

**SCHEME FOR COMPENSATORY
AFFORESTATION OVER AN AREA OF 48.50
HA. IN DEGRADED FOREST LAND IN
BALIPASI RF OF SADANGI RANGE UNDER
DHENKANAL FOREST DIVISION.**

**AGAINST THE FOREST LAND USED BY-
EAST COAST RAILWAYS,
BHUBANESWAR.**

**FOR CONSTRUCTION OF 3RD & 4TH RAILWAY
LINE BETWEEN BUDHAPANKA-SALEGAON IN
THE STATE OF ODISHA UNDER DHENKANAL
FOREST DIVISION & ATHAGARH FOREST
DIVISION IN DHENKANAL & CUTTACK
DISTRICT.**

**DHENKANAL FOREST DIVISION
DHENKANAL**

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**LAND SUITABILITY CERTIFICATE BY DIVISIONAL FOREST OFFICER,
DHENKANAL FOREST DIVISION**

This is to certify that, 48.50 ha. of degraded Forest land is identified in Balipasi RF in two patches i.e. 28.137 Ha. and 20.365 Ha. under Sadangi Range of Dhenkanal Forest Division. Both the patches are suitable for the purpose of Compensatory Afforestation under **Block Plantation @1600 Plants per Hectare (6 months old seedlings)** in lieu of Forest land 24.19 ha. i.e. 13.99 ha. in Dhenkanal Forest Division and 10.20 ha. in Athagarh Forest Division to be diverted for construction of 3rd & 4th Railway Line between Budhapanka-Salegaon in the State of Odisha in Dhenkanal & Cuttack District by East Coast Railways, Bhubaneswar.

Place: Dhenkanal
Date : July, 2019


Divisional Forest Officer
Dhenkanal Division
Divisional Forest Officer
Dhenkanal Division

Official Seal.....

Compensatory Afforestation Scheme over 48.50 Ha. in degraded forest land in Balipasi RF in two patches i.e. 28.137 Ha. and 20.365 Ha. under Sadangi Range under Dhenkanal Division against diversion of Forest land for construction of 3rd & 4th Railway Line between Budhapanka-Salegaon in the State of Odisha under Dhenkanal Forest Division & Athagarh Forest Division in Dhenkanal & Cuttack District.

by

EAST COAST RAILWAYS, BHUBANESWAR.

1. INTRODUCTION:

The project of construction of 3rd& 4thline between Budhapank to Salegaon has been sanctioned in the year 2015-16. Budhapank is a junction station near Talcher in the Sambalpur-Angul-Cuttack section of Khurda Division located at a distance of 98.133 Km. Cuttack via Nergundi. Salegaon station is located at a distance of 13.25 Km. from Cuttack.

The existing railway line is catering to the originating traffic from the Mahanadi Coal Field to Paradip and Vishakhapatnam ports and siding traffic originating from / going to the several Power Plants and other coal-based industries located in the Cuttack -Talcher-Jharsuguda area which are connecting to its existing railway station. The section between Budhapank and Salegaon is having doubling and handling more than 50 coal loaded wagons every day from Mahanadi Coal Field in addition to traffic originating from/to the siding and as such is operating more than 100% section capacity. To ease the traffic congestion and to augment the section capacity to cater to the enhanced Coal production by Mahanadi Coal Field construction of the Project of 3rd& 4thline construction project was sanctioned.

The alternative alignment survey is not possible because its being a 3rd& 4thline project which has to definitely follow the 1st& 2ndline corridor to have synchronization with the existing infrastructure and signalling system. The power plants/other industrial infrastructure are connected to the existing network by different siding which has to be served by augmenting the exiting capacity by constructing the 3rd& 4thline for which is has to run parallel to the existing network and has to be integrated to the existing network system.

As railway line is to be laid in a certain ruling gradient, these bare minimum forest land involvements are unavoidable. Also, the proposed 3rd and 4th line is essentially required to cater to the increased coal production of Mahanadi Coal Field and facilitating coal evacuation and cater to the needs of a number of Thermal Power Plants in India. This line is also carrying imported cooking coal from Paradip port to the sponge iron and iron plants located Angul-Sambalpur-Jharsuguda Belt. These two lines will also cater to the projected iron ore traffic from the Bimalagarh-Kiriburu-Malangotoli iron ore mines belt in North Odisha to Paradip Port. Also, it will serve for faster movement of passenger traffic in this route. The gross cost of the project will be Rs.1172.92 Cr. and Projected ROR will be 21.31%.

It will also enhance socio-economic conditions of these Districts. During the construction of the project, it will render employment opportunities to the people of the relevant Districts through which alignment will pass.

The present proposal is from 0-85km which involves 24.198 forest land (13.99 ha in Dhenkanal FD and 10.20 ha in Athagarh FD) of Cuttack and Dhenkanal District. The alignment starts from the village Salegaon in Cuttack District but from the chainage 0-10km there is no forest area involvement. So, the present proposal starts from chainage 10.00KM from the village Balipur under Cuttack District and ends at chainage 85.00Km at village Mangalpur under Dhenkanal District. However, the employment likely to be generated 5,00,000 nos of man-days over a period of 5 years.

NEED FOR THE NEW LINE:

The goods traffic in the Angul-CTC-BRAG section is increasing by more than 10% every year due to the coal traffic originating from the MCL coal fields and also that from/to the various power plants and other allied industries coming up in and around that area. So, viewed on this scenario, two additional lines (3rd and 4th) are being proposed for future traffic for the next 25-30 years.

These two lines will also cater to the projected iron ore traffic from the Bimalagarh-Kiruburu-Malangotoli Iron ore mines belt in North-Western Odisha, to the Paradeep Port and to the several Steel plants located in the Jajpur & Keonjhar Districts, to be carried by the Talcher-Bimlagarh New BG Line which is likely to be commissioned by 2021.

Also, these new lines (3rd and 4th) will serve as link for fast growing passenger traffic between the Western Odisha (SBP, JSG, BLGR etc.) and Raipur, to the Capital of Odisha and coastal area.

In view of the above, construction of two more lines between Budhapank and Salegaon in this mineral rich and industrialized region is essentially required to meet the demand of ever increasing traffic.

SCHEME FOR SITE SPECIFIC COMPENSATORY AFFORESTATION

As per Para 2.8(ii) of Guideline to Forest (Conservation) Act, 1980 for Govt. of India Projects Compensatory Afforestation will be raised in degraded forest twice in extent. Therefore, 48.50 Ha degraded forest is required for compensatory Afforestation. Accordingly CA Scheme shall be prepared for minimum of 1000 saplings per hectare of identified CA land with ten-year maintenance.

