



POWERGRID CORPORATION OF INDIA LIMITED
(A Govt. Of India Enterprise)

DGPS SURVEY REPORT

Of Compensatory Afforestation Land in

Raigarh Forest Division

**Against Diversion of 93.1635 Hac. Forest land under
Raigarh, Forest Division of CHHATTISGARH State**

**Name Of The Project :- 765KV D/C (HEX ZEBRA) JHARSUGUDA-
DHARAMJAYGARH (KORBA) TL- 2 ckt-3&4**

Registration No :- FP/CG/TRANS/8080/2014/ Dated 22.11.2014



MNEC Consultants Pvt. Ltd.

(An ISO 9001:2008 & ISO 27001:2005 Certified Company)

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INTRODUCTION & PURPOSE

POWERGRID CORPORATION OF INDIA LIMITED (a Govt. of India enterprises), the central transmission utility (CTU) of the country, has been entrusted upon the construction of various EHV transmission lines and associated state-of-the art substations towards establishment and operation of regional and national power grid to transfer of bulk power within & across the regions with reliability.

As a part of the above one 765kV D/C Jharsuguda-Dharamjaygarh Transmission Line-2 (WR Portion) Circuit 3&4 is being constructed under "common system associated with East Coast Energy Pvt. Ltd. & NCC power projects LTOA Generation project in Shrikakulam Area (Part-B)".

This line is passing through the state of Chhattisgarh wherein there are huge forest patches and having no other alternative from forest land. However, the route alignment of above said transmission line is carried out keeping in view of involvement of minimum forest area. The route alignment transverse through the forest patches and while construction of said transmission line, permission from the forest department has to be taken. Hence, in order to prepare the forest proposal, exact areas of the forest land are to be known. Therefore the activity of DGPS survey of forest patches for the said transmission line is carried out. The route is passing through Raigarh, Dharamjaygarh and Korba forest divisions.

Compensatory afforestation :

Compensatory afforestation in lieu of diversion of forest land Compensatory afforestation involves identification of non forest land or degraded forest land, work schedule, cost structure of plantation, provision of funds, mechanism to ensure the utilization of funds and monitoring mechanism etc. Hence, it is one of the most important conditions stipulated by the Central Government while approving proposals for de-reservation or diversion of forest land for non-forest use. It is essential that with all such proposals, a comprehensive scheme for compensatory afforestation is formulated and submitted to the Central Government. The comprehensive scheme is to include the details of non-forest/ degraded forest area identified for compensatory afforestation, map of area to be taken up for compensatory afforestation, year wise phased forestry operations, details of species to be planted and a suitability certificate from afforestation/ management point of view along with the cost structure of various operations.

Compensatory afforestation land details :-

Sr. No.	Compartment No.	Village	Range	Division	State	Total Area (Ha)	Proposed Area For CA(Ha)
1	964P	Lamidarha	Raigarh	Raigarh	Chhattisgarh	71.395	40.327
2	1076	Bhakurra (Jamjhor)	Sarangarh	Raigarh	Chhattisgarh	159.323	55.000
3	1075	Bhakurra (Jamjhor)	Sarangarh	Raigarh	Chhattisgarh	182.900	15.000
4	Damdama OA	Damdama	Raigarh	Raigarh	Chhattisgarh	70.220	60.000
5	933P	Bhelwamuda	Raigarh	Raigarh	Chhattisgarh	64.728	16.00

SCOPE OF WORK:

The scope of work as per the work order includes the following activities;

- i) Carrying out DGPS mapping of Proposed CA land i.e. taking DGPS co-ordinates of CA land boundary in accordance to applicable IS specification & drawings.
- ii) Compartment wise DGPS coordinates of CA area.
- iii) Geo-reference of CA land compartment wise.
- iv) .kml file of CA land compartment wise.
- v) Shape file of CA land compartment wise.

METHODOLOGY:

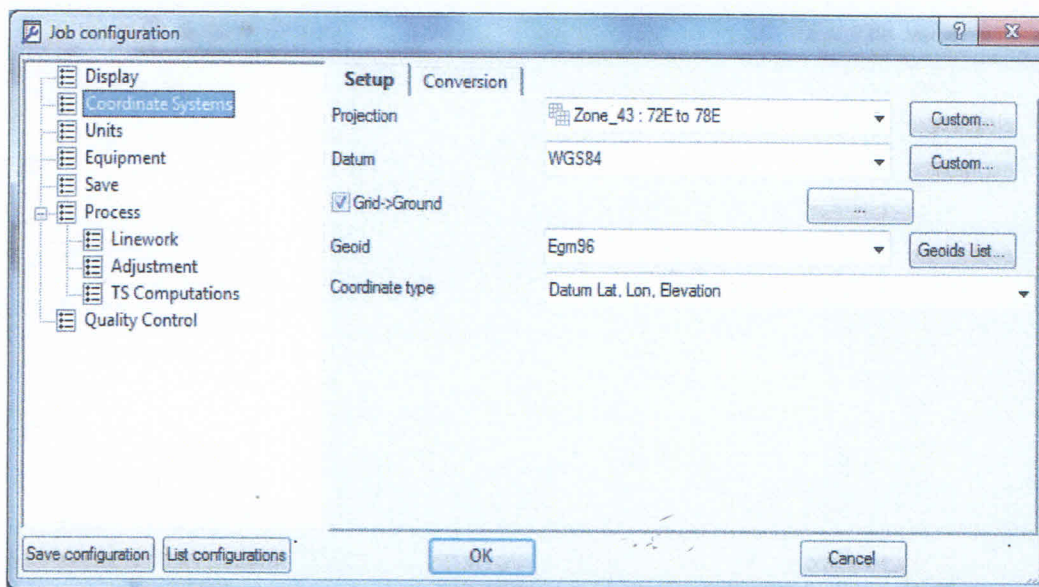
In order to meet the requirements of the scope of work MNEC Consultants Pvt. Ltd. adopted the following methodology;

- i) MNECC received compartment details and coordinates of CA land from the client.
- ii) MNECC carried out the DGPS survey of those forest patches after conducting site verification.
- iii) The DGPS data was post processed at the office of MNECC.
- iv) A geo-referenced map is prepared and submitted to client.
- v) After approval to the said CA maps, the list of coordinates of the forest compartments and its calculated area after DGPS survey is submitted and a report to this respect is also submitted to the client.

INSTRUMENTS USED& INSTRUMENT SETTINGS :

Following latest DGPS instrument of TOPCON SOKKIA was used for carrying out the DGPS survey.

