REPORT ON
DGPS SURVEY USING HIGH RESOLUTION SATELLITE IMAGE
OF

8.795 HECTARE OF FOREST LAND (LEFT-OUT) IN MERRY-GO-ROUND (MGR) RAILWAY LINE OF TALAIPALLI COAL MINING PROJECT FOR FOREST CLEARANCE

Submitted to

NTPC Ltd
LAILUNGA ROAD, TEHSIL-GHARGHODA, DISTRICT-RAIGARH
PIN CODE-496111, CHHATTISGARH

कार्यालय,
विज्ञान भवन,
छत्तीसगढ़ विज्ञान एवं प्रौद्योगिकी परिषद
विधान सभा रोड, दलदल सिवनी,
रायपुर (छ.ग.) पिन - 492014

Submitted by

छत्तीसगढ़ अंतरिक्ष उपयोग केन्द्र

CHHATTISGARH SPACE APPLICATIONS CENTRE
CHHATTISGARH COUNCIL OF SCIENCE AND TECHNOLOGY
VIGYAN BHAVAN,VIDHAN SABHA ROAD, DALDAL SEONI

छत्तीसगढ़ अंतरिक्ष उपयोग केन्द्र

Chhattisgarh Space Application Centre
Chhattisgarh Council of Science and Technology

PROJECT EXECUTION TEAM

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Official Notification (for DGPS Survey)
No. F7-14/2013/12
Government of Chhattisgarh

DGPS SURVEY CARRIED OUT
For
TALAIPALLI COAL MINING PROJECT
DISTRICT- RAIGARH
CHHATTISGARH

NTPC Ltd.
LAILUNGA ROAD, TEHSIL-GHARGHODA, DISTRICT-RAIGARH
PIN CODE-496111, CHHATTISGARH

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1. INTRODUCTION

Talaipalli coal mining project is in the state of Chhattisgarh is allotted to M/s NTPC by Ministry of Coal (MoC), vide letter no.13016/29/2003-CA-1, dated 25.01.2006, for meeting coal requirement for the proposed 4000MW Lara Integrated Power Project.

Talaipalli block is about 55 km away from Raigarh and is close to tehsil headquarters at Gharghoda situated on Raigarh-Ambikapur State Highway. The MGR (MERRY-GO-ROUND) is a dedicated railway line for the transportation of coal from Talaipalli coal mining project connecting it to the Indian railways main railway line as well as to the Lara power project. It is included in Survey of India Toposheet No. 64 N/8 and 64 O/5.

The Talaipalli coal mining project is located about 45kms north of Kotarlia station of SEC Railway. The proposed Lara Power Project is located about 20km south of Kotarlia station. Approximately 18 MTPA of coal is to be transported from Talaipalli coal mine to Lara Project through MGR system. The movement of empty coal rakes is proposed through a flyover on the IR system near Kotarlia station for reaching Talaipalli coal block.

The Talaipalli coal mining project has been accorded the stage II forest clearance for an area of 766.393 Ha. which also includes the forest area coming in the MGR. Talaipalli Coal Mining Project of M/s NTPC Ltd, Gharghoda has allotted the work of conducting DGPS survey in forest area of Tallaipalli Coal Mining project & MGR of an area 766.393 Ha. vide letter No.LOI-1017-108-61420004/2016 dated 20.05.2016 .

Ministry of Environment and Forests, Govt. of India vide their circular No.F.No.-11-9/98-FC, dated 08-07-2011 have stipulated that to ensure accurate delineation of forest area proposed to be diverted for non-forestry purposes under Section-2 of Forest Conservation Act, 1980 the diversion proposal under Forest Conservation Act shall be accompanied by DGPS/ETS surveyed reports of the forest land proposed for diversion as per guidelines laid down in the circular issued by ministry of forest and Environment, Government of India from time to time. While submitting proposal for diversion of forest land for non forest purpose, the user agency has to submit the georeferenced boundary, using DGPS in shape file containing maps along with hard copy authenticated by Divisional Forest Officer (DFO) concerned. The conventional methods of survey to delineate and demarcate the forest land with reference to the earlier Cadastral/Forest Compartment are time consuming. Further, the conventional surveys are "Un projected" Surveys, hence linking them to geospatial domain is a challenging task. The modern survey technique using Differential Global positioning system (DGPS) with georeferenced high resolution satellite image bring efficacy in survey in shorter time span compared to old method of survey and record preparation.

M/S NTPC Tallaipalli Coal Mining Project has requested CCOST vide purchase order no. 5500030515-108-1071 dated 23.07.2018 to undertake DGPS survey of 8.795 hectare left-out forest land in the rail corridor for which forest clearance is to be applied . These include RF No 897 with area 1.349 hectare and revenue forest of 7.446 hectare of village *Basanpali comprising plot no 333/1 (chhote jhaad ke jungle -0.210 hectare), Kantajhariya comprising plot no 9 (chhote jhad ke jungle - 0.140 hectare) - plot no 2 (chhote jhaad ke jungle - 0.060 hectare), Barkaspali comprising plot no 250/1 (chhote jhadd ke jungle 0.768 hectare), Dolesara comprising plot no 155/1 (chhote jhaad ke jungle - 0.672 hectare), Kasdol comprising plot no 144/1 (chhote jhaad ke jungle - 0.200 hectare), Banai comprising plot no 750/1 (bade jhaad ke jungle - 0.865 hectare), Raikera comprising plot no 661/1 (chhote jhaad ke jungle - 1.719 hectare), Sambalpuri comprising plot no 225/1 (chhote jhaad ke jungle - 0.304 hectare), Tarpali comprising plot no 9/1 (bade jhaad ke jungle – 0.085 hectare), Regda comprising plot no 1 (chhote jhaad ke jungle - 0.551 hectare) -plot no 240 (chhote jhaad ke jungle - 0.789 hectare) -plot no 196 (chhote jhaad ke jungle - 0.399 hectare) and plot no 148 (chhote jhaad ke jungle - 0.684 hectare)*. The present study is taken up to conduct DGPS survey of identified 8.795 hectare of forest land in respect of MGR Rail corridor of NTPC Talaipalli Coal Mining project, District Raigarh.

2. SCOPE OF WORK

- Deriving coordinates of forest area identified in the rail corridor using DGPS in the world geodetic system 1984 (WGS-84) Datum.
- Carrying out survey using DGPS for demarcation of forest patches coming in rail corridor.
- Preparation of Geo-referenced boundary map of forest patches.
- Computation of forest land area through digitization and comparison with area indicated in forest/ revenue land
- Integration of Geo-referenced maps on Vectorized corridor map.
- GIS data base creation and analysis.

3. LOCATION OF MGR RAILWAY LINE AREA

The proposed power project is located at a distance of about 20 km south of Kotarlia station near Raigarh in the Howrah- Mumbai rail route. The dedicated Talaipalli mine of the project is at a distance of 45 km north of Kotarlia Station. Along the MGR railway line few forest patches have been identified which are falling in the survey of India Toposheet No 64N/08 & 64O/05.