3.1 Selection of Site

Accordingly degraded forest land over 48.50 Ha (in two patches of 28.137 ha and 20.365 ha) identified in Balipasi RF (Khankira Section, Sadangi Range in Dhenkanal Forest Division), which will accommodate 1600 plants per Ha.

The land particulars of the proposed compensatory afforestation area is depicted below

Patch	Division	Range	Section	Name of RF	Compartment No.	Area considered for Compensatory Afforestation (Ha.)
1	Dhenkanal	Sadangi	Khankira	Balipasi	1	28.137
2	Dhenkanal	Sadangi	Khankira	Balipasi	1	20.365
Total						48.50

The site is located on survey of India Topo Sheet No F45-T/13 between Latitude: 20° 48' 40" - Longitude: 85° 57' 50" (Annexure-I).

3.2 Description of the existing vegetation

Though there is no valuable tree growth in the land but some scrubs are found scattered all over the land.

3.3 Topography & Soil

The topography of area is flat and undulating at some portion. The depth of the soil is good and the existing vegetation indicates the PH value.

3.4 Rainfall & Temperature

The annual rainfall varied from 1200 mm to 1400mm. The maximum rainfall is received during the rainy season from July to September. The average temperature varied from 28°C minimum in December to 41° C maximum in May.

3.5 Objective of the scheme

The main objective of the present scheme is to (I) increase vegetation through taking up AR plantation, (ii) clearly demarcating the area with posting up RCC pillars, (iii) enforcing protection measures by involving people around under JFM and (iv) above all checking soil erosion and run off which will go in combination for enrichment of the vegetation and soil and building up ecosystem. The total 48.50 ha shall be covered under Block Plantation with 1600 plants / ha.

3.6 Items of work to be taken up

To achieve the above objectives, the following items of work are mainly prescribed to be taken up with the full involvement and co-operation of local forest dwellers.

3.7 Survey and Demarcation

The boundary should be surveyed clearly with reference to the RI' boundary and demarcated by posting pillars

3.7.1 Block Plantation

The total allotted area shall be covered by Block Plantation. For protection of the plantation from grazing, green fencing will be provided around the plantation site.

Care should be taken to select only indigenous species as far as possible keeping in view of the existing natural vegetation in and around the area and also the climatic and edaphic factors. The choices of species are as follows:

Local Name	Scientific Name
Tentuli	<i>Terminalia belerica</i>
Karanja	<i>Pongomia pinnata</i>
Babul	<i>Tectona grandis</i>
Aswastha	<i>Ficus religiosa</i>
Neem	<i>Azadirachta indica</i>
Kusuma	<i>Schleichera oleosa</i>
Asana	<i>Terminalia aomentosa</i>
Kaitha	<i>Limonia acidissima</i>
Chatian	<i>Alstonia scholaris</i>
Khaira	<i>Acacia catchu</i>
Bara	<i>Ficus bengalensis</i>

It is proposed to take up pitting with a pit size of 30cm x 30cm x 30cm during February / March for allowing weathering of the soil. The planting should be taken up only with two years old seedlings having height more than one meter. The size of P. bags will be 12 inch x 9 inch with desired quantity of inputs. The seedlings will be graded and sorted at regular intervals to make those healthy and sound and avoid root coiling.

3.8 Development of Nursery

A good nursery is the per-requisite for a successful plantation. Therefore, all care should be taken to rise healthy and sound seeding of required sizes before they are put to the plantation site. The site being subjected to different biotic interference, it is proposed to raise two year old seedlings for plantation. This should be particularly adopted in case of slow growing species like Amba, Baunsa, Tentuli, Karanja, Babul, Aswastha, Neem, Kusuma, Asana, Kaitha, Chatian, Khaira and Bara etc. Accordingly, the nursery programme can be planned out one year in advance.

The two years seedling to be raised in poly bags of 12 inch x 9 inch and one year old manual should be taken up at all stages of nursery operation so that a good stock of healthy seedling can be raised. 10% extra seedlings should be raised to cover the short fall due to casualty in nursery stage. In case of all the seedlings, shifting, grading of polythene bags should be done from time to time not allow the tap roots to strike the ground. Nursery site should be selected, preferably near to plantation site and in a well-drained locality having water sources.

3.9 Planting

The best time of planting of the potted seedling is soon after the onset of regular monsoon or after a good shower of rain. Before planting, the pits are to be prepared by putting mixture of half cubic feet of alluvial soil and farmyard manure. Basal dose of 30 gram of NPK fertilizer and 5 gram of Aldrin dust or Phorate pesticide are to be applied to the pits before planting as basal dose. The excavated earth from the pits already weathered and free from stones should be filled in the pits. Before removal of the plants from the Nursery the following precaution should be taken:

Roots escaping from the container should be trimmed.

- i. Posts containing the plant are watered, if necessary.
- ii. Maximum care should be taken at the time of transportation and handling of seedling so that the ball of earth of the poly pots does not get disturbed and the primary leading shoots are broken. Manual transportation should be given priority.

Planting should be taken up on rainy/cloudy days by adopting all standard techniques of plantation.

Casualty of seedlings occurs due to various causes, like heavy rains, drought, fire, grazing etc. But in a well-managed plantation, where the planting stock consists of healthy and stout seedlings, say, about 5% may die during the period between planning and 1st weeding. Seedlings to be used for casualty replacement should be earmarked and kept reserved at the time of planting. Only healthy and stout seedlings slightly larger than those planted at the time of operation should be used. This is important because only such seedlings can catch up growth with those that have survived and are growing. Before planting for casualty replacement, the following operations are to be taken up:

- a. The failure pit is to be properly dug again
- b. Another dose of fertilizer, and insecticide should be given to the pit
- c. If the casualties are due to white ant attack. Little more quantity of phorate pesticide may be applied to the pit.
- d. If the casualties are due to water logging and wilting, care should be taken to drain out the pits by making small channels to downhill side.
- e. Watering is to be done generally directly after planting, if the planting is done on a dry day.

Casualty replacement can also be taken up in the 2nd year formation and this time should not exceed 20%.

3.10 Fencing.

To protect the plantation from grazing and other biotic interference, fencing shall be taken up over 7.36 km or 7360 mtr of periphery by Vegetative Fencing all around.