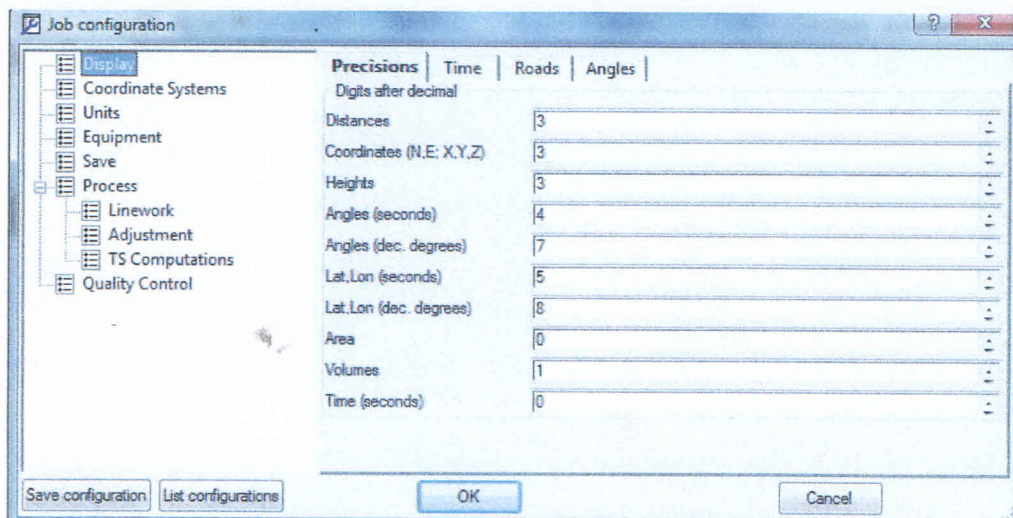
Sr. No.	Name of Instrument	Model	Make	Qty.
1.	DGPS	GRX-2	TOPCON SOKKIA	4

Sokkia DGPS Software Setting Parameters:


The screenshot shows the 'Job configuration' window with the 'Coordinate Systems' tab selected. The settings are as follows:

Setting	Value
Projection	Zone_43 : 72E to 78E
Datum	WGS84
Grid-to-Ground	☒
Geoid	Egm96
Coordinate type	Datum Lat, Lon, Elevation

Buttons at the bottom: Save configuration, List configurations, OK, Cancel.

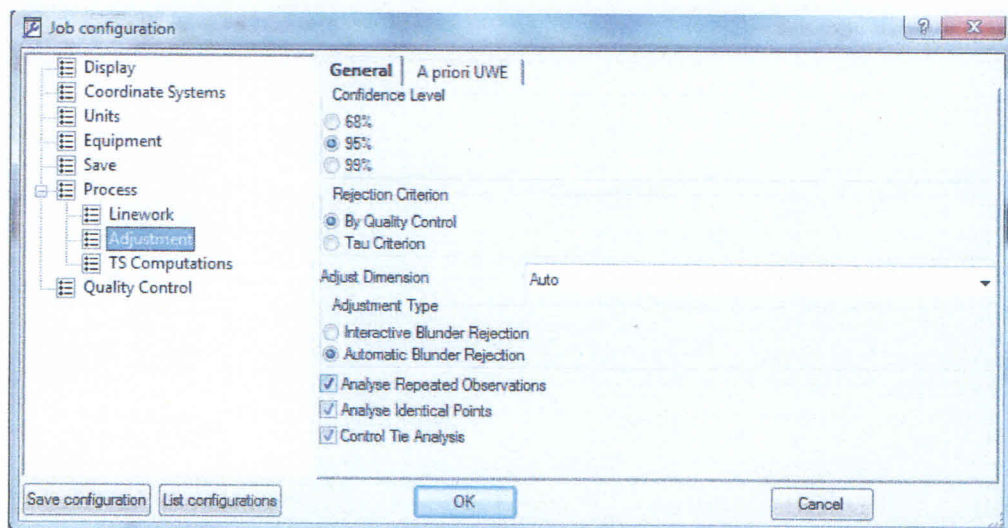
Instrument Setting


The screenshot shows the 'Job configuration' window with the 'Precisions' tab selected. The settings are as follows:

Setting	Value
Digits after decimal	
Distances	3
Coordinates (N.E: X,Y,Z)	3
Heights	3
Angles (seconds)	4
Angles (dec. degrees)	7
Lat, Lon (seconds)	5
Lat, Lon (dec. degrees)	8
Area	0
Volumes	1
Time (seconds)	0

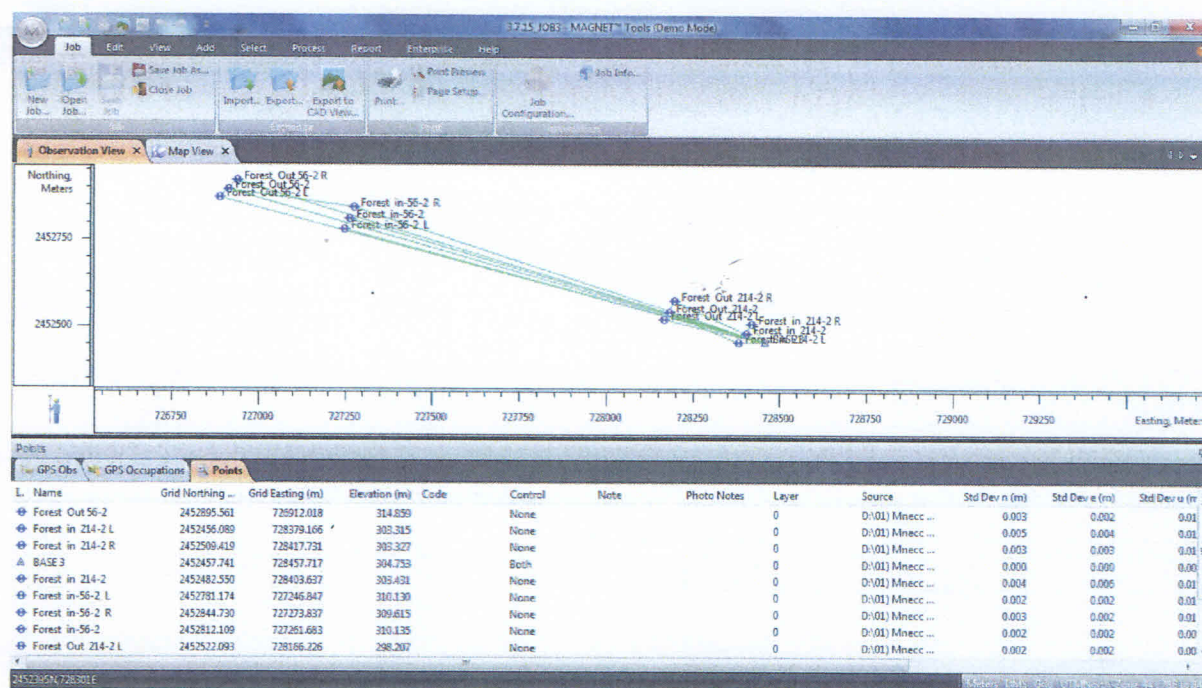
Buttons at the bottom: Save configuration, List configurations, OK, Cancel.

Parameters Fed Prior To Observations in GPS



Network Adjustment

POST PROCESSING OF DGPS DATA WITH MAGNET TOOLS SOFTWARE



ABOUT THE PROJECT & AREA:

The entire survey mentioned in this report is carried out in the Raigarh District of Chhattisgarh State. Chhattisgarh State has majority of tribal areas and huge forest patches. The following map depicts the study area.

