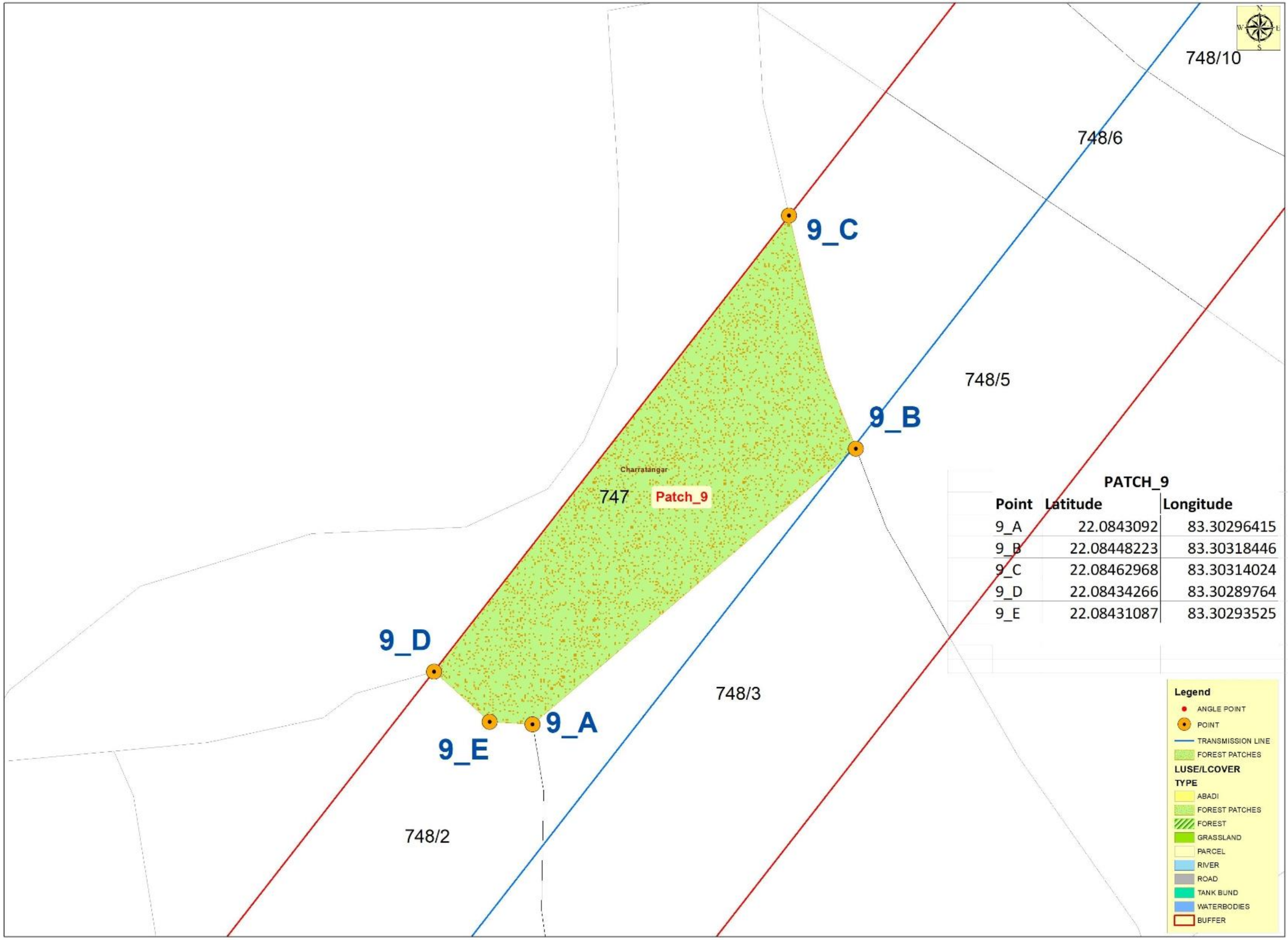
TRANSMISSION LINE FOREST PATCHES



PATCH_8

Point	Latitude	Longitude
8_A	22.0810757	83.30046356
8_B	22.08102285	83.30014487
8_C	22.08109537	83.30014692
8_D	22.08183034	83.30076938
8_E	22.08165589	83.30095494

TRANSMISSION LINE FOREST PATCHES



PATCH_9

Point	Latitude	Longitude
9_A	22.0843092	83.30296415
9_B	22.08448223	83.30318446
9_C	22.08462968	83.30314024
9_D	22.08434266	83.30289764
9_E	22.08431087	83.30293525

Legend

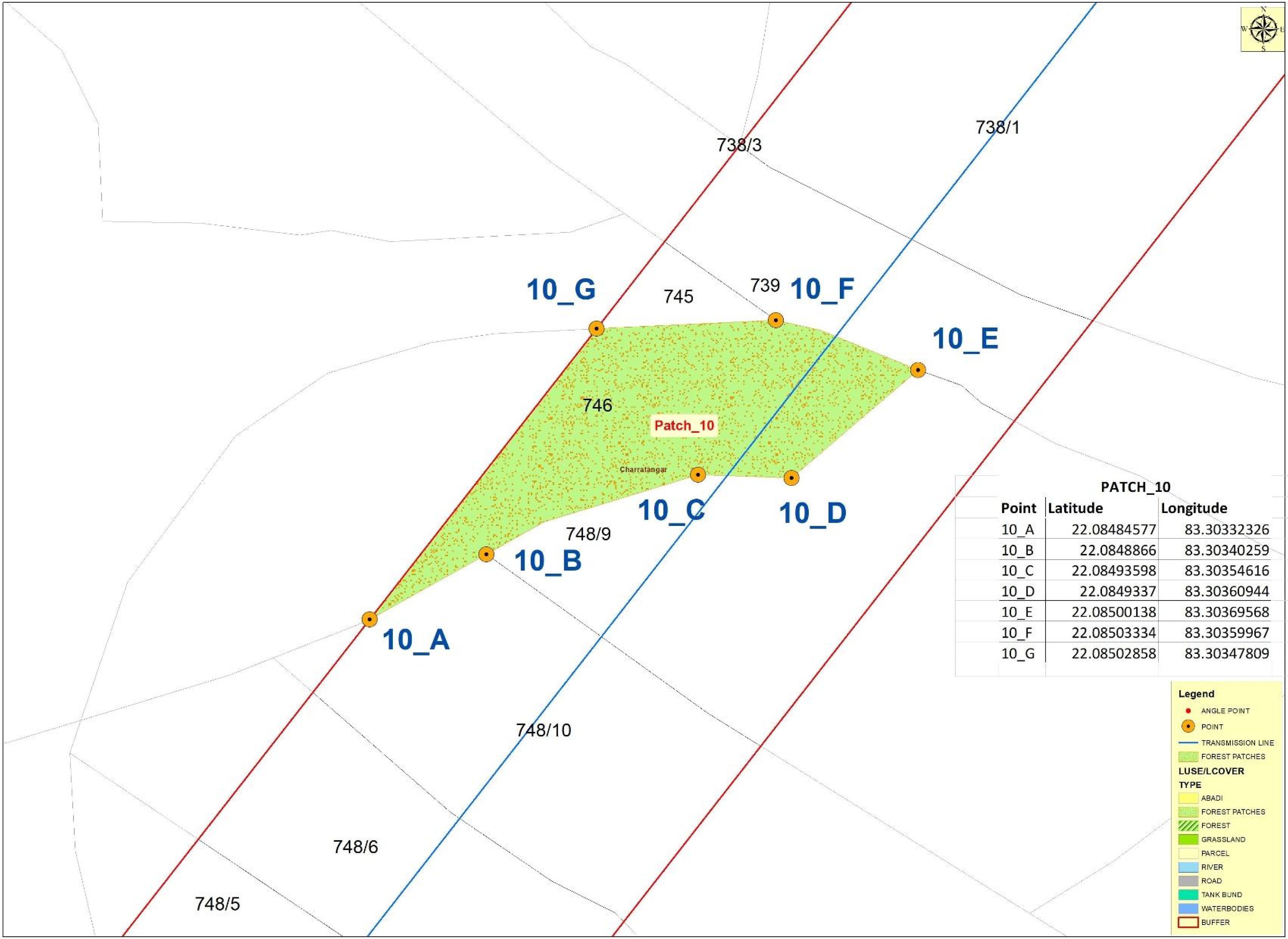
- ANGLE POINT
- POINT
- TRANSMISSION LINE
- FOREST PATCHES

