

**SCHEME FOR COMPENSATORY AFFORESTATION
OVER AN AREA OF 279.12 Ha OF DEGRADED-FOREST
LAND IDENTIFIED IN BARABANKA R.F., DEOBANDH
SECTION UNDER GHATAGAON RANGE IN
KEONJHAR FOREST DIVISION.**

**IN LIEU OF DIVERSION OF, REVENUE FOREST, SABIK
KISSAM FOREST AND DLC FOREST LAND OVER AN
AREA OF 139.07 Ha**

FOR

**Construction of Doubling Railway Project of Jaroli to
Porjanpur of Banspani-Daitari- Tomka- Jakhapura Broad
Gauge Railway line of East Coast Railway**

In

KEONJHAR FOREST DIVISION

SUITABILITY CERTIFICATE

Certified that 279.12 ha. of Degraded Forest Land identified in Barabanka Reserve Forest in Compt. No.13 of Ghatagaon Range under Keonjhar Forest division is suitable for the purpose of Compensatory Afforestation in ANR model @ 600 plants per Ha over 237.778 Ha and 400 plants per Ha over 30.342 ha out of 41.342 Ha in lieu of diversion forest land over 139.07 Ha. to be diverted for doubling railway Project of Jaroli to Porjanpur in Bansapani-Daitari-Tomka-Jakhapura Railway line Project of East Coast Railway.

SI No.	Identified area in Ha.	Nos. of seedling can be planted	Remarks
1.	237.778	600	Patch- I
2.	30.342	400	Patch- II
3	11.000	Without plantation	Patch- II
Total	279.120		

Compensatory Afforestation Scheme 279.12 ha of Degraded Forest Land identified in Barabanka Reserved Forest in Compt. No.13 of Ghatagaon Range under Keonjhar Forest Division for the purpose of diversion of forest land over 139.07 Ha to be diverted for doubling railway Project of Jaroli to Porjanpur in Bansapani-Daitari-Tomka-Jakhapura Railway line Project of East Coast Railway.

CHAPTER I

1. Introduction-

To accommodate the traffic congestion both for transportation of Iron ore and passenger, East Coast Railway considered doubling the railway line within the existing right of way (row). In the original proposal 709.440 ha of forest land were diverted which included Reserve Forest over 342.057 ha (Baitarani A& B, Basantpur, Barabanka, Kalimati, Balipokhari, Palaspal, Rebena, Sagadpata, Atei and Kendua), Khesera Forest as well as Village Forest over 367.383 ha. From the entire stretch of this railway line some Sabik Kissam Forest land were noticed between Jaroli to Porjanpur which includes villages like Jaroli, Jajanga, Bandhuabeda, Namira, Jagannathpur, Unchabali, Jalpaposi, Nayagarh, Dhanurjoypur, Malda and Jodibahal. As per Govt. of India, MoEF&CC Guideline No.8-78/1996-FC (Pt.) Dt.10.03.2015 – Sabik Kissam Forest needs diversion under Forest (Conservation) Act, 1980. Therefore, this proposal for diversion of (343.740 Acre) 139.07 Ha of Revenue Forest, Sabik Kissam Forest & DLC land and 30.821 Ha non-forest land has now been submitted by East Coast Railway for approval u/s 2 (ii) of Forest (Conservation) Act with Proposal No. FP/OR/RAIL/33194/2018- State Sl.No.08-021/2018 Dt.23.04.2018.

As per Para 2.5(i)f of Hand Book of Forest (Conservation) Act, 1980, it is mandatory to raise Compensatory Afforestation in Degraded Forest land twice in extent in lieu of forest land to be diverted for non-forestry purpose. Therefore, 139.07 ha to be diverted x 2=278.14 say 279.12 of degraded forest area has been identified in Keonjhar Forest Division as per Letter No. 6610 dated 25.09.2018 in Barabanka Reserve Forest, Compt. No.13. In this area the planting pattern will be 600 (237.778 ha) & 400 (30.342 ha) plants per Ha on ANR model with adequate Soil Conservation measures and 11.00 ha without plantation. This Scheme has been prepared for 10 years.

CHAPTER – II

01. DETAILS OF THE SITE SELECTED:

Due to biotic interference the vegetation of identified patches in Barabanka R.F. is in degraded condition. This includes bushy growth, pole size crop with scattered matured trees. The growing stock is struggling for survival against the biotic interference like grazing, fire hazard and illicit felling. However, whatever regeneration is sprouting does not grow vigorously due to invading of domestic cattle of surrounding villages.

The identified area is located in Sol Topo Sheet No F45N15 & F45N11. This Schemes aims at preparation of Comp. Affn. over 279.12 ha at the present wage rate of Rs.308/- and as per revised

wage rate communicated by Labour Commissioner, Odisha, Bhubaneswar vide their letter No. 4864/LC dated 22.07.2020.

(a) Site inspection:

The proposed site for CA in Barabank RF was inspected by DFO, Keonjhar on 09.02.2019 along with staff of Ghatgaon Range Namely 1. Ashok Nayak, Range Officer, Ghagaon Range 2. Mohini Mahanta, Forester, Deobandh 3. Sagarika Bej, Forest Guard, Deobandh Beat and staff of RVNL 1. Sourav Kumar Samal, Project Engineer, East Coast Railway/ RVNL 2. Bipin Bihari Panda, Consultant.

During the visit it was observed that the selected site is having degraded forest cover First Patch over 237.00 ha and open forest is found in Second Patch 41.00 ha. Thickness of soil is very less due to constant erosion due to absence of canopy cover. Therefore it is recommended to select the bald hill cost norm which will take care of the existing site requirement i.e. 18 months old seedlings, Foreign soil, CDM, Vegetative Fencing etc.