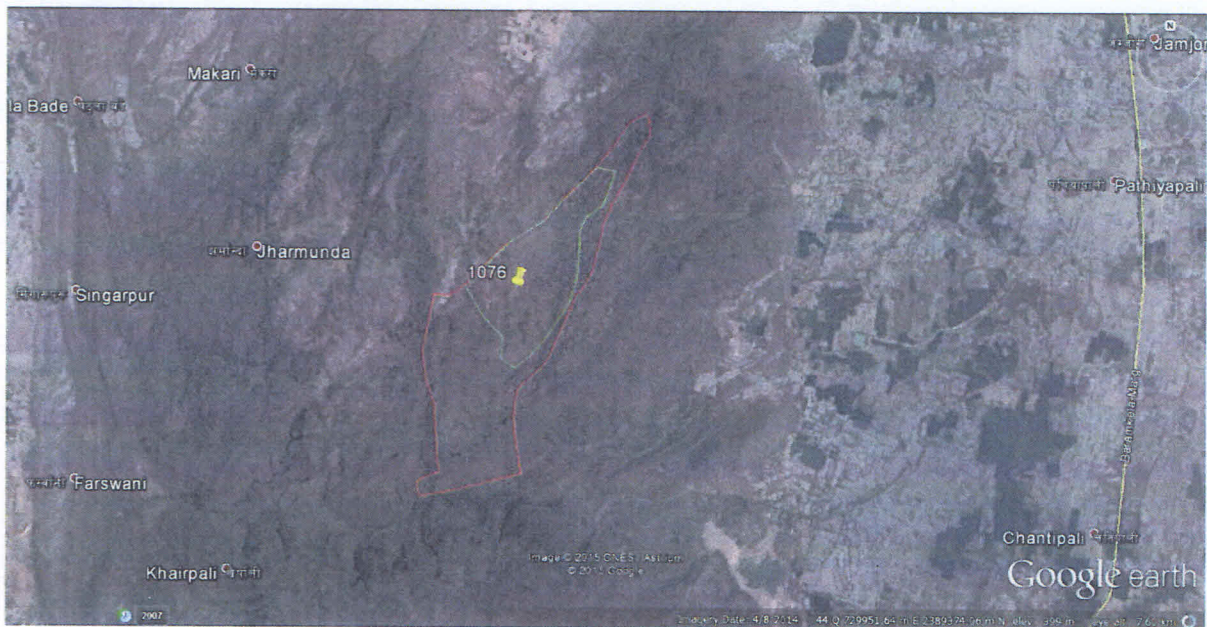
Google Image of 964P



Google Image of 1075 RF



Google Image of 1076 RF



Google Image of Damdama OA

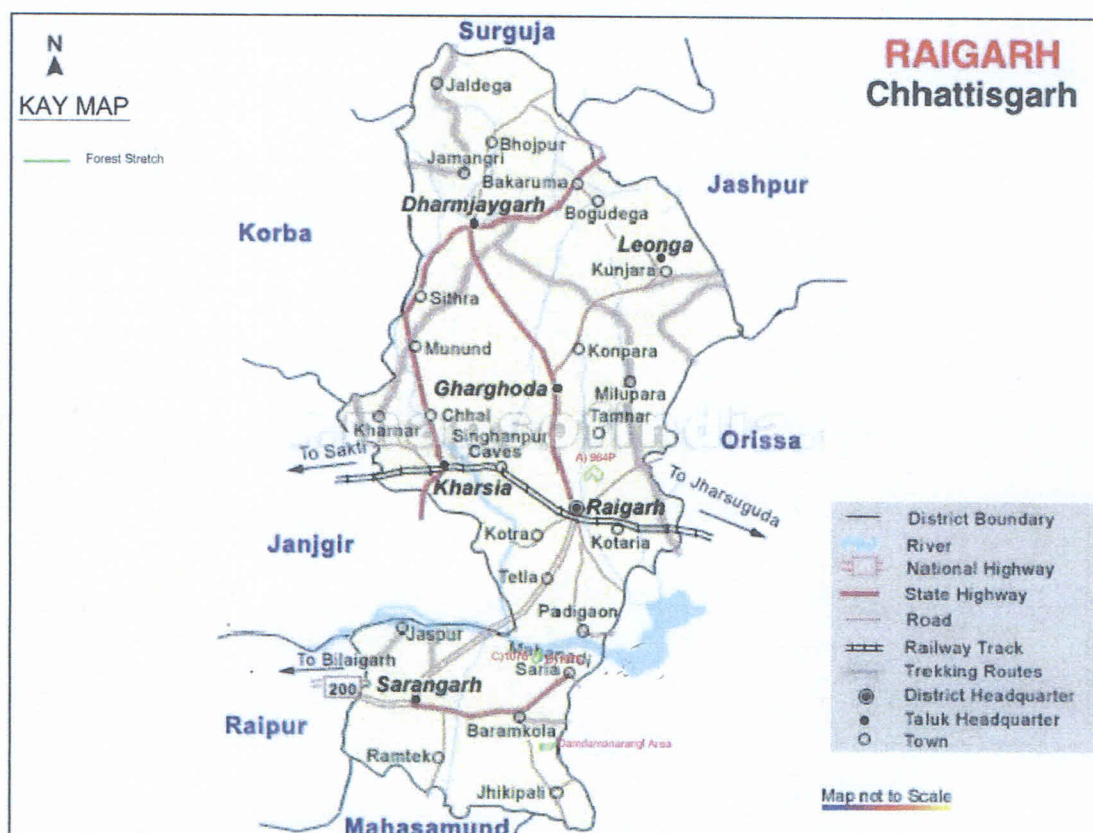


Google Image of 933P

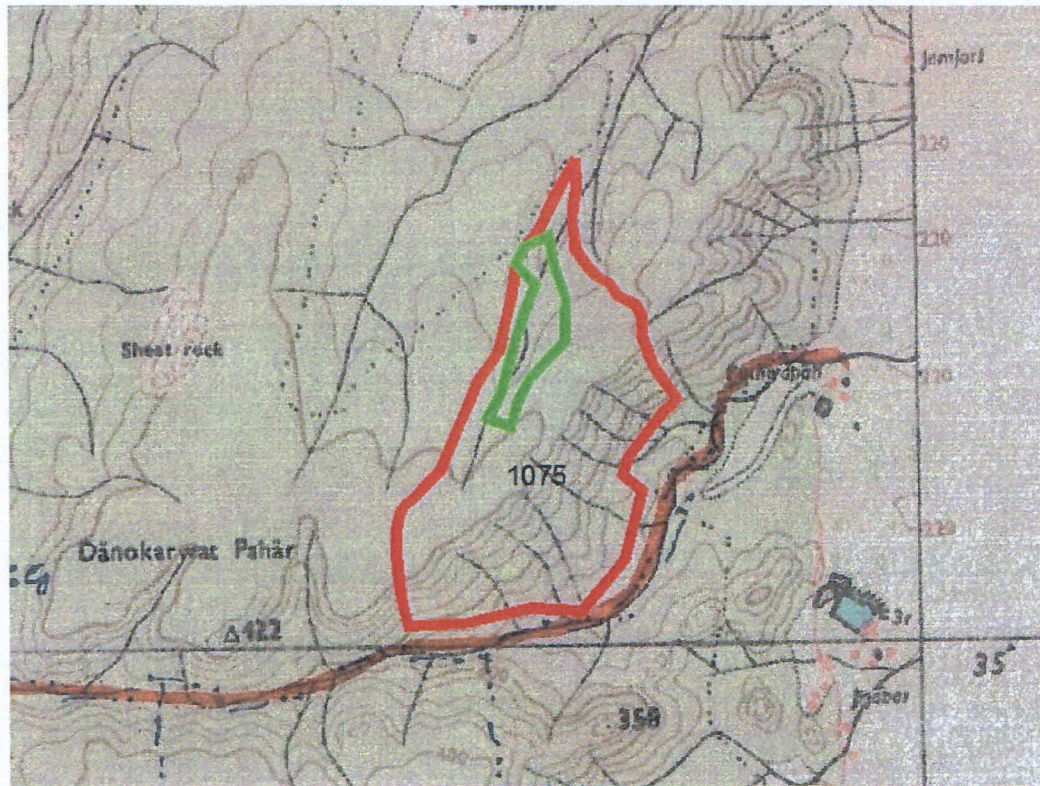
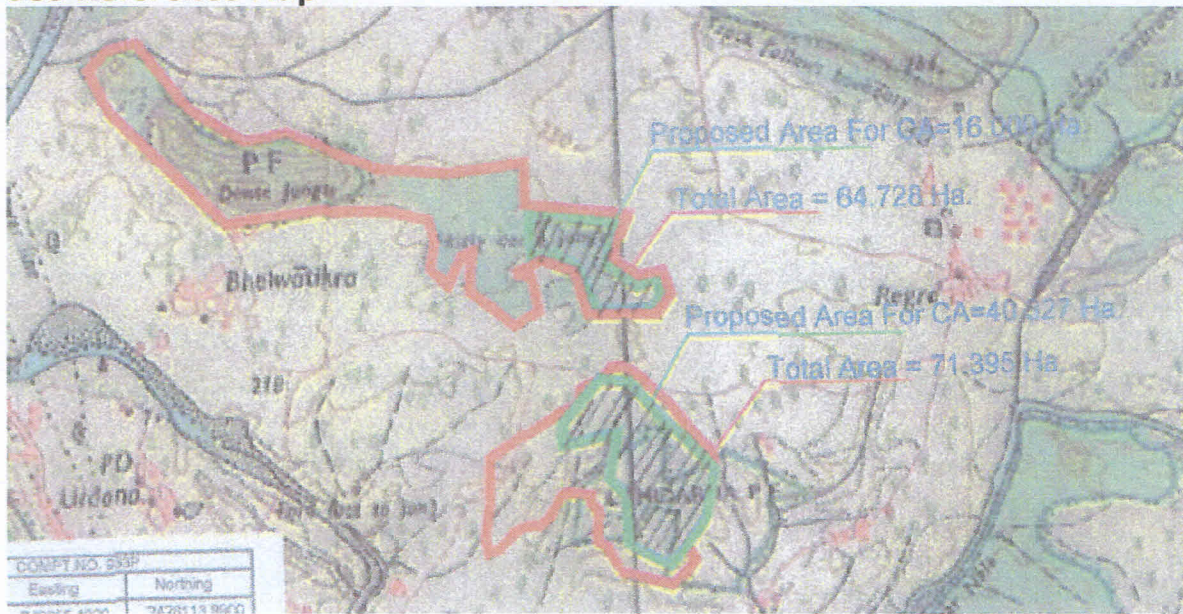