3.11 Peoples participation

It is experienced that, no scheme shall be effective if the local villagers are not involved in the implementation of the scheme itself. The villagers who are having a right on the NTFP items in the adjoining forest area are to be associated with the implementation of the scheme at all different levels. For that, Van Samarakhyana Samittee (VSS) is proposed to the guidelines of the government of Odisha issued on 3rd July'1993, the villagers are to be motivated and inspired and above all, explained the benefits they will be getting if plantation is protected by them.

3.12 Monitoring and execution

The scheme shall be executed and monitored by the Divisional Forest Officer, Dhenkanal Division from time to time. To facilitate this, the User Agency shall bear the cost of infrastructure required and shall provide also the infrastructural facilities.

3.13 Total cost of the Scheme

The total cost of the project will be Rs. **2,47,01,500.00.00/-** which will be deposited by the User Agency in the State CAMPA Account as per the Demand Notice issued by the Divisional Forest Officer, Dhenkanal Forest Division.


Divisional Forest Officer,
Dhenkanal Division
Divisional Forest Officer
Dhenkanal Division

COST NORM FOR BLOCK PLANTATION @ 1600 PLANTS/HA (6 MONTHS OLD SEEDLINGS) FOR SITE IDENTIFIED IN BALIPASI RF OVER AN AREA OF 48.50 HA, IN CURRENT WAGE RATE OF RS. 286.30 PER MANDAY.

Sl. No	Items of Work	Preferable period of execution	Labour in Mandays	Labour cost @ Rs 286.30/- per day	Material cost per hectare in Rs	Total cost per hectare in Rs.
1	2	3	4	5	6	7
0TH YEAR (ADVANCE WORK) PRE-PLANTING OPERATION						
1	Survey, demarcation and pillar posting	Nov/Dec	2	572.60	0	572.60
2	Site preparation	Nov/Dec	12	3435.60	0	3435.60
3	Alignment and stacking of pits	Jan/Feb	2	572.60	0	572.60
4	Digging of pits (30 cm cube)	Feb/Mar	40	11452	0	11452
5	Nursery cost (6 months old seedlings) part @ Rs.12.43/- seedling (Rs.8.67 in 0 th year + Rs.3.76 in 1 st year) for 1760 seedlings (1600+160)	Jan-Mar	44	12597.20	2939	15536.20
	Total		100	28630	2939	31569
6	Monitoring & Supervision charge 5% of the total cost					1578.45
	Grand Total		100	28630	2939	33147.45
1ST YEAR / PLANTING YEAR						
7	Nursery cost (6 months old seedling) balance @ Rs.3.76 for 1760 seedlings	Apr-June	21.5	6155.45	593	6748.45
8	For an average of 250 meters/ha @ Rs.76.80/- per meter for bamboo twigs and bamboo thorn fencing	May/June	38	10879.40	8560	19439.40
9	Carriage & planting, Casualty Replacement and application of insecticide, manure etc.	Jul/Aug	21	6012.30	0	6012.30
10	Cost of insecticide and fertilizer (a) NPK @ 50 gms/plant as basal dose =80kg/ha @ Rs.24/- per kg = Rs.1920.00/ha (b) Urea @ 70 gms/plant in two subsequent doses @ Rs.6/- per kg = Rs.672.00. (c) Granular insecticide (Themct, Forate etc.) @ 5gms/plant @ Rs.80/- per kg = Rs.640.00	July/August		0	3232	3232
11	1st weeding (complete weeding)	Aug/Sep	7	2004.10	0	2004.10
12	Manuring Urea 35 gm	Aug/Sep	5	1431.50	0	1431.50
13	2nd weeding (complete weeding)	Sep/Oct	5	1431.50	0	1431.50
14	Soil working (50 cms. Radius around plants) & manuring Urea 35 gms per plant	Sep/Oct	7	2004.10	0	2004.10
15	Soil conservation measures in the form of staggered trenches of size 2 m x 0.5 m x 0.5 m @ 30 nos per ha	Sep/Oct	10	2863	0	2863
16	Fire line tracing & inspection path	Feb/Mar	3	858.90	0	858.90
17	Watch & Ward	Aug-Mar	7	2004.10	0	2004.10
	Total		124.50	35644.35	12385	48029.35
18	Monitoring & Supervision charge 5% of the total cost					2401.50
	Grand Total		124.50	35644.35	12385	50430.85
2ND YEAR MAINTENANCE						
19	Casualty replacement (10%) with Nursery cost	Jul/Aug	4	1145.20	1988.80	3134
20	Weeding (complete weeding)	Sep/Oct	6	1717.80	0	1717.80
21	Cost of fertilizer (NPK @ 70 gms/plant) (Rs.24/-per kg & Insecticide @ 5 gms / plant for 160 plants 800 gms @ Rs.80/- per kg	Sep/Oct		0	2752	2752
22	Repair & maintenance of Bamboo fence including material cost	May/June	20	5726	5080	10806

Sl. No	Items of Work	Preferable period of execution	Labour in Mandays	Labour cost @ Rs 286.30/- per day	Material cost per hectare in Rs	Total cost per hectare in Rs.
1	2	3	4	5	6	7
23	Soil working (50 cms. Radius around plants)	Oct/Nov	7	2004.10	0	2004.10
24	Application of fertilizer & insecticide	Sep/Oct	4	1145.20	0	1145.20
25	Fire line tracing (2 m. wide fire line over 400m long)	Feb/Mar	3	858.90	0	858.90
26	Watch & Ward	Apr-Mar	15	4294.50	0	4294.50
	Total		59	16891.70	9820.80	26712.50
27	Monitoring & Supervision charge 5% of the total cost					1335.63
	Grand Total		59	16891.70	9820.80	28048.13
3RD YEAR MAINTENANCE						
28	Weeding and application of fertilizer	Aug/Sep	7	2004.10	0	2004.10
29	Cost of fertilizer (NPK @ 50 gms/plant) Rs.24/-per kg			0	1920	1920
30	Repair and maintenance of Bamboo fence including material cost	May/June	20	5726	1000	6726
31	Soil working (50 cms. Radius around plant) & application of fertilizer	Oct/Nov	7	2004.10	0	2004.10
32	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/Mar	3	858.90	0	858.90
33	Watch & Ward	Apr-Mar	15	4294.50	0	4294.50
	Total		52	14887.60	2920	17807.60
34	Monitoring & Supervision charge 5% of the total cost					890.38
	Grand Total		52	14887.60	2920	18697.98
4TH YEAR MAINTENANCE						
35	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/Mar	3	858.90	0	858.90
36	Watch & Ward	Apr-Mar	15	4294.50	0	4294.50
	Total		18	5153.40	0	5153.40
37	Monitoring & Supervision charge 5% of the total cost					257.67
	Grand Total		18	5153.40	0	5411.07
5TH YEAR MAINTENANCE						
38	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/Mar	3	858.90	0	858.90
39	Watch & Ward	Apr-Mar	15	4294.50	0	4294.50
	Total		18	5153.40	0	5153.40
40	Monitoring & Supervision charge 5% of the total cost					257.67
	Grand Total		18	5153.40	0	5411.07
6TH YEAR MAINTENANCE						
41	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/Mar	3	858.90	0	858.90
42	Watch & Ward	Apr-Mar	15	4294.50	0	4294.50
	Total		18	5153.40	0	5153.40
43	Monitoring & Supervision charge 5% of the total cost					257.67
	Grand Total		18	5153.40	0	5411.07

