

**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 3<sup>RD</sup> & 4<sup>TH</sup> 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 3<sup>rd</sup> & 4<sup>th</sup> 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 3<sup>rd</sup> & 4<sup>th</sup> 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 3<sup>rd</sup>& 4<sup>th</sup>line 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 3<sup>rd</sup>& 4<sup>th</sup>line construction project was sanctioned.

The alternative alignment survey is not possible because its being a 3<sup>rd</sup>& 4<sup>th</sup>line project which has to definitely follow the 1<sup>st</sup>& 2<sup>nd</sup>line 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 3<sup>rd</sup>& 4<sup>th</sup>line 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 3<sup>rd</sup> and 4<sup>th</sup> 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 (3<sup>rd</sup> and 4<sup>th</sup> ) 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 Rf 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. Sidings 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 form 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. 2,55,67,350/- 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. 298.00 PER MANDAY.**

Sl. No	Items of Work	Preferable period of execution	Labour in Mandays	Labour cost @ Rs 298/- per day	Material cost per hectare in Rs	Total cost per hectare in Rs.
1	2	3	4	5	6	7
<b>0TH YEAR (ADVANCE WORK) PRE-PLANTING OPERATION</b>						
1	Survey, demarcation and pillar posting	Nov/Dec	2	596	0	596
2	Site preparation	Nov/Dec	12	3576	0	3576
3	Alignment and stacking of pits	Jan/Feb	2	596	0	596
4	Digging of pits (30 cm cube)	Feb/March	40	11920	0	11920
5	Nursery cost (6 months old seedling ) part @Rs. 12.43/- seedling (RS.8.67 in 0 <sup>th</sup> year + Rs.3.76 in 1 <sup>st</sup> year) for 1760 seedlings (1600+160)	Jan-March	44	13112	2939	16051
	<b>Total</b>		<b>100</b>	<b>29800</b>	<b>2939</b>	<b>32739</b>
6	Monitoring & Supervision charge 5% of the total cost					1636.95
	<b>Grand Total</b>		<b>100</b>	<b>29800</b>	<b>2939</b>	<b>34375.95</b>
<b>1ST YEAR / PLANTING YEAR</b>						
7	Nursery cost (6 months old seedling ) balance @Rs.3.76/- for 1760 seedlings	Apr-June	21.5	6407	593	7000
8	Fencing For an average of 250 meters/ha @ Rs.76.80/- per meter for bamboo twigs and bamboo thorn fencing	May/June	38	11324	8560	19884
9	Carriage & planting, Casualty Replacement and application of insecticides, manure etc.	Jul/Aug	21	6258	0	6258
10	Cost of insecticide and fertilizer (a)NPK @50 gms/plant as basal dose = 80kg @ Rs.24 / -per kg =Rs.1920.00 (b) Urea @ 70 gms/plant in two subsequent does @ Rs.6/-per kg= Rs.672.00 (c) Granular insecticide(Themet, Forate etc.) @5 gms/plant@Rs.80/-per kg= Rs.640.00	Jul/Aug		0	3232	3232
11	1st weeding (complete weeding)	Aug/Sep	7	2086	0	2086
12	Manuring Urea 35 gm	Aug/Sep	5	1490	0	1490
13	2nd Weeding (complete weeding)	Sep/Oct	5	1490	0	1490
14	Soil working (50 cms. Radius around plants) & manuring Urea 358ms per plant	Sep/Oct	7	2086	0	2086
15	Soil conservation measures in the form of staggered trenches of size 2 m x0.5 m x0.5 m@ 30 nos per ha	Sep/Oct	10	2980	0	2980
16	Fire line tracing & inspection path	Feb/March	3	894	0	894
17	Watch&Ward	Aug/March	7	2086	0	2086
	<b>Total</b>		<b>124.50</b>	<b>37101</b>	<b>12385</b>	<b>49486</b>
18	Monitoring & Supervision charge 5% of the total cost					2474.3
	<b>Grand Total</b>		<b>124.50</b>	<b>37101</b>	<b>12385</b>	<b>51960.3</b>
<b>2ND YEAR MAINTENANCE</b>						
19	Casualty replacement ( 10 % ) with Nursery cost	Jul/Aug	4	1192	1988.8	3180.8
20	Weeding (complete weeding)	Sep/Oct	6	1788	0	1788
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 and maintenance of Bamboo fence including material cost	May/June	20	5960	5080	11040

