

SCHEME FOR
COMPENSATORY AFFORESTATION
OVER 17.00 HA IN DEGRADED FOREST
LAND IN KUKIA RESERVED FOREST
OF BANKI RANGE
UNDER
ROURKELA FOREST DIVISION

DIVERSION OF 220 KV S/C TRANSMISSION LINE FROM BONAI TO RTSS
BIMLAGARH OF OPTCL IN SUNDARGARH DISTRICT, ODISHA

OF

Odisha Power Transmission Corporation Ltd.
E.H.T (Construction) Division, Jharsuguda

1. INTRODUCTION & LOCATION:-

The Sambalpur Division of OPTCL has proposed to establish 220 kV single circuit (2 conductor) Transmission line from 220/ 33 KV Grid Sub-Station at Bonai located within the latitude 21° 52' 34.89" North & longitude 84° 54' 26.82" East and will be connected to Railway Traction Sub-Station (RTSS) of Govt. of India at Bimlagarh located with the latitude 21° 57' 59.72" (North) & longitude 85°00'45.55" (East) in Sundargarh District, Odisha over a distance of about 19.944 KM, KM as shown in Survey of India Topo Sheet No. F45M13 and F45N1.

The Sundargarh district is the northern most districts of Odisha state and is the second largest district in the state, which covers an area of 9712 sq. km with a population of about 20,80,664. Physiographically the entire district lies with high altitude zone with inter-spreading inaccessible terrain of hilly ranges and narrow valley tracts, which guides the socio-economic conditions of people and development of the district. More than 50% of population constitutes ST community of aboriginal tribal races. The District has 37% of land area under cultivation and 21% of area under forest cover. The district has limited irrigation facilities due to high hills and dense forest.

In view of the demand of the railway department, the transmission line proposed for the benefit of the Railway of India under central Govt. the continuance of supply of electricity to the Rail way department is necessitated. The proposed Transmission Line (Project) corridor area of 69.804 ha (Forest = 3.305 ha, Non-Forest Govt. Land = 22.478 ha and Private Land = 44.021 ha) includes 3.305 ha of forest land and 66.499 ha. of non-forest land. The forest land of the transmission line corridor is located in Two villages under Lahunipara Tahasil and another Three villages under Koira Tahasil in Rourkela Forest Division of Sundargarh district.

The 6,800 nos. of plants can be raised over a degraded forest area of 17.00 ha @ 400 plants per hectare by ANR with gap plantation, which is located in Kukia Reserved Forest under Banki Forest Range of Rourkela Forest Division and delineated in Survey of India Topo sheet No. F45M13 (73C/13) bounded by Latitude 21°54'06.635" to 21°54'26.449" North and Longitude 84°51'27.655" to 84°51'50.411" East.

District :	Sundargarh
Tahasil/ Block/ Forest Range:	Lahunipara/ Lahunipara/ Banki.
Nearest human habitation:	Lahunipara.

The Compensatory land can be approached easily in all seasons. Lahunipada, the Tahasil head quarter is at a distance of 7.50 KMs. The C.A. land area is situated at a distance of 8.00 KMs from Rajamunda town.

2. PHYSIOGRPHY & DRAINAGE:-

Geographically, the project area falls in Sundargarh district. The district has varied geomorphologic features starting from Plain land, Pediments to Hilly areas. The district is drained by a network of rivers and streams. The IB and Brahmani rivers being the most important in the district, control the drainage system of the western and eastern part of the district, respectively along with its numerous tributaries. The drainage pattern is dendritic in nature.

The allotted C.A.Land is situated at the North-Western portion of Kukia R.F. under Lahunipara Tahasil. The general topography of the project area varies from 220 M above MSL towards south-eastern part to 200 M MSL in north-western part and delineated in Survey of India Topo sheet No.F45M13 (73C/13). River Brahamani is flowing on North-Eastern side of the Kukia R.F. The area is gently undulating and flat with gentle slope at places. The general slope of the plantation area is towards North - West.