LUSE/LCOVER

TYPE

- ABADI
- FOREST PATCHES
- FOREST
- GRASSLAND
- PARCEL
- RIVER
- ROAD
- TANK BUND
- WATERBODIES
- BUFFER

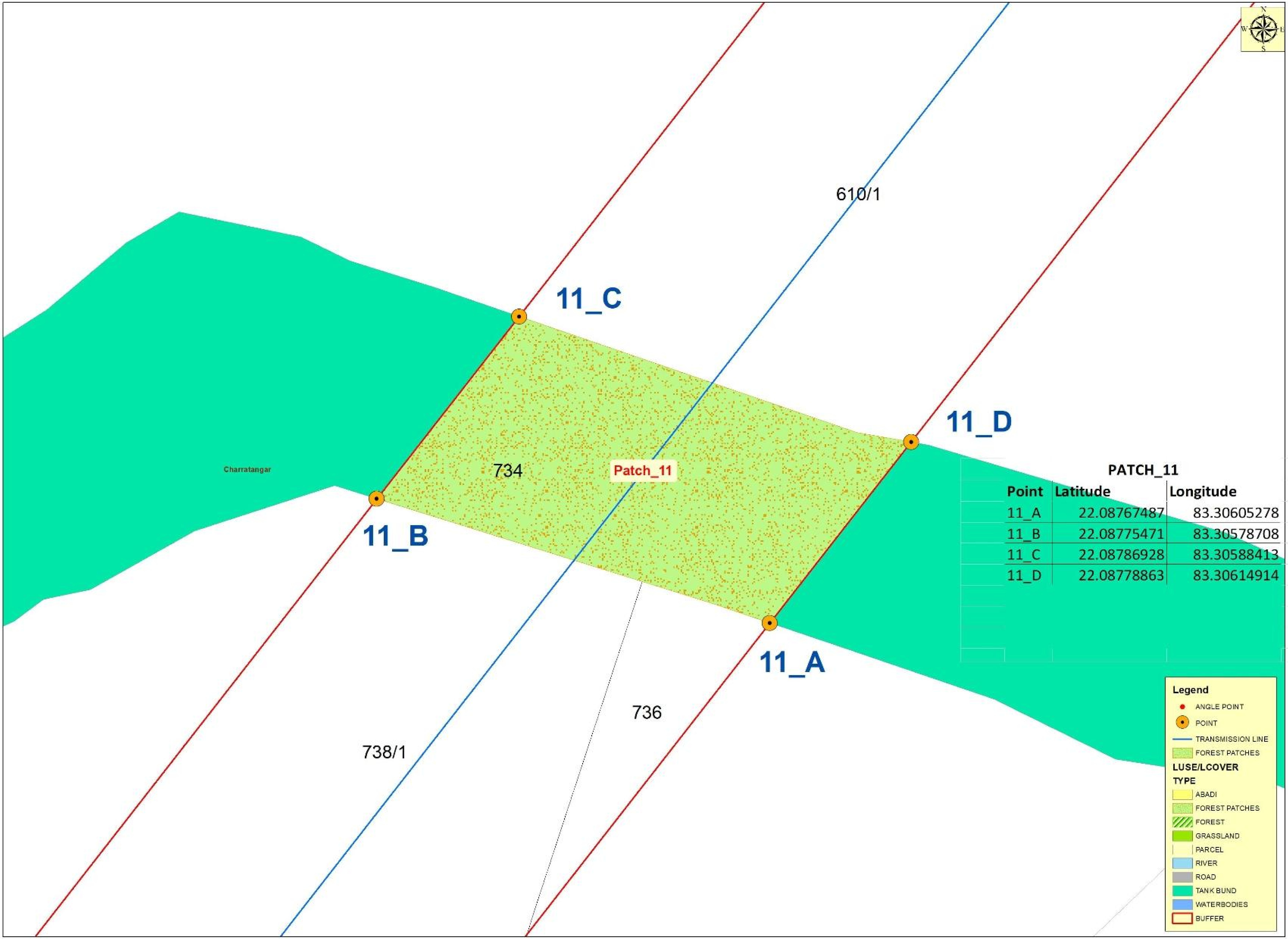
TRANSMISSION LINE FOREST PATCHES



PATCH_10

Point	Latitude	Longitude
10_A	22.08484577	83.30332326
10_B	22.0848866	83.30340259
10_C	22.08493598	83.30354616
10_D	22.0849337	83.30360944
10_E	22.08500138	83.30369568
10_F	22.08503334	83.30359967
10_G	22.08502858	83.30347809

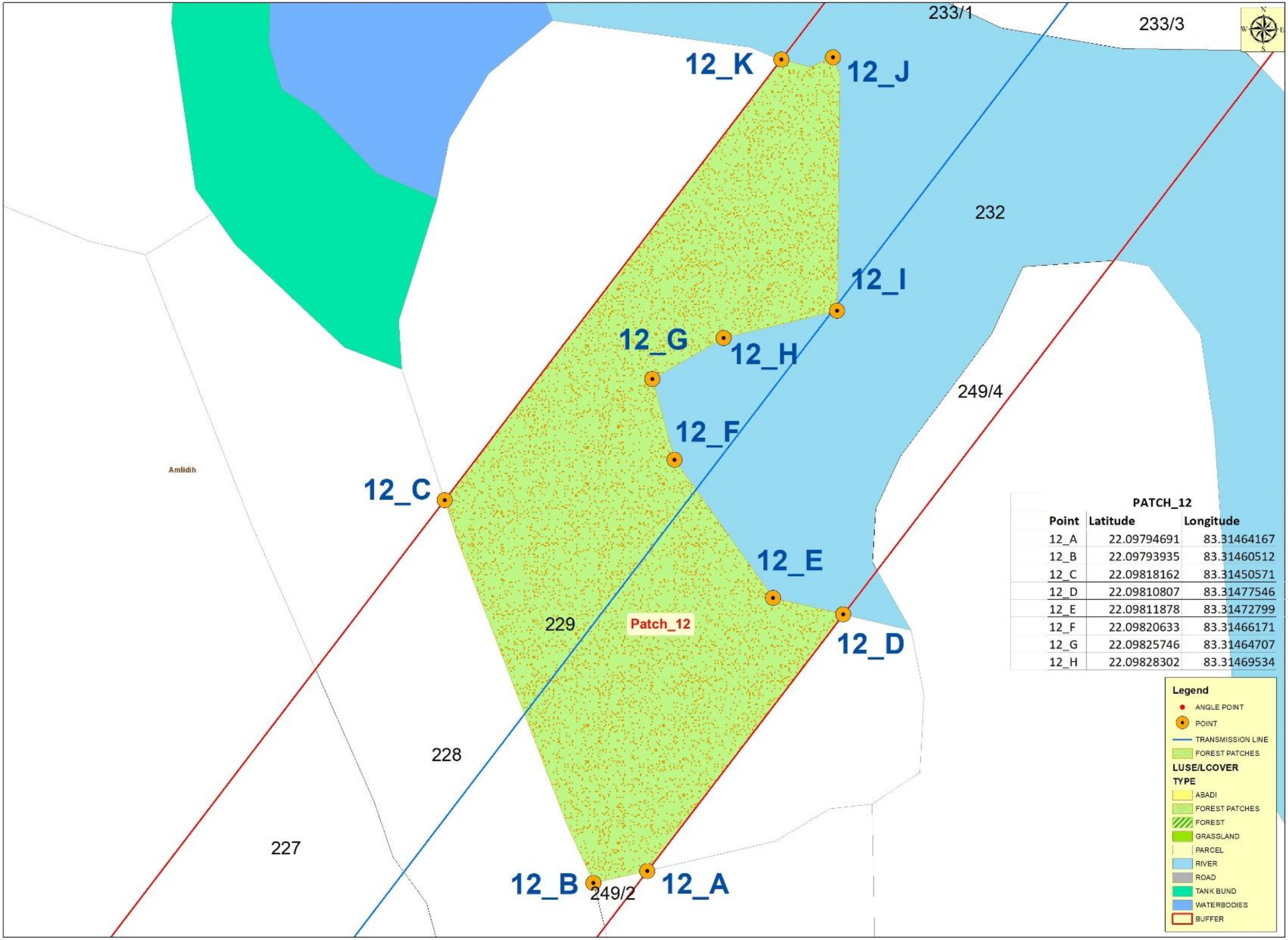
TRANSMISSION LINE FOREST PATCHES



PATCH_11

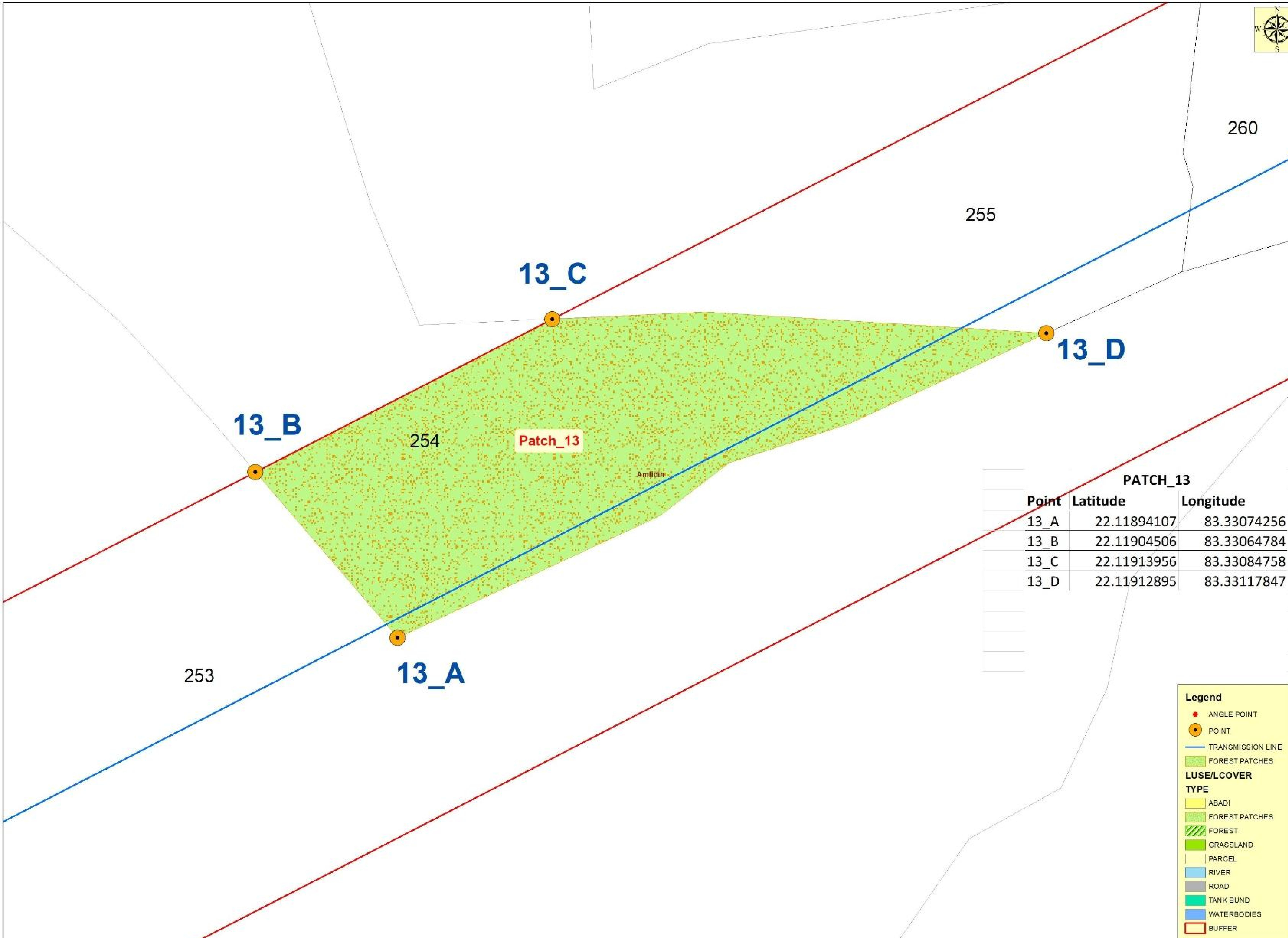
Point	Latitude	Longitude
11_A	22.08767487	83.30605278
11_B	22.08775471	83.30578708
11_C	22.08786928	83.30588413
11_D	22.08778863	83.30614914