Sl. No	Items of Work	Preferable period of execution	Labour in Mandays	Labour cost @ Rs 298/- per day	Material cost per hectare in Rs	Total cost per hectare in Rs.
1	2	3	4	5	6	7
23	Sol working (50 cms. Radlus around plants)	Oct/Nov	7	2086	0	2086
24	Application of fertilizer & insecticide	Sep/Oct	4	1192	0	1192
25	Fire line tracing (2 m wide fire line over 400 m long)	Feb/March	3	894	0	894
26	Watch & Ward	Apr-March	15	4470	0	4470
	<b>Total</b>		<b>59</b>	<b>17582</b>	<b>9820.8</b>	<b>27402.8</b>
27	Monitoring & Supervision charge 5% of the total cost					1370.14
	<b>Grand Total</b>		<b>59</b>	<b>17582</b>	<b>9820.8</b>	<b>28772.94</b>
<b>3RD YEAR MAINTENANCE</b>						
28	Weeding and application of fertilizer	Aug/Sep	7	2086	0	2086
29	Cost of fertilizer (NPK @ s0 gms/plant) 1960 Rs.24/-per kg			0	1920	1920
30	Repair and maintenance of Bamboo fence including material cost	May/June	20	5960	1000	6960
31	Soil working (50 cms. Radius around plants) & applicaton of fertilizer	Oct/Nov	7	2086	0	2086
32	Fire line tracing (2 m. wide fire line over 400 m length)& cultural operation	Feb/March	3	894	0	894
33	Watch& Ward	Apr-March	15	4470	0	4470
	<b>Total</b>		<b>52</b>	<b>15496</b>	<b>2920</b>	<b>18416</b>
34	Monitoring & Supervision charge 5% of the total cost					920.8
	<b>Grand Total</b>		<b>52</b>	<b>15496</b>	<b>2920</b>	<b>19336.8</b>
<b>4TH YEAR MAINTENANCE</b>						
35	Fire line tracing (2 m. wide fire line over 400 m length)& cultural operation	Feb/March	3	894	0	894
36	Watch& Ward	Apr-March	15	4470	0	4470
	<b>Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5364</b>
37	Monitoring & Supervision charge 5% of the total cost					268.2
	<b>Grand Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5632.2</b>
<b>5TH YEAR MAINTENANCE</b>						
38	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/March	3	894	0	894
39	Watch & Ward	Apr-March	15	4470	0	4470
	<b>Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5364</b>
40	Monitoring & Supervision charge 5% of the total cost					268.2
	<b>Grand Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5632.2</b>
<b>6TH YEAR MAINTENANCE</b>						
41	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/March	3	894	0	894
42	Watch & Ward	Apr-March	15	4470	0	4470
	<b>Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5364</b>
43	Monitoring & Supervision charge 5% of the total cost					268.2
	<b>Grand Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5632.2</b>

Sl. No	Items of Work	Preferable period of execution	Labour in Mandays	Labour cost @ Rs 298/- per day	Material cost per hectare in Rs	Total cost per hectare in Rs.
1	2	3	4	5	6	7
<b>7TH YEAR MAINTENANCE</b>						
44	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/March	3	894	0	894
45	Watch & Ward	Apr-March	15	4470	0	4470
	<b>Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5364</b>
46	Monitoring & Supervision charge 5% of the total cost					268.2
	<b>Grand Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5632.2</b>
<b>8TH YEAR MAINTENANCE</b>						
47	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/March	3	894	0	894
48	Watch & Ward	Apr-March	15	4470	0	4470
	<b>Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5364</b>
49	Monitoring & Supervision charge 5% of the total cost					268.2
	<b>Grand Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5632.2</b>
<b>9TH YEAR MAINTENANCE</b>						
50	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/March	3	894	0	894
51	Watch & Ward	Apr-March	15	4470	0	4470
	<b>Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5364</b>
52	Monitoring & Supervision charge 5% of the total cost					268.2
	<b>Grand Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5632.2</b>
<b>10TH YEAR MAINTENANCE</b>						
50	Fire line tracing (2 m. wide fire line over 400m (length) & cultural operation	Feb/March	3	894	0	894
51	Watch & Ward	Apr-March	15	4470	0	4470
	<b>Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5364</b>
52	Monitoring & Supervision charge 5% of the total cost					268.2
	<b>Grand Total</b>		<b>18</b>	<b>5364</b>	<b>0</b>	<b>5632.2</b>