3. SOILTYPE:-

The soil characteristics of the district show wide variation depending upon their occurrence, physical and chemical properties. The soil of the area is classified as red sandy soil, red loamy soils and lateritic soils. The red sandy soil & red loamy soils predominantly occupy high and medium lands throughout the Sundargarh district. Soil is the net result of the action of climate and organisms especially for the plant on the earth crust. These soils are neutral to slightly acidic in nature. The characteristic features of red soils are (i) light texture, porous and friable structure, (ii) absence of lime kankar and free carbonates and (iii) soluble salts in small quantity usually not exceeding 0.05%. These are usually deficient in nitrogen, phosphate, organic matter and lime. The lateritic soils are mildly acidic in nature and deficient in nitrogen, phosphorous and potassium and organic matters. Soils of the district are generally having average to good fertility status. All common types of plants can be grown in the district. The ph value of the soil is normal ranging from 5.5 to 6.9.

4. CLIMATE & RAINFALL:-

The district enjoys sub-tropical climate characterized by hot and dry summer, cold winter and erratic rainfall in monsoon. The winter season extends from November to end of February, which is followed by summer season from March to the middle of June and rainy season from middle of June to middle of October. During summer months the maximum temperature rises up to 43° C and May is the hottest month. December is the coldest month of the year, when the average daily temperature drops down to 8°C. Relative humidity is around 60-70% throughout the year. The highest and lowest monthly mean relative humidity so far recorded is 97% (Dec) and 26% (April).

5. OBJECTIVE OF THE SCHEME:-

The main objective of the present scheme is to carry out ANR plantation/ Afforestation with soil moisture conservation works inside the said Reserved Forest area to restore the degraded forest lands in Kukia R.F. as shown in the Map.

- A) To Demarcate and fence the area in ground to dispense with biotic interferences.
- B) To improve the micro edaphic conditions by undertaking suitable soil and moisture conservation measures.
- C) To create awareness among the local villagers for protection and maintenance of this plantation and the adjoining forest for ensuring enrichment of the ecosystem.

6. PROPOSED TECHNIQUE:-

It has been proposed to take up ANR plantation @ 400 plants/ ha. at a spacing of 2.5 mt. X 2.5 mt. in identified permanent gaps to achieve the above objectives. The following items of work prescribed in the scheme will be taken up.

A. SURVEY AND DEMARCATION OF BOUNDARY OF C. A. AREA: -

The identified degraded forest land has been surveyed by GPS. Geo co-ordinates with reference to the R.F Map and allotted reserve forest boundary are demarcated. Four feet (4 ft.) high R.C.C pillars at every corner/ turning points of boundary line are posted. The Longitude & Latitude of the boundary area are given below.

GPS COORDINATE OF BOUNDARY PILLARS				
PILLAR NO	EASTING	NORTHING	LONGITUDE	LATITUDE
1	278682.799	2423790.704	84°51'27.655"	21°54'15.880"
2	278827.753	2423834.905	84°51'32.684"	21°54'17.381"
3	278905.302	2423905.452	84°51'35.348"	21°54'19.710"
4	278979.389	2423971.98	84°51'37.897"	21°54'21.906"
5	279055.239	2424040.091	84°51'40.507"	21°54'24.152"
6	279132.698	2424109.647	84°51'43.171"	21°54'26.449"
7	279201.41	2424051.089	84°51'45.594"	21°54'24.577"
8	279263.649	2423998.048	84°51'47.786"	21°54'22.882"
9	279338.13	2423934.574	84°51'50.411"	21°54'20.851"
10	279266.828	2423863.179	84°51'47.963"	21°54'18.500"
11	279196.226	2423792.485	84°51'45.536"	21°54'16.171"
12	279121.394	2423717.555	84°51'42.966"	21°54'13.702"
13	279044.055	2423640.116	84°51'40.313"	21°54'11.149"
14	278974.294	2423573.626	84°51'37.915"	21°54'08.957"
15	278893.288	2423503.32	84°51'35.129"	21°54'06.635"
16	278845.568	2423568.473	84°51'33.433"	21°54'08.730"
17	278793.155	2423640.034	84°51'31.572"	21°54'11.030"
18	278737.65	2423715.815	84°51'29.603"	21°54'13.471"