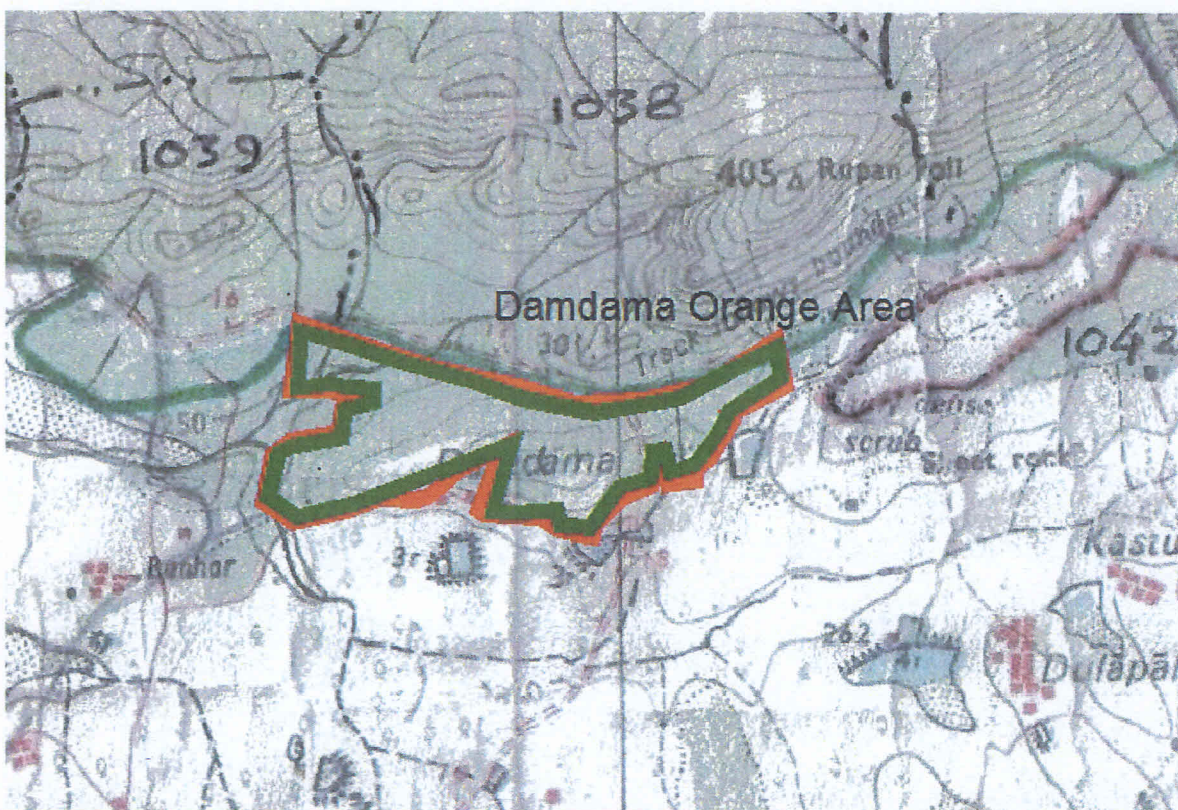
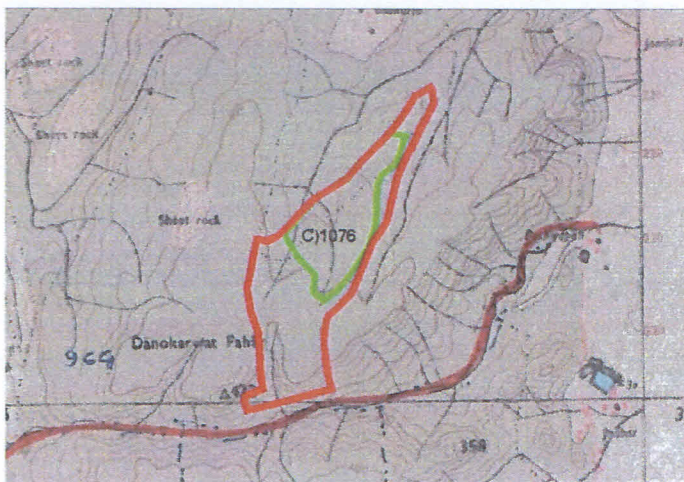
The detail annexure comprising of list of compartments with area, list of compartments with respective coordinates, geo-referenced drawing in PDF as well as CAD formats, photographs, shape files etc. are supplied with this report as annexure.