TRANSMISSION LINE FOREST PATCHES



PATCH_12		
Point	Latitude	Longitude
12_A	22.09794691	83.31464167
12_B	22.09793935	83.31460512
12_C	22.09818162	83.31450571
12_D	22.09810807	83.31477546
12_E	22.09811878	83.31472799
12_F	22.09820633	83.31466171
12_G	22.09825746	83.31464707
12_H	22.09828302	83.31469534

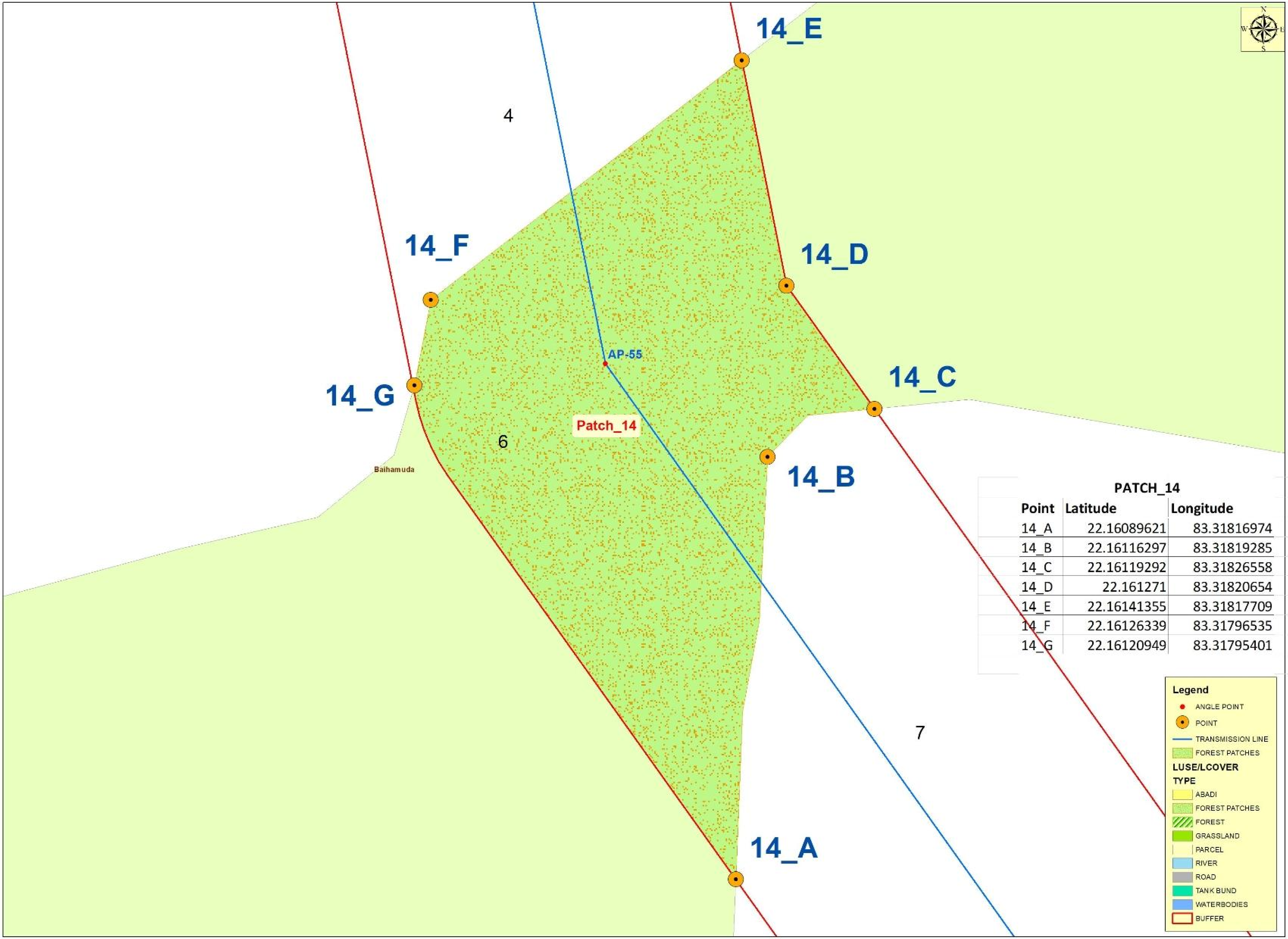
TRANSMISSION LINE FOREST PATCHES



PATCH_13

Point	Latitude	Longitude
13_A	22.11894107	83.33074256
13_B	22.11904506	83.33064784
13_C	22.11913956	83.33084758
13_D	22.11912895	83.33117847

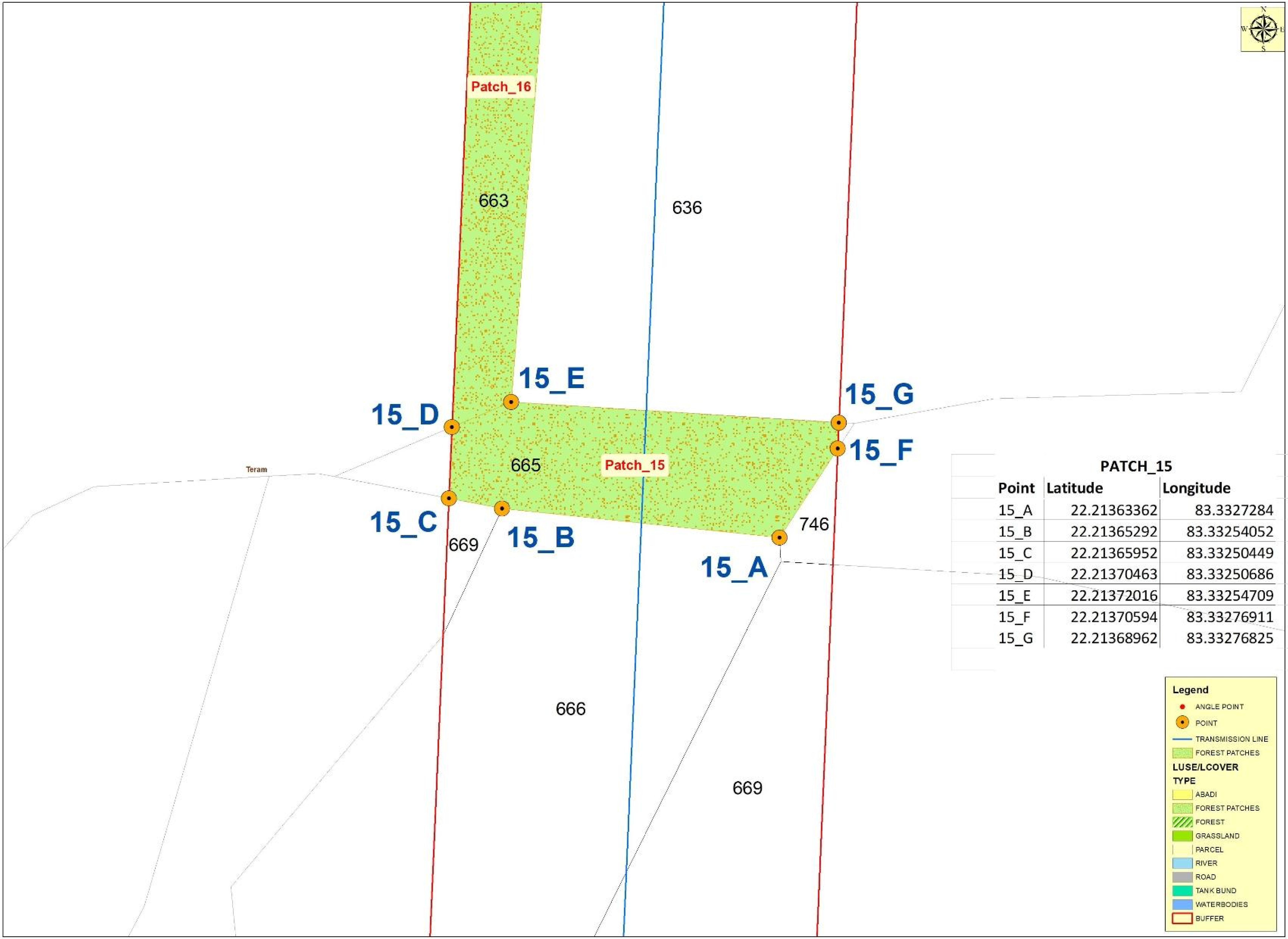
TRANSMISSION LINE FOREST PATCHES



PATCH_14

Point	Latitude	Longitude
14_A	22.16089621	83.31816974
14_B	22.16116297	83.31819285
14_C	22.16119292	83.31826558
14_D	22.161271	83.31820654
14_E	22.16141355	83.31817709
14_F	22.16126339	83.31796535
14_G	22.16120949	83.31795401