B. BARBED WIRE FENCING:

Barbed wire fencing is proposed to be undertaken in the site. The details of measurements of the perimeter of the degraded forest land selected along with the type of fencing to be taken up are given below. Barbed wire fencing over 1,807.926 or say 1, 808.00 meter shall be taken up around 17.00 ha of ANR plantation area to facilitate the maintenance of the plantation. The RCC pillars (size – Length = 8', Bottom width = 6" x 6", Top width = 4" x 4" & reinforced with 6 mm rods) shall be fixed with a pillar to pillar spacing of 2.5 mtr. Hence, there will be a requirement of 400 + 80 (Two Strut pillars in every 10th pillar) = 480 pillars per km. The cost estimate for Barbed wire fencing (Wage rate @ Rs.298.00 per Man Day) per running meter for fencing = Rs. 674/- (Rupees Six Hundred Seventy Four) only per meter (Annexure – ii). Hence, the total cost of the Barbed wire Fencing over 1,808.00 mtr (Rs. 674.00 x 1,808.00 mtr.) =Rs.12,18,592.00 OR say Rs. 12,18,600.00 (Rupees Twelve Lakh Eighteen Thousand Six Hundred) only.

C. WATCH AND WARD: -

Watchers are to be engaged soon after the completion of the plantation work to check the biotic interference in the allotted C.A. area.

7. REGENERATION CLEANING AND TENDING OPERATION:-

The aim is for tending (climber cutting, cleaning, double shoot cutting, pruning etc.) operation to the existing crop for the growth of principal species of the local species (Sal with associates) for ensuring better growth of the plants. It includes removal of inferior, diseased, malformed, dead, drying and moribund tree growth and disposal of them by distributing it among the local VSS members. Apart from it, weeding in planted and natural tree growth in the selected patch shall be carried out.

The detailed operation to be carried out is as follows-

- i) Cutting of herbs and shrubs interfering with the growth of the promising species.
- ii) Cutting of individual top broken poles interfering with good pole species.
- iii) Cutting back of malformed and moribund species.
- iv) Cutting of climbers up to hand reach.
- v) Sharp cutting of high stumps flush to the ground to get a good coppice shoots.
- vi) Singling of coppice shoots coming out from the stumps and retaining the most promising shoots.
- vii) Pruning of the branches of the pole size crops up to hand reach.

During the 1st year, climber cutting and cutting of high stumps, weeds and malformed and moribund species will be done. In the next two years, cutting back of malformed individuals and singling of coppice shoots in case of desired species will be done in the subsidiary silvicultural operation.

8. PLANTING & POST-PLANTING:-

The area to be re-stocked by raising plantation @ 400 plants per ha. in ANR area. Taking into consideration the site specific soil condition, existing species shall be allowed to grow naturally and the requirement of the tree for the locality should be planted in the area.

The main objective of the present scheme is to raise gap plantation in degraded forest as well as to retain soil & moisture conservation measures, restock & rejuvenate degraded forest.

Hence, the main objective of the present regeneration scheme is as follows:-

- 1) To carry out the plantation in the degraded forest land to restock the degraded forest.
- 2) To demarcate clearly and fence the area to dispense with the biotic interferences.
- 3) To improve the micro - edaphic conditions by undertaking suitable soil and moisture conservation measures.
- 4) To protect the area against encroachment, illicit felling, fire incidence, grazing and all other forms of biotic interference and allow unhindered growth of the saplings.
- 5) To create awareness among the local villagers for protection and maintenance of plantation and the forest for ensuring enrichment of the ecosystem and replacement of the degraded areas with natural green cover.

9. DETAILS OF PLANTATION IN PROPOSED DEGRADED FOREST LAND:-

The degraded forest area of 17.00 ha is selected in Kukia R.F. of Banki forest range under Rourkela Forest Division for ANR with gap plantation to raise 6,800 plants @ 1000 seedlings/ ha over 6.610 ha in lieu of the forest land over 3.305 ha, proposed for diversion for construction of the 220 kV S/C transmission line from Bonai sub-station to RTSS Bimlagarh of OPTCL in Sundargarh District, Odisha. Care shall be taken to select indigenous species for plantation, which are the associates of local species.

The list of species to be adopted for the plantation is as follows:-

SL No	Name Species	Botanical Name.
1	Arjuna	Terminalia arjuna
2	Amla	Emblica officinalis
3	Bamboo	Dendrocalamus strictus
4	Asan	Terminalia alata
5	Sisoo	Dalbergia sisoo
6	Gambhar	Gmelina arborea
7	Neem	Azadirachta indica

The ANR plantation will be carried over an area of 17.00 ha. The details of site are as follows:

POINT NAME	EASTING	NORTHING	PILLAR NO		DISTANCE IN METERS	FORWARD BEARING			BACKWARD BEARING		
			FROM	TO		DEGREE	MIN	SEC	DEGREE	MIN	SEC
1	278682.799	2423790.704	1	2	151.543	73	2	31	253	2	31
2	278827.753	2423834.905	2	3	104.836	47	42	26	227	42	26
3	278905.302	2423905.452	3	4	99.574	48	4	38	228	4	38
4	278979.389	2423971.98	4	5	101.943	48	4	38	228	4	38
5	279055.239	2424040.091	5	6	104.105	48	4	38	228	4	38
6	279132.698	2424109.647	6	7	90.279	130	26	18	310	26	18
7	279201.41	2424051.089	7	8	81.775	130	26	18	310	26	18
8	279263.649	2423998.048	8	9	97.859	130	26	18	310	26	18
9	279338.13	2423934.574	9	10	100.902	224	57	45	44	57	45
10	279266.828	2423863.179	10	11	99.911	224	57	45	44	57	45
11	279196.226	2423792.485	11	12	105.899	224	57	45	44	57	45
12	279121.394	2423717.555	12	13	109.444	224	57	45	44	57	45
13	279044.055	2423640.116	13	14	96.371	226	22	32	46	22	32
14	278974.294	2423573.626	14	15	107.261	229	2	41	49	2	41
15	278893.288	2423503.32	15	16	80.76	323	46	47	143	46	47
16	278845.568	2423568.473	16	17	88.702	323	46	47	143	46	47
17	278793.155	2423640.034	17	18	93.933	323	46	47	143	46	47
18	278737.65	2423715.815	18	1	92.829	323	46	47	143	46	47

10. DESCRIPTION OF THE EXISTING VEGETATION:-

The proposed site for ANR plantation has open mix jungle, mainly Sal and its associates. The available growth is degraded due to biotic pressure like lopping, grazing and fire wood collection.

11. RAISING OF NURSERY:-

Seedlings required for the plantation are to be raised in the nursery by the forest department. The Nursery should have a capacity of raising adequate seedlings. Nursery works will be undertaken in consultation with DFO, Rourkela Forest Division. All the infrastructures shall be provided by the user agency. Work will be started one year before the year of plantation, so that two year old seedlings will be available for plantation. 10% extra seedlings shall be raised to compensate the casualty in the nursery. Standard nursery practices shall be followed for raising of seedlings in polythene bags.

12. ALIGNMENT AND STACKING:-

Alignment, stacking and pitting will be taken up in the month of March-April. Pits of size 30cm X 30cm X 30cm will be dug by maintaining a spacing of 2.5mt X 2.5mtr in blank areas.

13. PLANTING:-

The seedlings will be planted in the dugout pits of 30 cm maintaining a spacing of 2.5 mt X 2.5 mtr. from pit to pit in blanks/ gaps. Plantation should be taken up after first regular shower of monsoon and should be completed by end of August. NPK/DAP fertilizer @ 30 gms per plant should be applied per pit. Casualty replacement, if required during the planting year and in the second year should be undertaken for which the seedlings shall be raised.

14. WEEDING, SOIL WORKING AND MANURING:-

For establishment and better growth of the planted seedlings, weeding, soil working and manuring are necessary. It is prescribed to carry out two weeding, soil working and manuring during the first year and second year of plantation and one weeding and soil working during the third year. Weeding and manuring for the first and second year shall be carried out during August-September and the second one during October-November along with soil working during which 30 gms. of NPK/DAP shall be added to the soil per plant. First seedling shall be for the area weeding and the second seedling should be strip weeding. The weeding of third year will be for the area, which shall be carried out during August.

15. APPLICATION OF INSECTICIDES:-

The plantation site after planting with good seedlings may in course of time get infested with diseases owing to influx of insects and pests into the area, which usually cause heavy damage to the soft, tender and avidly growing parts of the plant that heavily affects the rate of growth and sometimes causes wide spread casualty of the seedlings. To avoid such incidences, foliar spray and ground application of insecticides at regular intervals usually on a sunny day in the fore noon shall be done.

16. FIRE LINE TRACING AND MAINTENANCE:-

Fire causes irreparable damage to the plantation and the forest growth during fire season. To prevent such fire out-breaks in the area, the plantation area shall be divided into suitable blocks by tracing fire lines. Boundaries of the plantation patches and the block lines will be scrapped of forest growth to a width of 3.0 mt. during Feb-March. The cut back materials and the dry leaves stacked along these fire lines shall be burnt under direct supervision. This operation is highly essential and the scheme proposes to carry this operation for the first three years.

