नालको NALCO

SCHEME FOR

COMPENSATORY AFFORESTATION OVER 23.0 HA

OF DEGRADED FOREST LAND IN JHIRJHIRA P.R.F. OF LAXMIPUR RANGE, DASMANTPUR TAHASIL, OF KORAPUT FOREST DIVISION

IN LIEU OF 11.377 HA OF REVENUE FOEST LAND TO BE DIVERTED FOR 220 KV S/C TRANSMISSION LINE ON D/C TOWER FROM EXISTING 220/33 KV SUB-STATION AT LAXMIPUR TO PREMISES OF NALCO AT DAMNAJODI IN KORAPUT DIST. OF ODISHA.

11.377 HA X TWICE FOR CENTRAL SECTOR PSU= 22.754 OR 23.0 HA

PREPARED BY
D.F.O., KORAPUT

SUITABILITY CERTIFICATE

Certified that 23.0 Ha (11.377 ha x 2= 22.754 ha) of degraded forest has been identified for Compensatory Afforestation in JhirjhiraP.R.F. of Laxmipur Forest Range in lieu of 11.377 ha of Revenue forest land to be diverted for 220 KV S/C Transmission line on D/C Tower from existing 220/33 KV Sub-Station at Laxmipur to premises of NALCO at Damanjodi in Koraput Dist. is found suitable for plantation.

Degraded Forest twice in extent for Compensatory Afforestation has been identified as per Para 3.2 (iv) of guideline to Forest (Conservation) Act. 1980 as NALCO is a Central Sector PSU

Divisional Forest Officer,
Koraput Division

Divisional Forest Officer
Koraput Division

1. INTRODUCTION

NALCO owns and operates Bauxite mines with a long range of Conveyor Belt, Alumina Refinery, Administrative building etc. at Damanjodi in Koraput Dist. Un-interrupted Power supply is essential for smooth running of the Mines, refinery, staff canteen, administrative Buildings, residential area and other infrastructures. The present load demand is 93.0 MW.Presently power supply to NALCO at Damanjodi is fed with two single circuit 132 KV Transmission Line, one directly from Jay Nagar and another from Sunabeda. Frequent power disturbances are experienced from Jay Nagar unit resulting in production loss. The Sunabeda feeder has a limited supply of 10 MW only. Therefore, to compensate the deficient power supply, NALCO proposes to strengthen the existing power distribution system at M & R complex Damanjodi by installing a 220 KV Transmission Line from Laxmipur Sub-station of Orissa Power Transmission Corporation Ltd. (OPTCL). The total length of the line is 36.912 K.M.

2. LAND INVOLVED

D.F.O., Koraput vide his letter No.1126/4F(Misc.) Dt.16.03.2015 has identified 23.0 ha of land in Jhirjhira P.R.F. (11.377 ha x 2) as per para 3.2. (iv) of guideline to F (C) Act, 1980 for Block Plantation/ RDF plantation since NALCO is a Central Sector Public Sector Undertaking (PSU).

Total 11.377 ha x 2 = 22.754 ha Or 23.0 Ha	**23.0 ha**	**15.0 ha of Block Plantation @ 1600 seeding per Ha. in Bald Hill Norm + 8.0 ha RDF with 800 plants per ha as per approved Norm.**	**Approved Cost Norm as per letter No.643(36)/12F-AFFN-274/2014 Dt.12.02.2015 of PCCF, Odisha with 0 + 10 years maintenance.**

A - **JhirajhiraPRF** comes in LaxmipurTahasil of Laxmipur Range and allocated in the present Working Plan to Selection cum improvement Working Circle ofLaxmipurimprovement Felling series.This PRF has been shown in TOPO Sheet No.E44K13 (65 J/13). This block includes Sal patches at sparse coupled with miscellaneous forest with comparatively better crop composition. This block includes hilly terrain. The adjoining village is Jhirjhira. Forest type of this block is Southern Dry Mixed Deciduous Forests (5B/C_2).