**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.298/- per day	Material Cost (Rs)	Monitoring & Supervision charge 5% of the total cost	Total Cost (Rs.)
1	0th Year	100	29800	2939	1636.95	34375.95
2	1st Year	124.5	37101	12385	2474.3	51960.3
3	2nd Year	59	17582	9820.8	1370.14	28772.94
4	3rd Year	52	15496	2920	920.8	19336.8
5	4th Year	18	5364	0	268.2	5632.2
6	5th Year	18	5364	0	268.2	5632.2
7	6th Year	18	5364	0	268.2	5632.2
8	7th Year	18	5364	0	268.2	5632.2
9	8th Year	18	5364	0	268.2	5632.2
10	9th Year	18	5364	0	268.2	5632.2
11	10th Year	18	5364	0	268.2	5632.2
		<b>461.5</b>	<b>137527</b>	<b>28065</b>	<b>8279.59</b>	<b>173871.39</b>
	<b>TOTAL</b>	<b>173871.39 × 48.50 Ha</b>				<b>84,32,762.41</b>
12	Cost of vegetative fencing over 7.36 km or 7360 mtr around the Block plantation in Balipasi RF @ 132/- per meter	132 × 7360				<b>9,71,520.00</b>
13	Soil Conservation Measures					
	(i) LBCD of size 10'×10'×5 for 20 nos. per ha over 48.50 ha @ Rs.8510.93 per LBCD	8510.93 × 20 × 48.50				<b>82,55,602.10</b>
	(ii) Staggered tranches of size 2 mt × 0.5 mt. × 0.5 mt for 300 nos. per ha (below 30° slope) @ 60 manday per ha with current wage rate of 298/- over 48.50 ha.	298 × 60 × 48.50				<b>8,67,180.00</b>