The minimum and maximum coordinates along the MGR railway line is

Upper Right corner: - 22° 13' 42.93619" N, 83° 28' 27.95346" E

Lower Left corner: 21° 53' 06.99631" N, 83° 23' 51.95644" E

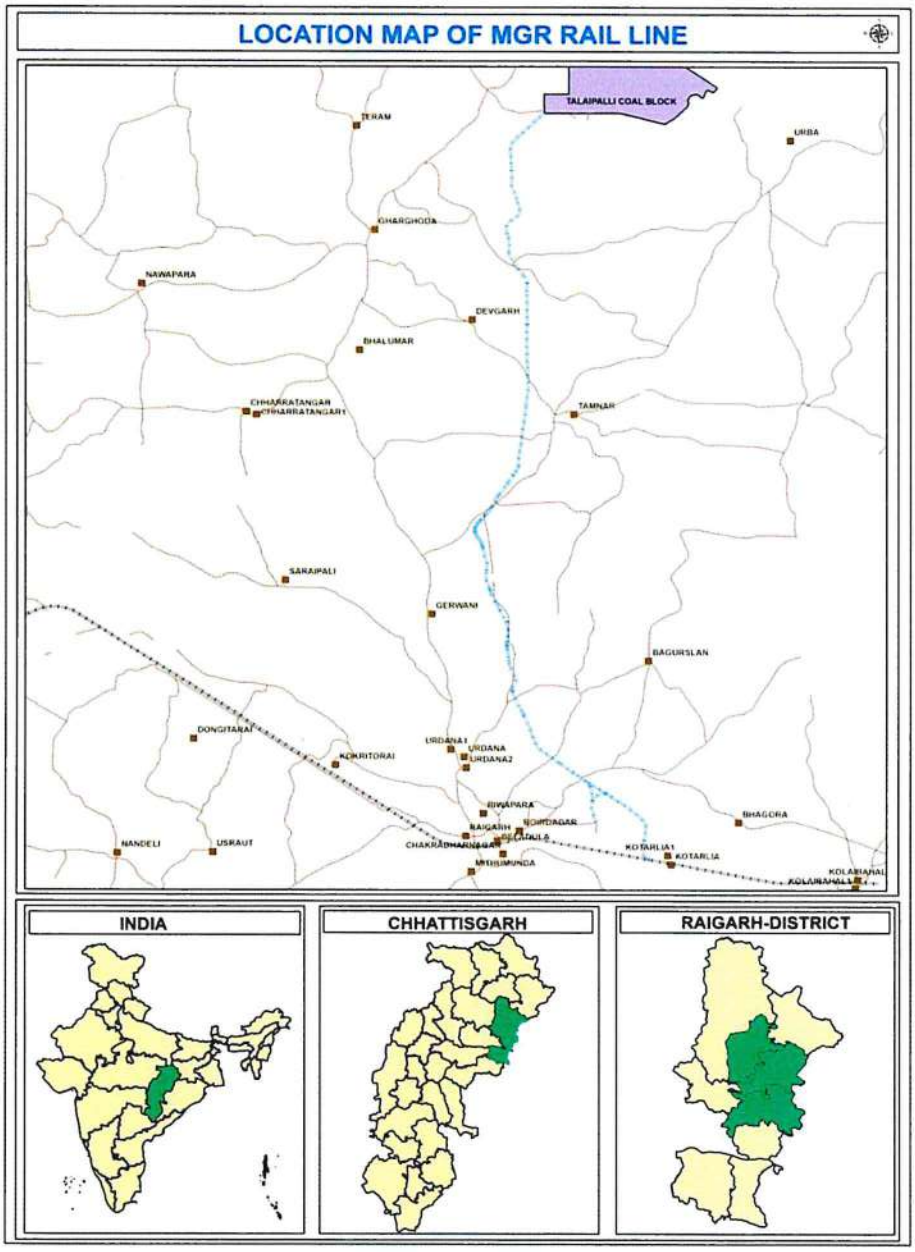

Figure 1: Location map of the area

4. DATA SETS USED

4.1. The Satellite Imagery:

High resolution Cartosat-I data with panchromatic images of 2.5 m resolution and multispectral images of Resourcesat-2 (LISS-IV) with 5.8 m resolution of date 2014-15 was acquired through National Remote Sensing Centre, Hyderabad used for study areas.

4.2. Cadastral/Forest Compartment Map:

Proposed rail route map for construction of MGR railway line from NTPC Talaipalli mine to STPP site was provided by NTPC for demarcation of affecting forest land, revenue forest land to be diverted. These maps were geo-referenced and overlaid on the satellite imagery for further analyses.

4.3. DGPS Data:

Leica DGPS with CS/GS12 Raw Data Logging License for Viva CS field controller, which enables logging of GNSS raw data with a GS12 receiver and GS12 GNSS Smart Antenna, Geodetic 120 channel GNSS receiver was used for GCPs collection.

5. DGPS SYSTEM

DGPS system consist a reference receiver located on a known position that has been previously surveyed, and one or more receivers, the antenna, differential correction processing system and data link equipment. Both the reference receiver and user receiver collect and store data for later processing. DGPS system is based on the principle that receiver in the same vicinity will simultaneously experience common error on a particular satellite ranging signal. In the user receiver, measurements are taken from the reference receiver to remove common errors. Based on this principle, the user receiver must use the same set of satellite as the reference station then the DGPS equation is formulated to remove the common error get cancel. The common errors are signal path delay through atmosphere and satellite clock.

6. PROCEDURE FOR SURVEY

6.1. Establishment of Base Station:

Geo-coordinates of base station were determined by way of transfer from known points (SOI) through static mode of simultaneous and uninterrupted observation for a minimum of duration four hours in triangulation method.

6.2. DGPS Survey of MGR Railway line Area :

To assess the present position of the revenue and forest compartment maps of the MGR railway line areas through which the alignment is passing, the survey has been carried out by dual frequency DGPS (Leica) to first transfer the established Ground Control Points (GCP) along the MGR area and precise geo-coordinates of forest land diverted for construction of rail line has been taken at identified interval using dual frequency DGPS in RTK (Real Time Kinematic) mode.

6.3. Digitization and geo-referencing of Cadastral / Forest maps

Cadastral / Forest map of MGR railway line provided by NTPC digitized and geo-referenced with the image taking the junctions, roads, etc. of the nearby area

6.4. GIS Analysis

DGPS observation were recorded after identification of alignment pillars on record maps and on the ground subsequently observation were potted on the record map and correlation was made between identified alignment and DGPS drawn alignment with recorded observation. Based on the proper superimposition final area statistics were generated using ArcGIS software (10.0), area calculated and statistics of area was generated.