(b) Crop Composition:

The main species exist in this R.F. are Sal (*Shorea robusta*), Asan (*Terminalia alata*), Dhaura (*Anogeissus latifolia*), Moi (*Lannea coromandelica*), Kendu (*Diospyros melanoxylon*), Simal (*Bombax ceiba*), Karada (*Cleistanthus collinus*), Tangan (*Albizia lebbek*), Char (*Buchnanania lanzan*), Kurum (*Adina cordifolia*) and Salia bamboo (*Dendocalamus strictus*). Crop density is <10%. In such areas efforts are necessary to restrict the biotic interference to maximum possible extent for restricting further degradation. In the revised Working Plan of Keonjhar Forest Division, Barabanka R.F. Compt. No. I3 comes under Improvement Working Circle.

(c) Soil & Topography:

The topography of the site is undulating with highly eroded soil which has formed lot of gullies in the site. Therefore the undersigned has selected the Bald Hill cost norm which will take care the difficulties observed in the site. The ANR (Assisted natural Regeneration) with 600 plants per ha in patch-1 over 237.778 ha), 400 plants per ha in patch-2 over 30.342 ha & without ANR-11.00 ha) will be mainly raised in the foothill where the soil is loamy, skeletal and coarse loamy.

(d) Temperature:

The average annual temperature varies from 15⁰C to 49⁰C, the minimum being in December-January and the maximum in May-June.

(e) Rain fall:

The annual average rainfall varies from 1100 to 1800 mm. The maximum rainfall is received during the rainy season from July to August.

(f) Climate.

The climate of this area is characterized by a hot dry summer and well distributed rainfall by the South-West monsoon season. The hot season starts from March and continues till May, which is the hottest month of the year with mean daily maximum temperature of 49⁰C and the mean daily minimum temperature of 15⁰ C. The rainy season starts from June to September, July being the month with the heaviest shower. Relative humidity is high in the South-West monsoon season. The rainfall is fairly uniform throughout the Division. Storms and depressions from the Bay of Bengal during the monsoon season pass across the Division causing heavy rainfall and strong wind. The winter starts from November to February.

02. SPECIAL OBJECTS OF MANAGEMENT:

- i) To restrict the degradation by reducing the biotic interference to barest minimum and reverse the trend towards the process of restoration of vegetation.
- ii) To improve quality and stocking of the existing crop through Silvicultural treatment.
- iii) To facilitate the boosting of natural regeneration and ensure their establishment.
- iv) To take up appropriate soil moisture conservation measures to improve the soil and moisture regime.
- v) To improve the bio-diversity of this block.
- vi) To meet the need of the local villagers with regard to firewood and small timber depending upon the productivity (from silvicultural operations like thinning, subsidiary silvicultural operation, climber cutting, cutting of high stumps, double shoot cutting etc.)
- vii) To improve the Canopy density of degraded forest land identified for Comp. Affn.

03. ITEM OF WORK TO BE TAKEN UP:

To achieve the objective narrated in the foregoing para, the following items of work are mainly prescribed to be taken up.

i) ***SURVEY AND DEMARCATION OF BOUNDARY***

The proposed Compensatory Plantation Area has been surveyed with GPS Coordinates and demarcated in the field by putting RCC pillars by the User Agency. Before one year of planting, the identified area will be surveyed and demarcated in the field. Silvicultural cleaning will be done in this area to provide facility to dominant prominent species to grow faster than the others. The plantation area will be indicated by signboards at corner or at points of intersection with roads, inspection paths and boundary lines. The signboard should contain the name of the plantation site, area in Ha, year of planting, model of plantation, species preferred and other details.

ii) FENCING

As the area is nearer to the habitation and lies adjacent to the agricultural land there is every chances of biotic interference to the plantation area. The total periphery of the patch is 12.275 Km (patch-I = 9.494 Km and patch-II =2.781 Km). The fencing is included in the cost norm of Bald Hill plantation for patch- I and for patch- II bamboo twig and thorn fencing is included in the cost norm (Cost norm brought from fencing head in the AR plantation).

iii) PROTECTION MEASURE:

The identified site of Barabanka R.F. is having very thin forest cover with a few scattered trees. Due to biotic interference and to save the area from damage, the following protection measures have been suggested.

(a) Watch and ward.

The Compensatory Area will have to be protected by engaging watchers for 10 years, i.e. till establishment of the planted trees and saplings. In addition at strategic locations entrance gate will be provided to check sudden trespass of cattle.

(b) Motivation of people:

As per CAMPA Act 2018, the villagers of Barabanka villages have to be involved in protection of plantation raised under compensatory scheme. For this purpose, meeting will be conducted and local V.S.S will be associated with the field work from very inception of the plantation.

Plantation activities will be executed with the full involvement of the local Vana Surakshya Samiti (VSS). Standard Entry Point Activities (EPA) will be included to ensure their participation.

PLANTATION:

The area will be stocked by way of raising plantations @ 1000 plants per hectare in ANR model with the following species (@ 600 plants per hectare over 237.778 ha, @ 400 plants per hectare over 30.342 ha and ANR without Gap plantation over 11.00 ha)

1. *Terminalia alata* (Asan)
2. *Azadirachta indica* (Neem)
3. *Pterocarpus marsupium* (Bija)
4. *Emblica officinalis* (Amla)
5. *Terminalia belerica* (Bahada)
6. *Terminlia chebula* (Harida)
7. *Dalbergia latifolia*(Pahadisissoo)
8. *Bombax ceiba* (Simul)

9. *Gmelina arborea* (Gambhar)
10. *Madhuca indica* (Mohula)
11. *Dendrocalamus strictus* (Salia Bamboo)
12. *Schleichera oleosa* (Kusum)
13. *Soymida febrifuga* (Rohini)
14. *Acacia nilotica* (Babul)
15. *Acacia leucophlaea* (Gohira)
16. *Bridelia retusa* (Kasi)

Different operations those will be taken up for plantation is as follows:-.