The key map of the survey area is as under:



Geo Reference Map





**ANNEXURE-A****LIST OF COORDINATES OF CA LAND BOUNDARY**

SR. NO.	COMPARTMENT NO.	POINT NO.	EASTING	NORTHING
1	964P	1	749615.5400	2426875.5700
		2	749586.1100	2427139.7600
		3	749530.0600	2427180.1100
		4	749562.4800	2427272.6300
		5	749578.4400	2427352.8900
		6	749313.9900	2427372.4200
		7	749313.7100	2427572.1400
		8	749394.4100	2427607.5700
		9	749510.5214	2427737.6595
		10	749615.8169	2427790.3137
		11	749739.7300	2427703.4800
		12	749845.2400	2427603.2900
		13	749970.1100	2427440.9300
		14	750048.0900	2427375.6900
		15	750055.5800	2427296.0020
		16	750012.3600	2427074.7800
		17	749839.0100	2426851.4000
2	933P	1	749055.4020	2428113.9900
		2	749007.8863	2428306.7500
		3	748871.0000	2428501.0000
		4	748945.0000	2428530.0000
		5	749060.3500	2428529.5100
		6	749163.0000	2428515.0000
		7	749281.9400	2428496.0700
		8	749362.5000	2428485.0300
		9	749320.6600	2428407.4300
		10	749287.1800	2428345.3600
		11	749475.2000	2428256.0000
		12	749445.4700	2428138.6000
		13	749426.2000	2428085.98 00
		14	749210.0678	2428142.0479
3	1076	1	730608.3998	2390345.3881
		2	730490.0000	2390211.0000
		3	730255.0000	2390063.0000
		4	730132.7272	2389943.7095
		5	729958.0000	2389742.0000
		6	730080.0000	2389544.0000





SR. NO.	COMPARTMENT NO.	POINT NO.	EASTING	NORTHING
		7	730213.0000	2389409.0000
		8	730204.8780	2389257.1030
		9	730299.3630	2389192.7400
		10	730405.3750	2389274.8320
		11	730510.2360	2389401.1470
		12	730671.8570	2389651.5340
		13	730726.0000	2389827.0000
		14	730738.5840	2390013.2850
		15	730741.4480	2390152.5850
		16	730779.1920	2390239.7300
		17	730894.3860	2390321.9450
		18	730935.3970	2390435.6370
		19	730978.0000	2390560.0000
		20	730847.0000	2390582.0000
4	1075	1	730829.7410	2389629.1380
		2	730875.6830	2389798.2340
		3	730912.6700	2389925.4270
		4	730959.3300	2390061.3080
		5	731007.4230	2390188.7030
		6	730912.0620	2390291.3480
		7	730953.5660	2390377.0110
		8	731079.4750	2390434.6180
		9	731104.3470	2390287.6320
		10	731163.2400	2390123.4090
		11	731161.5650	2390024.4660
		12	731161.4180	2389899.0960
		13	731060.3540	2389803.4130
		14	730982.3400	2389716.4740
		15	730918.9500	2389601.4830
		16	730880.3150	2389466.6440
		17	730760.6240	2389511.7010
5	Damdama Orange Area	1	740575.9490	2374435.6440
		2	740746.8580	2374392.8840
		3	740816.9500	2374373.2860
		4	740932.5180	2374337.7140
		5	741178.1300	2374285.0390
		6	741359.4330	2374226.1170
		7	741611.1280	2374187.9920
		8	741740.0300	2374211.2550
		9	741909.8210	2374247.3080
		10	742070.7430	2374344.1860

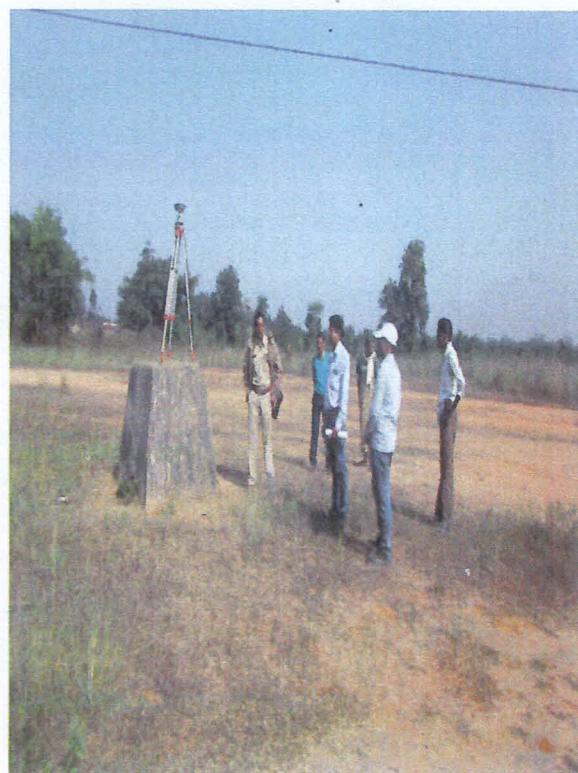
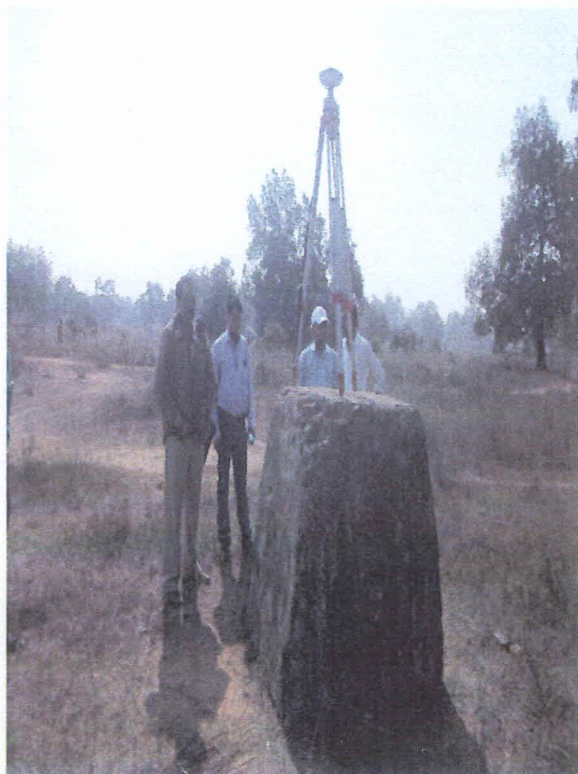


SR. NO.	COMPARTMENT NO.	POINT NO.	EASTING	NORTHING
		11	742242.5150	2374435.9170
		12	742257.7690	2374332.8960
		13	742081.5550	2374206.3590
		14	742041.0170	2374127.2680
		15	741967.1520	2374018.2780
		16	741880.9890	2373991.2660
		17	741860.3800	2374063.7460
		18	741820.6730	2374058.3600
		19	741815.8570	2373962.5240
		20	741707.7820	2373931.9460
		21	741609.0580	2373783.1360
		22	741505.3950	2373788.5140
		23	741490.9440	2373842.6250
		24	741336.0050	2373826.0065
		25	741263.1010	2373831.1610
		26	741066.5360	2373958.0660
		27	740904.5130	2373888.1220
		28	740780.1760	2373835.6210
		29	740583.1730	2373786.3140
		30	740480.3600	2373850.4400
		31	740511.6100	2374003.5900
		32	740561.2110	2374034.7280
		33	740731.5000	2374067.9520
		34	740741.1440	2374166.6860
		35	740838.4310	2374192.7380
		36	740839.0460	2374240.3110
		37	740744.6640	2374241.8390
		38	740691.0310	2374255.2550
		39	740570.1010	2374235.7380