Special objective of Management of Selection Working Circle

- To improve the density and composition of forest crop and to encourage natural regeneration through variety of silvicultural operations including soil and moisture conservation measures.
- To remove only dead and up-rooted trees besides felling those of matured trees whose removal would benefit better growth and more of adequate natural regeneration in consistence with the general objectives of the management.
- To remove congestion in the coppice crop by way ofthinning operations also that conducive situation is create for better growth of the crop and the upcoming natural regeneration.

DESCRIPTION OF EXISTING VEGETATION

The dominant species is Sal (Shorearobusta) associated withPiasal (Pterocarpusmarsupium), Asan (Terminaliaalata), Dhaura (Anogeissuslatifolia), MankadKendu (Diospyrosmelanoxylon), Karada (Cleistanthuscollinus), Kumbhi (Careyaarborea), Mango (Mangiferaindica), Amla (Emblicaofficinalis), Harida (Terminaliachebula), Jamun (Syzygiumcuminii), Bamboo (Dendrocalamusstrictus) etc. This P.R.F. comes under Southern Dry Mixed Deciduous Forest (5 A-C 3). Undergrowth consists of

Naguari (Lantana camara), Pokasunga (Chromolaenaodorata), Kurei (Hollarhena anti-dysenterica).

G.P.S. READING OF SURVEYED POINTS

G.P.S. reading taken up in **JhirjhiraP.R.F in Laxmipur** Range comes under LaxmipurTahasilin Laxmipur range for Compensatory Afforestation Plantation by M/S NALCO Ltd is given below.

SL.NO.	PILLAR		BEARING		DISTANCE IN MTR.	LATITUDE	LONGITUDE
	FROM	TO	**FORWARD**	**BACKWARD**			
1	1	2	248°	68°	255.78	N18 59 08.2	E82 58 06.2
2	2	3	323°	143°	286.4	N18 59 04.6	E82 57 56.4
3	3	4	344°	164°	216.76	N18 59 12.1	E82 57 50.6
4	4	5	66°	246°	325.01	N18 59 18.9	E82 57 48.6
5	5	6	49°	229°	199.9	N18 59 23.1	E82 57 58.8
6	6	7	332°	152°	135.53	N18 59 27.3	E82 58 04.0
7	7	8	84°	264°	375.91	N18 59 31.2	E82 58 01.9
8	8	9	16°	196°	131.32	N18 59 32.3	E82 58 14.7
9	9	10	112°	292°	149.3	N18 59 36.4	E82 58 16.0
10	10	11	172°	352°	114.12	N18 59 34.5	E82 58 20.7
11	11	12	263°	83°	162.36	N18 59 30.8	E82 58 21.2
12	12	13	218°	38°	360.29	N18 59 30.2	E82 58 15.7
13	13	14	223°	43°	302.19	N18 59 22.2	E82 58 05.2
14	14	15	117°	297°	88.95	N18 59 15.9	E82 57 56.2
15	15	1	117°	297°	155.57	N18 59 14.6	E82 57 59.0

TOPOGRAPHY & SOIL

The terrain is almost hilly with shallow soil depth and fair drainage system. However, the plantation in Block model with Bald Hill Norm will be taken up on the foot hill whereas RDF operation will be undertaken in gentle hill slopes to prevent soil erosion and protection for improving regeneration of prominent species.

CLIMATIC CONDITION

The climatic condition of the area favors growth of dry deciduous forest having average annual rain fall of 75 – 100 cm and maximum temperature 45^{0}C. The summer season is from March to June, winter from November to February and rainy season is from July to September.

SURVEY & DEMARCATION

The area should be surveyed in field with reference to the Topo map using G.P.S. system. The masonry pillars already existing/ to be fixed on the boundary of the site are to be numbered and the pillar numbers with G.P.S. reading i.e. latitude & longitude has to be written over the pillars. The pillars are to be painted with white paint whereas the writing there-on will be in black paint.

The plantation areas need to be provided with sign boards at corners or at point of intersection with roads, inspection paths and boundary lines. The sign boards should contain the name of the plantation site, area, year of planting, planting module, No. of seedlings planted, funding agency & other details, as would be necessary.