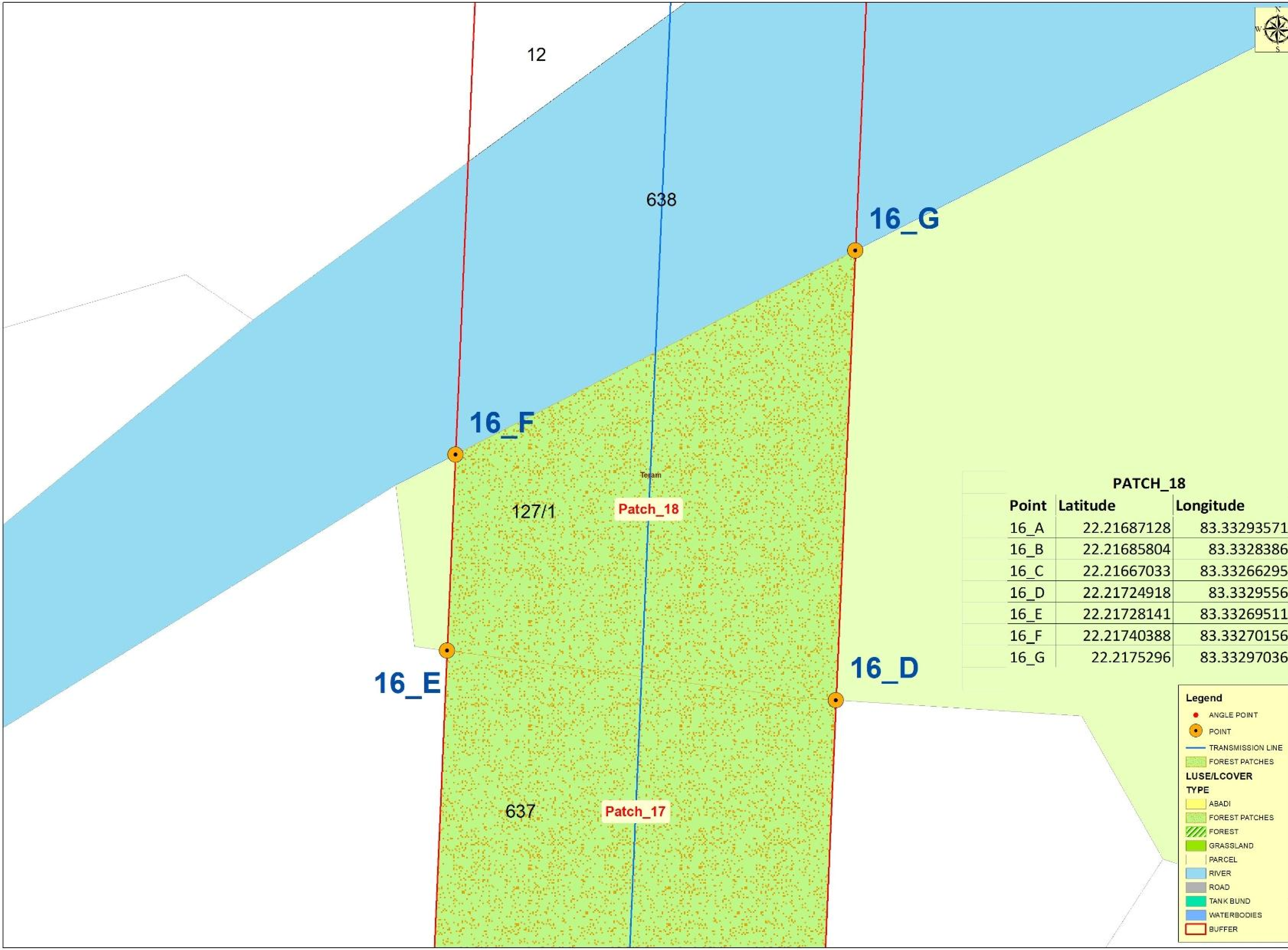
TRANSMISSION LINE FOREST PATCHES



PATCH_15

Point	Latitude	Longitude
15_A	22.21363362	83.3327284
15_B	22.21365292	83.33254052
15_C	22.21365952	83.33250449
15_D	22.21370463	83.33250686
15_E	22.21372016	83.33254709
15_F	22.21370594	83.33276911
15_G	22.21368962	83.33276825

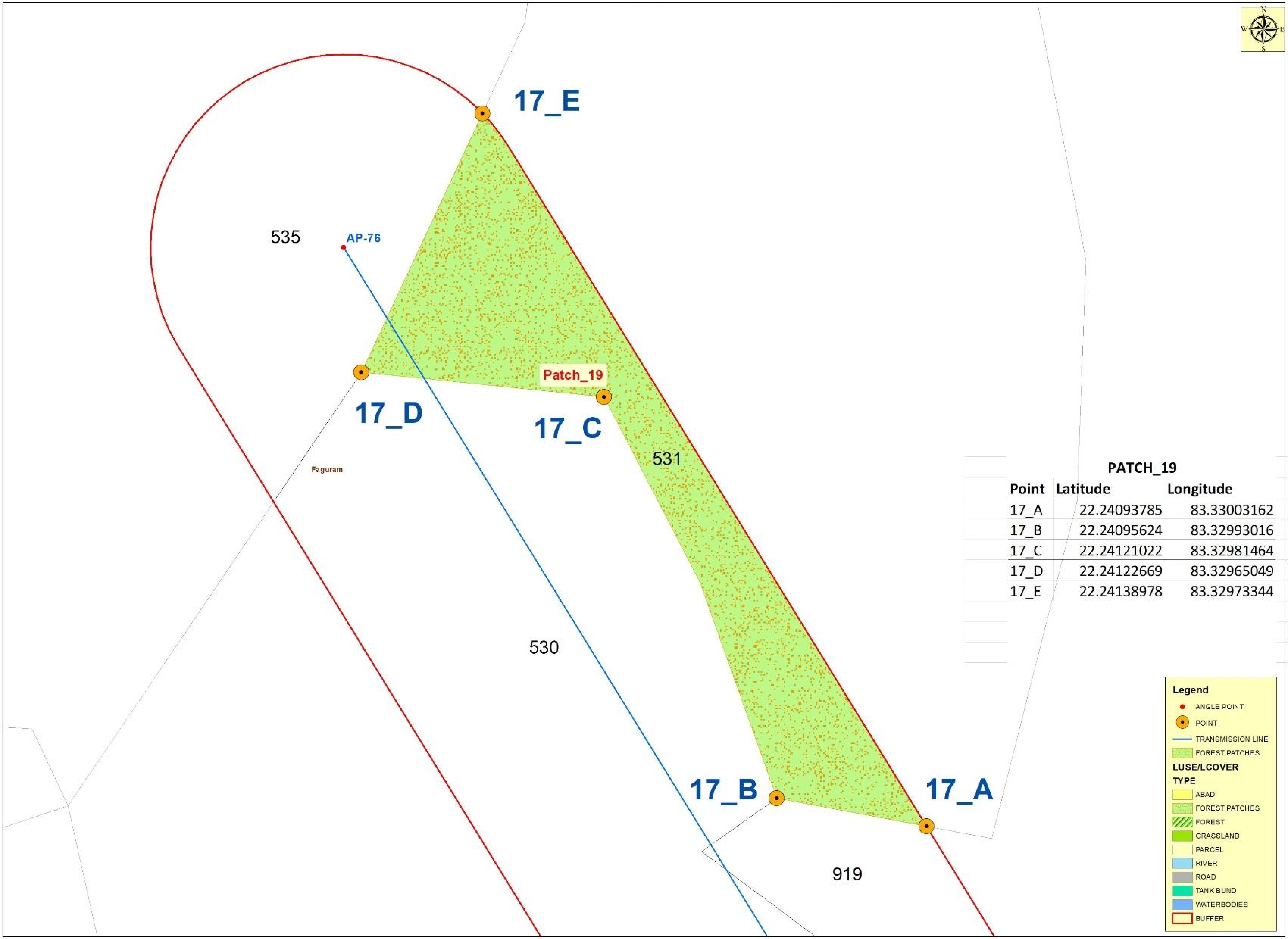
TRANSMISSION LINE FOREST PATCHES



PATCH_18

Point	Latitude	Longitude
16_A	22.21687128	83.33293571
16_B	22.21685804	83.3328386
16_C	22.21667033	83.33266295
16_D	22.21724918	83.3329556
16_E	22.21728141	83.33269511
16_F	22.21740388	83.33270156
16_G	22.2175296	83.33297036