Sl. No	Items of Work	Preferable period of execution	Labour in Mandays	Labour cost @ Rs 286.30/- per day	Material cost per hectare in Rs	Total cost per hectare in Rs.
1	2	3	4	5	6	7
7TH YEAR MAINTENANCE						
44	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation)	Feb/Mar	3	858.90	0	858.90
45	Watch & Ward	Apr-Mar	15	4294.50	0	4294.50
	Total		18	5153.40	0	5153.40
46	Monitoring & Supervision charge 5% of the total cost					257.67
	Grand Total		18	5153.40	0	5411.07
8TH YEAR MAINTENANCE						
47	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation)	Feb/Mar	3	858.90	0	858.90
48	Watch & Ward	Apr-Mar	15	4294.50	0	4294.50
	Total		18	5153.40	0	5153.40
49	Monitoring & Supervision charge 5% of the total cost					257.67
	Grand Total		18	5153.40	0	5411.07
9TH YEAR MAINTENANCE						
50	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation)	Feb/Mar	3	858.90	0	858.90
51	Watch & Ward	Apr-Mar	15	4294.50	0	4294.50
	Total		18	5153.40	0	5153.40
52	Monitoring & Supervision charge 5% of the total cost					257.67
	Grand Total		18	5153.40	0	5411.07
10TH YEAR MAINTENANCE						
50	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation)	Feb/Mar	3	858.90	0	858.90
51	Watch & Ward	Apr-Mar	15	4294.50	0	4294.50
	Total		18	5153.40	0	5153.40
52	Monitoring & Supervision charge 5% of the total cost					257.67
	Grand Total		18	5153.40	0	5411.07

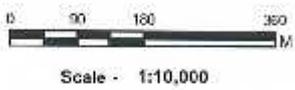
TOTAL FINANCIAL OUTLAY OF THE SCHEME**A. Cost of Plantation to be deposited in State CAMPA fund by User Agency****ABSTARCT**

Sl. No	Year	No. Person Day	Labour Cost @ Rs.286.30/- per day	Material Cost (Rs)	Monitoring & Supervision charge 5% of the total cost	Total Cost (Rs.)
1	0th Year	100	28630	2939	1578.45	32486
2	1st Year	124.5	35644.35	12358	2401.50	49607
3	2nd Year	59	16891.70	9820.80	1335.63	27658
4	3rd Year	52	14877.60	2920	890.38	18354
5	4th Year	18	5153.40	0	257.67	5292
6	5th Year	18	5153.40	0	257.67	5292
7	6th Year	18	5153.40	0	257.67	5292
8	7th Year	18	5153.40	0	257.67	5292
9	8th Year	18	5153.40	0	257.67	5292
10	9th Year	18	5153.40	0	257.67	5292
11	10th Year	18	5153.40	0	257.67	5292
		461.5	132117.45	28037.80	8009.65	1,68,164.90 or 1,68,165.00
	TOTAL	168165 × 48.50 Ha.				81,56,002.50 or 81,56,003.00
12	Cost of vegetative fencing over 7.36 km or 7360 mtr around the Block plantation in Balipasi RF @ 128/- per meter	128 × 7360				9,42,080.00
13	Soil Conservation Measures					
	(i) LBCD of size 10'×10'×5 for 20 nos. per ha over 48.50 ha @ Rs.8,233.73 per LBCD	8233.73 × 20 × 48.50				79,86,718.00
	(ii) Staggered tranches of size 2.5 mt × 0.5 mt. × 0.5 mt for 300 nos. per ha @ Rs.56/- each over 48.50 ha.	56 × 300 × 48.50				8,14,800.00
					Total	1,78,99,601.00
14	15 % of total plantation cost towards EPA / Incentive to VSS					26,84,940.00
					Total	2,05,84,541.00
15	Add Escalation Cost (20%)					41,16,908.00
					Grand Total	2,47,01,449.00 or 2,47,01,500.00

(Rupees Two Crore Forty Seven Lakh One Thousand Five Hundred) only.

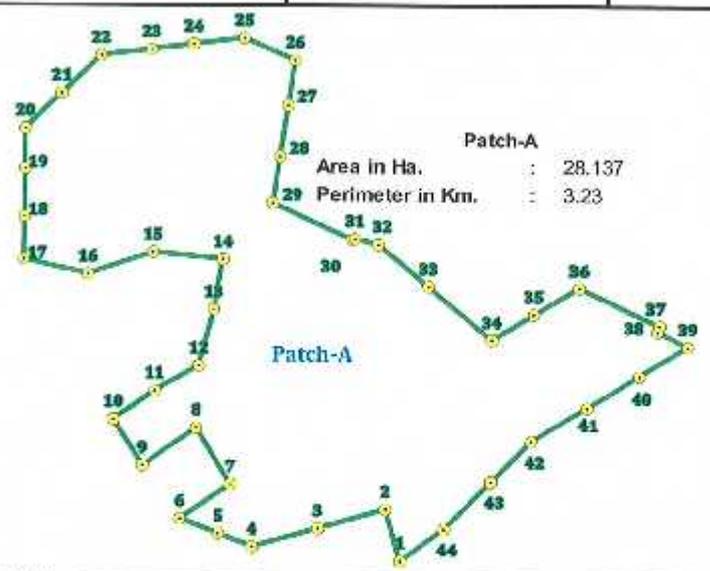

Divisional Forest Officer,
Dhenkanal Division
Divisional Forest Officer
Dhenkanal Division

Geo-referenced Map of Degraded land identified in Balipasi RF for raising Compensatory Afforestation using DGPS in the Lieu of Forest land to be Diverted for 3rd & 4th line between Budhapank-Salegaon via Rajathagarh Railway Project, Range-Sadangi, Section-Khankira, Beat-Tolarpasi, Dhenkanal Forest Division, Dhenkanal, Odisha