7. INPUT DATA

- Survey of India Coordinates as reference coordinates.
- Cadastral map of MGR railway line area.
- Forest compartment map of MGR railway line area
- Digital data Cartosat-I PAN and LISS-IV MSS was acquired through National Remote Sensing Centre, Hyderabad under SIS-DP project of ISRO.
- Leica GS12 Base and Rover Dual Frequency RTK / Post Processing Differential Global Positioning System

8. EQUIPMENT SPECIFICATIONS

S. No.	DGPS Equipment Specifications
1	**DESCRIPTION BASE AND ROVER**
	GS12 GNSS Smart Antenna, Geodetic 120 channel GNSS receiver, includes GPS L1 + L2, 1 Hz position rate, (e.g. Glonass, Gallileo, GPS L5, Network RTK, Raw data logging)
	GS12 GLONASS License for the Viva CS10 field controller, which enables use of GLONASS with a GS12 receiver.
	GS12 Raw Data Logging License for Viva CS10 field controller, which enables logging of GNSS raw data with a GS12 receiver.
	GS12 5Hz License for Viva CS10 field controller, which enables to compute 5 Hz positions with a GS12 receiver.
	GS12 RTK Reference Station License key for Viva CS10 field controller, which enables the GS12 to be used as an RTK base station.
	CS10 Field Controller. Ruggedized WinCE field controller with full VGA touch display, 1GB NAND Flash Memory, 512MB SDRAM, CF/SD card slot and 2MP camera. Includes Bluetooth, virtual numeric keypad, and stylus.
2	**RTK Base and Rover Radio** HPR2, Satelline-EASY Pro 35W high power radio, 403-473 Mhz RX/TX radio. 5 Meter Mast for Base, Gainflex antenna, CGR10, 403-470 Mhz RXO radio for controllers. ProCom Unity Gain Antenna, GLS13 telescopic aluminum pole
3	**Field Software** SmartWorx Viva Software (with CS LT license)
4	**Data Processing Software** Leica Geo Office GNSS-PP Bundle (Node locked). Includes LandXML Import/Export, COGO calculations, L1/L2 GNSS processing, GLONASS, RINEX Import and Datum & Map., LGO Design & Adjustment 3D
5	**Measurement Performance & Accuracy**
	Accuracy (rms) Code differential with DGPS / RTCM2
	DGPS / RTCM
	Accuracy (rms) with Real-Time (RTK)[2]
	Standard of compliance

S. No.	DGPS Equipment Specifications	
	Rapid static (phase)	
	Static mode agree initialization	
	Kinematic (phase)	
	Moving mode after initialization	
	Accuracy (rms) with Post Processing[2]	
	Static (phase) with long observations	
	Static and rapid static (phase)	Typically 25 cm (rms)
	Kinematic (phase)	
	On the Fly (OTF) Initialization	Compliance with ISO17123-8
	RTK technology	Horizontal: 5 mm + 0.5 ppm (rms)
		Vertical: 10 mm + 0.5 ppm (rms)
	Reliability of OTF initialization	Horizontal: 10 mm + 1 ppm (rms)
		Vertical: 20 mm + 1 ppm (rms)
	Time of initialization	
	ORF range	Horizontal: 3 mm + 0.1 ppm (rms)
		Vertical: 3.5 mm + 0.4 ppm (rms)
	Network RTK	Horizontal: 5 mm + 0.5 ppm (rms) / Vertical: 10 mm + 0.5 ppm (rms)
	Network technology	Horizontal: 10 mm + 1 ppm (rms) / Vertical: 20 mm + 1 ppm (rms)
	Supported RTK network solutions	Leica SmartCheck+ technology
	Supported RTK network standards	Better than 99.99%[2]

9. LAND SCHEDULE DETAILS

Table 1: Details of Revenue forest

Sl	VILLAGE	KHASRA NO.	CATEGORY	AREA IN HECTARES
1	Basanpali	333/1	CHOTE JHAAD KE JANGAL	0.210
2	Kantajhariya	9		0.140
3	Barkaspali	250/1		0.768
4	Dolesara	155/1		0.672
Total				**1.790**
5	Kasdol	144/1	CHOTE JHAAD KE JANGAL	0.200
6	Banai	750/1	BADE JHAAD KE JANGAL	0.865
7	Raikera	661/1	CHOTE JHAAD KE JANGAL	1.719
8	Sambalpuri	225/1		0.304
9	Tarpali	9/1	BADE JHAAD KE JANGAL	0.085
10	Regda	1	CHOTE JHAAD KE JANGAL	0.551
11		240		0.789
12		196		0.399
13		148		0.684
14	Kantajhariya	2		0.060
Total				**5.656**

वन परिक्षेत्र अधिकारी
तमनार

वनमण्डलाधिकारी
रायगढ़ (छ.ग.)

कार्यालय,
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उप वनमण्डलाधिकारी

वन मण्डलाधिकारी
रायगढ़,वनमण्डल

10. Geo Coordinates

Table 2: Centre line pillar coordinates of Railway line, village – Basanpali (Annexure-IIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
C1	83° 25' 15.46069" E	22° 5' 54.47435" N	749774.44601	2445711.72896
C2	83° 25' 15.39668" E	22° 5' 53.99107" N	749772.84721	2445696.83083
C3	83° 25' 15.33509" E	22° 5' 53.52606" N	749771.30887	2445682.49625

Table 3: Bounding area coordinates of MGR Railway line in revenue forest, village – Basanpali (Annexure-IIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
1	83° 25' 16.60186" E	22° 5' 55.94459" N	749806.44500	2445757.48322
2	83° 25' 15.95388" E	22° 5' 55.78214" N	749787.94612	2445752.18969
3	83° 25' 15.86647" E	22° 5' 54.63138" N	749786.00311	2445716.74533
4	83° 25' 15.11317" E	22° 5' 54.33986" N	749764.54796	2445707.43272
5	83° 25' 15.18283" E	22° 5' 54.02187" N	749766.70069	2445697.68093
6	83° 25' 14.74723" E	22° 5' 53.68037" N	749754.37881	2445686.97570
7	83° 25' 14.73671" E	22° 5' 53.59466" N	749754.11907	2445684.33398
8	83° 25' 15.73652" E	22° 5' 53.48004" N	749782.84076	2445681.26340
9	83° 25' 15.72233" E	22° 5' 52.17924" N	749783.07043	2445641.23610
10	83° 25' 15.68038" E	22° 5' 51.58483" N	749782.15872	2445622.92922
11	83° 25' 15.79402" E	22° 5' 51.58704" N	749785.41582	2445623.04901
12	83° 25' 15.87805" E	22° 5' 52.17496" N	749787.53725	2445641.17558
13	83° 25' 15.92325" E	22° 5' 52.52091" N	749788.66395	2445651.83970
14	83° 25' 16.06036" E	22° 5' 53.43064" N	749792.14988	2445679.89119
15	83° 25' 16.39711" E	22° 5' 54.68274" N	749801.19196	2445718.56723