The detailed cost estimate of various operations to be taken up in ANR plantation has been furnished below.

17. POINTS OF IMPORTANCE:-

While taking up plantation, the following vital points shall be taken up for consideration:

- All care is to be taken to raise healthy seedlings of minimum 2 feet height and 20% extra of the required stock. Complete 1 (one) year seedlings shall be used in case of Arjuna, Asan, Neem, Harida, Bahada, Kasi etc. However, in case of Sisoo, Gambhar, etc; 6 months old seedlings can be used. Pitting shall be invariable done before the onset of monsoon and should not be delayed.
- Basal dose of 30 grams of NPK and 5 grams of Aldrin be applied at the time of planting. Casualty replacement, weeding, soil working, application of fertilizer and insecticides shall be taken up as per the provisions in the cost-norm at the proper time. Engaging watchers as per norm are to be taken up. Tracing of inspection path & fire line and maintenance of fence to be done by the watchers.
- All-out efforts are to be taken up to keep the plantation free from grazing, fire and other biotic interference.

18. SOIL & MOISTURE CONSERVATION MEASURES:-

The site selected for re-stocking and re-juvenation by Compensatory Afforestation in the allotted degraded forest land and the slope of the identified area varies from gently slope to moderate with undulating topography at places. Nalas are formed due to erosion of soil. Therefore, soil conservation measure is indispensable and is to be appropriately designed.

The estimated cost (Wage rate @ Rs. 298.00 per Man Day) of Soil and Moisture conservation measures will be Rs. 4,321.00 per ha (Annexure –iii). So, the total cost for **Soil and Moisture** over 17.00 ha. of CA land = Rs. 4321.00 X 17.00 ha = Rs. 73,457.00 Or say Rs. 73,500.00 (Rupees Seventy Three Thousand Five Hundred) only in Kukia R.F.

19. WATCH AND WARD:-

To protect the area against grazing, fire accident and other biotic interference, it is proposed to engage watchers for ten years after the year of plantation.

20. EXECUTING AGENCY:-

All the works under this scheme shall be executed by the forest department, Rourkela. Therefore, to facilitate this, the User Agency shall pay the estimated cost of raising ANR plantation to the Forest Department.

21. INSPECTION, MONITORING AND EVALUATION:-

For successful implementation of the above proposed programmes, intensive inspection, monitoring and technical guidance from concerned Divisional Forest Officer, Rourkela Forest Division is highly essential.

22. TOTAL FINANCIAL OULAY:-

The total financial outlay for Compensatory Afforestation for **17.00 ha.** of degraded forest land in Kukia R.F. of Banki forest range under Rourkela Forest Division in lieu of **3.305 ha.** of forest land proposed to be diverted to raise 6,800 plants for construction of 220 kV S/C Transmission line from grid sub-station Bonai to RTSS Bimlagarh of OPTCLtd is detailed below.

Sl. No.	Description	Amount in Rs.
A.	PLANTATION ACTIVITIES (To be deposited in Ad-hoc CAMPA)	
1.	The estimated cost of the Barbed wire Fencing @ Rs. 674.00 per running meter over 1,808.00 mtr = Rs. 12,18,592.00 (Rupees Twelve Lakh Eighteen Thousand Five Hundred Ninety Two) only.	12,18,592.00
2.	Total Cost for Soil and Moisture over 17.00 ha. of CA land in Kukia R.F. @ 4,399.30 per ha = Rs. 74,788.10 or say Rs.74,788.00 (Rupees Seventy Four Thousand Seven Hundred Eighty Eight) only.	74,788.00
3.	Total Cost of ANR Plantation @ 400 plants per hectare @ Rs. 58557.95 over on 17.00 ha = Rs.9,95,485.15 or say Rs.9,95,485.00(Rupees Nine Lakh Ninty Five Thousand Four Hundred Eighty Five) only with 10 years maintenance.	9,95,485.00
	Total	22,88,865.00
(Rupees Twenty Two Lakh Eighty Eight Thousand Eight hundred Sixty Five) only.		

23. REQUIREMENT OF FUNDS:-

For implementation of all prescriptions outlined above, Rs. 32,95,966.00 (Rupees Thirty two Lakhs Ninety Five Thousand Nine hundred Sixty Six) only will be required as derailed below. As there will be a time lag between the writing of the scheme, and its implementation, the User Agency will pay enhanced wage as and when required.