SURVEYED DETAILS OF COMPENSATORY AFFORESTATION AREA

GPS CO-ORDINATES OF CA LAND AREA BOUNDARY				
SL NO	EASTING	NORTHING	LONGITUDE	LATITUDE
1	369912.514	2365890.530	85°44'42.29743"	21°23'25.94777"
2	369867.374	2366210.169	85°44'40.64138"	21°23'36.33037"
3	370267.448	2366181.213	85°44'54.54099"	21°23'35.49259"
4	370276.094	2366104.384	85°44'54.86243"	21°23'32.99643"
5	370459.170	2366147.693	85°45'01.20733"	21°23'34.45220"
6	370549.263	2366189.925	85°45'04.32392"	21°23'35.84883"
7	370410.414	2366242.218	85°44'59.48827"	21°23'37.51345"
8	370428.447	2366337.790	85°45'00.08798"	21°23'40.62602"
9	370594.344	2366402.706	85°45'05.83052"	21°23'42.77995"
10	370623.196	2366354.019	85°45'06.84577"	21°23'41.20414"
11	370749.280	2366371.814	85°45'11.21889"	21°23'41.81540"
12	370758.439	2366480.246	85°45'11.50700"	21°23'45.34385"
13	370931.549	2366494.671	85°45'17.51400"	21°23'45.85763"
14	370998.000	2366367.000	85°45'19.85651"	21°23'41.72300"
15	371055.000	2366352.000	85°45'21.83985"	21°23'41.24990"
16	371107.015	2366434.154	85°45'23.62337"	21°23'43.93487"
17	371158.757	2366424.345	85°45'25.42273"	21°23'43.62922"
18	371196.625	2366307.135	85°45'26.76983"	21°23'39.82739"
19	371124.496	2366285.496	85°45'24.27123"	21°23'39.10515"
20	371077.765	2366156.471	85°45'22.68410"	21°23'34.89733"
21	371203.026	2366098.425	85°45'27.04941"	21°23'33.04197"
22	371375.005	2365984.654	85°45'33.05218"	21°23'29.38645"
23	371515.235	2365992.592	85°45'37.91909"	21°23'29.68057"
24	371639.589	2365910.571	85°45'42.25942"	21°23'27.04521"
25	371668.693	2365807.383	85°45'43.29822"	21°23'23.69709"
26	371676.121	2365730.213	85°45'43.57724"	21°23'21.18949"
27	371758.000	2365736.000	85°45'46.41865"	21°23'21.39866"

28	371540.974	2365624.380	85°45'38.91370"	21°23'17.71322"
29	371642.170	2365389.163	85°45'42.49175"	21°23'10.09012"
30	371834.000	2365191.000	85°45'49.20643"	21°23'03.69513"
31	371996.217	2365155.749	85°45'54.84834"	21°23'02.59027"
32	372175.659	2364802.957	85°46'01.17479"	21°22'51.16355"
33	372316.044	2364526.971	85°46'06.12404"	21°22'42.22448"
34	372291.000	2364411.000	85°46'05.28609"	21°22'38.44680"
35	372293.554	2364230.637	85°46'05.42385"	21°22'32.58216"
36	372380.070	2364028.162	85°46'08.48263"	21°22'26.01985"
37	372364.812	2363933.147	85°46'07.97874"	21°22'22.92615"
38	372125.000	2363907.000	85°45'59.66005"	21°22'22.01473"
39	372073.153	2364122.089	85°45'57.80141"	21°22'28.99604"
40	371819.508	2364123.194	85°45'48.99496"	21°22'28.96715"
41	371773.206	2364227.704	85°45'47.35887"	21°22'32.35391"
42	371559.770	2364548.926	85°45'39.86076"	21°22'42.74514"
43	371470.158	2364705.161	85°45'36.70669"	21°22'47.80280"
44	371254.154	2364777.164	85°45'29.18741"	21°22'50.08882"
45	370984.597	2364867.020	85°45'19.80374"	21°22'52.94149"
46	370924.268	2364896.551	85°45'17.70101"	21°22'53.88628"
47	370980.000	2364982.000	85°45'19.61253"	21°22'56.67937"
48	370901.000	2365073.000	85°45'16.84460"	21°22'59.61825"
49	370782.000	2365170.000	85°45'12.68617"	21°23'02.74192"
50	370601.000	2365313.000	85°45'06.36232"	21°23'07.34542"
51	370539.000	2365435.000	85°45'04.17596"	21°23'11.29673"
52	370485.000	2365539.000	85°45'02.27231"	21°23'14.66475"
53	370483.000	2365655.000	85°45'02.17083"	21°23'18.43645"
54	370371.000	2365674.000	85°44'58.27678"	21°23'19.02533"
55	370260.000	2365732.000	85°44'54.40665"	21°23'20.88268"
56	370184.058	2365821.852	85°44'51.74496"	21°23'23.78492"
57	370049.552	2365874.264	85°44'47.06015"	21°23'25.45440"
58	368726.140	2370085.826	85°43'59.92866"	21°25'42.06399"
59	368834.994	2370185.609	85°44'03.68127"	21°25'45.33739"
60	368832.726	2370303.534	85°44'03.56945"	21°25'49.17158"
61	369098.059	2370421.460	85°44'12.75175"	21°25'53.07595"
62	369393.099	2370613.928	85°44'22.94519"	21°25'59.41198"
63	369532.775	2370636.206	85°44'27.79019"	21°26'00.17294"
64	369609.925	2370677.998	85°44'30.45810"	21°26'01.55211"
65	369651.401	2370435.066	85°44'31.96635"	21°25'53.66308"
66	369558.048	2370174.064	85°44'28.79681"	21°25'45.15125"
67	369494.923	2370126.646	85°44'26.61766"	21°25'43.59278"
68	369519.869	2369956.561	85°44'27.53148"	21°25'38.06834"
69	369155.335	2369973.451	85°44'14.86632"	21°25'38.52227"
70	368864.923	2369928.127	85°44'04.79289"	21°25'36.97227"