Table 4: Centre line pillar coordinates of Railway line, village – Kantajharia (Annexure-IVA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
C1	83° 24' 35.15080" E	22° 3' 15.18498" N	748696.23380	2440792.68517
C2	83° 24' 33.33998" E	22° 3' 12.97734" N	748645.37278	2440723.94453
C3	83° 24' 31.57896" E	22° 3' 11.05818" N	748595.79947	2440664.10178
C4	83° 24' 30.14696" E	22° 3' 9.57428" N	748555.45043	2440617.79961
C5	83° 24' 27.05466" E	22° 3' 6.26424" N	748468.37024	2440514.56303

Table 5: Bounding area coordinates of MGR Railway line in revenue forest, village –Kantajharia (Annexure-IVA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
1	83° 24' 34.23147" E	22° 3' 16.79708" N	748669.08388	2440841.86661
2	83° 24' 34.11037" E	22° 3' 16.44946" N	748665.77981	2440831.11674
3	83° 24' 33.80698" E	22° 3' 15.90470" N	748657.34345	2440814.21935
4	83° 24' 33.54337" E	22° 3' 15.56833" N	748649.94676	2440803.75095
5	83° 24' 33.31468" E	22° 3' 15.41303" N	748643.46334	2440798.86956
6	83° 24' 33.23257" E	22° 3' 15.05619" N	748641.28190	2440787.85354
7	83° 24' 33.10605" E	22° 3' 14.85750" N	748637.75000	2440781.68346
8	83° 24' 32.33249" E	22° 3' 14.36409" N	748615.80413	2440766.15285
9	83° 24' 33.27841" E	22° 3' 15.54621" N	748642.35828	2440802.95047
10	83° 24' 29.72648" E	22° 3' 11.58534" N	748542.41411	2440679.48147
11	83° 24' 29.45733" E	22° 3' 9.91562" N	748535.50599	2440627.98906
12	83° 24' 28.60643" E	22° 3' 9.86499" N	748511.12663	2440626.04618
13	83° 24' 28.33409" E	22° 3' 10.06071" N	748503.22063	2440631.94424

Table 6: Centre line pillar coordinates of Road, village – Barkaspali (Annexure-VA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R1	22° 9' 31.83373" N	83° 24' 53.77360" E	749046.41644	2452389.19333
R2	22° 9' 32.38947" N	83° 24' 54.67070" E	749071.85440	2452406.70032
R3	22° 9' 32.82720" N	83° 24' 55.25412" E	749088.35995	2452420.43374
R4	22° 9' 33.75274" N	83° 24' 55.54637" E	749096.28263	2452449.04248
R5	22° 9' 34.85964" N	83° 24' 55.30985" E	749088.96250	2452482.98993
R6	22° 9' 36.15416" N	83° 24' 54.27064" E	749058.54639	2452522.34386
R7	22° 9' 37.46397" N	83° 24' 53.22978" E	749028.07601	2452562.16749
R8	22° 9' 39.16313" N	83° 24' 51.85719" E	748987.90820	2452613.81894
R9	22° 9' 39.86436" N	83° 24' 51.71932" E	748983.61398	2452635.33020
R10	22° 9' 40.41553" N	83° 24' 51.87136" E	748987.70151	2452652.35700

Table 7: Bounding area coordinates of MGR Railway line in revenue forest, village – Barkaspali (Annexure-VA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
1	83° 24' 52.59615" E	22° 9' 30.56715" N	749013.29216	2452349.68848
2	83° 24' 53.55134" E	22° 9' 30.57540" N	749040.66261	2452350.37764
3	83° 24' 53.53815" E	22° 9' 31.77658" N	749039.69682	2452387.32764
4	83° 24' 54.24132" E	22° 9' 31.73277" N	749059.87012	2452386.30027
5	83° 24' 54.88874" E	22° 9' 32.09442" N	749078.24749	2452397.72228
6	83° 24' 55.57990" E	22° 9' 32.61260" N	749097.80151	2452413.97983
7	83° 24' 55.90524" E	22° 9' 33.73810" N	749106.57431	2452448.75573

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
8	83° 24' 55.63669" E	22° 9' 34.99490" N	749098.26286	2452487.30047
9	83° 24' 52.60987" E	22° 9' 38.77189" N	749009.67022	2452602.12496
10	83° 24' 52.10509" E	22° 9' 39.80124" N	748994.70048	2452633.56422
11	83° 24' 51.90703" E	22° 9' 39.73427" N	748989.05719	2452631.41346
12	83° 24' 51.74750" E	22° 9' 39.56065" N	748984.57029	2452625.99900
13	83° 24' 51.80104" E	22° 9' 39.33011" N	748986.21737	2452618.93069
14	83° 24' 52.08047" E	22° 9' 39.14718" N	748994.31498	2452613.42999
15	83° 24' 52.33617" E	22° 9' 38.84721" N	749001.78964	2452604.31738
16	83° 24' 52.36025" E	22° 9' 38.54039" N	749002.62973	2452594.88865
17	83° 24' 52.25699" E	22° 9' 38.30651" N	748999.78515	2452587.64589
18	83° 24' 52.36639" E	22° 9' 38.10498" N	749003.01882	2452581.49540
19	83° 24' 52.36334" E	22° 9' 37.99645" N	749002.98463	2452578.15506
20	83° 24' 54.98465" E	22° 9' 34.71676" N	749079.71251	2452478.44584
21	83° 24' 55.18639" E	22° 9' 33.77083" N	749085.95710	2452449.43512
22	83° 24' 54.94976" E	22° 9' 33.01872" N	749079.54382	2452426.18747
23	83° 24' 53.65132" E	22° 9' 32.19898" N	749042.73344	2452400.37500
24	83° 24' 53.36765" E	22° 9' 31.82519" N	749034.78674	2452388.74554
25	83° 24' 52.87492" E	22° 9' 31.21445" N	749020.96464	2452369.73056
26	83° 24' 52.40182" E	22° 9' 30.97378" N	749007.52378	2452362.11054
27	83° 24' 52.25343" E	22° 9' 30.71799" N	749003.39627	2452354.17303
28	83° 24' 55.76100" E	22° 9' 27.99721" N	749105.25091	2452272.06340
29	83° 24' 56.55600" E	22° 9' 28.59816" N	749127.74054	2452290.91500
30	83° 24' 57.24196" E	22° 9' 27.54527" N	749147.91506	2452258.83420
31	83° 24' 57.05149" E	22° 9' 27.20410" N	749142.62339	2452248.25085
32	83° 24' 55.73570" E	22° 9' 27.19135" N	749104.92018	2452247.25866