Sl. No.	Description	Amount (Rs.)	
1.	ANR plantation over 17.00 Ha. @Rs. 58557.95/- per hectare	Rs.	9,95,485.00
2.	The estimated cost of the Barbed wire Fencing @ Rs. 674.00 per running meter] over 1,808.00 mtr = Rs. 12,18,592.00 (Rupees Twelve Lakh Eighteen Thousand Five Hundred Ninety Two) only.	Rs.	12,18,592.00
3.	Total Cost for Soil and Moisture over 17.00 ha of CA land in Kukia, R.F. @ 4399.30 per ha] = Rs. 74,788.00 (Rupees Seventy Four Thousand Seven Hundred Eighty Eight) only.	Rs.	74,788.00
	Total Plantation cost	Rs.	22,88,865.00
4.	Monitoring & Evaluation @ 5% of the plantation cost.	Rs	1,14,443.25
5.	15% of the total plantation cost for motivation of VSS / People involved remedial measures against fire hazard as per Govt. Resolution of 1993.	Rs	3,43,329.75
	TOTAL:-	Rs	27,46,638.00
9.	Add 20% for escalation	Rs	5,49,327.60
	Total Plantation cost :-	Rs	32,95,965.60 Or 32,95,966.00

(Rupees Thirty two Lakhs Ninety Five Thousand Nine hundred Sixty Six) only


Divisional Forest Officer
Rourkela Forest Division

6	Cost of Chemical fertilizer : - (a) Urea 70 gms/ plant in two doses @ Rs. 6/ per kg = Rs. 168.00. (b) NPK 50 gms / plant as basal dose @ Rs.24/ per kg = 480.00 as basal dose.	Jul/ Aug	0	0	648	648
7	Silvicultural Operation involving clearance of weed, cutting of climber, singling of shoots etc.	Sep/ Oct	15	4551	0	4551
8	Soil conservation measures (Staggered trenches of dimension 2 m X 0.5 m X 0.5 m @ 60 nos. per ha) or its equivalent.	Sep/ Oct	20	6068	0	6068
9	Fire line tracing & Inspection path	Feb/ March	3	910.20	0	91.20
10	Watch & Ward	Apr- March	7	2123.80	0	2123.80
11	Contingency and unforeseen Expenditure.		0	0	319	319
SUB-TOTAL			84	25,485.60	2982	28,467.60
12	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	1400.70
TOTAL			84	25,485.60	2982	29,868.30
2ND YEAR MAINTENANCE						
1	Casualty replacement including cost of seedling, carriage and planting.	Jul/ Aug	2	606.80	497.20	1104
2	Complete weeding and cultural operations.	Sep/ Oct	4	1213.60	0	1213.60
3	Soil working and manuring.	Sep/ Oct	4	1213.60	0	1213.60
4	Cost of fertilizer and insecticide (a) Vermi compost 200gm/ plant @ Rs.20/- per kg =Rs.1,600.00. (b) Granular Insecticides @ 5 gms/ plant for 100 plants = 500gms @ Rs. 80/- per kg =Rs.16.00.	Sep/ Oct	0	0	1,616	1,616
5	Fire line tracing & Inspection path	Feb/ March	1	303.40	0	303.40
6	Soil conservation measures (Renovation of staggered trenches etc).	Sep/ Oct	8	2427.20	0	2427.20
7	Watch & Ward.	Apr-March.	7	2123.80	0	2123.80
8	Contingency and unforeseen Expenditure.		0	0	362	362
SUB-TOTAL			26	7888.40	2,475.20	10363.60
9	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	511.15
TOTAL			26	7888.40	2475.20	10874.75