A - 1 - <u>Block Plantation</u> is proposed to be taken up in Bald Hill Norm over 15.0 ha @ 1600 nos. of seedlings per ha at a spacing of 2.5 mtr x 2.5 mtr with a pit size of 30 $cm^{3.}$ The effective area of the plantation shall be calculated basing on the actual number of pits/ seedlings planted in order to avoid any future complicacy, which should be recorded in the Plantation Journal and shown in the map, too.

The Schedule of operation for preparation of site, pre-planting, planting, post-planting are prescribed herewith.

OPERATIONS	PERIOD OF COMPLETION
i. Advance preparation of site.	End of October
ii. Alignment & Digging of pits	End of February
iii. Stacking	End of February
iv. Pre sprouted poly potted stump planting.	1st week of July
v. Casualty replacement	End of July
vi. 1st soil working, weeding, manuring	End of August
vii. Soil & water conservation measuring	End of September
viii. 2nd soil working, weeding	During October
ix. Fire line tracing	During December
X Watch & Ward	July to March

Post Planting operation in 2nd year.

a. Casualty replacement, 1st weeding soil working &manuring. : End of July

b. Fire line tracing : During December

c. Watch & Ward :Whole year
(byProviding312 MD.)

In 3rd year.

a. Wedding, soil working and application of manure: End of July

b. Fireline tracing : December

c. Watch & Ward : Whole year
(by Providing312 MD.)

In 4th year to 10th year

a. Fire line tracing : End of December

b. Pruning & Singling : September

c. Watch & Ward : Whole year
(by Providing312 MD.).

NURSERY :

A) A good nursery is the pre-requisite for a successful plantation. All care should be taken to raise healthy seedlings of required sizes before they are planted at site. Planting of one year old seedling of above species shall be taken up. Nursery Programme must be planned out as per the "Guide-lines" in the plantation manual, 1977 so that a good stock of healthy Seedling can be raised. 10% extra seedling be raised to cover the shortfall due to casualty in the nursery stage.

B) The temporary nursery should be raised near the plantation site as far as practicable.

C) A good variety of seeds should be collected from plus trees or purchased from the State Silviculturist with prior requisition.

D) Proper treatment of seeds should be done as per the Plantation manual, 1977.

E) Shifting and grading of potted seedlings is recommended not only to develop resistance for isolation but not to allow the roots striking into the ground by the time they are shifted to planting site.

Choice of Species

Common Name	Scientific Name
Salia Bamboo	*Dendrocalamusstrictus*
Mango	*Mangiferaindica*
Jack fruit	*Artocarpusheterophyllus*
Cashew	*Anacardiumoccidentale*
Neem	*Azadirachtaindica*
Bel	*Aeglemarmelos*
Sunajhari	*Acacia auriculiformis*
Sunari	*Cassia fistula*
Bad Chakunda	*Samaniasaman*

Chakunda	*Cassia siamea*
Simaruba	*Simarubaglauca*
Amla	*Emblicofficinalis*
Harida	*Terminaliachebula*
Jamun	*Syzyglumcuminii*
Karanja	*Pongamiaglabra*

PROTECTION:

The important element of successful plantation is Protection. Watchers are to be engaged on daily wage basis for ten years but they should be assigned with specific work and their involvement in protecting the plantation should be ensured. It is suggested not to engage a particular person for the entire ten years but considering the work efficiency the person, if not found suitable should be changed. Since the plantation site is close to Jhirjhira, enough care should be taken to engage efficient worker for protection as there is every possibility of damage by grazing. Therefore, in the planting design non-browsable species like Simaruba should be planted in three to four rows to-wards periphery of the plantation at the foot hill.**Keeping the view on protection of plantation of compensatory areaat least one person should be engaged for the whole year on the plantation site for its watch and ward where little provision has been provided in the cost norm of watch and ward,i.e. 312 MD provided by dividing as per the area selected.**

CONTROL MEASURES:

1) The nursery journal, the plantation journal and other records shall be maintained separately in accordance with the provisions of "The Orissa 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. In case of any eventuality like cyclone, thunder storm, hail storm etc. which causes destruction to the plantation, this should also be noted in the journal for future reference. It is also necessary to note the distribution of rain fall which not only helps in the growth of plants at site but also acts as a guideline for the ensuing years nursery schedule to be formulated.