TRANSMISSION LINE FOREST PATCHES



PATCH_19

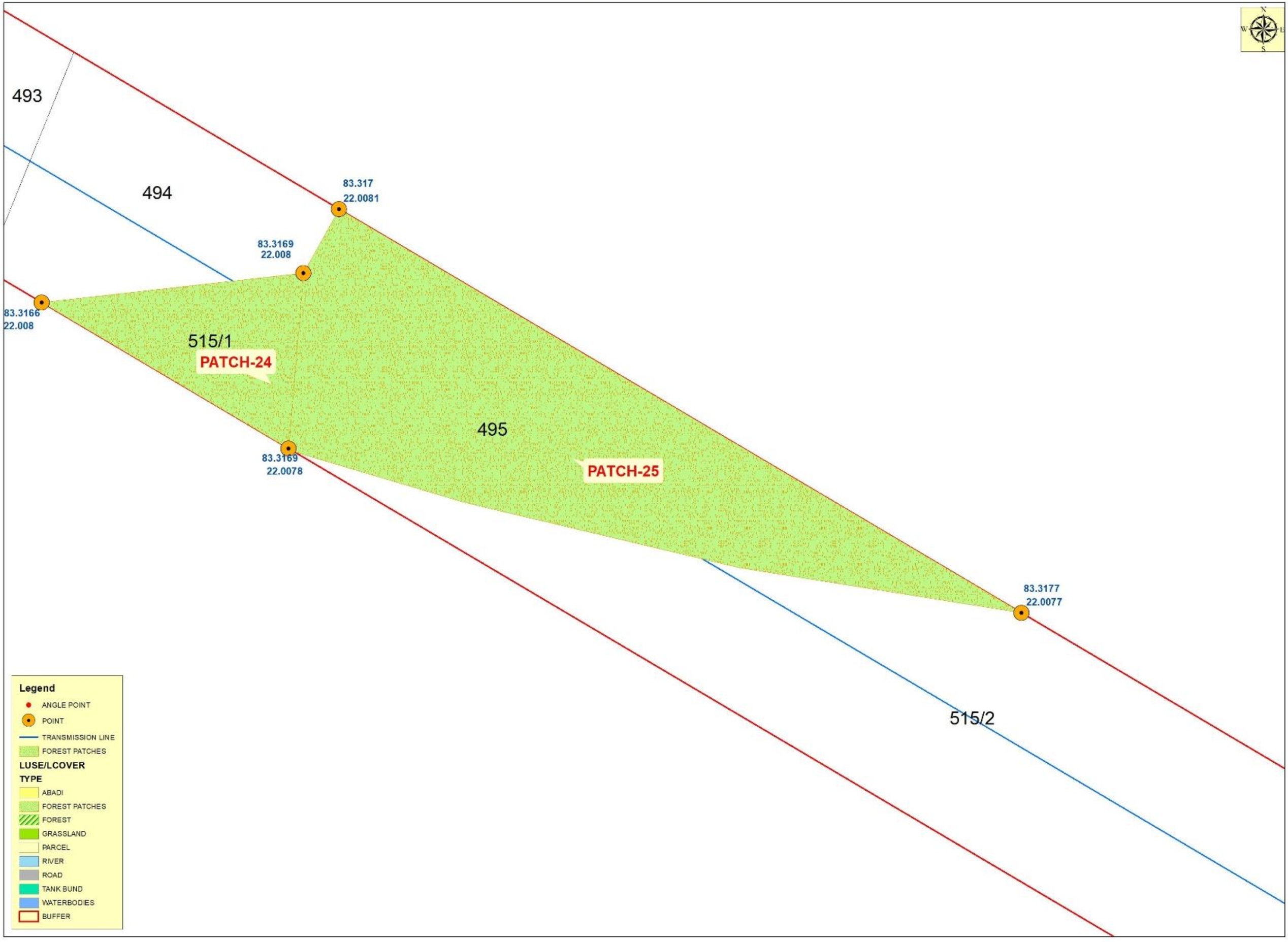
Point	Latitude	Longitude
17_A	22.24093785	83.33003162
17_B	22.24095624	83.32993016
17_C	22.24121022	83.32981464
17_D	22.24122669	83.32965049
17_E	22.24138978	83.32973344

132KV D/C GERWANI TO KORICHHAPAR TSS LINE FOREST PATCHES

0 0.015 0.03 0.06 0.09 0.12 Km.

132KV D/C GERWANI TO KORICHHAPAR TSS LINE FOREST PATCHES

TRANSMISSION LINE FOREST PATCHES



TRANSMISSION LINE FOREST PATCHES

800

83.3023
22.0836

83.3024
22.0836

83.3025
22.0836

83.3023
22.0835

83.3022
22.0835

561/1

PATCH-27

83.3021
22.0834

83.3024
22.0834

561/2

Legend

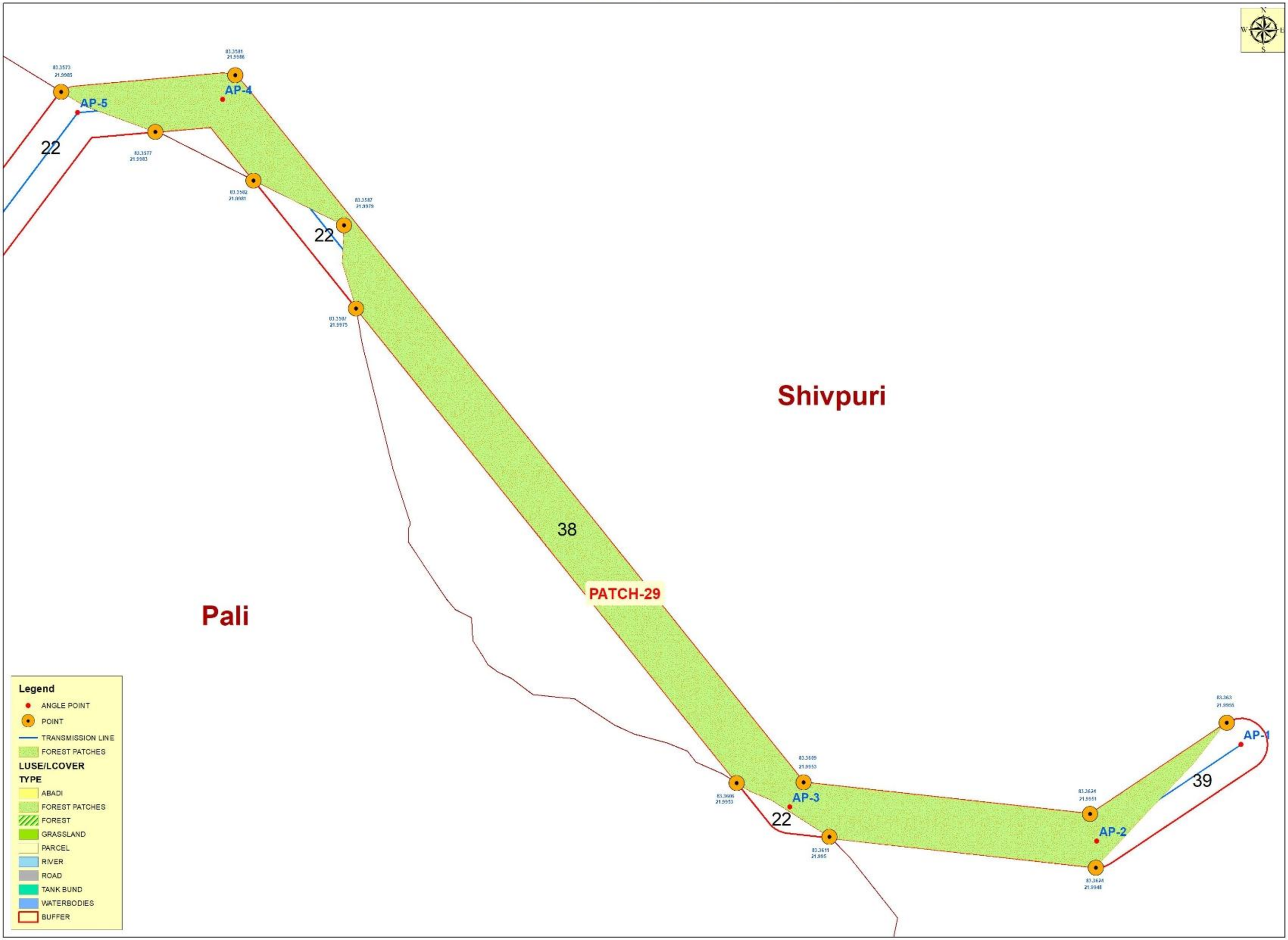
- ANGLE POINT
- POINT
- TRANSMISSION LINE
- FOREST PATCHES

LUSE/LCOVER TYPE

- ABADI
- FOREST PATCHES
- FOREST
- GRASSLAND
- PARCEL
- RIVER
- ROAD
- TANK BUND
- WATERBODIES
- BUFFER

TRANSMISSION LINE FOREST PATCHES

TRANSMISSION LINE FOREST PATCHES



TRANSMISSION LINE FOREST PATCHES

92

93/2

AP-22

AP-21

PATCH-30

50

51

Bagbuda

Gadgaon

Bhuikurri

Legend

- ANGLE POINT
- POINT
- TRANSMISSION LINE
- FOREST PATCHES

LUSE/LCOVER TYPE

- ABADI
- FOREST PATCHES
- FOREST
- GRASSLAND
- PARCEL
- RIVER
- ROAD
- TANK BUND
- WATERBODIES
- BUFFER

TRANSMISSION LINE FOREST PATCHES

0 0.015 0.03 0.06 0.09 0.12 Km.