					<b>Total</b>	<b>1,85,27,064.51</b> or <b>1,85,27,065.00</b>
14	15 % of total plantation cost towards EPA / Incentive to VSS					<b>27,79,060.00</b>
					<b>Total</b>	<b>2,13,06,125.00</b>
15	Add Escalation Cost (20%)					<b>42,61,225.00</b>
					<b>Grand Total</b>	<b>2,55,67,350.00</b>

**(Rupees Two Crore Fifty Five Lakh Sixty Seven Thousand Three Hundred Fifty) only.**

  
 Divisional Forest Officer,  
 Dhenkanal Division  
 Divisional Forest Officer  
 Dhenkanal Division

85°57'0"E

85°58'0"E

85°59'0"E

20°50'0"N

20°50'0"N

20°49'0"N

20°49'0"N

20°48'0"N

20°48'0"N

85°57'0"E

85°58'0"E

85°59'0"E

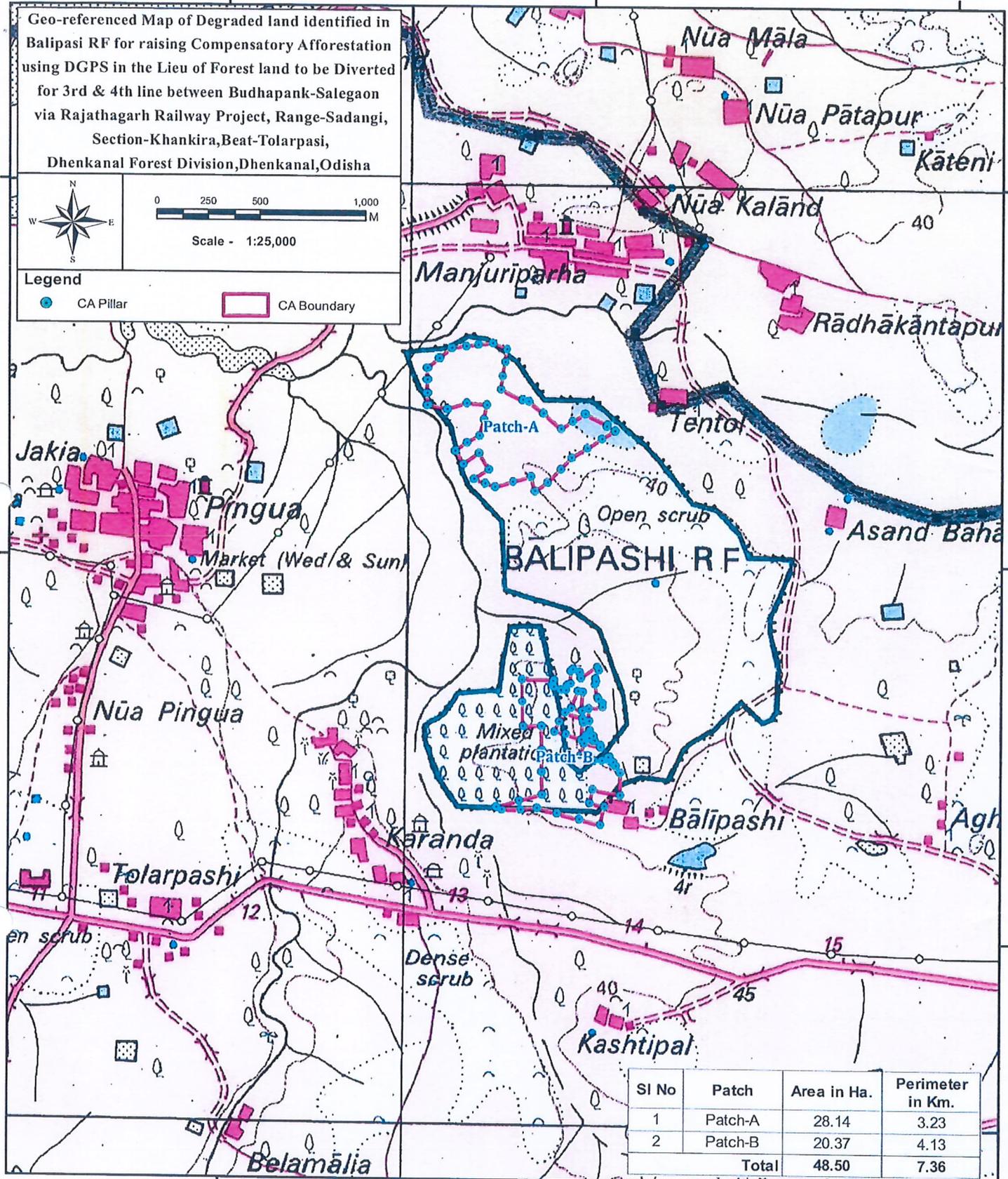
Geo-referenced Map of Degraded land identified in Balipashi RF for raising Compensatory Afforestation using DGPS in the Lieu of Forest land to be Diverted for 3rd & 4th line between Budhapank-Salegaon via Rajathagarh Railway Project, Range-Sadangi, Section-Khankira, Beat-Tolarpasi, Dhenkanal Forest Division,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