2) For protection, measures shall be taken to save the plantation from fire incidence and prevent accidental trespass of cattle, goat etc. to the premises of the nursery. Boundary area will be scrapped to a width of at least 2mtr. During February / March and the cut materials are to be burnt under strict supervision. The inspection path around 4 Ha plot shall have to be laid out and weed growths are to be scrapped.

SOIL & WATER CONSERVATION MEASURES:

It is indispensable to take up the soil & moisture conservation work. Small gullies are to be plugged by live plants. As the area will be dried out quickly, water conservation measures will be taken by digging staggered trenches on the uphill side near each plant. These trenches will be dug along

the contour in a continuous manner. The dimensions of the trenches will be 2.5 mtr x 0.5 mtr x 0.5 mtr. and dug out earth will be kept on the lower hill side. Staggered trenches are to be aligned 15 mtr. apart along the contour and 7.5 mtr. across the contour. In addition to above, leguminous seeds are to be sown in the inter space between the plants. Check dams are proposed to be constructed out of dry rubbles across the nallahs& gullies.

Cost Norm has been furnished in Annexure –1

A – 2 - RDF Operation – 08.0 ha

PLANTING TECHNIQUE

The site will be re-stocked by way of raising plantation @ 800 plants per hectare in RDF model. Taking into consideration of the soil condition and indigenous species of the site, the species mentioned below are proposed to be planted.

Choice of Species

Common Name	Scientific Name
Salia Bamboo	*Dendrocalamusstrictus*
Cashew	*Anacardiumoccidentale*
Neem	*Azadirachtaindica*
Bel	*Aeglemarmelos*
Sunari	*Cassia fistula*
Chakunda	*Cassia siamea*
Simaruba	*Simarubaglauca*
Jamun	*Syzygiumcuminii*
Karanja	*Pongamiaglabra*

RAISING OF NURSERY

Seedlings required for this plantation shall be raised in the Permanent Central Nursery of Range Officer, Laxmipur; which is the perennial source of seedlings. 10% extra seedlings shall be raised to compensate and mitigate the eventuality casualty in the nursery. Standard nursery practices shall be followed for raising of seedlings in polypots. Cluster of Permanent gaps need to be assessed well in advance where plantation can be done.

13. ALIGNMENT AND STACKING

Alignment, staking and pitting will be taken up in the month of January-February. Pits of size 45cm x 45cm x 45cm will be dug maintaining a spacing of 2.5 mt.

14. PLANTING

The seedlings will be planted in dug out pits of 30 cm^3 maintaining a spacing of 2.5 mt between the pits i.e. @ 800 seedlings per ha. Plantation should be taken up after first shower of monsoon and should ideally be completed by end of July. NPK/DAP fertilizer @ 30 gms per plant should be given as basal dose. Anti- termite and insecticide @ 5 gms. per plant should be applied per pit while planting. Casualty replacement whenever required during the planting year and in the subsequent years upto third year should be undertaken for which the seedlings shall be raised and kept in stock at site as well as in the Central Nursery, Panchada.

15. 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 one weeding, one soil working and manuring during the first year alongwith soil moisture conservation in the form of staggered trenches. One weeding, one soil working and application of fertilizer in second year of plantation Weeding and manuring for the first and second year shall be carried out during August- September along the contour using NPK/ DAP @ 50 grams per plant. Application of vermin compost shall be given preference. First weeding shall be carried out after the first pair of leaf of the planted species have come up preferably in August. The detailed cost estimate of various operations to be taken up in ANR plantation has been furnished below. Fire line should be drawn in order to avoid damage to the plants during fire season (February to June).