1:491

132 KV D/C GERWANI TO KORICHHAPAR TSS LINE

Sheet - 10

83°19'0"E

22°0'30"N

AP-16

Patch_32

83.317882
22.007737

83.317496
22.007691

83.318827
22.007191

83.31883
22.006904

487 488/2 488/1 489 490 491 480 492 493 494 495 496/1 496/2 496/3 496/4 497 498/1 498/2 513/2 513/4 514 514/641 515/1 515/2 516 517 580 582 583 585 586 587 588 589 590 591 592 593 594 595 596 597 598 599 600 601 602 603 604 608 610

N W E S

Legend

- Angle Point
- Transmission Line
- Village Boundary

132 KV D/C GERWANI TO KORICHHAPAR TSS LINE

Sheet - 10

0 0.005 0.01 0.02 0.03 0.04 Km. 1:150

N W E S

83.306049
22.010943

83.30618
22.010933

Patch_32

Patch_33

83.306111
22.010782

Bhuikurri

Executive Engineer
EHT (C) Dn. CSPTCL
Bilaspur

वन मण्डलाधिकारी
रायगढ़,तनमण्डल

Legend

- Angle Point
- Transmission Line
- Village Boundary

0 0.0045 0.009 0.018 0.027 0.036 Km. 1:133

132 KV D/C GERWANI TO KORICHHAPAR TSS LINE

Sheet - 10

N
W E
S

22.07824
83.297982

Patch_34

22.078015
83.297796

22.077999
83.2981

22.077899
83.298015

Charratangar

822
823
931
932
933
951
968

Legend
- Angle Point
- Transmission Line
- Village Boundary

0 0.0325 0.065 0.13 0.195 0.26 Km. 1:982

132 KV D/C GERWANI TO KORICHHAPAR TSS LINE

Sheet - 10

83°20'0"E

22°13'0"N

N
W E
S

83.333134
22.217088

83.332853
22.216856

83.332639
22.213714

83.332904
22.21372

Patch_35

Teram

Kanchanpur

Legend

- Angle Point
- Transmission Line
- Village Boundary

DGPS SURVEYED CO-ORDINATES OF FOREST PATCHES

SL NO	PATCH	KHASRA/COMPARTMENT NO.	PILLAR ID	EASTING(m)	NORTHING(m)	LATITUDE(° N)	LONGITUDE(° E)
1	PATCH NO-1	RAIGARH(881)	P-1	743614.3437	2434227.8230	21°59'44.44"N	83°21'34.41"E
2			P-2	743642.0894	2434252.1142	21°59'45.20"N	83°21'35.44"E
3			P-3	743554.4032	2434233.9822	21°59'44.66"N	83°21'32.40"E
4			P-4	743557.1631	2434260.8408	21°59'45.54"N	83°21'32.52"E
5			P-5	743504.6315	2434275.7921	21°59'46.09"N	83°21'30.61"E
6			P-6	743525.5598	2434292.8511	21°59'46.56"N	83°21'31.38"E
7			P-7	743243.8907	2434595.6746	21°59'56.55"N	83°21'21.68"E
8			P-8	743255.8855	2434623.6934	21°59'57.42"N	83°21'22.12"E
9			P-9	743187.5417	2434591.2659	21°59'56.45"N	83°21'19.77"E
10			P-10	743185.4362	2434618.1827	21°59'57.33"N	83°21'19.74"E
11	PATCH NO-2	KHARSIA-1183	P-11	736564.4346	2436659.3674	22°1'6.93"N	83°17'30.08"E
12			P-12	736588.3920	2436642.1227	22°1'6.39"N	83°17'30.84"E
13			P-13	736610.5592	2436963.2441	22°1'3.53"N	83°17'31.76"E
14			P-14	736636.9270	2436857.4355	22°1'13.33"N	83°17'32.66"E
15			P-15	736629.3811	2436990.7479	22°1'17.68"N	83°17'32.49"E
16			P-16	736656.1672	2436987.3565	22°1'17.54"N	83°17'33.39"E
17	PATCH NO-3	TAMNAR-829	P-17	737217.5040	2438725.4536	22°2'13.87"N	83°17'53.90"E
18			P-18	737243.1880	2438733.7802	22°2'14.02"N	83°17'54.81"E
19			P-19	737166.6691	2438882.2563	22°2'18.91"N	83°17'52.24"E
20			P-20	737192.3531	2438890.5830	22°2'19.05"N	83°17'53.14"E
21	PATCH NO-4	GHOGHODA-1260	P-21	736137.6600	2440360.1900	22°3'7.41"N	83°17'17.10"E
22			P-22	736163.4199	2440398.8550	22°3'8.63"N	83°17'18.03"E
23			P-23	736128.8565	2440644.9269	22°3'16.75"N	83°17'17.00"E
24			P-24	736155.8406	2440645.8432	22°3'16.68"N	83°17'17.93"E

Executive Engineer
EHT (C) Dn. CSPTCL
Bilaspur

वन मण्डलाधिकारी
रायगढ़,वनमण्डल

DGPS SURVEYED CO-ORDINATEOF CENTRELINE POINT					
SL NO.	ANGLE POINT	EASTING(m)	NORTHING(m)	LATITUDE(° N)	LONGITUDE(° E)
STARTING WITH GERWANI GSS					
1	AP-1	743778.11	2434282.01	21°59'46.11"N	83°21'40.20"E
2	AP-2	743703.18	2434232.22	21°59'44.53"N	83°21'37.56"E
3	AP-3	743544.00	2434248.32	21°59'45.13"N	83°21'32.02"E
4	03/1	743396.79	2434429.60	21°59'51.10"N	83°21'26.99"E
5	AP-4	743249.86	2434609.52	21°59'57.02"N	83°21'21.97"E
6	AP-5	743176.47	2434603.88	21°59'56.87"N	83°21'19.41"E
7	05/01	743004.78	2434371.50	21°59'49.41"N	83°21'13.30"E
8	05/02	742827.62	2434131.84	21°59'41.71"N	83°21'7.00"E
9	AP-6	742688.96	2433943.49	21°59'35.66"N	83°21'2.06"E
10	AP-7	742486.42	2433952.06	21°59'36.03"N	83°20'55.01"E
11	AP-8	742310.68	2433680.41	21°59'27.29"N	83°20'48.74"E
12	AP-9	742256.98	2433607.04	21°59'24.94"N	83°20'46.83"E
13	AP-10	742115.26	2433554.91	21°59'23.31"N	83°20'41.86"E
14	AP-11	741859.26	2433691.72	21°59'27.89"N	83°20'33.02"E
15	AP-12	741796.83	2433932.42	21°59'35.74"N	83°20'30.97"E
16	12/01	741617.85	2434050.34	21°59'39.66"N	83°20'24.80"E
17	AP-13	741439.05	2434167.20	21°59'43.55"N	83°20'18.63"E
18	13/01	741191.01	2434257.36	21°59'46.60"N	83°20'10.03"E
19	13/02	740905.34	2434361.31	21°59'50.12"N	83°20'0.13"E
20	AP-14	740635.44	2434459.05	21°59'53.43"N	83°19'50.78"E
21	14/01	740414.56	2434661.45	22° 0'0.12"N	83°19'43.19"E
22	14/02	740248.36	2434813.32	22° 0'5.14"N	83°19'37.48"E
23	AP-15	740087.13	2434960.35	22° 0'9.99"N	83°19'31.94"E
24	15/01	739846.83	2435100.05	22° 0'14.65"N	83°19'23.64"E
25	15/02	739606.51	2435239.41	22° 0'19.30"N	83°19'15.34"E
26	15/03	739357.43	2435384.08	22° 0'24.12"N	83°19'6.73"E
27	15/04	739108.04	2435528.68	22° 0'28.95"N	83°18'58.12"E
28	AP-16	738866.88	2435668.86	22° 0'33.62"N	83°18'49.79"E
29	16/01	738673.36	2435709.18	22° 0'35.03"N	83°18'43.07"E
30	16/02	738459.39	2435754.31	22° 0'36.60"N	83°18'35.63"E
31	AP-17	738205.08	2435807.48	22° 0'38.43"N	83°18'26.79"E
32	G-1	738184.23	2435829.05	22° 0'39.16"N	83°18'26.07"E
33	G-2	738152.95	2435861.40	22° 0'40.22"N	83°18'24.98"E
34	AP-18	738134.00	2435881.00	22° 0'40.87"N	83°18'24.36"E
35	18/01	737844.24	2435878.47	22° 0'40.92"N	83°18'14.29"E
36	18/02	737576.99	2435876.26	22° 0'40.95"N	83°18'4.98"E
37	AP-19	737311.00	2435874.00	22° 0'41.03"N	83°17'55.67"E
38	19/01	737133.32	2436046.72	22° 0'46.75"N	83°17'49.57"E
39	19/02	736955.63	2436219.71	22° 0'52.46"N	83°17'43.47"E
40	19/03	736785.56	2436385.74	22° 0'57.94"N	83°17'37.63"E
41	AP-20	736564.65	2436600.12	22° 1'5.01"N	83°17'30.04"E
42	AP-21	736623.88	2436860.41	22° 1'13.44"N	83°17'32.24"E
43	AP-22	736656.37	2437079.92	22° 1'20.56"N	83°17'33.49"E
44	22/01	736780.00	2437317.00	22° 1'28.20"N	83°17'37.92"E
45	22/02	736895.00	2437532.00	22° 1'35.14"N	83°17'42.04"E
46	AP-23	737009.00	2437749.00	22° 1'42.13"N	83°17'46.13"E
47	AP-24	737061.00	2437875.00	22° 1'46.20"N	83°17'48.01"E