DSS analysis of Degraded Forest Patch selected for CA

DSS(Decision Support System):

PATCH NO	<i>in square Km.)</i>		
	MDF	NON-FOREST	OPEN FOREST
Patch-I	0.00	1.28	1.10
Patch-II	0.11	0.03	0.27
Total	0.11	1.31	1.37

i) Raising of nursery:

Seedling required for this plantation shall be raised in an in-situ nursery in close vicinity of the planting site and perennial water sources. Nursery work will start one year in advance to the year of plantation, so that one year old seedlings of 45cm height will be available for plantation; Seeds shall be collected from sound trees carefully and should be treated before dibbling. Poly-pot seedlings should be raised 20% extra than the actual requirement to compensate the casualties during nursery stage as well as planting time. Standard nursery practices will be followed for raising such nursery.

i) Alignment and pitting:

Alignment and pitting will be taken up in the month of November-December and pits of size 45 cm x 45 cm x 45 cm will be dug up over 237.778 ha and pit size 30 cm x 30 cm x 30 cm will be dug up over 30.342 ha, earth will be piled preferably on the northern aspect.

ii) Actual planting:

The seedlings will be planted in the dugout pits with initial dose of manure. Plantation should be taken up after first regular shower of monsoon and should be completed by the end of July. Species should be planted as per the suitability of the soil condition. NPK fertilizer @ 30gms per plant should be given as basal dosage. Anti-termite insecticide should also be applied to each pit while planting. Casualties if any noticed should be replaced with the excess seedling raised for the purpose. During second year also casualty replacement will be done for which seedling shall be raised.

iii) Weeding, Soil working & manuring:

For establishment and better growth of the planted seedling, weeding, soil working and manuring are necessary as prescribed in the approved cost Norm.

Year of operation	Number of weeding and pattern	Application of manure with quantity	Time Period
1 st year	02 (Complete weeding) 2 nd weeding will be followed by a Soil Working 50cm around each plant.	100 gms per plant in doses after each weeding	Aug-Sept. Sept.-Oct
2 nd year	01 complete weeding	50 grams per plant	Aug. Oct.
	Soil Working 50 cm radius around each plant		Aug. Oct.

(v) Application of insecticides.

The plantation site after planting good healthy seedling may cause influx of insects, which usually eat and damage the roots of the plants. To get rid of such insects attack application of the insecticides will be taken up @ 5 grams per plant while planting. Spraying of insecticides shall be done preferably in a sunny day in the afternoon.

04. INSPECTION, MONITORING & EVALUATION:

Compensatory Afforestation will be taken up in the identified site by the Range Officer, Ghatgaon Forest Range of Keonjhar Division. The Range Forest Officer, Ghatgaon Forest Range will undertake field checks of the works undertaken at the identified site and will be cross checked by the Asst. Conservator of Forests, (Affn.) and Divisional Forest Officer, Keonjhar Division. GPS co-ordinates along with other required informations of Compensatory Afforestation will be uploaded in the e-Greenwatch Portal of NIC, MoEF, Govt. of India for the purpose of online monitoring. Annual progress of plantation involving growth of planted seedlings, survival percentage etc. will be monitored and recorded in the plantation journal by the field staffs of Ghatgaon Forest Range and reported to the Divisional Forest Officer for necessary action. The same thing will be reported to the Regional Chief Conservator of Forests, Rourkela Circle and Chief Conservator of Forests (PP&A), O/o the Pr. Chief Conservator of Forests, Odisha, Bhubaneswar and necessary corrective measures will be followed if required so.

05. CONTROL:

The nursery journal, the plantation journal and other records shall be maintained for each patch separately in accordance with the provision of "The Odisha Forest Plantation Manual 1977 indicating the Physical and financial achievements. Necessary entries with regard to plantation activities undertaken shall be entered in the journals and shall be produced before the inspecting officers for their views. The date of inspection and comments of the visitor will also find place in the journal.

06. EXECUTING AGENCY:

The Divisional Forest Officer, Keonjhar Forest Division through his staff will execute the scheme as per fund to be provided by the user agency.

07. FUNDING AGENCY:

Rs. **8,92,54,500.00** (Rupees eight crore ninety-two lakh fifty-four thousand five hundred) only shall be deposited by the project proponent i.e. East Coast Railway on approval of the scheme to the Ad-hoc CAMPA Account and the funds will be utilized for raising of Compensatory Afforestation by the Divisional Forest Officer, Keonjhar Division on allotment by the Principal Chief Conservator of Forest, Odisha, Bhubaneswar

08. Monitoring and Evaluation

The Divisional Forest Officer, Keonjhar Division will monitor and evaluate this plantation with a team of field executives at least once every year for which financial provision has been made in the Cost Norm .

09. TOTAL FINANCIAL OUTLAY FOR THE SCHEME:

The total financial outlay of the scheme is Rs. **8,92,54,500.00** (Rupees eight crore ninety-two lakh fifty-four thousand five hundred) only.