Legend

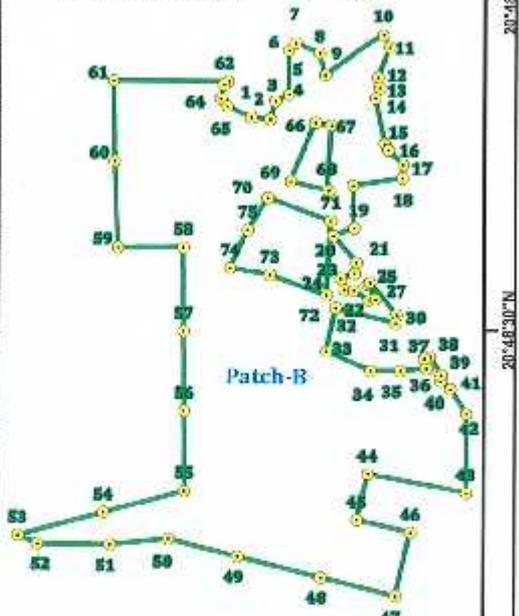
- CA Pillar
- CA Boundary



Patch-A															
Point No	Easting	Northing	Longitude	Latitude	Point No	Easting	Northing	Longitude	Latitude	Point No	Easting	Northing	Longitude	Latitude	
1	332806.281	2302544.500	85°57'50.73010"	20°49'11.061748"	16	331700.294	2302938.127	85°57'36.97162"	20°49'23.70112"	31	332144.247	2302990.365	85°57'48.490704"	20°49'25.483204"	
2	332106.779	2302615.305	85°57'30.041832"	20°49'13.367384"	17	331694.376	2302866.217	85°57'32.955765"	20°49'24.17004"	32	332176.701	2302979.563	85°57'49.618236"	20°49'25.273162"	
3	332065.075	2302589.641	85°57'46.875372"	20°49'12.31354"	18	331696.506	2302917.777	85°57'31.964235"	20°49'28.354172"	33	332214.616	2303021.566	85°57'51.864321"	20°49'23.3436"	
4	332064.426	2302584.203	85°57'43.748362"	20°49'11.88452"	19	331696.308	2302905.903	85°57'32.870302"	20°49'28.505195"	34	332301.213	2302948.369	85°57'54.264762"	20°49'29.843024"	
5	331903.110	2302581.794	85°57'42.177890"	20°49'12.226638"	20	331696.590	2302136.615	85°57'32.891472"	20°49'30.313850"	35	332327.271	2302983.703	85°57'56.320768"	20°49'22.138672"	
6	331908.207	2302602.232	85°57'40.542122"	20°49'12.883512"	21	331745.789	2302107.839	85°57'34.662276"	20°49'31.886304"	36	332446.980	2302990.185	85°57'58.978004"	20°49'23.347344"	
7	331975.353	2302649.430	85°57'42.723612"	20°49'14.433204"	22	331758.568	2302326.990	85°57'36.478424"	20°49'33.603348"	37	332595.439	2302868.415	85°58'02.703664"	20°49'21.67844"	
8	331928.236	2302726.517	85°57'41.076576"	20°49'16.600908"	23	331956.759	2302348.748	85°57'30.103116"	20°49'33.022202"	38	332672.822	2302960.054	85°58'02.832688"	20°49'21.463956"	
9	331854.906	2302674.668	85°57'30.261528"	20°49'15.235068"	24	331844.501	2302286.182	85°57'40.835464"	20°49'34.18082"	39	332633.636	2302968.728	85°58'04.06578"	20°49'20.751312"	
10	331816.040	2302737.825	85°57'37.183148"	20°49'17.270548"	25	331827.588	2302284.949	85°57'43.186008"	20°49'34.456816"	40	332528.500	2302799.550	85°58'01.840512"	20°49'19.431182"	
11	331811.575	2302777.525	85°57'38.165144"	20°49'18.577416"	26	332009.194	2302234.216	85°57'46.284872"	20°49'33.400544"	41	332457.427	2302754.988	85°57'59.31021"	20°49'17.066588"	
12	331831.607	2302811.722	85°57'41.174136"	20°49'19.89910"	27	332022.685	2302172.703	85°57'45.702031"	20°49'34.45862"	42	332303.008	2302708.150	85°57'58.841888"	20°49'16.460756"	
13	331952.082	2302886.411	85°57'41.860212"	20°49'22.246888"	28	332031.793	2302104.748	85°57'44.901188"	20°49'29.157956"	43	332304.610	2302653.751	85°57'54.880388"	20°49'14.620116"	
14	331902.327	2302950.463	85°57'42.397074"	20°49'24.514248"	29	332032.172	2302037.326	85°57'44.807704"	20°49'27.080444"	44	332265.103	2302626.723	85°57'52.794752"	20°49'12.519416"	
15	331898.185	2302958.435	85°57'38.87810"	20°49'24.783364"	30	332140.675	2302888.111	85°57'48.367584"	20°49'25.01774"						

