SCHEME FOR COMPENSATORY AFFORESTATION OVER AN AREA OF 37.00 HA. IN DEGRADED FOREST LAND IN NISCHINTA 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 JHARAPADA-BUDHAPANKA RAILWAY PROJECT IN THE STATE OF ODISHA UNDER ANGUL FOREST DIVISION IN ANGUL DISTRICT.

Prepared by

DHENKANAL FOREST DIVISION

DHENKANAL

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LAND SUITABILITY CERTIFICATE BY DIVISIONAL FOREST OFFICER, DHENKANAL FOREST DIVISION

This is to certify that, 37.00 ha. of degraded Forest land is identified in Nischinta RF between Reserve Forest Pillar No.18 to 66 under Sadangi Range of Dhenkanal Forest Division. The area is suitable for the purpose of Compensatory Afforestation under **Block Plantation @1000 Plants per Hectare** in lieu of Forest land 18.131 ha in Angul Forest Division to be diverted for construction of 3rd & 4th Railway Line between Jharapada-Budhapanka Railway Project in the State of Odisha in Angul District by East Coast Railways, Bhubaneswar.

Place: Dhenkanal
Date : 26th November, 2019

26.11.19

Divisional Forest Officer
Dhenkanal Division

Divisional Forest Officer
Dhenkanal Division

Official Seal.....

Compensatory Afforestation Scheme over 37.00 Ha. in degraded forest land in Nischinta RF between Reserve Forest Pillar No.18 to 66 under Sadangi Range under Dhenkanal Division against diversion of Forest land for construction of 3rd & 4th Railway Line between Jharapada-Budhapanka Railway Project in the State of Odisha under Angul Forest Division in Angul District.

by

EAST COAST RAILWAYS, BHUBANESWAR.

1. INTRODUCTION:

The project for construction of 3rd & 4th line between Jharapada-Budhapank Railway project 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. Jharapada station is located at a distance of 52.78 Km. from Budhapanka Railway Station.

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 Jharapada and Budhapanka 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 & 4th line construction project was sanctioned.

The alternative alignment survey is not possible because its being a 3rd & 4th line project which has to definitely follow the 1st & 2nd line corridor to have synchronization with the existing infrastructure and signaling 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 & 4th line for which is has to run parallel to the existing network and has to be integrated to the existing network system.

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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.

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.

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 (3rdand 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 Jharapada- Budhapank 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, 37.00 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 37.00 Ha (Reserve Forest Pillar No.18 to 66) identified in Nischinta RF (Khankira Section, Sadangi Range in Dhenkanal Forest Division), which will accommodate 1000 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	Nischinta	1	37.00

The site is located on survey of India Topo Sheet No F45-T/13 between Latitude: 20° 46' 31.66" - Longitude: 85° 59' 34.69" to Latitude: 20° 46' 15.08" - Longitude: 86° 00' 22.57".

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 hilly 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.

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3.5 Objective of the scheme

The main objective of the present scheme is to (I) increase vegetation through taking up Block (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 37.00 ha shall be covered under Block Plantation with 1000 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	Terminalia belerica
Karanja	Pongomia pinnata
Babul	Tectona grandis
Aswastha	Ficus religiosa
Neem	Azadirachta indica
Kusuma	Schleichera oleosa
Asana	Terminalia aomentosa
Kaitha	Limonia acidissima
Chatian	Alstonia scholaris
Khaira	Acacia catchu
Bara	Ficus bengalensis

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 06 months 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 06 months 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 4.18 km or 4180 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. **75,01,200/-** 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

Divisional Forest Officer
Angul, Division

P.T.O.