Table 8: Road Centre line pillar coordinates of Railway line, village – Dolesara (Annexure-VIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
RD1	83° 25' 17.68691" E	22° 8' 55.94626" N	749749.35116	2451295.97874
RD2	83° 25' 17.37341" E	22° 8' 56.29627" N	749740.19435	2451306.60405
RD3	83° 25' 16.89725" E	22° 8' 56.65941" N	749726.36920	2451317.55886
RD4	83° 25' 16.34556" E	22° 8' 57.01589" N	749710.38255	2451328.27461
RD5	83° 25' 15.81479" E	22° 8' 57.34454" N	749695.00894	2451338.14342
RD6	83° 25' 14.98150" E	22° 8' 57.69876" N	749670.95242	2451348.66075
RD7	83° 25' 14.73019" E	22° 8' 57.83361" N	749663.68365	2451352.69495
RD8	83° 25' 13.96791" E	22° 8' 57.97485" N	749641.76690	2451356.69200
RD9	83° 25' 13.43557" E	22° 8' 58.40892" N	749626.29683	2451369.80383
RD10	83° 25' 13.09630" E	22° 8' 58.61407" N	749616.47241	2451375.96046
RD11	83° 25' 12.46109" E	22° 8' 58.88479" N	749598.13424	2451383.99955
RD12	83° 25' 11.36726" E	22° 8' 59.26279" N	749566.59900	2451395.12985
RD13	83° 25' 10.90319" E	22° 8' 59.38359" N	749553.23908	2451398.63439

Table 9: Bounding area coordinates of Road under MGR Railway line in revenue forest, village – Dolesara (Annexure-VIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
1	83° 25' 17.94976" E	22° 8' 56.35029" N	749756.68656	2451308.52944
2	83° 25' 17.35075" E	22° 8' 56.89238" N	749739.25263	2451324.93389
3	83° 25' 17.39079" E	22° 8' 56.94452" N	749740.37449	2451326.55642
4	83° 25' 15.50311" E	22° 8' 58.04501" N	749685.73240	2451359.55204
5	83° 25' 15.52924" E	22° 8' 58.09999" N	749686.45435	2451361.25564
6	83° 25' 14.63294" E	22° 8' 58.53222" N	749660.55392	2451374.14413
7	83° 25' 14.63007" E	22° 8' 58.19856" N	749660.63524	2451363.87749
8	83° 25' 13.68544" E	22° 8' 57.97757" N	749633.66960	2451356.64666
9	83° 25' 13.68395" E	22° 8' 58.98369" N	749633.13377	2451387.60085
10	83° 25' 13.10438" E	22° 8' 59.24498" N	749616.39461	2451395.37523
11	83° 25' 13.07578" E	22° 8' 59.18982" N	749615.60192	2451393.66498
12	83° 25' 11.05095" E	22° 8' 59.87696" N	749557.23235	2451413.88116
13	83° 25' 11.02166" E	22° 8' 59.81745" N	749556.42193	2451412.03689
14	83° 25' 10.73279" E	22° 8' 58.96419" N	749548.56097	2451385.65309
15	83° 25' 10.71624" E	22° 8' 58.90189" N	749548.11710	2451383.72884
16	83° 25' 12.61022" E	22° 8' 58.25835" N	749602.71555	2451364.79426
17	83° 25' 12.58913" E	22° 8' 58.19586" N	749602.14153	2451362.86217
18	83° 25' 15.01511" E	22° 8' 57.05040" N	749672.23368	2451328.72838
19	83° 25' 15.04045" E	22° 8' 57.10214" N	749672.93470	2451330.33184
20	83° 25' 16.69466" E	22° 8' 56.15240" N	749720.81148	2451301.86759
21	83° 25' 16.74561" E	22° 8' 56.19755" N	749722.24952	2451303.27987
22	83° 25' 17.43018" E	22° 8' 55.54862" N	749742.18817	2451283.62752

Table 10: Centre line pillar coordinates of Railway line, village – Kasdol (Annexure-VIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
CR1	83° 25' 1.39415" E	22° 3' 58.25481" N	749427.88401	2442129.68780
CR2	83° 25' 1.35098" E	22° 3' 57.68645" N	749426.92330	2442112.18200
CR3	83° 25' 1.13817" E	22° 3' 56.51020" N	749421.39414	2442075.89659
CR4	83° 25' 0.99965" E	22° 3' 55.80447" N	749417.76615	2442054.12109
CR5	83° 24' 58.26233" E	22° 3' 50.13586" N	749342.03058	2441878.47516
CR6	83° 24' 55.68406" E	22° 3' 46.63420" N	749269.79798	2441769.57098

Table 11: Bounding area coordinates of MGR Railway line in revenue forest, village – Kasdol (Annexure-VIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R1	83° 25' 2.18610" E	22° 3' 56.41871" N	749451.49092	2442073.55826
R2	83° 25' 0.12018" E	22° 3' 57.11315" N	749391.90663	2442093.98414
R3	83° 24' 59.89597" E	22° 3' 55.86433" N	749386.08579	2442055.46073
R4	83° 25' 1.98910" E	22° 3' 55.46876" N	749446.30507	2442044.24237

Table 12: Centre line pillar coordinates of Railway line, village – Banai (Annexure-VIIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
CR1	83° 24' 40.86665" E	22° 10' 26.88936" N	748649.60690	2454077.17400
CR2	83° 24' 40.98476" E	22° 10' 25.89559" N	748653.47730	2454046.65400
CR3	83° 24' 41.19811" E	22° 10' 24.87121" N	748660.09190	2454015.23400
CR4	83° 24' 41.87845" E	22° 10' 22.13071" N	748680.92790	2453931.22900
CR5	83° 24' 43.04856" E	22° 10' 17.48627" N	748716.72970	2453788.86900
CR6	83° 24' 43.23263" E	22° 10' 16.75566" N	748722.36180	2453766.47500

Table 13: Bounding area coordinates of MGR Railway line in revenue forest, village – Banai (Annexure-VIIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R1	83° 24' 43.65750" E	22° 10' 16.86751" N	748734.48220	2453770.10956
R2	83° 24' 43.30117" E	22° 10' 17.02502" N	748724.19426	2453774.79349
R3	83° 24' 43.45079" E	22° 10' 17.23752" N	748728.37776	2453781.39940
R4	83° 24' 43.52930" E	22° 10' 17.39336" N	748730.55137	2453786.22989
R5	83° 24' 43.46714" E	22° 10' 17.64833" N	748728.64546	2453794.04604
R6	83° 24' 43.22431" E	22° 10' 17.67375" N	748721.67432	2453794.71760
R7	83° 24' 43.13249" E	22° 10' 17.49016" N	748719.13296	2453789.02712
R8	83° 24' 42.48484" E	22° 10' 17.54648" N	748700.54620	2453790.46501
R9	83° 24' 41.89687" E	22° 10' 19.60529" N	748682.69065	2453853.53924
R10	83° 24' 42.01776" E	22° 10' 19.63092" N	748686.14220	2453854.38290
R11	83° 24' 41.08558" E	22° 10' 22.69322" N	748657.93222	2453948.17427
R12	83° 24' 41.22830" E	22° 10' 22.73839" N	748662.00003	2453949.62902
R13	83° 24' 40.70065" E	22° 10' 24.44365" N	748646.04584	2454001.85332
R14	83° 24' 40.36327" E	22° 10' 25.97785" N	748635.62780	2454048.90135
R15	83° 24' 40.50115" E	22° 10' 26.02016" N	748639.55830	2454050.26590
R16	83° 24' 40.38831" E	22° 10' 26.82824" N	748635.92970	2454075.07620
R17	83° 24' 40.36760" E	22° 10' 27.69258" N	748634.91342	2454101.65937
R18	83° 24' 40.95188" E	22° 10' 26.70520" N	748652.13916	2454071.54749
R19	83° 24' 41.36115" E	22° 10' 26.41297" N	748664.01009	2454062.74302