POINT PHOTOGRAPHS

Compartment No. - 964P



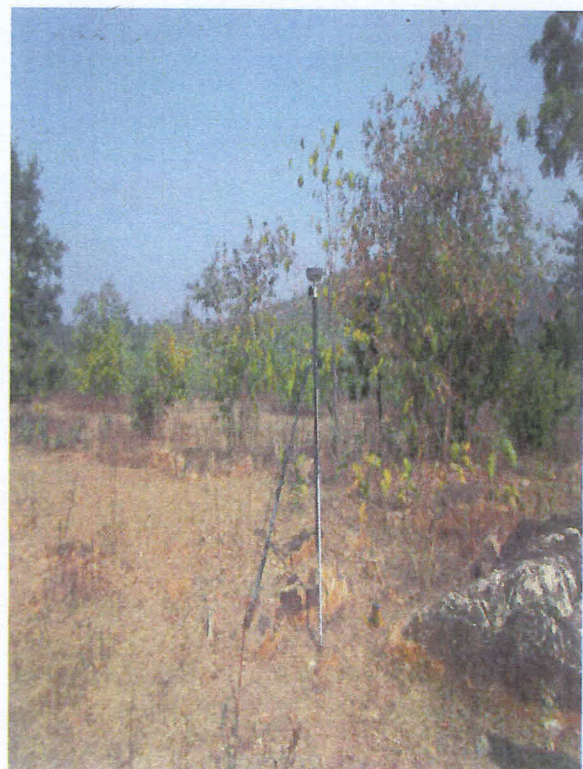
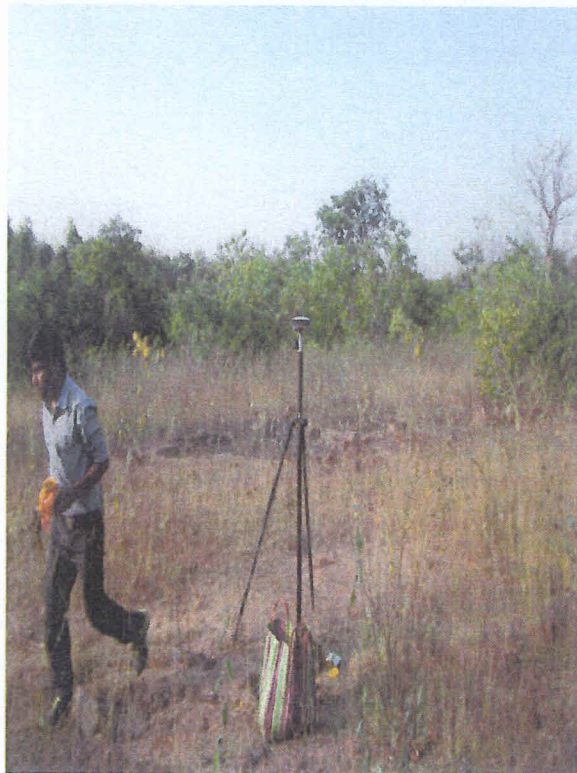
POINT PHOTOGRAPHS

Compartment No. - 1076



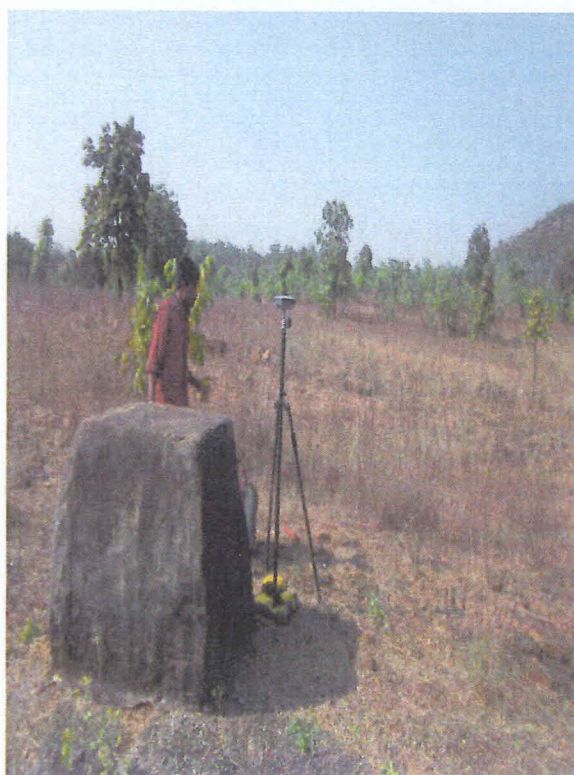
POINT PHOTOGRAPHS

Compartment No. - 1075



POINT PHOTOGRAPHS

Compartment No. – Damdama Orange Area



POINT PHOTOGRAPHS

Compartment No. – 933P



DGPS Survey Of Compensatory Afforestation Land

for 765KV D/C (Hex Zebra) Jharsuguda-Dharamjaygarh(Korba) Transmission Line-II (WR Portion).CKT 3&4

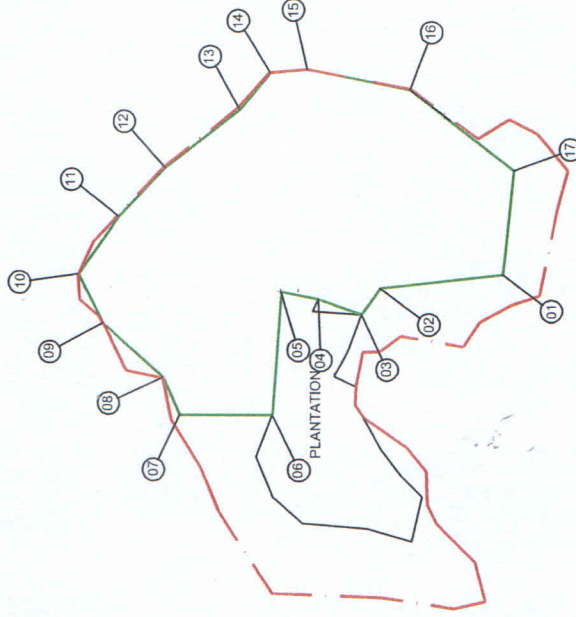
Compartment No.- 964P

Forest Division Raigarh (CG),

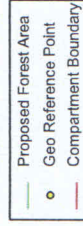
Total Area = 71.395 Ha., Proposed Area For CA= 40.327 Ha., Area of Plantation=10.484Ha.



SCALE - 1:15000



Legend



Checked by: *[Signature]*

Approved by: *[Signature]*

Surveyed By:

MNEC Consultants Pvt. Ltd.
An ISO 27001:2005, 9001:2008 Certified Company
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E-mail : info@mnescc.com

Submitted by:
Power Grid India Corporation Of India LTD
Raigarh

[Signature]
आर. आर. बारस्कर / R.R. Baraskar
सहायक प्रबंधक / Asst. General Manager
पावरग्रिड, रायगढ़ / POWERGRID, Raigarh

Point No.	Easting	Northing
01	749615.5400	2426875.5700
02	749586.1100	2427139.7600
03	749530.0600	2427180.1100
04	749562.4800	2427272.6300
05	749578.4400	2427352.8900
06	749313.9900	2427372.4200
07	749313.7100	2427572.1400
08	749394.4100	2427607.5700
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10	749615.8169	2427790.3137
11	749739.7300	2427703.4800
12	749845.2400	2427603.2900
13	749970.1100	2427440.9300
14	750048.0900	2427375.6900
15	750055.5800	2427296.0020
16	750012.3600	2427074.7800
17	749839.0100	2426851.4000