48	24/01	737122.00	2438150.00	22° 1'55.11"N	83°17'50.28"E
49	24/02	737184.00	2438440.00	22° 2'4.50"N	83°17'52.59"E
50	AP-25	737241.09	2438695.98	22° 2'12.79"N	83°17'54.72"E
51	AP-26	737146.00	2438987.00	22° 2'22.33"N	83°17'51.58"E
52	26/01	736987.00	2439071.00	22° 2'25.13"N	83°17'46.08"E
53	AP-27	736826.00	2439156.00	22° 2'27.95"N	83°17'40.51"E
54	27/01	736546.00	2439166.00	22° 2'28.42"N	83°17'30.75"E
55	27/02	736265.56	2439176.83	22° 2'28.90"N	83°17'20.96"E
56	AP-28	735986.34	2439186.98	22° 2'29.36"N	83°17'11.24"E
57	G-3	735951.84	2439197.27	22° 2'29.71"N	83°17'10.01"E
58	G-4	735913.51	2439208.71	22° 2'30.08"N	83°17'8.69"E
59	G-5	735856.02	2439225.87	22° 2'30.66"N	83°17'6.71"E
60	G-6	735806.19	2439240.73	22° 2'31.17"N	83°17'4.98"E
61	G-7	735760.19	2439254.46	22° 2'31.65"N	83°17'3.38"E
62	AP-29	735728.31	2439263.97	22° 2'31.99"N	83°17'2.28"E
63	AP-30	735649.68	2439357.72	22° 2'35.08"N	83°16'59.59"E
64	30/01	735715.35	2439596.84	22° 2'42.81"N	83°17'2.00"E
65	AP-31	735780.99	2439834.88	22° 2'50.52"N	83°17'4.42"E
66	31/01	735958.59	2440064.81	22° 2'57.90"N	83°17'10.73"E
67	AP-32	736152.36	2440315.50	22° 3'5.96"N	83°17'17.61"E
68	32/01	736142.15	2440650.34	22° 3'16.83"N	83°17'17.43"E
69	AP-33	736135.98	2440852.58	22° 3'23.45"N	83°17'17.30"E
70	AP-34	736085.84	2441177.51	22° 3'34.00"N	83°17'15.74"E
71	34/01	736180.79	2441397.75	22° 3'41.11"N	83°17'19.17"E
72	34/02	736274.91	2441616.69	22° 3'48.18"N	83°17'22.57"E
73	AP-35	736370.86	2441839.90	22° 3'55.39"N	83°17'26.03"E
74	35/01	736430.13	2442102.69	22° 4'3.90"N	83°17'28.23"E
75	35/02	736500.47	2442413.93	22° 4'13.98"N	83°17'30.85"E
76	35/03	736568.53	2442714.92	22° 4'23.73"N	83°17'33.38"E
77	AP-36	736632.90	2442998.82	22° 4'32.92"N	83°17'35.77"E
78	36/01	736805.84	2443225.35	22° 4'40.20"N	83°17'41.92"E
79	36/02	736981.50	2443454.68	22° 4'47.57"N	83°17'48.17"E
80	36/03	737163.67	2443692.20	22° 4'55.20"N	83°17'54.64"E
81	36/04	737353.72	2443940.42	22° 5'3.17"N	83°18'1.40"E
82	36/05	737512.66	2444147.51	22° 5'9.82"N	83°18'7.05"E
83	36/06	737664.09	2444345.51	22° 5'16.18"N	83°18'12.44"E
84	36/07	737842.63	2444578.20	22° 5'23.66"N	83°18'18.79"E
85	AP-37	738034.21	2444828.76	22° 5'31.71"N	83°18'25.60"E
86	37/01	738207.78	2445059.72	22° 5'39.13"N	83°18'31.77"E
87	37/02	738380.86	2445290.62	22° 5'46.54"N	83°18'37.93"E
88	37/03	738547.46	2445512.73	22° 5'53.68"N	83°18'43.86"E
89	37/04	738726.51	2445751.53	22° 6'1.35"N	83°18'50.23"E
90	37/05	738905.32	2445989.86	22° 6'9.01"N	83°18'56.59"E
91	37/06	739090.63	2446237.06	22° 6'16.95"N	83°19'3.18"E
92	AP-38	739257.84	2446460.05	22° 6'24.11"N	83°19'9.13"E
93	38/01	739299.39	2446718.03	22° 6'32.48"N	83°19'10.72"E
94	38/02	739340.75	2446974.82	22° 6'40.80"N	83°19'12.30"E
95	38/03	739382.37	2447232.82	22° 6'49.17"N	83°19'13.89"E
96	AP-39	739423.00	2447489.19	22° 6'57.48"N	83°19'15.44"E
97	39/01	739662.75	2447615.73	22° 7'1.47"N	83°19'23.87"E

98	39/02	739898.31	2447739.86	22° 7'5.39"N	83°19'32.15"E
99	39/03	740111.42	2447852.28	22° 7'8.93"N	83°19'39.64"E
100	AP-40	740326.86	2447965.53	22° 7'12.51"N	83°19'47.22"E
101	AP-41	740392.31	2448279.17	22° 7'22.67"N	83°19'49.67"E
102	41/01	740357.45	2448510.15	22° 7'30.19"N	83°19'48.58"E
103	41/02	740319.79	2448756.45	22° 7'38.21"N	83°19'47.39"E
104	AP-42	740279.61	2449018.03	22° 7'46.73"N	83°19'46.13"E
105	42/01	740111.32	2449253.11	22° 7'54.46"N	83°19'40.39"E
106	42/02	739954.50	2449471.11	22° 8'1.62"N	83°19'35.04"E
107	AP-43	739789.98	2449699.71	22° 8'9.13"N	83°19'29.42"E
108	43/01	739887.00	2449919.00	22° 8'16.59"N	83°19'31.65"E
109	AP-44	739949.00	2450060.00	22° 8'21.46"N	83°19'33.10"E
110	AP-45	740007.00	2450198.00	22° 8'25.47"N	83°19'35.33"E
111	AP-46	740178.97	2450293.08	22° 8'28.22"N	83°19'43.30"E
112	G-8	740198.59	2450315.77	22° 8'28.92"N	83°19'43.98"E
113	G-9	740231.29	2450353.60	22° 8'30.14"N	83°19'45.15"E
114	AP-47	740250.89	2450376.26	22° 8'30.89"N	83°19'45.86"E
115	47/01	740326.52	2450632.23	22° 8'39.17"N	83°19'48.63"E
116	AP-48	740401.96	2450888.86	22° 8'47.47"N	83°19'51.40"E
117	48/01	740364.96	2451045.64	22° 8'52.58"N	83°19'50.19"E
118	AP-49	740321.10	2451229.66	22° 8'58.58"N	83°19'48.76"E
119	G-10	740354.28	2451267.07	22° 8'59.78"N	83°19'49.93"E
120	G-11	740394.09	2451311.96	22° 9'1.19"N	83°19'51.35"E
121	AP-50	740429.13	2451351.47	22° 9'2.49"N	83°19'52.60"E
122	AP-51	740377.04	2451593.49	22° 9'10.38"N	83°19'50.91"E
123	51/01	740106.09	2451739.13	22° 9'15.25"N	83°19'41.54"E
124	51/02	739835.45	2451883.80	22° 9'20.08"N	83°19'32.17"E
125	AP-52	739566.11	2452028.33	22° 9'24.91"N	83°19'22.85"E
126	AP-53	739359.63	2452268.10	22° 9'32.81"N	83°19'15.78"E
127	53/01	739147.87	2452358.79	22° 9'35.86"N	83°19'8.44"E
128	AP-54	738939.65	2452448.59	22° 9'38.88"N	83°19'1.22"E
129	AP-55	738847.86	2452574.35	22° 9'43.01"N	83°18'58.09"E
130	55/01	738807.92	2452767.75	22° 9'49.32"N	83°18'56.80"E
131	AP-56	738771.18	2452943.66	22° 9'55.05"N	83°18'55.61"E
132	AP-57	738711.55	2453175.32	22°10'2.61"N	83°18'53.65"E
133	57/01	738446.09	2453299.22	22°10'6.77"N	83°18'44.45"E
134	AP-58	738185.01	2453419.62	22°10'10.81"N	83°18'35.41"E
135	AP-59	738069.83	2453697.25	22°10'19.89"N	83°18'31.54"E
136	59/01	738078.86	2453959.76	22°10'28.42"N	83°18'31.99"E
137	59/02	738088.99	2454228.27	22°10'37.14"N	83°18'32.49"E
138	59/03	738098.06	2454485.83	22°10'45.50"N	83°18'32.94"E
139	59/04	738107.73	2454745.33	22°10'53.93"N	83°18'33.42"E
140	59/05	738117.36	2455003.37	22°11'2.31"N	83°18'33.89"E
141	AP-60	738127.15	2455272.83	22°11'11.06"N	83°18'34.37"E
142	AP-61	738204.13	2455554.57	22°11'20.18"N	83°18'37.21"E
143	G-12	738192.63	2455592.88	22°11'21.40"N	83°18'36.81"E
144	G-13	738178.26	2455640.77	22°11'22.97"N	83°18'36.34"E
145	AP-62	738160.94	2455698.49	22°11'24.88"N	83°18'35.78"E
146	62/01	738046.02	2455951.88	22°11'33.17"N	83°18'31.90"E
147	AP-63	737931.76	2456204.15	22°11'41.43"N	83°18'28.05"E