Divisional Forest Officer
Keonjhar Division

**A. COST NORM FOR ANR PLANTATION @ 600 PLANTS PER HECTARE
WAGE RATE Rs. 308.00 PER MANDAY (In Patch-1 over 237.778 ha of Barabank RF as
applicable for Bald Hill plantation)**

**(As per revised wage rate communicated by Labour Commissioner, Odisha,
Bhubaneswar vide their letter No. 6100/LC dated 21.10.2020 and approved cost norm
communicated by PCCF, Odisha vide memo No. 25281 dated 18.12.2018)**

Sl. No.	Item of work	Preferable period of execution	Manday	Labour cost @ Rs 308.00 per day	Material cost per hectare in Rs	Total cost per hectare in Rs.
Preparatory operation (0th Year)						
1	Survey and demarcation	June	2	616	0	616
2	Fencing i. For an average of 126 mtr/ ha @Rs. 76.19 per mtr for bamboo twigs and bamboo thorns fencing (LM= 40:60). ii. To be strengthened by planting of bamboo and other seedlings in two rows. Bamboo to be planted at two mtr spacing in staggered manner on the two rows, and the rest of the species to be planted at ½ mtr species along the two rows, the rows being two mtr apart. Thus 500 plants (125 bamboo and 375 others) to be planted in two rows to cover 126 mtr of periphery/ ha by the vegetative fenced (Bamboo seedlings @Rs. 12.43 per seedlings x 125 = 1553.75, Agave seedlings @4.90 per seedling x 375 = Rs. 1837.50.	June-Sept	19	5852	4280	10132
		June-Sept	11	3388	3391.25	6779.25
3	Pitting (600 per ha) each pit 45cm ³	Nov-Dec	80	24640	0	24640
4	Soil and water conservation measures (a) Staggered trench along the contour @ 300 per ha (2.5mx0.5mx0.5m), digging of percolation pits @ 600 per ha in lieu of staggered trenches, gully plugging and Drainage line treatment, half moon trench on the uphill side of each planting pit (100 MD for staggered trench/ percolation pits and 30 MD for gully plugging, drainage line treatment and half moon trench)	Sept-Nov	130	40040	0	40040

	(b) Site clearance-8 MD. Alignment and staking of contour lines on ground, planting pits, contour trenches/percolation pits and check dam sites etc.-2 MD	July-Aug	10	3080	0	3080
5	Raising of seedlings in poly bags (minimum 60 cm high) @ Rs 12.43 per seedling (Rs 8.67 in 0 th year + Rs. 3.76) Part (660 saplings to be raised for one hectare from January-March @ Rs 7708/-	October-March	16.5	5082	1102	6184
	Total 0th year		268.5	82698	8773.25	91471.25
Planting Operation (1st Year)						
1	Cost of sapling (balance) from April-June/July @ Rs 2.78 per seedling for 1100 seedlings = Rs. 3240/-	April-July	8.06	2482.48	222.37	2704.85
2	Freshening of pits, filling with fertile soil and farm yard manure (FYM), application of insecticide and planting of 60 cm tall saplings including carriage of plants	June-July	40.875	12589.5	0	12589.5
3	Cost of fertile soil 0.25 cft @ Rs 6 per cft/ FYM 0.25 cft @ Rs 15 per cft per pit		0	0	3450	3450
4	Carriage. Planting including casualty replacement, fertilizer application, 1 st weeding, 2 nd weeding, soil working.	July-August	13.5	4158	0	4158
6	Cost of fertilizer and insecticide (Granular insecticide @ 5gms/plant @Rs 80/- per kg, NPK 100 gms/plant in two doses @ Rs 24 per kg		0	0	1680	1680
7	Maintenance of Soil and Moisture Conservation measures (20% of cost)	October-December	26	8008	0	8008
8	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	30	9240	0	9240
9	Fire tracing and control, display board construction, painting/writing, other miscellaneous cost	Jan-Feb	10	3080	360	3440
	Total (1st year)		128.44	39559.52	5712.37	45271.89
Maintenance Operation (2nd Year)						
1	Casualty replacement including seedling cost @ Rs 12.43 per seedling and its transportation	June-July	3.75	1155	745.80	1900.8
2	Soil working, 1 st weeding, 2 nd weeding and fertilizer application	August-October	8.625	2656.5	0	2656.5

3	Cost of fertilizer @ 50 gms NPK per plant. Insecticide @ 5 gm per plant		0	0	744	744
4	Maintenance of Soil and Moisture Conservation measures (20% of cost)	August-October	15.6	4804.8	0	4804.8
5	Fire tracing and control, and other miscellaneous cost	Feb-March	10	3080	0	3080
6	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	30	9240	0	9240
	Total 2nd Year		67.975	20936.3	1489.80	22426.1
Maintenance Operation (3rd Year)						
1	S.M.C measures (Renovation)-	April-March	15.6	4804.8	0	4804.8
2	Maintenance of plantation	Apr-Mar	6.75	2079	0	2079
3	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	30	9240	0	9240
	Total 3rd Year		52.35	16123.8	0	16123.8
Maintenance Operation (4th Year)						
1	S.M.C measures-12.6 MD, and maintenance of plantation –8.4 MD	April-March	21	6468	0	6468
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544	0	5544
	Total 4th Year		39	12012	0	12012
Maintenance Operation (5th Year)						
1	S.M.C measures-12.6 MD, and maintenance of plantation –8.4 MD	April-March	21	6468	0	6468
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544	0	5544
	Total 5th Year		39	12012	0	12012
Maintenance Operation (6th Year)						
1	S.M.C measures-12.6 MD, and maintenance of plantation –8.4 MD	April-March	21	6468	0	6468
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544	0	5544
	Total 6th Year		39	12012	0	12012
Maintenance Operation (7th Year)						
1	S.M.C measures-12.6 MD, and maintenance of plantation –8.4 MD	April-March	21	6468	0	6468
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544	0	5544
	Total 7th Year		39	12012	0	12012