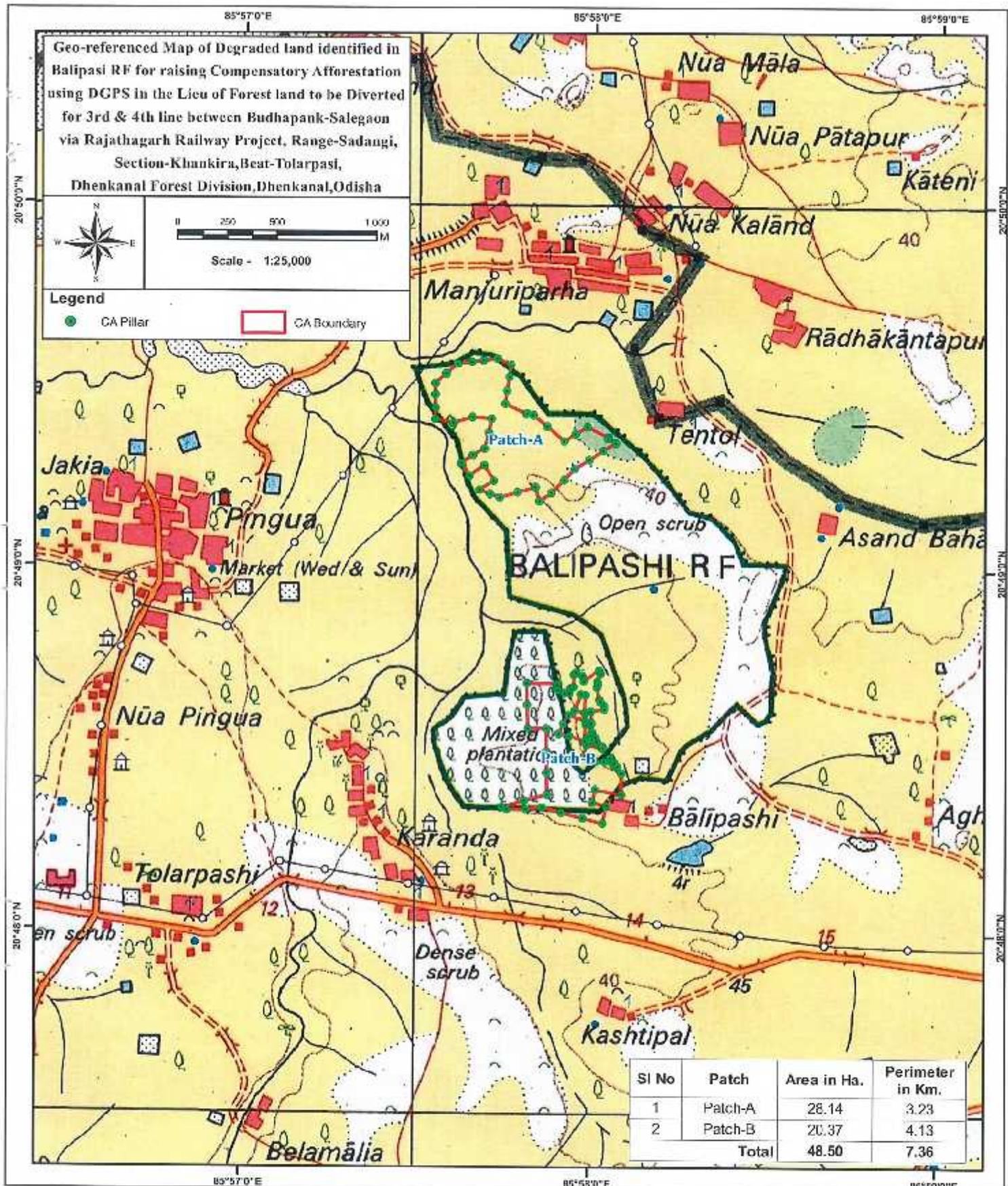
Patch-B															
Point No	Easting	Northing	Longitude	Latitude	Point No	Easting	Northing	Longitude	Latitude						
1	332334.015	2301980.367	85°57'52.370204"	20°48'30.380396"	30	332980.768	2301217.305	85°58'04.350668"	20°48'17.983032"						
2	332198.517	2301067.240	85°57'56.259308"	20°48'29.310072"	40	332980.212	2301208.685	85°58'04.275648"	20°48'27.748994"						
3	332335.708	2301982.701	85°57'50.461092"	20°48'40.148814"	41	332803.051	2301157.535	85°58'01.756884"	20°48'27.336148"						
4	332381.581	2301901.888	85°57'57.112168"	20°48'40.448016"	42	332864.723	2301133.322	85°58'05.516588"	20°48'26.21132"						
5	332393.526	2301882.306	85°57'57.262378"	20°48'42.412804"	43	332825.259	2301055.608	85°58'05.557508"	20°48'22.731888"						
6	332394.376	2301872.684	85°57'57.43753"	20°48'42.73304"	44	332781.620	2301083.829	85°58'03.831036"	20°48'22.621044"						
7	332405.088	2301868.026	85°57'58.7"	20°48'42.312158"	45	332477.154	2301017.451	85°58'03.444144"	20°48'21.680212"						
8	332433.270	2301829.488	85°57'56.790448"	20°48'41.34932"	46	332549.653	2301000.685	85°58'02.980284"	20°48'20.920262"						
9	332430.029	2301884.591	85°57'51.890116"	20°48'43.164772"	47	332529.122	2300912.648	85°58'02.264568"	20°48'18.008852"						
10	332516.986	2301867.283	85°58'01.740768"	20°48'42.827116"	48	332420.077	2300807.581	85°57'58.796136"	20°48'18.880104"						
11	332502.856	2301868.118	85°58'01.107848"	20°48'41.261328"	49	332310.957	2300965.039	85°57'54.912696"	20°48'19.704368"						
12	332504.808	2301861.830	85°58'01.262628"	20°48'40.757216"	50	332223.474	2300884.895	85°57'51.67028"	20°48'20.50308"						
13	332500.210	2301840.113	85°58'01.11288"	20°48'40.314534"	51	332143.285	2300801.082	85°57'58.903004"	20°48'20.266622"						
14	332512.645	2301834.835	85°58'01.569788"	20°48'38.254658"	52	332044.368	2300902.004	85°57'45.483156"	20°48'20.210268"						
15	332517.037	2301825.045	85°58'01.742016"	20°48'37.872984"	53	332017.080	2300994.077	85°57'44.203664"	20°48'20.501072"						
16	332506.310	2301805.203	85°58'02.481108"	20°48'37.38614"	54	332134.077	2301023.892	85°57'48.579368"	20°48'21.802856"						
17	332587.252	2301406.105	85°58'02.418708"	20°48'36.718378"	55	332245.205	2301096.181	85°57'52.4124"	20°48'22.568102"						
18	332470.677	2301476.695	85°58'00.114864"	20°48'36.362652"	56	332214.322	2301165.850	85°57'50.357476"	20°48'26.237838"						
19	332471.888	2301417.519	85°58'01.8908"	20°48'34.473708"	57	332243.445	2301274.541	85°57'52.302956"	20°48'26.774354"						
20	332443.945	2301418.617	85°57'59.208876"	20°48'34.118604"	58	332242.016	2301300.442	85°57'52.249444"	20°48'30.02890"						
21	332447.382	2301370.268	85°58'00.204816"	20°48'32.934132"	59	332193.282	2301309.286	85°57'49.156192"	20°48'31.881158"						
22	332472.482	2301356.177	85°58'00.229312"	20°48'32.44032"	60	332148.387	2301507.941	85°57'48.953096"	20°48'37.343844"						
23	332454.690	2301348.507	85°57'59.889144"	20°48'32.232744"	61	332117.281	2301615.171	85°57'48.800688"	20°48'40.361196"						
24	332456.517	2301333.745	85°57'59.763672"	20°48'31.743288"	62	332079.737	2301619.225	85°57'48.277344"	20°48'40.848032"						
25	332471.685	2301319.687	85°58'00.154872"	20°48'31.711368"	63	332026.630	2301614.012	85°57'51.057072"	20°48'40.324872"						
26	332466.690	2301318.020	85°58'00.910828"	20°48'31.268268"	64	332022.176	2301604.632	85°57'53.908656"	20°48'40.183492"						
27	332500.508	2301310.252	85°58'01.180204"	20°48'31.12592"	65	332031.591	2301564.683	85°57'54.237112"	20°48'39.87051"						
28	332486.544	2301310.625	85°58'00.41422"	20°48'31.673384"	66	332020.028	2301659.935	85°57'50.347972"	20°48'39.189188"						
29	332492.685	2301343.800	85°58'00.815496"	20°48'32.077224"	67	332011.086	2301659.648	85°57'53.078832"	20°48'39.00504"						
30	332530.161	2301299.879	85°58'02.214732"	20°48'30.65262"	68	332043.874	2301658.814	85°57'58.978188"	20°48'36.131862"						
31	332528.306	2301267.708	85°58'02.153032"	20°48'30.280394"	69	332037.141	2301651.815	85°57'57.277368"	20°48'36.543356"						
32	332448.917	2301307.684	85°57'59.33768"	20°48'30.88828"	70	332038.909	2301458.345	85°57'58.188696"	20°48'35.773162"						
33	332436.440	2301293.030	85°57'58.546748"	20°48'30.607344"	71	332040.588	2301457.359	85°57'59.087412"	20°48'34.783884"						
34	332435.171	2301292.710	85°58'00.876128"	20°48'29.138438"	72	332035.903	2301425.756	85°57'58.915212"	20°48'34.478472"						
35	332436.428	2301222.311	85°58'02.814198"	20°48'28.134828"	73	332039.810	2301322.742	85°57'56.303402"	20°48'32.340312"						
36	332570.430	2301225.810	85°58'02.828888"	20°48'28.75688"	74	332036.821	2301361.788	85°57'54.448032"	20°48'32.629688"						
37	332567.650	2301239.511	85°58'03.503188"	20°48'28.700288"	75	332029.315	2301444.251	85°57'55.547818"	20°48'34.334452"						
38	332574.218	2301212.157	85°58'03.751428"	20°48'28.68072"											