COST NORM FOR BLOCK PLANTATION @ 1000 PLANTS PER HECTARE IN CURRENT WAGE RATE OF RS. 298 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
	0TH YEAR (ADVANCE WORK) PRE-PLANTING OPERATION					
1	Survey, Demarcation and Pillar Posting.	Nov/Dec	2	596	0	596
2	Site preparation	Nov/Dec	8	2384	0	2384
3	Alignment and stacking of pits	Jan/Feb	2	596	0	596
4	Digging of pits	Feb/Mar	25	7450	0	7450
5	Nursery cost (6 months old seedling) part @ Rs.12.43/- per seedling (rs.8.67 in 0th year + Rs.3.76 in 1st year) for 1100 seedlings (1000+100)	Jan-Mar	27.5	8195	1837	10032
	Total		**64.5**	**19221**	**1837**	**21058**
6	Monitoring & Supervision charge 5% of the total cost					1053
	Grand Total		**64.5**	**19221**	**1837**	**22111**
	1ST YEAR / PLANTING YEAR					
1	Nursery cost (6 months old seedling) balance @ Rs.3.08 for 1100 seedlings	Apr-Jul	13	3874	496	4370
2	Fencing for an average of 250 meters/ha @ Rs.76.80/- per meter for bamboo twigs and bamboo throne fencing	Jan/Feb	38	11324	8560	19884
3	Carriage and planting, Casuality Replacement and application of insecticides, manure etc.	Jul/Aug	13	3874	0	3874
4	Cost of insecticide and fertilizer (a) NPK @ 50 gms/plant as basl dose = 50kg @ Rs.24/- per kg = Rs.1200.00 (b) Urea @ 70 gms/plant in two susequent doses @ rs.6/- per kg = Rs.420.00 (c) Granular Insecticide (themet, Forate etc.) @ 5 gms/plant @ rs.80/- per kg = Rs.400.00		0	0	2020	2020
5	1st weeding (complete weeding)	Aug/Sep	5	1490	0	1490
6	Manuring Urea 35 gm	Aug/Sep	4	1192	0	1192
7	2nd weeding (complete weeding)	Sep/Oct	4	1192	0	1192
8	Soil working (50 cms. Radius around plants) & manuring Urea 35 gms per plant	Sep/Oct	5	1490	0	1490
9	Soil Conservation Measures in the form of staggered trenches of size 2 m × 0.5 m × 0.5 m @ 30 nos per ha	Sep/Oct	10	2980	0	2980
10	Fire line tracing & Inspection path	Aug-Mar	3	894	0	894
11	Watch & Ward		7	2086	0	2086
	Sub-Total		**102**	**30396**	**11076**	**41472**
12	Monitoring & Supervision charge 5% of the total cost					2074
	Grand Total		**102**	**30396**	**11076**	**43546**
	2ND YEAR MAINTENANCE					
1	Casualty replacement (10%) with Nursery cost	Jul/Aug	2.5	745	1036	1781
2	Weeding (complete weeding)	Sep/Oct	4	1192	0	1192
3	Repair and maintenance of Bamboo fence including material cost	Sep/Oct	20	5960	5080	11040
4	Cost of fertilizer (NPK @ 70 gms/plant for 1000 plants) (Rs.24/- per kg & Insecticide @ 5 gms/plant for 100 plants 500 gms @ Rs.80/- per kg)	Oct/Nov	0	0	1720	1720

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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
5	Soil working (50 cms. Radius around plants)	Oct/Nov	5	1490	0	1490
6	Application of fertilizer & insecticide	Sep/Oct	2.5	745	0	745
7	Fire line tracing (2 m. wide fire line over 400 m long)	Feb/Mar	3	894	0	894
8	Watch & Ward	Apr-Mar	15	4470	0	4470
	Total		**52**	**15496**	**7836**	**23332**
9	Monitoring & Supervision charge 5% of the total cost					1167
	Grand Total		**52**	**15496**	**7836**	**24499**
	3RD YEAR MAINTENANCE					
1	Weeding and application of fertilizer	Aug/Sep	5	1490	0	1490
2	Cost of fertilizer (NPK @ gms/plant) @ Rs.24/- per kg		0	0	1200	1200
3	Repair and maintenance of Bamboo fence including material cost	Sep/Oct	20	5960	1000	6960
4	Soil working (50 cms. Radius around plants) & application of fertilizer	Oct/Nov	5	1490	0	1490
5	Fire line tracing (2 m. wide fire line over 400 m length) & cultural operation	Feb/Mar	3	894	0	894
6	Watch & Ward	Apr-Mar	15	4470	0	4470
	Total		**48**	**14304**	**2200**	**16504**
7	Monitoring & Supervision charge 5% of the total cost					825
	Grand Total		**48**	**14304**	**2200**	**17329**
	4TH YEAR MAINTENANCE					
1	Fire line tracing (2 m. wide fire line over 400 m length) & cultural operation	Feb/Mar	3	894	0	894
2	Watch & Ward	Apr-Mar	15	4470	0	4470
	Total		**18**	**5364**	**0**	**5364**
3	Monitoring & Supervision charge 5% of the total cost					268
	Grand Total		**18**	**5364**	**0**	**5632**
	5TH YEAR MAINTENANCE					
1	Fire line tracing (2 m. wide fire line over 400 m length) & cultural operation	Feb/Mar	3	894	0	894
2	Watch & Ward	Apr-Mar	15	4470	0	4470
	Total		**18**	**5364**	**0**	**5364**
3	Monitoring & Supervision charge 5% of the total cost					268
	Grand Total		**18**	**5364**	**0**	**5632**
	6TH YEAR MAINTENANCE					
1	Fire line tracing (2 m. wide fire line over 400 m length) & cultural operation	Feb/Mar	3	894	0	894
2	Watch & Ward	Apr-Mar	15	4470	0	4470
	Total		**18**	**5364**	**0**	**5364**
3	Monitoring & Supervision charge 5% of the total cost					268
	Grand Total		**18**	**5364**	**0**	**5632**