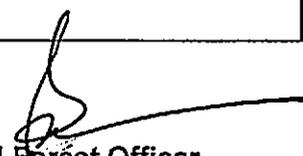
3RD YEAR MAINTENANCE						
1	Complete Weeding & cultural operation.	Aug/ Sep	2	606.80	0	606.80
2	Soil working	Aug/ Sep	2	606.80	0	606.80
3	Fire line tracing & Inspection path	Feb/ March	1	303.40	0	303.40
4	Watch & Ward	Apr-March	7	2123.80	0	2123.80
SUB-TOTAL			12	3640.80	0	3640.80
5	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	178.80
TOTAL			12	3640.80	0	3819.60
4TH YEAR MAINTENANCE						
1	Fire line tracing & Inspection path	Feb/ March	1	303.40	0	303.40
2	Watch & Ward and cultural operations	Apr-March.	2	606.80	0	606.80
SUB-TOTAL			3	910.20	0	910.20
3	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	44.70
TOTAL			3	910.20	0	954.90
5TH YEAR MAINTENANCE						
1	Fire line tracing & Inspection path	Feb/ March	1	303.40	0	303.40
2	Watch & Ward and cultural operations	Apr-march.	2	606.80	0	606.80
SUB-TOTAL			3	910.20	0	910.20
3	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	44.70
TOTAL			3	910.20	0	954.90
6TH YEAR MAINTENANCE						
1	Fire line tracing & Inspection path	Feb/ March	1	303.40	0	303.40
2	Watch & Ward and cultural operations	Apr-march.	2	606.80	0	606.80
SUB-TOTAL			3	910.20	0	910.20
3	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	44.70
TOTAL			3	910.20	0	954.90
7TH YEAR MAINTENANCE						
1	Fire line tracing & Inspection path	Feb/ March	1	303.40	0	303.40
2	Watch & Ward and cultural operations	Apr-march.	2	606.80	0	606.80
SUB-TOTAL			3	910.20	0	910.20

3	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	44.70
TOTAL			3	910.20	0	954.90
8TH YEAR MAINTENANCE						
1	Fire line tracing & Inspection path	Feb/ March	1	303.40	0	303.40
2	Watch & Ward, cultural operations	Apr- march.	2	606.80	0	606.80
SUB-TOTAL			3	910.20	0	910.20
3	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	44.70
TOTAL			3	910.20	0	954.90
9TH YEAR MAINTENANCE						
1	Fire line tracing & Inspection path	Feb/ March	1	303.40	0	303.40
2	Watch & Ward and cultural operations	Apr- march.	2	606.80	0	606.80
SUB-TOTAL			3	910.20	0	910.20
3	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	44.70
TOTAL			3	910.20	0	954.90
10TH YEAR MAINTENANCE						
1	Fire line tracing & Inspection path	Feb/ March	1	303.40	0	303.40
2	Watch & Ward and cultural operations	Apr- march.	2	606.80	0	606.80
SUB-TOTAL			3	910.20	0	910.20
3	Monitoring & Supervision Charge 5% of the total cost.		0	0	0	44.70
TOTAL			3	910.20	0	954.90

PLANTATION COST:-

The abstract of the total cost of Plantation over 17.00 ha is Rs.9,95,485.00 as estimated below and the detail cost analysis is at Annexure-iii.

COST ESTIMATE FOR AIDED NATURAL REGNERATION (ANR) OF 400 SEEDLINGS PER HECTARE TO RAISE 6,800 PLANTS IN 17.00 ha.						
1	Type of the Plantation	ANR with gap plantation.				
2	No. of seedlings to be planted	400 Nos. per hectare.				
3	Pit to Pit Spacing to be adopted	2.5m x 2.5m.				
4	Size of pits	30 cm X 30 cm X 30 cm.				
5	Wage rate	303.40/- per Man day.				
ABSTRACT						
Sl. No.	Item of Work.	No. Person day.	Labour cost @ Rs. 303.40/ per day.	Material Cost in Rs.	Monitoring & Supervision charge @ 5% of the Total cost.	Total cost in Rs.
1	0th Year	20	6068	900	343	7311.00
2	1st Year	84	25,485.60	2982	1400.70	29,868.30
3	2 nd year	26	7888.40	2475.20	511.15	10874.75
4	3rd Year	12	3640.80	0	178.80	3819.60
5	4th Year	3	910.20	0	44.70	954.90
6	5th Year	3	910.20	0	44.70	954.90
7	6th Year	3	910.20	0	44.70	954.90
8	7th Year	3	910.20	0	44.70	954.90
9	8th Year	3	910.20	0	44.70	954.90
10	9th Year	3	910.20	0	44.70	954.90
11	10th Year	3	910.20	0	44.70	954.90
	TOTAL	163	49454.20	6,357.2	2,746.55	58557.95
The estimated cost of plantation @ Rs. 58557.95/ ha over 17.00 ha = 58557.95 X 17.00 = Rs.9,95,485.15 or say Rs.9,95,485.00 (Rupees Nine Lakh Ninty five Thousand Four Hundred Eighty Five) only.						