Scale - 1:25,000

Legend

- CA Pillar
- CA Boundary

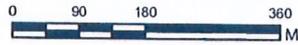


Sl No	Patch	Area in Ha.	Perimeter in Km.
1	Patch-A	28.14	3.23
2	Patch-B	20.37	4.13
Total		48.50	7.36

*Manjira*  
 Forest Range Officer  
 Sadangi Range

*S. K.*  
 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

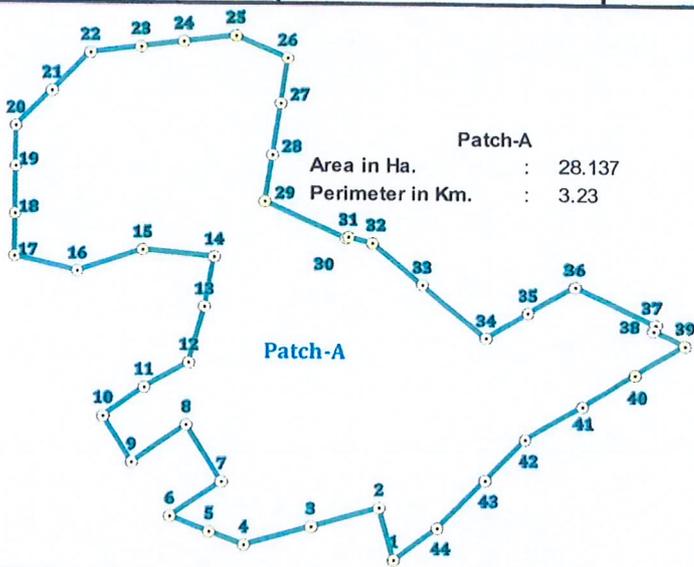


Scale - 1:10,000

**Legend**

○ CA Pillar

□ CA Boundary

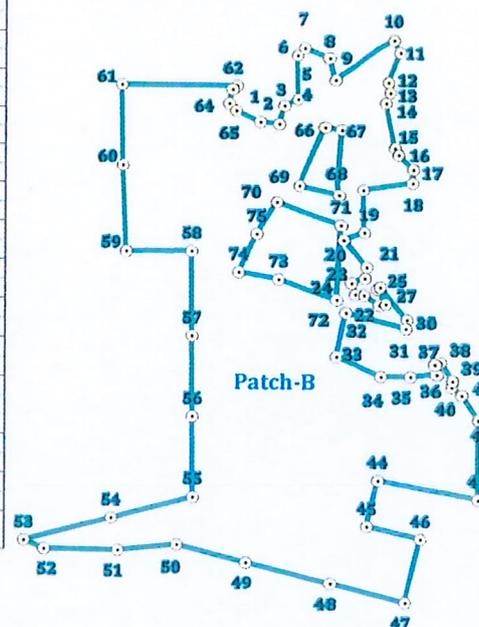


Patch-A  
Area in Ha. : 28.137  
Perimeter in Km. : 3.23

Point No	Easting	Northing	Longitude	Latitude	Point No	Easting	Northing	Longitude	Latitude	Point No	Easting	Northing	Longitude	Latitude
1	392206.281	2302544.902	85°57'50.73516"	20°49'11.081748"	16	391780.294	2302938.127	85°57'35.91162"	20°49'23.781612"	31	392144.247	2302988.095	85°57'48.490704"	20°49'25.483008"
2	392186.779	2302615.305	85°57'50.044832"	20°49'13.367388"	17	391694.976	2302958.217	85°57'32.955768"	20°49'24.417084"	32	392176.791	2302979.893	85°57'49.618296"	20°49'25.223052"
3	392095.075	2302569.641	85°57'46.878372"	20°49'12.51354"	18	391695.605	2303017.772	85°57'32.964228"	20°49'26.354172"	33	392244.816	2302921.668	85°57'51.984432"	20°49'23.3436"
4	392004.428	2302564.273	85°57'43.748352"	20°49'11.66952"	19	391696.303	2303083.903	85°57'32.973588"	20°49'28.505136"	34	392330.213	2302848.559	85°57'54.954792"	20°49'20.983656"
5	391959.119	2302581.784	85°57'42.177096"	20°49'12.229536"	20	391696.890	2303139.515	85°57'32.981472"	20°49'30.313956"	35	392387.271	2302883.703	85°57'56.920788"	20°49'22.138572"
6	391906.207	2302602.232	85°57'40.342212"	20°49'12.883512"	21	391745.789	2303187.839	85°57'34.662276"	20°49'31.895904"	36	392446.989	2302920.485	85°57'58.978404"	20°49'23.347344"
7	391975.353	2302649.435	85°57'42.723612"	20°49'14.433204"	22	391798.568	2303239.996	85°57'36.476424"	20°49'33.603348"	37	392555.468	2302868.415	85°58'2.742564"	20°49'21.67644"
8	391928.236	2302726.517	85°57'41.076576"	20°49'16.930308"	23	391866.759	2303248.748	85°57'38.833416"	20°49'33.902292"	38	392552.822	2302890.054	85°58'2.652888"	20°49'21.403956"
9	391854.906	2302674.866	85°57'38.551428"	20°49'15.235068"	24	391924.681	2303256.182	85°57'40.835484"	20°49'34.1562"	39	392593.536	2302839.726	85°58'4.06578"	20°49'20.751312"
10	391816.048	2302737.855	85°57'37.193148"	20°49'17.275548"	25	391992.988	2303284.949	85°57'43.196508"	20°49'34.455648"	40	392528.950	2302799.550	85°58'1.840512"	20°49'19.431192"
11	391871.575	2302777.525	85°57'39.105144"	20°49'18.577416"	26	392062.124	2303234.215	85°57'45.594972"	20°49'33.470544"	41	392457.427	2302764.966	85°57'59.37624"	20°49'17.966856"
12	391931.607	2302811.782	85°57'41.174136"	20°49'19.70418"	27	392052.686	2303172.723	85°57'45.282204"	20°49'31.46862"	42	392383.865	2302709.150	85°57'56.841696"	20°49'16.460796"
13	391952.082	2302889.911	85°57'41.865012"	20°49'22.249488"	28	392041.793	2303101.748	85°57'44.921196"	20°49'29.157996"	43	392329.702	2302653.761	85°57'54.980388"	20°49'14.648016"
14	391965.327	2302959.460	85°57'42.307704"	20°49'24.514248"	29	392032.172	2303037.326	85°57'44.602704"	20°49'27.060744"	44	392266.103	2302588.723	85°57'52.794792"	20°49'12.519444"
15	391869.165	2302968.416	85°57'38.97918"	20°49'24.785364"	30	392140.675	2302986.111	85°57'48.367584"	20°49'25.41774"					