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R20	83° 24' 41.40079" E	22° 10' 26.12914" N	748665.28460	2454054.02850
R21	83° 24' 41.50086" E	22° 10' 26.16427" N	748668.13510	2454055.15500
R22	83° 24' 41.79510" E	22° 10' 24.62462" N	748677.31980	2454007.91960
R23	83° 24' 42.21335" E	22° 10' 22.95400" N	748690.12190	2453956.71100
R24	83° 24' 42.11110" E	22° 10' 22.93310" N	748687.20200	2453956.02140
R25	83° 24' 42.90058" E	22° 10' 19.82549" N	748711.34520	2453860.77120
R26	83° 24' 42.93547" E	22° 10' 19.82924" N	748712.34300	2453860.90250

Table 14: Centre line pillar coordinates of Railway line, village – Raikera (Annexure-IXA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
CR1	83° 25' 38.04442" E	22° 13' 37.47009" N	750194.16160	2459966.84500
CR2	83° 25' 37.25809" E	22° 13' 36.68938" N	750172.02250	2459942.46400
CR3	83° 25' 35.46240" E	22° 13' 34.90649" N	750121.46390	2459886.78500
CR4	83° 25' 34.65877" E	22° 13' 34.10859" N	750098.83740	2459861.86700
CR5	83° 25' 33.08530" E	22° 13' 32.62488" N	750054.49640	2459815.49600
CR6	83° 25' 32.48478" E	22° 13' 32.06324" N	750037.57110	2459797.94100
CR7	83° 25' 30.78272" E	22° 13' 30.47139" N	749989.59980	2459748.18300
CR8	83° 25' 30.34816" E	22° 13' 30.06496" N	749977.35180	2459735.47900
CR9	83° 25' 26.46822" E	22° 13' 26.23849" N	749868.09450	2459615.97100
CR10	83° 25' 24.66454" E	22° 13' 24.45163" N	749817.30700	2459560.16800
CR11	83° 25' 23.98306" E	22° 13' 23.77245" N	749798.11990	2459538.96000
CR12	83° 25' 21.42924" E	22° 13' 21.21244" N	749726.22420	2459459.02600
CR13	83° 25' 21.32433" E	22° 13' 21.10727" N	749723.27060	2459455.74200
CR14	83° 25' 14.09769" E	22° 13' 14.07510" N	749519.71600	2459236.07500
CR15	83° 25' 12.99084" E	22° 13' 13.01290" N	749488.53130	2459202.88700

Table 15: Bounding area coordinates of MGR Railway line in revenue forest, village – Raikera (Annexure-IXA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R1	83° 25' 38.10594" E	22° 13' 35.88688" N	750196.70506	2459918.16277
R2	83° 25' 38.27908" E	22° 13' 36.63867" N	750201.29389	2459941.37243
R3	83° 25' 38.56949" E	22° 13' 36.82522" N	750209.52064	2459947.24521
R4	83° 25' 38.88754" E	22° 13' 36.67752" N	750218.70407	2459942.84708
R5	83° 25' 34.28606" E	22° 13' 34.71048" N	750087.86414	2459880.21443
R6	83° 25' 35.01375" E	22° 13' 35.38893" N	750108.37442	2459901.42233
R7	83° 25' 36.09421" E	22° 13' 34.09670" N	750139.96159	2459862.16067
R8	83° 25' 35.22058" E	22° 13' 33.28219" N	750115.33816	2459836.69968
R9	83° 25' 33.08330" E	22° 13' 32.74536" N	750054.37986	2459819.20201
R10	83° 25' 33.79049" E	22° 13' 32.93010" N	750074.54628	2459825.21054

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R11	83° 25' 34.29767" E	22° 13' 32.42171" N	750089.32520	2459809.80189
R12	83° 25' 34.26241" E	22° 13' 32.38885" N	750088.33160	2459808.77450
R13	83° 25' 34.39049" E	22° 13' 32.27638" N	750092.05578	2459805.37304
R14	83° 25' 32.04672" E	22° 13' 29.99589" N	750026.04211	2459734.13383
R15	83° 25' 31.91250" E	22° 13' 30.09970" N	750022.14590	2459737.26620
R16	83° 25' 31.64723" E	22° 13' 29.87007" N	750014.66037	2459730.07942
R17	83° 25' 30.17308" E	22° 13' 30.71792" N	749972.01497	2459755.48840
R18	83° 25' 30.74387" E	22° 13' 31.25290" N	749988.10166	2459772.21010
R19	83° 25' 30.76791" E	22° 13' 31.20236" N	749988.81516	2459770.66625
R20	83° 25' 32.42878" E	22° 13' 32.76539" N	750035.62093	2459819.51769
R21	83° 25' 32.57490" E	22° 13' 32.14754" N	750040.11111	2459800.57559
R22	83° 25' 32.70041" E	22° 13' 31.59235" N	750043.98023	2459783.55182
R23	83° 25' 32.94304" E	22° 13' 31.36317" N	750051.04349	2459776.61203
R24	83° 25' 33.02234" E	22° 13' 31.46260" N	750053.26599	2459779.70767
R25	83° 25' 33.08708" E	22° 13' 32.51728" N	750054.60046	2459812.18657
R26	83° 25' 29.77369" E	22° 13' 30.41443" N	749960.72385	2459745.96779
R27	83° 25' 31.38754" E	22° 13' 29.59148" N	750007.35896	2459721.38894
R28	83° 25' 27.44951" E	22° 13' 25.80635" N	749896.41696	2459603.12591
R29	83° 25' 25.86982" E	22° 13' 26.32868" N	749850.90854	2459618.47177
R30	83° 25' 26.06321" E	22° 13' 26.52899" N	749856.34940	2459624.72330
R31	83° 25' 25.92997" E	22° 13' 26.68444" N	749852.45613	2459629.44505
R32	83° 25' 26.28193" E	22° 13' 25.18084" N	749863.27890	2459583.34543
R33	83° 25' 26.45821" E	22° 13' 25.17005" N	749868.33403	2459583.09426
R34	83° 25' 24.61671" E	22° 13' 23.30385" N	749816.50205	2459524.83290
R35	83° 25' 24.54711" E	22° 13' 23.38966" N	749814.46609	2459527.44127
R36	83° 25' 23.97531" E	22° 13' 22.82108" N	749798.36637	2459509.68558
R37	83° 25' 24.01618" E	22° 13' 23.44772" N	749799.22844	2459528.98403
R38	83° 25' 23.84517" E	22° 13' 24.30387" N	749793.90817	2459555.24646
R39	83° 25' 24.45100" E	22° 13' 25.01099" N	749810.91426	2459577.28014
R40	83° 25' 24.71355" E	22° 13' 24.90710" N	749818.48643	2459574.20424
R41	83° 25' 24.74652" E	22° 13' 24.24616" N	749819.75643	2459553.88420
R42	83° 25' 24.73010" E	22° 13' 24.09677" N	749819.35956	2459549.28044
R43	83° 25' 24.86036" E	22° 13' 23.93745" N	749823.16957	2459544.43856
R44	83° 25' 24.96725" E	22° 13' 23.89376" N	749826.25304	2459543.14323
R45	83° 25' 25.20908" E	22° 13' 24.09912" N	749833.07930	2459549.57262
R46	83° 25' 25.25821" E	22° 13' 24.21707" N	749834.42868	2459553.22388