148	AP-64	738015.84	2456447.89	22°11'49.31"N	83°18'31.11"E
149	64/01	738238.10	2456500.74	22°11'50.91"N	83°18'38.90"E
150	AP-65	738461.28	2456553.13	22°11'52.50"N	83°18'46.72"E
151	AP-66	738668.27	2456770.26	22°11'59.46"N	83°18'54.05"E
152	66/01	738898.00	2456907.84	22°12'3.82"N	83°19'2.14"E
153	66/02	739128.83	2457046.11	22°12'8.19"N	83°19'10.27"E
154	66/03	739348.20	2457177.24	22°12'12.35"N	83°19'18.00"E
155	66/04	739622.82	2457340.85	22°12'17.53"N	83°19'27.67"E
156	66/05	739826.70	2457463.02	22°12'21.39"N	83°19'34.85"E
157	66/06	740032.42	2457585.45	22°12'25.27"N	83°19'42.10"E
158	AP-67	740236.31	2457707.35	22°12'29.13"N	83°19'49.28"E
159	67/01	740245.50	2457976.83	22°12'37.88"N	83°19'49.74"E
160	67/02	740254.41	2458244.81	22°12'46.59"N	83°19'50.20"E
161	67/03	740263.54	2458513.55	22°12'55.31"N	83°19'50.66"E
162	67/04	740272.51	2458771.59	22°13'3.70"N	83°19'51.11"E
163	AP-68	740281.92	2459053.23	22°13'12.84"N	83°19'51.59"E
164	68/01	740130.55	2459333.95	22°13'22.04"N	83°19'46.46"E
165	AP-69	739972.53	2459626.09	22°13'31.61"N	83°19'41.10"E
166	AP-70	740010.07	2459720.34	22°13'34.66"N	83°19'42.46"E
167	AP-71	740139.00	2459804.00	22°13'37.31"N	83°19'47.01"E
168	AP-72	740162.92	2459865.12	22°13'39.29"N	83°19'47.87"E
169	72/01	740023.28	2460152.45	22°13'48.69"N	83°19'43.15"E
170	AP-73	739890.49	2460425.46	22°13'57.63"N	83°19'38.67"E
171	AP-73A	739949.77	2460616.67	22°14'3.79"N	83°19'40.81"E
172	73A/01	740014.21	2460811.59	22°14'10.10"N	83°19'43.18"E
173	AP-74	740079.47	2461006.38	22°14'16.42"N	83°19'45.57"E
174	AP-75	740029.38	2461258.63	22°14'24.64"N	83°19'43.96"E
175	AP-76	739902.72	2461459.33	22°14'31.22"N	83°19'39.65"E
CONNECT WITH KARICHHAPAR TSS					

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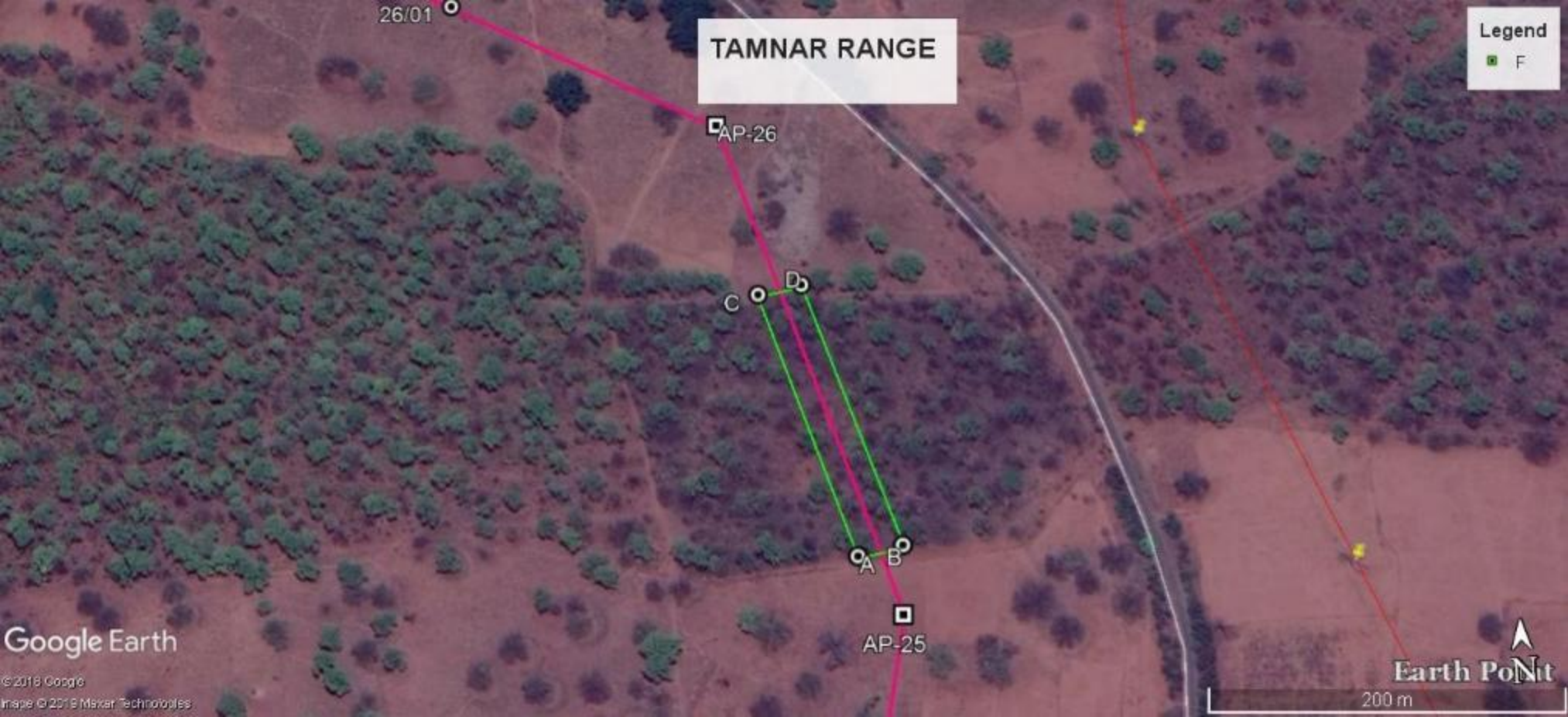
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कार्यालय वनमण्डलाधिकारी, रायगढ़ वनमण्डल, रायगढ़ (छ.ग.)

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क्रमांक/तक.अधि./ 1590 /2019/रायगढ़, दिनांक– 04-06-19

प्रति,

mail वन परिक्षेत्र अधिकारी
रायगढ़/घरघोड़ा/लभनार/खरसिंया

विषय :– 220/130 के.व्ही. उपकेंद्र गेरवानी से मेसर्स इरकॉन हेतु प्रस्तावित टी.एस.एस. कोरीछापर तक लगभग 45 कि.मी. 132 के.व्ही. डी.सी.डी.एस. लाईन हेतु वन भूमि के लिये सर्वेक्षण बाबत्।

संदर्भ :– छत्तीसगढ़ राज्य विद्युत पारेषण कम्पनी मर्यादित का पत्र क्रमांक/का.अ./अ.उ.दा./निर्माण/संभाग/1310 दिनांक 28.05.2019

उपरोक्त विषयान्तर्गत लेख है कि छत्तीसगढ़ राज्य विद्युत पारेषण कम्पनी मर्यादित द्वारा 220/130 के.व्ही. उपकेंद्र गेरवानी से मेसर्स इरकॉन हेतु प्रस्तावित टी.एस.एस. कोरीछापर तक लगभग 45 कि.मी. 132 के.व्ही. डी.सी.डी.एस. लाईन हेतु संयुक्त डी. जी. पी. एस सर्वे कार्य किये जाने के लिए अनुमति चाही गई है।

अतः सुनिश्चित करें कि डी.जी.पी.एस. सर्वे कार्य वन विभाग के कर्मचारी के देख रेख में किया जावें एवं कार्य पूर्ण होने पर प्रमाण पत्र संलग्न प्रारूप में प्रेषित करें।

संलग्न :– उपरोक्तानुसार।

वनमण्डलाधिकारी
रायगढ़ वनमण्डल, रायगढ़

क्रमांक/तक.अधि./ 1591 /2019/रायगढ़, दिनांक :- 04-06-19

प्रतिलिपि :–

1. mail उप वनमण्डलाधिकारी, रायगढ़/घरघोड़ा की ओर सूचनार्थ एवं आवश्यक कार्यवाही हेतु अग्रेषित।
2. छत्तीसगढ़ राज्य विद्युत पारेषण कम्पनी मर्यादित की ओर सूचनार्थ अग्रेषित। वन विभाग की कर्मचारियों की उपस्थिति में डी. जी. पी. एस. सर्वे कार्य संपन्न करावें।

वनमण्डलाधिकारी
रायगढ़ वनमण्डल, रायगढ़