16. POINTS OF IMPORTANCE:

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

- All care should be taken to raise healthy seedlings of minimum 45cm height and 10% extra of the required stock has to be raised. Pitting shall be invariably done during January-February, when the soil is moist. The sites being the hilly slopes, pits shall be dug along the contours and alternate lines should be staggered. Planting shall be done at the onset of monsoon.
- Basal dose of 30 grams of NPK and 5 grams of Aldrin be applied at the time of planting. Casualty replacement, weeding and soil working, application of fertilizer and insecticides shall be taken up as per the provisions made in the cost- norm at the proper time. Engaging requisite watchers as per norm is mandatory.
- All out efforts be taken to keep the plantation free from grazing, fire and other biotic interference.

The Schedule of operation for preparation of site, pre-planting, planting, post-planting are prescribed herewith.

OPERATIONS	PERIOD OF COMPLETION
i. Advance preparation of site.	End of October
ii. Alignment & Digging of pits	End of February
iii. Stacking	End of February
iv. Planting.	1st week of July
v. Casualty replacement	End of July
vi. Soil working, weeding, manuring	End of August
vii. Soil & water conservation measuring	End of September
viii. Fire line tracing	During December
ix Watch & Ward	July to March

Post Planting operation in 2nd year.

a. Casualty replacement, 1st weeding soil working &manuring. : End of July

b. Fire line tracing : During December

c. Watch & Ward : Whole year (by Providing 312 MD.)

In 3rd year.

a. Wedding, soil working and application of manure: End of July

b. Fire line tracing : December

c. Watch & Ward : Whole year (by Providing 312 MD.)

In 4th year

a.	Fire line tracing	:	End of December
b.	Pruning	:	September
c.	Watch & Ward	:	Whole year (by Providing 312 MD.)

PROTECTION:- 5th to 10th year

The important element of successful plantation is Protection. Watchers are to be engaged on daily wage basis for four years but they should be assigned with specific work and their involvement in protecting the plantation should be ensured. Since the plantation site is close to Jhirjhira, enough care should be taken to engage efficient worker for protection as there is every possibility of damage by biotic interference. Therefore, in the planting design non browsable species like Simaruba should be planted in three four rows to-wards periphery of the plantation at the foot hill.**Keeping the view on protection of plantation of compensatory area at least one person should be engaged for the whole year on the plantation site for its watch and ward where little provision has been provided in the cost norm of watch and ward,i.e. 312 MD provided by dividing as per the area selected.**

CONTROL MEASURES:

1) The nursery journal, the plantation journal and other records shall be maintained separately in accordance with the provision of "The Orissa 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. In case of any eventuality like cyclone, thunder storm, hail storm etc. if caused destruction to the plantation, this should also be noted. It is also necessary to note the distribution of rain fall which not only helps in the growth of plants at site but also acts as a guideline for the ensuing years nursery schedule to be formulated

2) For protection, measures shall be taken to save the plantation from fire incidence and prevent trespass of cattle, goat etc. to the premises of the nursery/ plantation. Plantation area at certain intervals need to be scrapped to a width of 2mtr. During February / March the cut materials are to be burnt under strict supervision. The inspection path at definite intervals shall have to be laid out and weed growths are to be scrapped.

FUNDING AGENCY - M/S NALCO Ltd.

EXECUTING AGENCY - Divisional Forest Officer, Koraput Forest Division.

MONITORING AND EVALUATION

Divisional Forest Officer, Koraput Forest Division shall monitor and evaluate the scheme periodically.

Annexure-1

Cost Norm of Block Plantation with Bald Hill Norm

Bald Hill Plantation

Cost Norms per ha

Year	Activities	Laboratory Cost @ Rs. 200/-	Material Cost (Rs.)	Cost Per ha (Rs.)	Entry Point Activity (For State Plan Only)	Remarks
0th Year	Preparatory	68000 (340 MD)	14160	82160	1000	Intensive soil and moisture conservation and fencing
1st Year	Planting	50600 (253 MD)	21200	71800	500	Planting of 60 cm tall healthy sapling in large sized pits with application of borrowed soil, FYM and vermin-compost
2nd Year	Maintenance	23200 (116 MD)	6590	29790	0	Casualty replacement by tall sapling and intensive care of plantation
3rd Year	Maintenance	19760 (98.8 MD)	800	20560	0	Watch and Ward of plantation and protection against fire, grazing etc.
4th	Maintenance	13760 (68.8 MD)	800	14560	0	Watch and Ward of plantation and protection against fire, grazing etc.