Page-

DGPS Survey Of Compensatory Afforestation Land

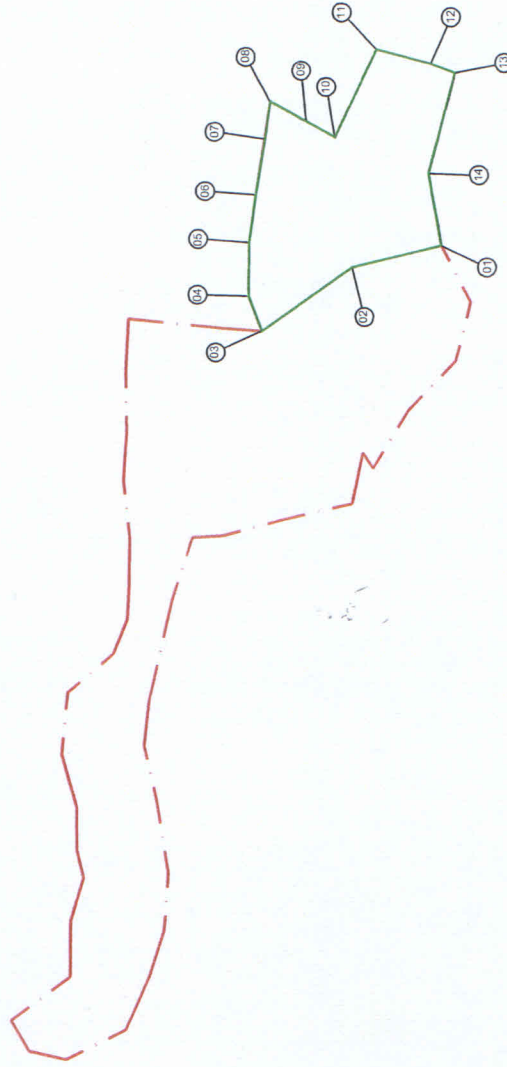
for 765KV D/C (Hex Zebra) Jharsuguda-Dharamjaygarh(Korba) Transmission Line-II (WR Portion).CKT 3&4

Compartment No.- 933P

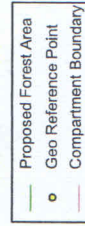
Forest Division Raigarh (CG),

Total Area = 64.728 Ha. Proposed Area For CA= 16.00 Ha.

SCALE - 1:15000



Legend



Checked by: *[Signature]*

Approved by: *[Signature]*

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E-mail : info@mnecc.com

Submitted by:

Power Grid India Corporation Of India LTD
Raigarh

आर. आर. बारस्कर / P.R. Baraskar

सहा. महा प्रबंधक / AS

मावसिड, रायगढ़ / P.

Page-

Point No.	Easting	Northing
01	749055.4020	2428113.9900
02	749007.8863	2428306.7500
03	748871.0000	2428501.0000
04	748945.0000	2428530.0000
05	749060.3500	2428529.5100
06	749163.0000	2428515.0000
07	749281.9400	2428496.0700
08	749362.5000	2428485.0300
09	749320.6600	2428407.4300
10	749287.1800	2428345.3600
11	749475.2000	2428256.0000
12	749445.4700	2428138.6000
13	749426.2000	2428085.9800
14	749210.0678	2428142.0479

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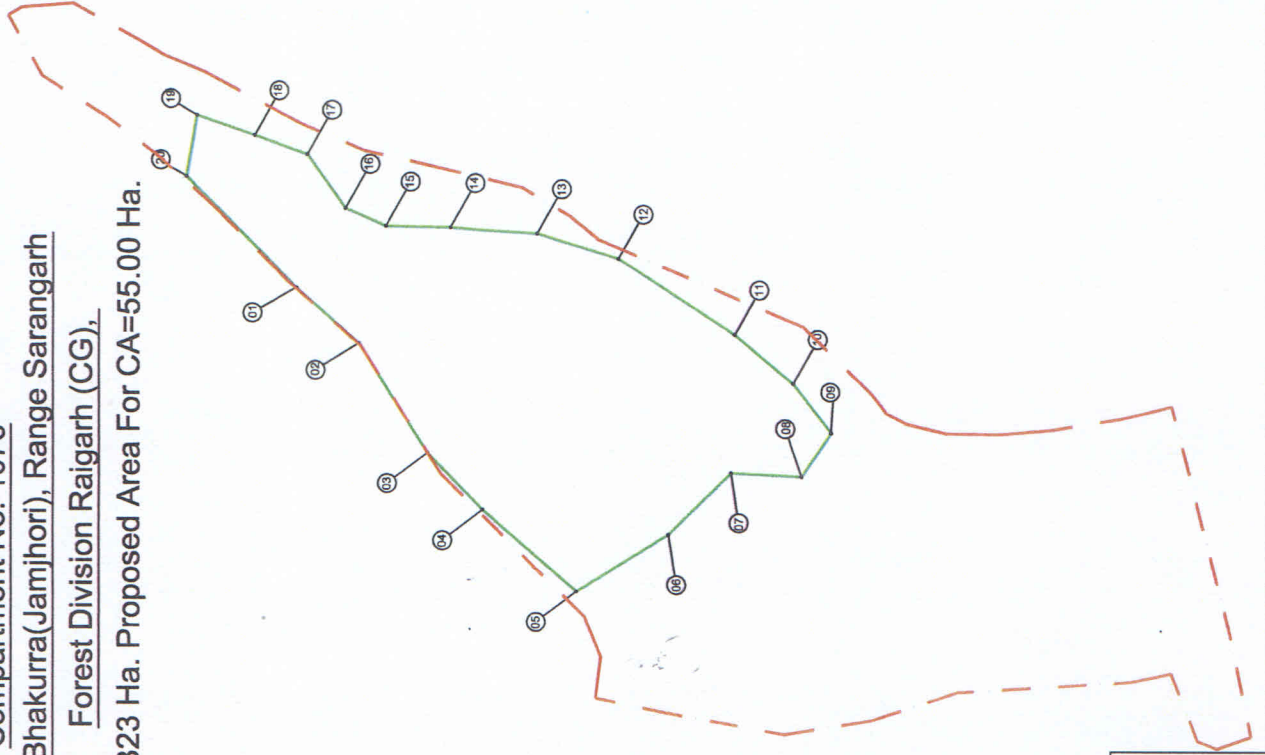
Compartment No. 1076

Village Bhakurra(Jamihori), Range Sarangarh

Forest Division Raigarh (CG),

Total Area = 159.323 Ha. Proposed Area For CA=55.00 Ha.

SCALE - 1:15000



Legend

- Proposed Forest Area
- Geo Reference Point
- Compartment Boundary



Checked by: Ranjan

Approved by: Dr. Pradyumn Singh

Submitted by: Dr. Pradyumn Singh

Power Grid India Corporation Of India LTD

Raigarh

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E-mail : info@mnecc.com

Point No.	Easting	Northing
01	730608.3998	2390345.3881
02	730490.0000	2390211.0000
03	730255.0000	2390083.0000
04	730132.7272	2389943.7095
05	729958.0000	2389742.0000
06	730080.0000	2389544.0000
07	730213.0000	2389409.0000
08	730204.8780	2389257.1030
09	730296.3630	2389192.7400
10	730405.3750	2389274.8320
11	730510.2360	2389401.1470
12	730671.8570	2389651.5340
13	730726.0000	2389827.0000
14	730738.5840	2390013.2650
15	730741.4480	2390152.5850
16	730779.1920	2390239.7300
17	730894.3860	2390321.9450
18	730935.3970	2390435.6370
19	730978.0000	2390560.0000
20	730847.0000	2390582.0000