Table 16: Centre line pillar coordinates of Railway line, village – Sambalpuri (Annexure-XA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
CR1	83° 26' 24.10707" E	21° 55' 33.09182" N	752047.95820	2426625.48800
CR2	83° 26' 25.93837" E	21° 55' 31.78267" N	752101.16890	2426586.04700

Table 17: Bounding area coordinates of MGR Railway line in revenue forest, village – Sambalpuri (Annexure-XA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R1	83° 26' 25.38075" E	21° 55' 33.53946" N	752084.30142	2426639.84205
R2	83° 26' 23.98542" E	21° 55' 33.52031" N	752044.25617	2426638.61540
R3	83° 26' 23.49238" E	21° 55' 32.37688" N	752030.66268	2426603.21147
R4	83° 26' 25.05096" E	21° 55' 31.31721" N	752075.92242	2426571.32160
R5	83° 26' 25.42967" E	21° 55' 31.73417" N	752086.58959	2426584.32279
R6	83° 26' 25.36277" E	21° 55' 32.11419" N	752084.48325	2426595.98386
R7	83° 26' 25.63064" E	21° 55' 32.72123" N	752091.87567	2426614.78245
R8	83° 26' 25.84088" E	21° 55' 32.71533" N	752097.91378	2426614.69702
R9	83° 26' 25.95976" E	21° 55' 33.11807" N	752101.12896	2426627.14202

Table 18: Bounding area coordinates of MGR Railway line in revenue forest, village – Tarpali (Annexure-XIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R1	83° 26' 57.77274" E	21° 54' 49.11518" N	753035.98076	2425287.90032
R2	83° 26' 57.15678" E	21° 54' 48.17867" N	753018.75720	2425258.80501
R3	83° 26' 57.57187" E	21° 54' 47.36376" N	753031.07404	2425233.92366
R6	83° 26' 58.24032" E	21° 54' 48.68841" N	753049.61385	2425274.98443
R4	83° 26' 58.01434" E	21° 54' 48.12372" N	753043.40362	2425257.50742
R5	83° 26' 58.32201" E	21° 54' 48.65216" N	753051.97705	2425273.90649

Table 19: Centre line pillar coordinates of Railway line, village – Regda (Annexure-XIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
CR1	83° 25' 7.90078" E	21° 57' 9.21758" N	749813.69950	2429548.21400
CR2	83° 25' 8.54865" E	21° 57' 7.62122" N	749833.06934	2429499.39434
CR3	83° 25' 8.94053" E	21° 57' 6.74418" N	749844.74270	2429472.58886
CR4	83° 25' 30.22895" E	21° 56' 13.86359" N	750481.48470	2427855.33200
CR5	83° 25' 31.40372" E	21° 56' 12.20599" N	750516.01200	2427804.86800
CR6	83° 25' 32.77920" E	21° 56' 10.74938" N	750556.20270	2427760.67900
CR7	83° 25' 34.36004" E	21° 56' 9.38705" N	750602.24250	2427719.48400

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
CR8	83° 25' 35.28840" E	21° 56' 8.63987" N	750629.25390	2427696.91800
CR9	83° 25' 36.53214" E	21° 56' 7.72222" N	750665.40130	2427669.25100
CR10	83° 25' 48.83932" E	21° 55' 58.44495" N	751023.19303	2427389.42396
CR11	83° 25' 52.68363" E	21° 55' 55.61076" N	751134.92560	2427303.97700

Table 20: Bounding area coordinates of MGR Railway line in revenue forest, village – Regda (Annexure-XIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R1	83° 25' 7.04320" E	21° 57' 9.17471" N	749789.1072	2429546.506
R2	83° 25' 8.44024" E	21° 57' 10.01101" N	749828.7967	2429572.869
R3	83° 25' 9.54226" E	21° 57' 7.41080" N	749861.6887	2429493.371
R4	83° 25' 9.65397" E	21° 57' 7.46347" N	749864.8691	2429495.042
R5	83° 25' 10.19981" E	21° 57' 6.09723" N	749881.1992	2429453.256
R6	83° 25' 9.09944" E	21° 57' 6.37948" N	749849.4806	2429461.441
R7	83° 25' 7.80967" E	21° 57' 6.73457" N	749812.2909	2429471.781
R8	83° 25' 29.74847" E	21° 56' 13.08533" N	750468.0719	2427831.17
R9	83° 25' 30.85040" E	21° 56' 14.55686" N	750498.9851	2427876.943
R10	83° 25' 32.92553" E	21° 56' 11.87353" N	750559.8557	2427795.331
R11	83° 25' 33.12640" E	21° 56' 12.05374" N	750565.5337	2427800.967
R12	83° 25' 33.26359" E	21° 56' 11.92064" N	750569.5364	2427796.934
R13	83° 25' 32.75961" E	21° 56' 10.33241" N	750555.8436	2427747.842
R14	83° 25' 32.08128" E	21° 56' 9.73872" N	750536.6618	2427729.268
R15	83° 25' 31.34369" E	21° 56' 10.45436" N	750515.1415	2427750.95
R16	83° 25' 31.54455" E	21° 56' 10.63457" N	750520.8195	2427756.586
R17	83° 25' 30.23565" E	21° 56' 12.16930" N	750482.5017	2427803.209
R18	83° 25' 30.19861" E	21° 56' 12.37372" N	750481.3392	2427809.481
R19	83° 25' 29.81146" E	21° 56' 12.71750" N	750470.059	2427819.882
R20	83° 25' 34.39726" E	21° 56' 9.44709" N	750603.2816	2427721.348
R21	83° 25' 35.14812" E	21° 56' 9.80834" N	750624.6584	2427732.803
R22	83° 25' 36.78671" E	21° 56' 8.55986" N	750672.3004	2427695.137
R 23	83° 25' 36.48403" E	21° 56' 7.59430" N	750664.0826	2427665.294
R24	83° 25' 35.90792" E	21° 56' 7.01385" N	750647.8289	2427647.174
R25	83° 25' 33.78169" E	21° 56' 8.63518" N	750586.0078	2427696.089
R26	83° 25' 47.55027" E	21° 55' 58.40054" N	750986.2131	2427387.471
R27	83° 25' 47.91097" E	21° 55' 58.58931" N	750996.4747	2427393.443
R28	83° 25' 48.90901" E	21° 55' 58.73319" N	751025.0531	2427398.323
R29	83° 25' 50.92731" E	21° 55' 57.69570" N	751083.4936	2427367.323
R30	83° 25' 53.34059" E	21° 55' 56.46616" N	751153.3662	2427330.593
R31	83° 25' 51.97048" E	21° 55' 54.56209" N	751114.9664	2427271.389
R32	83° 25' 50.00796" E	21° 55' 56.07705" N	751057.8937	2427317.105
R33	83° 25' 50.23030" E	21° 55' 56.32723" N	751064.1537	2427324.903