Maintenance Operation (8th Year)						
1	S.M.C measures-12.6 MD, and maintenance of plantation –8.4 MD	April-March	21	6468	0	6468
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544	0	5544
Total 8th Year			39	12012	0	12012
Maintenance Operation (9th Year)						
1	S.M.C measures- 21MD, and maintenance of plantation – 14 MD	April-March	21	6468	0	6468
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544	0	5544
Total 9th Year			39	12012	0	12012
Maintenance Operation (10th Year)						
1	S.M.C measures- 21MD, and maintenance of plantation – 14 MD	April-March	21	6468	0	6468
2	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	18	5544	0	5544
Total 10th Year			39	12012	0	12012

ABSTRACT

Sl. No.	Year	No. person days	Labour cost	Material cost	Total Cost (Rs.)
1	0 th year	268.5	82698	8773.25	91471.25
2	1 st year	128.44	39559.52	5712.37	45271.89
3	2 nd year	67.975	20936.3	1489.80	22426.1
4	3 rd year	52.35	16123.8	0	16123.8
5	4 th year	39	12012	0	12012
6	5 th year	39	12012	0	12012
7	6 th year	39	12012	0	12012
8	7 th year	39	12012	0	12012
9	8 th year	39	12012	0	12012
10	9 th year	39	12012	0	12012
11	10 th year	39	12012	0	12012
Total		790.65	243520.2	15975.42	259495.62
Total Cost of plantation (237.778 ha.)					61702349.53

**B. COST NORM FOR ANR PLANTATION @ 400 PLANTS PER HECTARE
WAGE RATE Rs.308.00 PER MANDAY (In Patch-2 over 30.342 Ha of Barabanka RF)
(As per revised wage rate communicated by Labour Commissioner, Odisha, Bhubaneswar
vide their letter No. 6100/LC dated 21.10.2020).**

0 th year (Advance work) Pre-planting operation.						
Sl No	Item of work	Preferable period of execution	pers on days	Labour (Rs)	Material (Rs)	Total (Rs)
0th year						
1	Survey demarcation and pillar posting, GPS reading with mapping	Nov/Dec	2	616	0	616
2	Site Preparation	Nov/Dec	2	616	0	616
3	Silviculture Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots etc.	Jan/Feb	5	1540	0	1540
4	Nursery cost (6 months old seedling) part @ Rs. 9.45/- seedling (Rs. 6.67 in 0th year + Rs. 2.78 in 1st year) for 440 seedlings (400+40)		11	3388	735	4123
5	Contingency and unforeseen expenditure		0		165	165
	Sub Total		20	6160	900	7060
6	Monitoring & Supervision charge 5% of the total cost					353
	Grand Total		20	6160	900	7413
1st year						
1	Nursery cost (6 months old seedling) balance @Rs. 2.78 for 440 seedlings	Apr-Jul	5	1540	255	1795
2	Pitting 30 cm cube size	Feb/Mar	12	3696	0	3696
3	Carriage and planting including casualty replacement	Jul/Aug	10	3080	0	3080
4	Complete weeding, Soilworking, manuring	Aug/Sep	12	3696	0	3696
5	Cost of vermin compost @200gms/plant @Rs. 20/-per kg=Rs. 1600.00 and Granular insecticide 5 gms/ plant @ Rs. 80 per kg=Rs.160.00	Aug/Sep	0	0	1760	1760
6	Cost of chemical fertilizer (a) Urea 70 gms/plant in two subsequent doses @ Rs.6 per kg =Rs 168.00 (b) NPK 50 gms/plant @ Rs. 24/- per kg= Rs. 480.00 as basal dose		0	0	648	648
7	Silvicultural operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct	15	4620	0	4620

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	6160	0	6160
9	Fireline Tracing and inspection path	Feb/Mar	3	924	0	924
10	Watch & ward	Aug-Mar	7	2156	0	2156
11	Contingency and unforeseen expenditure		0	0	319	319
	Sub Total		84	25872	2982	28854
12	Monitoring & Supervision charge 5% of the total cost					1442.7
	Grand Total		84	25872	2982	30296.7
2nd year						
1	Casualty Replacement including cost of seedling, carriage and planting	Jul/Aug	2	616	497.2	1113.2
2	Complete weeding and cultural operations	Sep/Oct	4	1232	0	1232
3	Soil working and manuring	Sep/Oct	4	1232	0	1232
4	Cost of fertilizer and insecticide (a) Vermicompost 200 gms/plant @ Rs. 20/ per kg=Rs.1600 (b) Granular insecticide 5 gms/plant for 40 plants 200gms @ Rs. 80/- per kg=Rs.16.00	Sep/Oct	0	0	1616	1616
5	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
6	Soil conservation Measures (Renovation of staggered trenches etc.)	Sep/Oct	8	2464	0	2464
7	Watch & ward (whole year)	Apr-Mar	7	2156	0	2156
8	Contingency and unforeseen expenditure		0	0	362	362
	Sub Total		26	8008	2475.2	10483.2
9	Monitoring & Supervision charge 5% of the total cost					524.16
	Grand Total		26	8008	2475.2	11007.36
3rd Year						
1	Complete weeding and cultural operations	Aug/Sep	2	616	0	616
2	Soil working	Aug/Sep	2	616	0	616
3	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
4	Watch & ward (whole year)	Apr-Mar	7	2156	0	2156
	Sub Total		12	3696	0	3696
5	Monitoring & Supervision charge 5% of the total cost					184.8
	Grand Total		12	3696	0	3880.8
4th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308		308