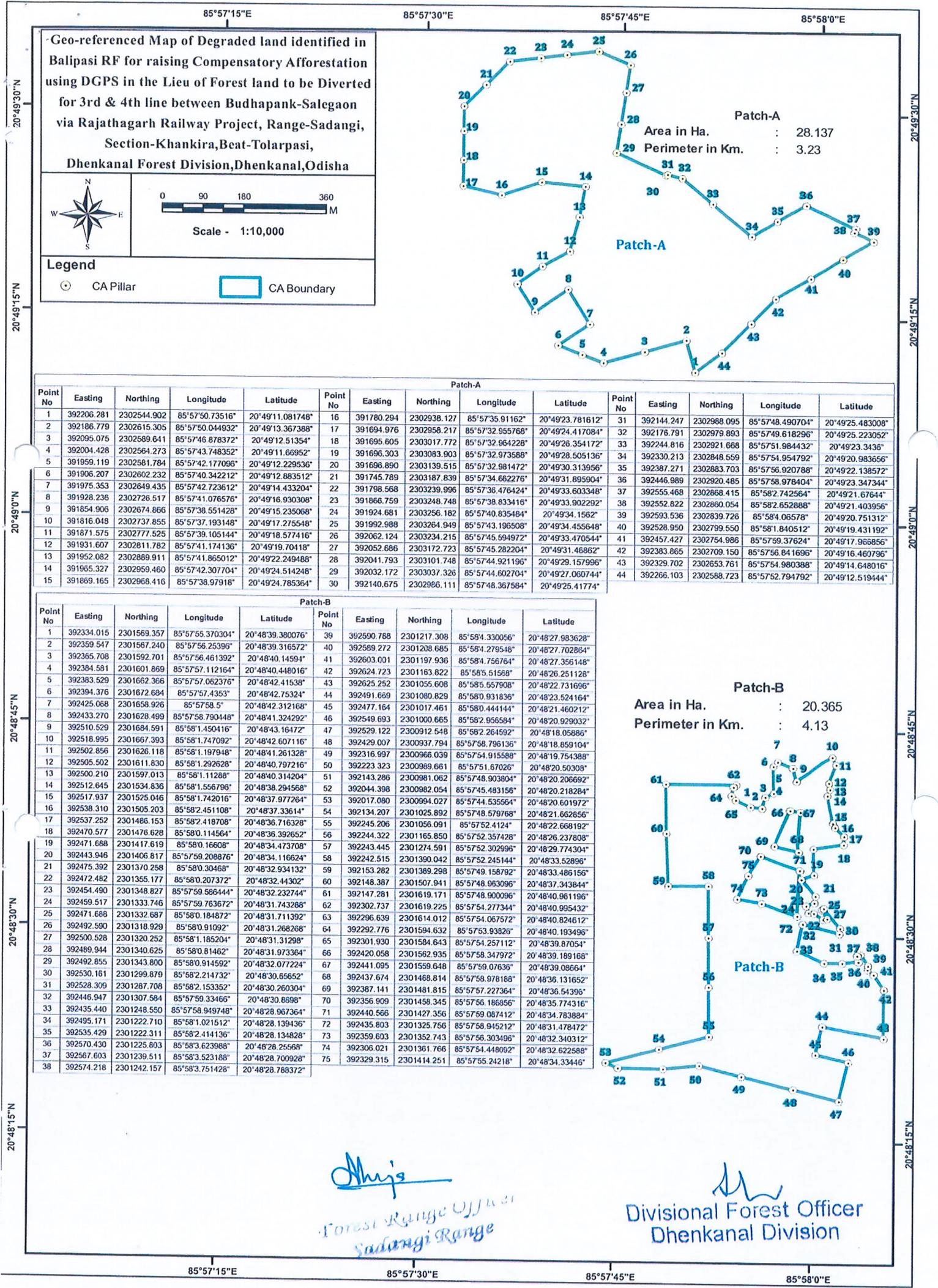
Point No	Easting	Northing	Longitude	Latitude	Point No	Easting	Northing	Longitude	Latitude
1	392334.015	2301569.357	85°57'55.370304"	20°48'39.380076"	39	392590.788	2301217.308	85°58'4.330056"	20°48'27.983628"
2	392359.547	2301587.240	85°57'56.25396"	20°48'39.316572"	40	392569.272	2301208.685	85°58'4.279548"	20°48'27.702864"
3	392365.708	2301592.701	85°57'56.461392"	20°48'40.14594"	41	392603.001	2301197.936	85°58'4.756764"	20°48'27.356148"
4	392384.581	2301601.869	85°57'57.112164"	20°48'40.448016"	42	392624.723	2301163.822	85°58'5.15568"	20°48'26.251128"
5	392383.529	2301662.366	85°57'57.062376"	20°48'42.41538"	43	392625.252	2301055.608	85°58'5.559796"	20°48'22.731696"
6	392394.376	2301672.684	85°57'57.4353"	20°48'42.75324"	44	392491.669	2301080.829	85°58'0.931836"	20°48'23.524164"
7	392425.078	2301658.926	85°57'58.5"	20°48'42.312168"	45	392477.164	2301017.461	85°58'0.444144"	20°48'21.460212"
8	392433.260	2301628.499	85°57'58.790448"	20°48'41.324292"	46	392549.623	2301000.665	85°58'2.955584"	20°48'20.929032"
9	392510.529	2301684.591	85°58'1.450416"	20°48'43.16472"	47	392529.122	2300912.548	85°58'2.264592"	20°48'18.05886"
10	392518.995	2301667.393	85°58'1.747092"	20°48'42.607116"	48	392429.007	2300937.794	85°58'38.796136"	20°48'18.859104"
11	392502.856	2301626.118	85°58'1.197948"	20°48'41.261328"	49	392316.997	2300966.039	85°58'54.915588"	20°48'19.754388"
12	392505.502	2301611.830	85°58'1.292628"	20°48'40.797216"	50	392223.323	2300989.661	85°58'5.167026"	20°48'20.50308"
13	392500.210	2301597.013	85°58'1.11286"	20°48'40.314204"	51	392143.286	2300981.062	85°58'48.903804"	20°48'20.206692"
14	392512.645	2301534.836	85°58'1.556796"	20°48'38.294568"	52	392044.398	2300982.054	85°58'45.483156"	20°48'20.218284"
15	392517.937	2301525.046	85°58'1.742016"	20°48'37.977264"	53	392017.080	2300994.027	85°58'44.535564"	20°48'20.601972"
16	392538.310	2301505.203	85°58'2.451108"	20°48'37.33614"	54	392134.207	2301025.892	85°58'48.579768"	20°48'21.662656"
17	392537.252	2301486.153	85°58'2.418708"	20°48'36.716328"	55	392245.206	2301056.091	85°57'52.4124"	20°48'22.668192"
18	392470.577	2301476.628	85°58'0.114564"	20°48'36.392652"	56	392244.322	2301165.850	85°57'52.357428"	20°48'26.237808"