Patch-B
 Area in Ha. : 20.365
 Perimeter in Km. : 4.13



Ahuja
 Forest Range Officer
 Sadangi Range

[Signature]
 Divisional Forest Officer
 Dhenkanal Division



Sl No	Patch	Area in Ha.	Perimeter in Km.
1	Patch-A	28.14	3.23
2	Patch-B	20.37	4.13
Total		48.50	7.36

Amiya
 Forest Range Officer
 Sadangi Range

[Signature]
 Divisional Forest Officer
 Dhenkanal Division

85°57'0"E

85°58'0"E

85°59'0"E

Geo-referenced Map of Degraded land identified in Balipasi RF for raising Compensatory Afforestation using DGPS in the Lieu of Forest land to be Diverted for 3rd & 4th line between Budhapank-Salegaon via Rajathagarh Railway Project, Range-Sadangi, Section-Khankira, Beat-Tolarpasi, Dhenkanal Forest Division, Dhenkanal, Odisha



Scale - 1:25,000

Legend

- CA Pillar
- CABoundary

20°50'0"N

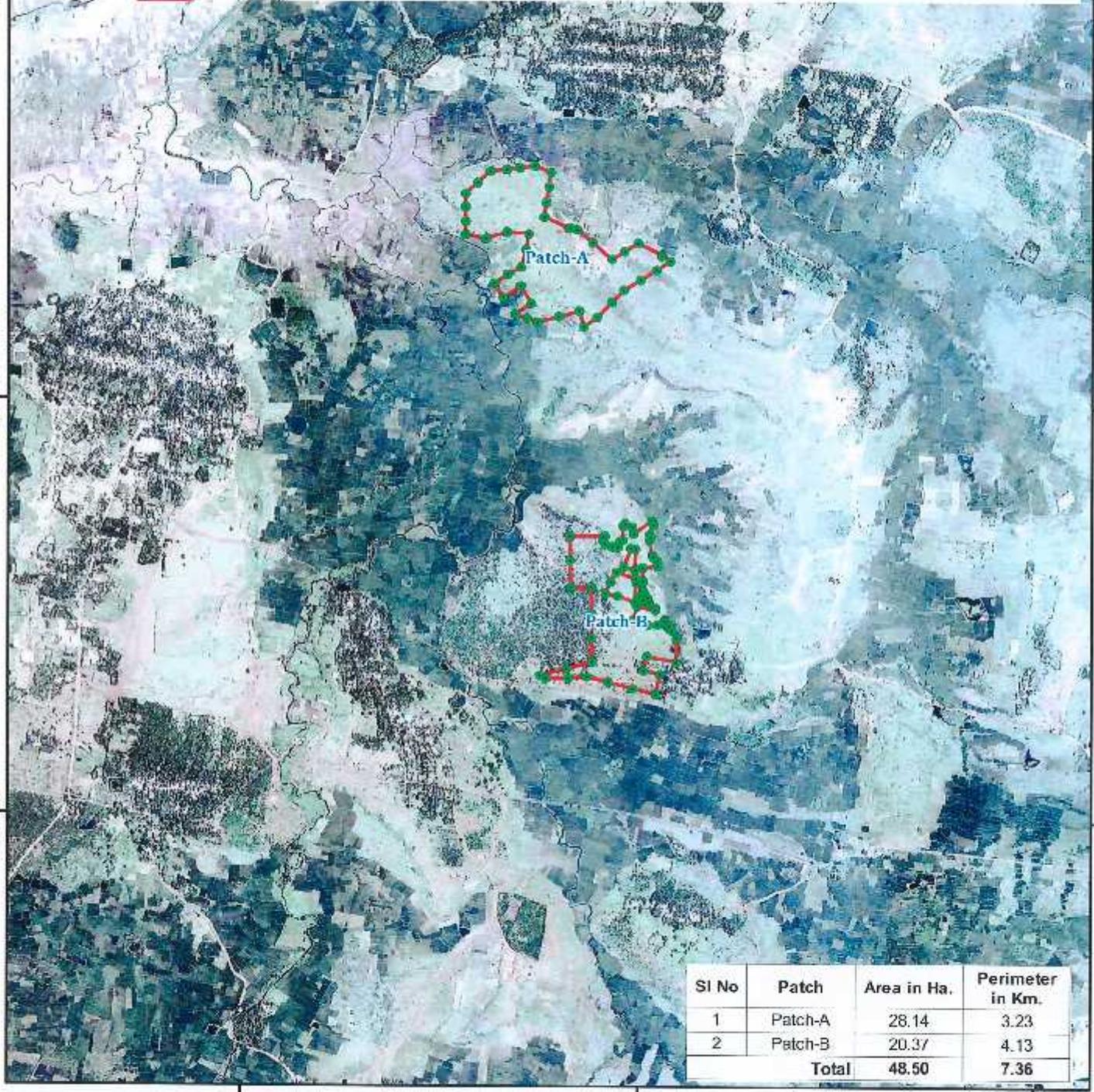
20°49'0"N

20°48'0"N

20°50'0"N

20°49'0"N

20°48'0"N



Sl No	Patch	Area in Ha.	Perimeter in Km.
1	Patch-A	28.14	3.23
2	Patch-B	20.37	4.13
Total		48.50	7.36