2	Watch & ward and cultural operation	Apr-Mar	2	616		616
	Sub-Total		3	924	0	924
3	Monitoring & Supervision charge 5% of the total cost					46.20
	Grand Total		3	924	0	970.20
5th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308		308
2	Watch & ward and cultural operation	Apr-Mar	2	616		616
	Sub-Total		3	924	0	924
3	Monitoring & Supervision charge 5% of the total cost					46.20
	Grand Total		3	924	0	970.20
6th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308		308
2	Watch & ward and cultural operation	Apr-Mar	2	616		616
	Sub-Total		3	924	0	924
3	Monitoring & Supervision charge 5% of the total cost					46.20
	Grand Total		3	924	0	970.20
7th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308		308
2	Watch & ward and cultural operation	Apr-Mar	2	616		616
	Sub-Total		3	924	0	924
3	Monitoring & Supervision charge 5% of the total cost					46.20
	Grand Total		3	924	0	970.20
8th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308		308
2	Watch & ward and cultural operation	Apr-Mar	2	616		616
	Sub-Total		3	924	0	924
3	Monitoring & Supervision charge 5% of the total cost					46.20
	Grand Total		3	924	0	970.20
9th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308		308
2	Watch & ward and cultural operation	Apr-Mar	2	616		616
	Sub-Total		3	924	0	924
3	Monitoring & Supervision charge 5% of the total cost					46.20
	Grand Total		3	924	0	970.20
10th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308		308

2	Watch & ward and cultural operation	Apr-Mar	2	616		616
	Sub-Total		3	924	0	924
3	Monitoring & Supervision charge 5% of the total cost					46.20
	Grand Total		3	924	0	970.20

ABSTRACT						
Sl. No.	Year	Person days	Labour cost @308.00/- per Manday (Rs.)	Material cost (Rs.)	Monitoring & Supervision charge 5% of the total cost (Rs.)	Total cost (Rs.)
1	0th Year	20	6160	900	353	7413
2	1st Year	84	25872	2982	1442.7	30296.7
3	2nd Year	26	8008	2475.2	524.16	11007.36
4	3rd Year	12	3696	0	184.8	3880.8
5	4th Year	3	924	0	46.20	970.20
6	5th Year	3	924	0	46.20	970.20
7	6th Year	3	924	0	46.20	970.20
8	7th Year	3	924	0	46.20	970.20
9	8th Year	3	924	0	46.20	970.20
10	9th Year	3	924	0	46.20	970.20
11	10th Year	3	924	0	46.20	970.20
	Total	163	50204	6357.2	2828.06	59389.26
	Total Cost of plantation (30.342 ha.)					1801988.92

C. Cost Norms for Aided Natural Regeneration (ANR without gap) per hectare wage rate Rs. 308.00/per day
(As per revised wage rate communicated by Labour Commissioner, Odisha, Bhubaneswar vide their letter No. 6100/LC dated 21.10.2020).

Sl No	Item of work	Preferable period of execution	Person days	Labour (Rs)	Material (Rs)	Total (Rs)
0th year						
1	Survey demarcation and pillar posting, GPS reading with mapping	Nov/Dec	2	616	0	616
2	Site Preparation	Nov/Dec	2	616	0	616
3	Cutting of high stumps		5	1540	0	1540
	Sub Total		9	2772	0	2772
4	Monitoring & Supervision charge 5% of the total cost					138.6
	Grand Total		9	2772	0	2910.6

1st year						
1	Silvicultural operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct	15	4620	0	4620
2	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	6160	0	6160
3	Fireline Tracing and inspection path	Feb/Mar	3	924	0	924
4	Watch & ward	Aug-Mar	5	1540	0	1540
5	Contingency and unforeseen expenditure		0	0	500	500
	Sub Total		43	13244	500	13744
6	Monitoring & Supervision charge 5% of the total cost					687.2
	Grand Total		43	13244	500	14431.2
2nd year						
1	Soil conservation Measures (Renovation of staggered trenches etc.)	Sep/Oct	8	2464	0	2464
2	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
3	Watch & ward (whole year)	Apr-Mar	7	2156	0	2156
4	Contingency and unforeseen expenditure		0	0	300	300
	Sub Total		16	4928	300	5228
5	Monitoring & Supervision charge 5% of the total cost					261.4
	Grand Total		16	4928	300	5489.4
3rd Year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
2	Watch & ward (whole year)	Apr-Mar	7	2156	0	2156
3	Contingency and unforeseen expenditure		0	0	300	300
	Sub Total		8	2464	300	2764
4	Monitoring & Supervision charge 5% of the total cost					138.2
	Grand Total		8	2464	300	2902.2
4th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
2	Watch & ward and cultural operation	Apr-Mar	2	616	0	616
3	Contingency and unforeseen expenditure			0	100	100
	Sub-Total		3	924	100	1024
4	Monitoring & Supervision charge 5% of the total cost					51.2
	Grand Total		3	924	100	1075.2
5th year						