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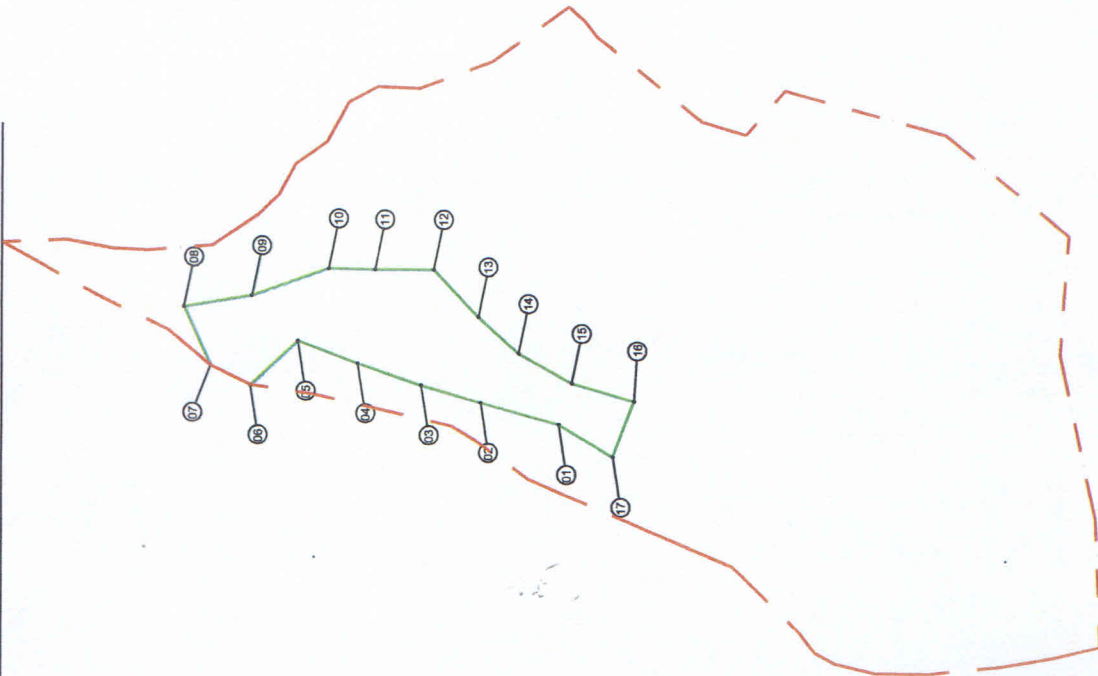
SCALE - 1:15000

Compartment No. 1075

Village Bhakurra(Jamjhora), Range Raigarh

Forest Division Raigarh (CG),

Total Area = 182.90 Ha. Proposed Area For CA=15.00 Ha.



Legend

- Proposed Forest Area
- Geo Reference Point
- Compartment Boundary



Checked by: *[Signature]*

Approved by: *[Signature]*

Submitted by:
Power Grid India Corporation Of India LTD
Raigarh

Surveyed By:
MNEC Consultants Pvt. Ltd.
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Ph. : +91-712-2542261 Fax : +91-712-2542291
E-mail : info@mnecc.com

Point No.	Easting	Northing
01	730829.7410	2386629.1380
02	730875.6830	2389798.2340
03	730912.6700	2389925.4270
04	730959.3300	2390061.3080
05	731007.4230	2390188.7030
06	730912.0620	2390291.3480
07	730953.5660	2390377.0110
08	731079.4750	2390434.6180
09	731104.3470	2390287.6320
10	731163.2400	2390123.4090
11	731161.5650	2390024.4660
12	731161.4180	2389999.0960
13	731060.3540	2389903.4130
14	730982.3400	2389716.4740
15	730918.9500	2389601.4830
16	730880.3150	2389466.6440
17	730760.6240	2389511.7010

DGPS Survey Compensatory Afforestation Land

for 765KV D/C (Hex Zebra) Jharsuguda-Dharamjaygarh(Korba) Transmission Line-II (WR Portion).CKT 3&4

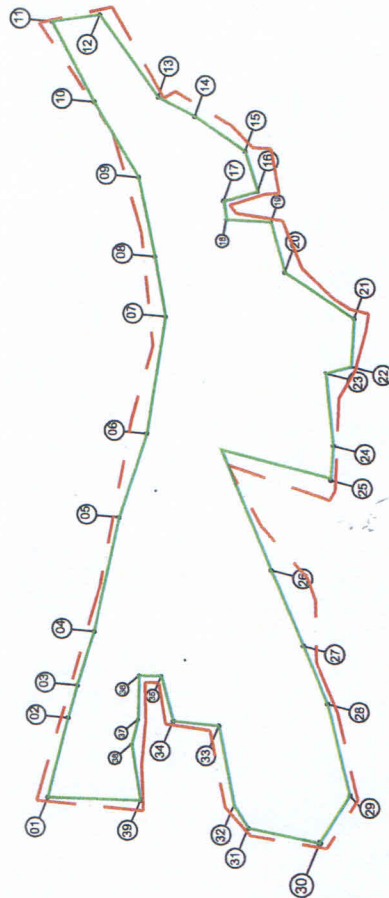
SCALE - 1:15000

Compartment No. Damdama Orange Area

Village Damdama, Range Raigarh

Forest Division Raigarh (CG),

Total Area = 70.220 Ha. Proposed Area For CA=60.000 Ha.



Legend

- Proposed Forest Area
- Geo Reference Point
- Compartment Boundary

0.25 0.50 0.75 1 2 3 Kilometers

Checked by: *[Signature]*

Approved by: *[Signature]*

Surveyed By:

MNEC Consultants Pvt. Ltd.

An ISO 27001:2005, 9001:2008 Certified Company

First Floor, 'Pratibha Sankul', 1, Bhagvagar Layout,

Besides Alankar Cinema, Dharampath, Nagpur-10

Ph. : +91-712-2542261 Fax : +91-712-2542291

E-mail : info@mnecc.com

Submitted by:

Power Grid India Corporation Of India LTD

Raigarh

Point No.	Easting (IN UTM)	Northing (IN UTM)
19	741815.8570	2373962.5240
20	741707.7020	2373991.9460
21	741609.0580	2373783.1360
22	741505.3950	2373788.5140
23	741490.9440	2373842.6250
24	741336.0050	2373826.0065
25	741283.1010	2373831.1610
26	741066.5360	2373958.0660
27	740904.5130	2373888.1220
28	740780.1760	2373835.6210
29	740583.1730	2373786.3140
30	740480.3600	2373850.4400
31	740511.6100	2374003.5900
32	740561.2110	2374034.7280
33	740731.5000	2374067.9520
34	740741.1440	2374166.6860
35	740838.4310	2374192.7380
36	740839.0460	2374240.3110
37	740744.6640	2374241.8390
38	740691.0310	2374255.2550
39	740570.1010	2374235.7980

Point No.	Easting (IN UTM)	Northing (IN UTM)
01	740575.9480	2374435.6440
02	740746.8590	2374392.8840
03	740816.9500	2374373.2860
04	740932.5180	2374337.7140
05	741178.1300	2374285.0390
06	741359.4330	2374226.1170
07	741611.1280	2374187.9920
08	741740.0300	2374211.2550
09	741909.8210	2374247.3080
10	742070.7430	2374344.1860
11	742242.5150	2374435.9170
12	742257.7690	2374332.8960
13	742081.5550	2374206.3590
14	742041.0170	2374127.2680
15	741967.1520	2374018.2780
16	741880.9890	2373991.2660
17	741860.3800	2374063.7460
18	741820.6730	2374058.3600