85°57'0"E

85°58'0"E

85°59'0"E

Murja

Forest Range Officer
Sadangi Range

Sh

Divisional Forest Officer
Dhenkanal Division

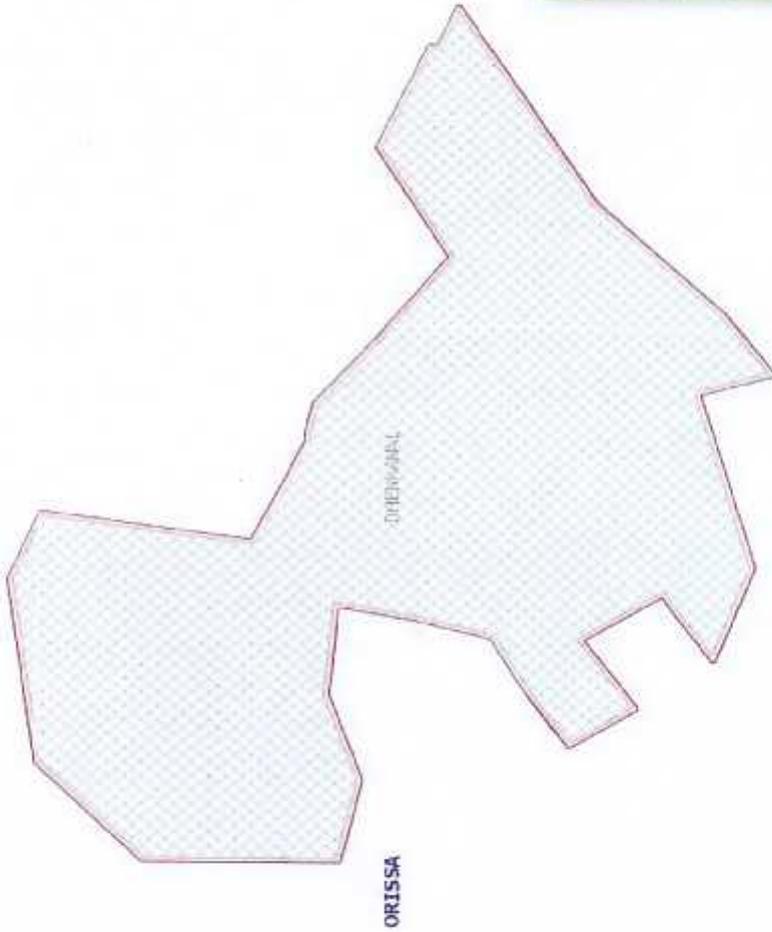


Dr. B. K. Mishra
Dr. B. K. Mishra

GIS based Decision Support System



- Load Polygon
- Select Polygon
- Decision Rule 1
- Set Land/Forest Cover
- GIS Application
- Get Time Series
- Get Result Table
- NPV Result
- FCM Result
- FTM Result
- BR Result
- LI Result
- DSS Result
- FCM Without Grid Result
- Save Result Table



Lat: 20.822 Long : 85.956

Scale: 1:5940

300 m
1000 ft

FOREST COVER MAP

FCM LEGEND

- VERY DENSE FOREST
- MODERATELY DENSE FOREST
- OPEN FOREST
- SCRUB
- NON FOREST
- WATER

Forest Cover Map

FCM Without Grid Result

NON FOREST

0.28



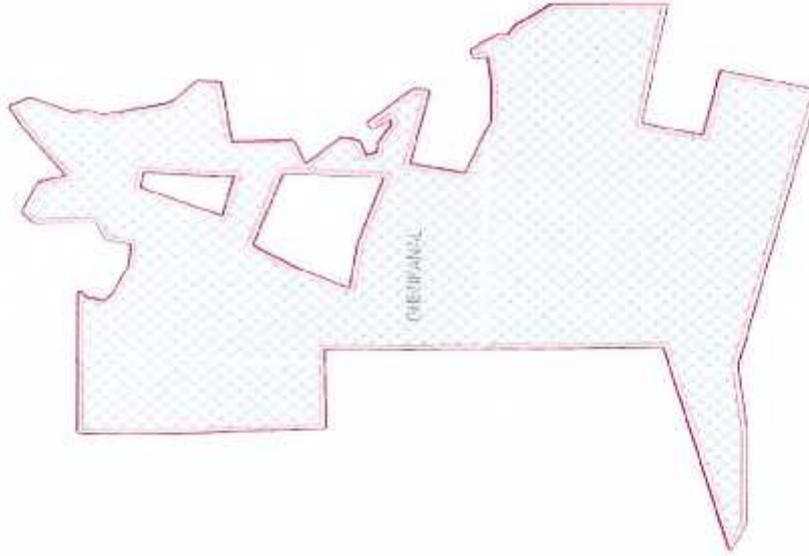
Forest Research Institute
Dehra Dun, Uttarakhand



GIS based Decision Support System



- Load Polygon
- Select Polygon
- Decision Rule 1
- Get Land Forest Cover
- GIS Application
- Get Time Series
- Get Result Table
- NPV Result
- FCM Result
- FTM Result
- BR Result
- LI Result
- DSS Result
- FCM Without Grid Result
- Save Result Table



ORISSA

Lat: 20.812 Long: 85.969

Scale: 1:5380

300 m
1000 ft

FOREST COVER MAP

FCM LEGEND

- VERY DENSE FOREST
- MODERATELY DENSE FOREST
- OPEN FOREST
- SCRUB
- NON FOREST
- WATER

Forest Cover Map

FCM Without Grid Result

NON FOREST

0.20

All results are in Square Kilometer.