5th	Maintenance	13760 (68.8 MD)	800	14560	0	Watch and Ward of plantation and protection against fire, grazing etc.
6th	Maintenance	13760 (68.8 MD)	800	14560	0	Watch and Ward of plantation and protection against fire, grazing etc.
7th	Maintenance	13760 (68.8 MD)	800	14560	0	Watch and Ward of plantation and protection against fire, grazing etc.
8th	Maintenance	13760 (68.8 MD)	800	14560	0	Watch and Ward of plantation and protection against fire, grazing etc.
9th	Maintenance	13760 (68.8 MD)	800	14560	0	Watch and Ward of plantation and protection against fire, grazing etc.
Total		**(1220.6 MD) 244120**	**47550**	**291670**	**1500**	
		83.69 %	**16.31 %**	**100 %**		

BALD HILL PLANTATION

Sl No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/-per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Preparatory operation (0th year)						
1	**Survey and demarcation**	June	2	400	0	400
2	**Fencing** i. For an average of 126 meters/ha @ Rs. 56.57/- per meter for	June-September	19	3800	5700	9500

	bamboo thorn fencing (L:M=40:60). ii. To be strengthened by planting of bamboo and other seedlings in two rows. Bamboo to be planted at 2 meters spacing in staggered manner on the two rows and the rest of the species to be planted at ½ meter spacing along the two rows, the rows being 2 m apart. Thus 500 plant (125 bamboo and 375 others) to be planted in two rows to cover 126m of periphery / Ha by the vegetativeL:M=40:60)	June-September	11	2200	3300	5500
3	**Pitting (1600 per ha) each pit-45cm^3 (40 x 3.2 = 128)**	Nov-Dec	128	25600	0	25600
4	**Soil and Water Conservation Measures** (a) Staggered contour trench @ 300 per ha (2.5 m x 0.5 m x 0.5 m); gully plugging and drainage line treatment, digging of percolation pits @ 600 per ha in lieu of staggered trenches, half moon trench on the uphill side each planting pit. (40 x 3.25 = 130)	Sept-Nov	130	26000	0	26000
	(b) Site Clearance & alignment of contour trenches/ percolation pits, check dam sites, etc.	July-August	10	2000	0	2000
5	**Raising of seedling** in poly bags(minimum 60cm high) @ Rs.9.30/ Seedling (Rs. 5.60 in 0th year + Rs. 3.70 in 1st year) 1760 sapling to be raised for one hectare from October- March @ 9870/- and from April-June/July @6500/-	October-March	40	8000	5160	13160
	Total 0th Year		**340**	**68000**	**14160**	**82160**

Material Cost =Rs.14160.00
Labour Cost (340 man days) = Rs. 68000.00
Total =Rs.82160.00

Sl. No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/- per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Planting Operation (1st Year)						
1	Cost Sapling (balance)	April-July	21	4200	4470	8670
2	Freshening of pits 64, filling with the fertile soil and farm yard manure (FYM) 24, vermin-compost application and planting of 60 cm tall saplings including carriage of plants 21, soil, FYM etc, 39	June-July	109	21800	7800	29600
3	Sowing seeds on dugout earth of trench	June	6	1200	260	1460
4	Casualty replacement including seedling cost 6+6 with weeding 7+5, soil working 7 and fertilizer application 5 including cost of fertilizer 24	July-August	36	7200	4800	12000
5	Repair and maintenance of fence	August-Oct	15	3000	3390	6390
6	Maintenance of Soil and moisture conservation measures (20 % of Cost)	Oct-Dec	26	5200	0	5200
7	Closure to grazing, fire and other biotic interference by engaging watch & ward	April-March	30	6000	0	6000
8	Fire tracing and control, display board construction, painting/writing and other miscellaneous cost.	April-March	10	2000	480	2480
	Total 1st Year		**253**	**50600**	**21200**	**71800**