1	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
2	Watch & ward and cultural operation	Apr-Mar	2	616	0	616
3	Contingency and unforeseen expenditure			0	100	100
	Sub-Total		3	924	100	1024
4	Monitoring & Supervision charge 5% of the total cost					51.2
	Grand Total		3	924	100	1075.2
6th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
2	Watch & ward and cultural operation	Apr-Mar	2	616	0	616
3	Contingency and unforeseen expenditure			0	100	100
	Sub-Total		3	924	100	1024
4	Monitoring & Supervision charge 5% of the total cost					51.2
	Grand Total		3	924	100	1075.2
7th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
2	Watch & ward and cultural operation	Apr-Mar	2	616	0	616
3	Contingency and unforeseen expenditure			0	100	100
	Sub-Total		3	924	100	1024
4	Monitoring & Supervision charge 5% of the total cost					51.2
	Grand Total		3	924	100	1075.2
8th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
2	Watch & ward and cultural operation	Apr-Mar	2	616	0	616
3	Contingency and unforeseen expenditure			0	100	100
	Sub-Total		3	924	100	1024
4	Monitoring & Supervision charge 5% of the total cost					51.2
	Grand Total		3	924	100	1075.2
9th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
2	Watch & ward and cultural operation	Apr-Mar	2	616	0	616
3	Contingency and unforeseen expenditure			0	100	100
	Sub-Total		3	924	100	1024
4	Monitoring & Supervision charge 5% of the total cost					51.2
	Grand Total		3	924	100	1075.2
10th year						
1	Fireline Tracing and inspection path	Feb/Mar	1	308	0	308
2	Watch & ward and cultural operation	Apr-Mar	2	616	0	616

3	Contingency and unforeseen expenditure			0	100	100
	Sub-Total		3	924	100	1024
4	Monitoring & Supervision charge 5% of the total cost					51.2
	Grand Total		3	924	100	1075.2

ABSTRACT						
Sl. No.	Year	Person days	Labour cost @308.00/- per manday (in Rs.)	Material cost (in Rs.)	Monitoring & Supervision charge 5% of the total cost in (Rs.)	Total cost (in Rs.)
1	0th Year	9	2772	0	138.6	2910.6
2	1st Year	43	13244	500	687.2	14431.2
3	2nd Year	16	4928	300	261.4	5489.4
4	3rd Year	8	2464	300	138.2	2902.2
5	4th Year	3	924	100	51.2	1075.2
6	5th Year	3	924	100	51.2	1075.2
7	6th Year	3	924	100	51.2	1075.2
8	7th Year	3	924	100	51.2	1075.2
9	8th Year	3	924	100	51.2	1075.2
10	9th Year	3	924	100	51.2	1075.2
11	10th Year	3	924	100	51.2	1075.2
	Total	97	29876	1800	1583.8	33259.8
Total Cost of plantation (11.00 ha.)						365857.8

ADDITIONAL COST PROPOSED FOR PATCH- 1 OVER 237.778 HA

1	SMC measures- LBCD structure of dimension 10' x 10' x 5' @Rs. 8725.39/- per LBCD structure for 474 LBCD structures.	Rs. 8725.39 x 474 nos.	4135834.86
2	Additional incentive (3% of cumulative expenditure upto 4 th year) for VSS/Fr./FG proposed for more than 80% survival and very good growth during 4 th year of maintenance as per recommendation of DFO and RCCF. @Rs. 5619.15/- for 237.778 ha.	Rs. 5619.15 x 237.778 ha	1336110.24
3	Additional EPA expenses if implemented through VSS at rate Rs.1200/- in 0 th Year, Rs.2400/- in 1 st Year, Rs.1800/- in 2 nd Year, Rs.600/- in 3 rd Year, Rs.600/- in 4 th Year, Rs.600/- in 5 th Year, Rs.600/- in 6 th year, Rs.600/- in 7 th year, Rs.600/- in 8 th year, Rs.600/- in 9 th year, Rs.600/- in 10 th year @ Rs. 10200/-per Ha. for 237.778 ha	Rs.10200 x 237.778 ha	2425335.60
4	Cost of maintenance to 50 damaged pillars of Barabanka R.F. @Rs.3,000/-	Rs.3,000/- x 50 pillars	150000.00
	Sub Total		8047280.70

**ADDITIONAL COST PROPOSED FOR PATCH- 2 OVER 41.342 HA (ANR- 30.342 ha,
ANR without gap plantation- 11.00 ha)**

1	SMC measures- LBCD structure of 10' x 10' x 5' @Rs. 8725.39/- per LBCD for 82 no. LBCD structures.	8725.39 x 82 nos.	715481.98
2	Staggered trenches of 2.5 mt x 0.5 mt x 0.5 mt) @60 MD for 300 structures per ha	18480 x 41.342 ha	764000.16
3	Bamboo, Brushwood fencing over 41.342 ha length of 2.781 Km.	19884 x 41.342 ha	822044.33
4	Additional incentive @ 3% of cumulative expenditure up to 4 th year) for VSS/Fr/FG proposed for more than 80% survival and very good growth during 4th year of maintenance as per recommendation of DFO and RCCF @ Rs.2412/- for 41.342 ha.	2412 x 41.342 ha	99716.90
5	Cost of maintenance to 20 damaged pillars of Barabanka R.F. @Rs.3,000/-	Rs.3,000/- x 20 pillars	60000.00
	Total		2461243.37

TOTAL COST OF PROJECT

1	Plantation over 237.778 ha @600 seedlings/ ha of Rs. 259495.62	61702349.53
2	Plantation over 30.342 ha @400 seedlings/ ha of Rs. 59389.26	1801988.92
3	Plantation over 11.00 ha ANR without gap of Rs. 33259.80	365857.80
	Total plantation cost over 279.12 ha	63870196.25
4	Additional Cost(8047280.70 + 2461243.37) (Patch- 1 + 2)	10508524.07
	Sub Total	74378720.32
5	Add 20% escalation	14875744.06
	Grand Total	89254464.38
		Or say 8,92,54,500.00

(Rupees eight crore ninety-two lakh fifty-four thousand five hundred) only.


Divisional Forest Officer,
Keonjhar Division