7TH YEAR MAINTENANCE						
1	Fire line tracing (2 m. wide fire line over 400 m length) & cultural operation	Feb/Mar	3	894	0	894
2	Watch & Ward	Apr-Mar	15	4470	0	4470
	Total		**18**	**5364**	**0**	**5364**
3	Monitoring & Supervision charge 5% of the total cost					268
	Grand Total		**18**	**5364**	**0**	**5632**
8TH YEAR MAINTENANCE						
1	Fire line tracing (2 m. wide fire line over 400 m length) & cultural operation	Feb/Mar	3	894	0	894
2	Watch & Ward	Apr-Mar	15	4470	0	4470
	Total		**18**	**5364**	**0**	**5364**
3	Monitoring & Supervision charge 5% of the total cost					268
	Grand Total		**18**	**5364**	**0**	**5632**
9TH YEAR MAINTENANCE						
1	Fire line tracing (2 m. wide fire line over 400 m length) & cultural operation	Feb/Mar	3	894	0	894
2	Watch & Ward	Apr-Mar	15	4470	0	4470
	Total		**18**	**5364**	**0**	**5364**
3	Monitoring & Supervision charge 5% of the total cost					268
	Grand Total		18	5364	0	5632
10TH YEAR MAINTENANCE						
1	Fire line tracing (2 m. wide fire line over 400 m length) & cultural operation	Feb/Mar	3	894	0	894
2	Watch & Ward	Apr-Mar	15	4470	0	4470
	Total		**18**	**5364**	**0**	**5364**
3	Monitoring & Supervision charge 5% of the total cost					268
	Grand Total		**18**	**5364**	**0**	**5632**

TOTAL FINANCIAL OUTLAY

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	64.5	19221	1837	1053	22111
2	1st Year	102	30396	11076	2074	43546
3	2nd Year	52	15496	7836	1167	24499
4	3rd Year	48	14304	2200	825	17329
5	4th Year	18	5364	0	268	5632
6	5th Year	18	5364	0	268	5632
7	6th Year	18	5364	0	268	5632
8	7th Year	18	5364	0	268	5632
9	8th Year	18	5364	0	268	5632
10	9th Year	18	5364	0	268	5632
11	10th Year	18	5364	0	268	5632
		392.5	**116965**	**22949**	**6995**	**146909**
	TOTAL	**Rs.146909 × 37.00 Ha.**				**54,35,633.00**
12	**Fencing included in the Scheme**					**-**
13	**Soil Conservation Measures included in the Scheme**					**-**
	Total					**54,35,633.00**
14	**15 % of total plantation cost towards EPA / Incentive to VSS**					**8,15,345.00**
	Total					**62,50,978.00**
15	**Add Escalation Cost (20%)**					**12,50,196.00**
	Grand Total					**75,01,174.00 or 75,01,200.00**

Dy. Chief Engineer (Con.) I
East Coast Railway, Angul

Divisional Forest Officer,
Dhenkanal Division

Divisional Forest Officer
Dhenkanal Division

Divisional Forest Officer
Angul Division