19	392471.688	2301417.619	85°58'0.16608"	20°48'34.473708"	57	392243.445	2301274.591	85°57'52.302996"	20°48'29.774304"
20	392443.946	2301406.817	85°57'59.208876"	20°48'34.116624"	58	392242.515	2301390.042	85°57'52.24544"	20°48'33.52896"
21	392475.392	2301370.258	85°58'0.30468"	20°48'32.934132"	59	392153.282	2301389.298	85°57'49.158792"	20°48'33.486156"
22	392472.482	2301355.177	85°58'0.207372"	20°48'32.44302"	60	392148.387	2301507.941	85°57'48.963096"	20°48'37.343844"
23	392454.490	2301348.827	85°57'59.586444"	20°48'32.232744"	61	392147.281	2301619.171	85°57'48.900096"	20°48'40.961196"
24	392459.517	2301333.746	85°57'59.763672"	20°48'31.743268"	62	392302.37	2301619.225	85°57'54.277344"	20°48'40.995432"
25	392471.688	2301332.687	85°58'0.184872"	20°48'31.711392"	63	392296.639	2301614.012	85°57'54.067572"	20°48'40.824612"
26	392492.590	2301318.929	85°58'0.91092"	20°48'31.288268"	64	392292.776	2301594.632	85°57'53.93826"	20°48'40.193496"
27	392500.528	2301320.252	85°58'1.185204"	20°48'31.31298"	65	392301.930	2301584.643	85°57'54.257112"	20°48'39.87054"
28	392489.944	2301340.625	85°58'0.81462"	20°48'31.973364"	66	392420.058	2301582.935	85°57'58.347972"	20°48'39.189168"
29	392492.855	2301343.800	85°58'0.914592"	20°48'32.077224"	67	392441.095	2301559.648	85°57'59.07636"	20°48'39.08664"
30	392530.161	2301299.879	85°58'2.214732"	20°48'30.65552"	68	392437.674	2301468.814	85°57'58.978188"	20°48'36.131652"
31	392528.309	2301287.708	85°58'2.153352"	20°48'30.260304"	69	392387.141	2301481.815	85°57'57.227364"	20°48'36.543996"
32	392446.947	2301307.584	85°57'59.33466"	20°48'30.8898"	70	392356.909	2301458.345	85°57'56.186856"	20°48'35.774316"
33	392435.440	2301248.550	85°57'58.949784"	20°48'28.967364"	71	392440.566	2301427.356	85°57'59.087412"	20°48'34.783884"
34	392495.171	2301222.710	85°58'1.02512"	20°48'28.139436"	72	392435.803	2301325.756	85°57'58.945212"	20°48'31.478472"
35	392535.429	2301222.311	85°58'2.414136"	20°48'28.134828"	73	392359.603	2301352.743	85°57'56.303496"	20°48'32.340312"
36	392570.430	2301225.803	85°58'3.623988"	20°48'28.25568"	74	392306.021	2301361.766	85°57'54.448002"	20°48'32.622588"
37	392567.603	2301239.511	85°58'3.523188"	20°48'28.700928"	75	392329.315	2301414.251	85°57'55.24218"	20°48'34.33446"
38	392574.218	2301242.157	85°58'3.751428"	20°48'28.788372"					