Table 21: Centre line pillar coordinates of Railway line, village – Kantajharia (Annexure-XIIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
CR1	83° 24' 46.99189" E	22° 3' 33.87946" N	749026.73336	2441373.21040
CR2	83° 24' 46.04911" E	22° 3' 32.41667" N	749000.40763	2441327.77822

Table 22: Bounding area coordinates of MGR Railway line in revenue forest, village – Kantajharia (Annexure-XIIIA&B)

PILLAR NO	GEOGRAPHICAL COORDINATE		UTM COORDINATE	
	LONGITUDE	LATITUDE	EASTING	NORTHING
R1	83° 24' 47.93609" E	22° 3' 33.63420" N	749053.93136	2441366.09305
R2	83° 24' 48.98491" E	22° 3' 33.43780" N	749084.10602	2441360.52674
R3	83° 24' 48.55511" E	22° 3' 32.65324" N	749072.16209	2441336.19390
R4	83° 24' 48.34316" E	22° 3' 32.78294" N	749066.02036	2441340.08807
R5	83° 24' 47.96463" E	22° 3' 32.77309" N	749055.16923	2441339.61307

Table 23: Details of Forest compartment

Compartment No.	Old Compartment No.	Category	Area in Hectares
897	751	RF	1.349
TOTAL			**1.349**

Table 24: Centre line coordinates of MGR Railway line in and around forest compartment no. - 897 (Annexure-XIVA)

PILLAR NO	Geographic Coordinates		UTM Coordinates	
	LONGITUDE	LATITUDE	EASTING	NORTHING
C8	83° 24' 31.55844" E	22° 3' 10.80359" N	748595.33446	2440656.25984
C9	83° 24' 30.64828" E	22° 3' 9.75572" N	748569.74027	2440623.60879
C10	83° 24' 27.59835" E	22° 3' 6.63727" N	748483.78234	2440526.28575
C11	83° 24' 25.90631" E	22° 3' 3.16957" N	748436.93802	2440418.83281
C12	83° 24' 24.21483" E	22° 2' 59.70298" N	748390.10829	2440311.41435
C13	83° 24' 21.55016" E	22° 2' 53.74385" N	748316.57556	2440126.87066
C14	83° 24' 20.48703" E	22° 2' 52.01402" N	748286.92330	2440073.17008
C15	83° 24' 18.04791" E	22° 2' 48.04524" N	748218.89159	2439949.96389

Table 25: Bounding area coordinates of MGR Railway line in forest compartment no. - 897 (Annexure-XIVA)

Pillar No	Geographic Coordinates		UTM Coordinates	
	Longitude	Latitude	Easting	Northing
27	83° 24' 25.39714" E	22° 2' 59.13730" N	748424.29236	2440294.54570
28	83° 24' 25.22056" E	22° 2' 58.74242" N	748419.41980	2440282.31700
29	83° 24' 24.89878" E	22° 2' 58.86747" N	748410.13010	2440286.01860
30	83° 24' 22.42758" E	22° 2' 53.34102" N	748341.93630	2440114.87410
31	83° 24' 21.39914" E	22° 2' 51.66763" N	748313.25160	2440062.92560
32	83° 24' 21.61088" E	22° 2' 51.55454" N	748319.37940	2440059.54200
33	83° 24' 21.21651" E	22° 2' 50.91286" N	748308.37987	2440039.62164
34	83° 24' 20.65634" E	22° 2' 51.02682" N	748292.25824	2440042.87448
35	83° 24' 20.43886" E	22° 2' 52.84223" N	748285.13973	2440098.62893
36	83° 24' 21.49710" E	22° 2' 56.15920" N	748313.88177	2440201.15719
37	83° 24' 22.69207" E	22° 2' 58.83157" N	748346.85737	2440283.91545
38	83° 24' 23.67755" E	22° 2' 59.18455" N	748374.95052	2440295.22135

उप वनमण्डलाधिकारी

वनमण्डलाधिकारी

कार्यालय,
विज्ञान भवन,
छत्तीसगढ़ विज्ञान एवं प्रौद्योगिकी परिषद,
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वन मण्डलाधिकारी
रायगढ़, वनमण्डल

11. DELIVERABLES

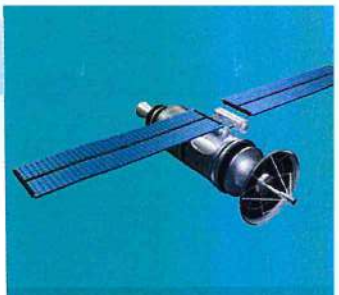
Annexure I	.....	Map showing merry-go-round (MGR) for Talaipalli coal mining project superimposed on toposheet no. 64 N/08 and 64 O/05
Annexure II	.....	Map showing revenue forest area under merry-go-round (MGR) for Talaipalli coal mining project superimposed on toposheet no. 64 N/08 and 64 O/05
Annexure III A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Basanpalli Village
Annexure IV A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Kantajhariya Village
Annexure V A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Barkaspali Village
Annexure VI A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Dolesara Village
Annexure VII A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Kasdol Village
Annexure VIII A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Banai Village
Annexure IX A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Raikera Village
Annexure X A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Sambalpuri Village
Annexure XI A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Tarpali Village
Annexure XII A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of RegdaVillage
Annexure XIII A&B	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Kantajhariya Village
Annexure XIV	.....	Map Showing Merry-Go-Round (MGR) Railway Line For Talaipalli Coal Mining Project And Their Coordinates, Raigarh, Chhattisgarh, Revenue Forest of Kantajhariya Village, Forest Compartment no.- 897







*******Glimpses of Field *******



छत्तीसगढ़ अंतरिक्ष उपयोग केन्द्र

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