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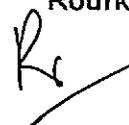
 Rourkela Forest Division

**COST ESTIMATE FOR ONE RUNNING KILO METER (RKM) BARBED WIRE FENCING @
Rs. 303.40 per Man Day.**

Sl. No.	Item of work.	Total.	Unit Cost in Rs.	Total Amount in Rs.
1.	Cost of 2 (Two) ply Barbed wire (5 Rmt per kg) @ 7 straight strand + 2 diagonal strand for 1.00 km = 9560 mtr or 1912 kg @ Rs. 80/- per kg.	1912 kg	80.00	1,52,960.00
2.	(i) Construction cost of RCC pillar (size – 8' high, Top-4" x 4" & bottom 6" x 6") with proper curing = Rs. 203.54/- pillar. (ii) Cost of Rod including cutting, bending & binding = Rs. 370.83/- pillar. (iii) Contingency @ 15% including Curing, Stacking, Provision of hooks, etc = Rs.86.15/- pillar. So, the cost per pillar = Rs. 660.52/- Hence, the cost for 480 nos. of pillars (1.00 km length).	480 Nos.	660.52	3,17,049.60
3.	(i) Cost of digging of pits {(1.5'x1.5'x1.5') = 3.375 cft/ pit} for 480 pits (1.00 km length) = 45.86 cum @ Rs. 128.14/cum.	45.86 cum	128.14	5,876.50
	(ii) Cost of fitting & fixing of pillar with c.c work @ 2.25 cft/ pillar for 480 pillars (1.00 km length)= 30.577 cum @ Rs.3702.95/ cum.	30.577 cum	3702.95	1,13,225.10
4.	Labour charges for straightening the barbed wire & fixing/ clipping with pillars.	70 Man days	303.40	21,238.00
5.	Transportation charges of pillar & barbed wire (Apx. 10 tld.) to the CA Land site @ Rs. 1000/- per tld & cost of loading with unloading within 5 km distance @ Rs. 800/- per tld.	10 tld.	1800.00	18,000.00
6.	Cost of iron gate (size – 4 x 5') & fixing charges.	1 no.	7500.00	7,500.00
	Total Amount for one RKM			6,35,849.20
7.	Expenditure to-wards maintenance for 3 years (3 rd , 6 th & 9 th year) @ 2% of cost per 1.00 RKM = 3x2% x Rs. 635849.20 =			38,150.95
	Grand total for One RKM.			6,74,000.15 Or say 6,74,000.00

The expenditure per One RKM of fencing = 6,74,000.00. So, the expenditure per running meter for fencing = Rs. 6,74,000.00/ 1000 mtr. = 674.00/ mtr. OR say Rs. 674/- (Rupees Six Hundred Seventy Four) only per meter.


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The estimated cost of soil & moisture measure is tabulated below:

Cost Estimate of soil & moisture conservation measures per ha. (@ Rs. 303.40 wage rate per Manday)					
Sl. No.	Item of works	Man days @Rs. 303.40 per day	No. of Trenches per ha.	Amount per one staggered trench in Rs.	Total amount required per ha. In Rs.
1.	Staggered trench of size 2 mtr x 0.5 mtr along the contour line	10	14	216.71	3034.00
2.	2mx0.5mx0.5m;digging of percolation pits in lieu of staggered trenches,	2	0	0	606.80
3.	Gully plugging and drainage line treatment, half moon trench for gully plugging, drainage line treatment wherever necessary	2.5	0	0	758.50
TOTAL Rs. per ha.					4399.30


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SUITABILITY CERTIFICATE

This is to certify that 42.483 ac. Or 17.152 ha. of degraded forest land identified in Kukia Reserved forest in Lahunipara Tahasil of Banki Forest range under Rourkela Forest division of Sundargarh district is found suitable for ANR with gap plantation @ 400 per Ha to plant 6860 no. of seedlings in 17.00 ha of the above identified area for the purpose of Compensatory afforestation in lieu of 3.305 ha of forest land, proposed to be diverted for construction of transmission line proposed from Bonai to RTSS, Bimlagarh of OPTCL.


Divisional Forest Officer
Rourkela Division

Yours faithfully,


Asst. Conservator of Forests
I/C Banki Forest Range

Asst. Conservator of Forest
I/C Banki Forest Range