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



*Shri's*  
Forest Range Officer  
Sadangi Range

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
- CA Boundary

20°50'0"N

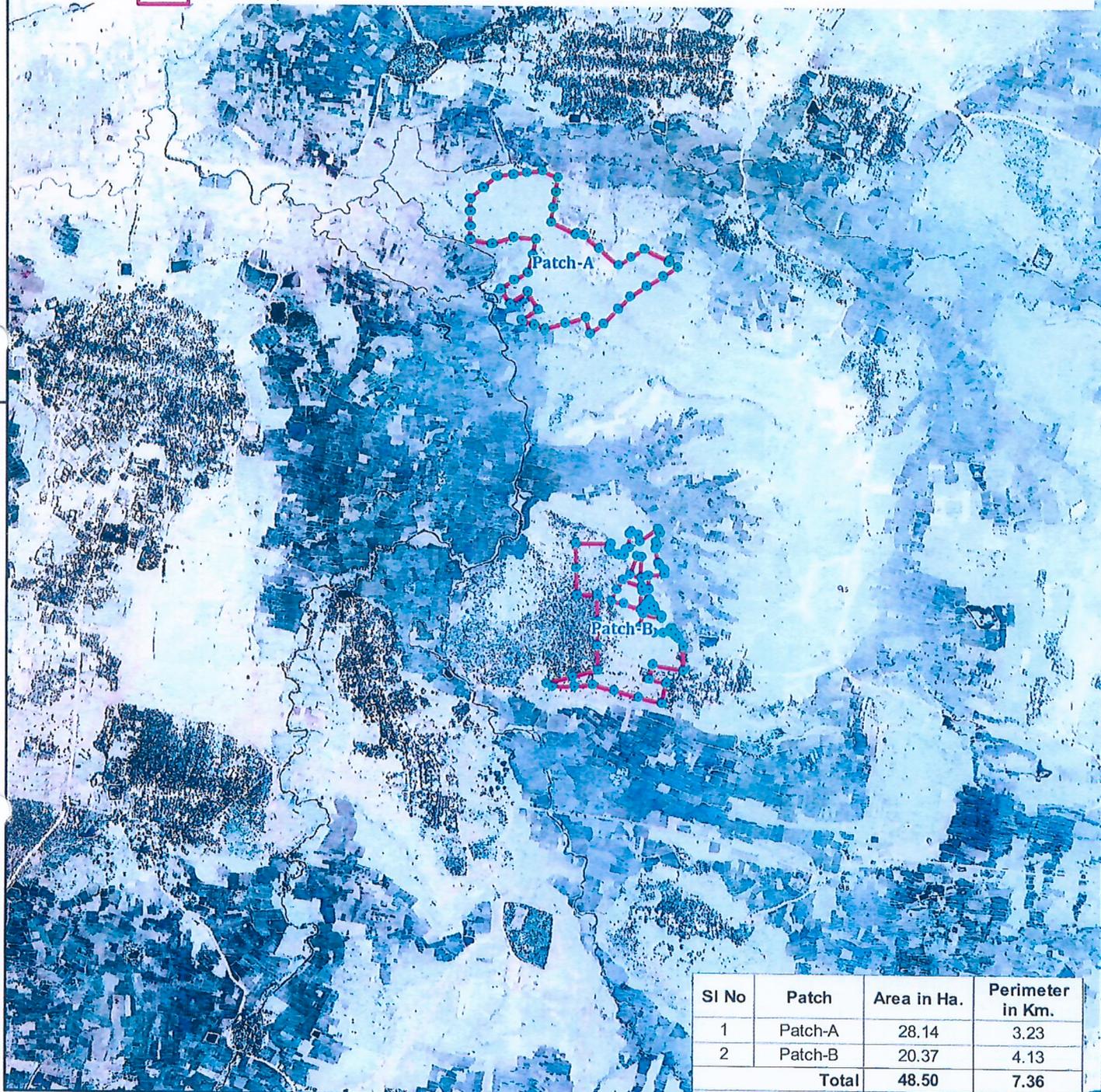
20°50'0"N

20°49'0"N

20°49'0"N

20°48'0"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
<b>Total</b>		<b>48.50</b>	<b>7.36</b>

85°57'0"E

85°58'0"E

85°59'0"E

*Mujeeb*

Forest Range Officer  
Sadangi Range

*Su*

Divisional Forest Officer  
Dhenkanal Division



# GIS based Decision Support System



- Load Polygon
- Select Polygon
- Decision Rule 1
- Get Land/Forest Cover
- MIS 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

FOREST COVER MAP

FCM LEGEND

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

Map

Forest Cover Map

FCM Without Grid Result
NON FOREST
0.28

Lat: 20.822 Long: 85.956  
Scale: 1:5940





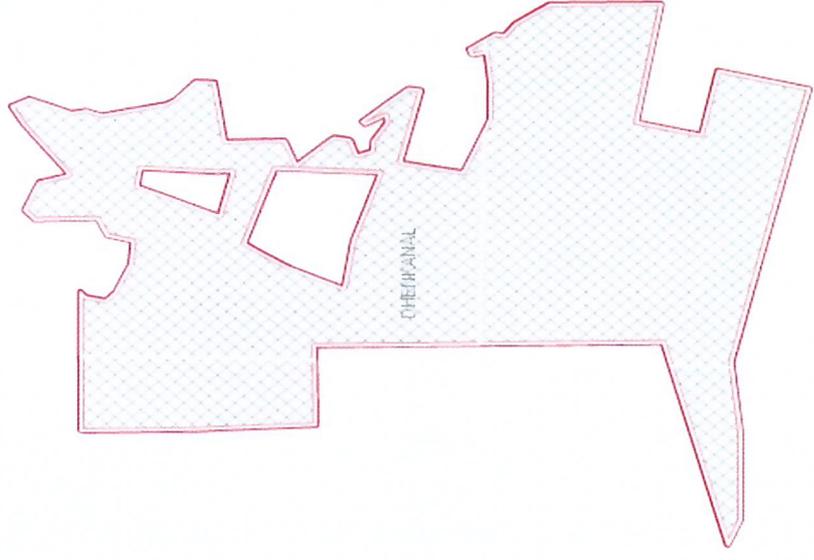
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# GIS based Decision Support System



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- Decision Rule 1
- Get Land/Forest Cover
- GIS Application
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- FCM Result
- FTM Result
- BR Result
- LJ Result
- DSS Result
- FCM Without Grid Result
- Save Result Table



ORISSA

Lat: 20.812 Long: 85.969

Scale: 1:3380



**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.