Material Cost =Rs.21200.00
Labour Cost (253 man days)= Rs. 50600.00
Total =Rs.71800.00

Sl. No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/- per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Maintenance Operation (2nd Year)						
1	Casualty replacement 6 including seedling cost of sapling and its transplantation 6	June-July	12	2400	800	3200
2	Soil working 7, weeding 6 + 6 and fertilizer application 4 including cost of fertilizer 12	August-Oct	23	4600	2400	7000
3	Repair and maintenance of fence	August-Oct	15	3000	3390	6390
4	Maintenance of Soil & Moisture Conservation measures (20 % of cost)	August-Oct	26	5200	0	5200
5	Fire tracing and control and other miscellaneous cost	April-March	10	2000	0	2000
6	Closure to grazing, fire and other biotic interference by engaging watch and ward	April-March	30	6000	0	6000
	Total 2nd Year		**116**	**23200**	**6590**	**29790**

Material Cost =Rs.6590.00
Labour Cost (116 man days) = Rs. 23200.00
Total =Rs.29790.00

Sl. No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/- per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Maintenance Operation (3rd Year)						
1	Repair and maintenance of fence, SMC measures and maintenance of plantation	April-March	78	15600	800	16400
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	April-March	20.8	4160	0	4160
	Total 3rd Year		**98.8**	**19760**	**800**	**20560**

Material Cost =Rs.800.00
Labour Cost (96 man days)= Rs. 19760.00
Total =Rs.20560.00

Sl. No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/- per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Maintenance Operation (4th Year)						
1	Repair and maintenance of fence, SMC measures and maintenance of plantation	April-March	48	9600	800	10400
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	April-March	20.8	4160	0	4160
	Total 4th Year		**68.8**	**13760**	**800**	**14560**

Material Cost =Rs.800.00
Labour Cost (66 man days)= Rs. 13760.00
Total =Rs.14560.00

Sl. No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/- per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Maintenance Operation (5th Year)						
1	Repair and maintenance of fence, SMC measures and maintenance of plantation	April-March	48	9600	800	10400
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	April-March	20.8	4160	0	4160
	Total 5th Year		**68.8**	**13760**	**800**	**14560**

Material Cost =Rs.800.00
Labour Cost (66 man days)= Rs. 13760.00
Total =Rs.14560.00

Sl. No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/- per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Maintenance Operation (6th Year)						
1	Repair and maintenance of fence, SMC measures and maintenance of plantation	April-March	48	9600	800	10400
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	April-March	20.8	4160	0	4160
	Total 6th Year		**68.8**	**13760**	**800**	**14560**

Material Cost =Rs.800.00
Labour Cost (66 man days)= Rs. 13760.00
Total =Rs.14560.00

Sl. No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/- per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Maintenance Operation (7th Year)						
1	Repair and maintenance of fence, SMC measures and maintenance of plantation	April-March	48	9600	800	10400
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	April-March	20.8	4160	0	4160
	Total 7th Year		**68.8**	**13760**	**800**	**14560**

Material Cost =Rs.800.00
Labour Cost (66 man days)= Rs. 13760.00
Total =Rs.14560.00

Sl. No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/- per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Maintenance Operation (8th Year)						
1	Repair and maintenance of fence, SMC measures and maintenance of plantation	April-March	48	9600	800	10400
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	April-March	20.8	4160	0	4160
	Total 8th Year		**68.8**	**13760**	**800**	**14560**

Material Cost =Rs.800.00
Labour Cost (66 man days)= Rs. 13760.00
Total =Rs.14560.00

Sl. No.	Item of Work	Period of Execution	Manday	Labour Cost @ Rs. 200/- per day	Material Cost per ha. in Rs.	Total Cost per ha. in Rs.
Maintenance Operation (9th Year)						
1	Repair and maintenance of fence, SMC measures and maintenance of plantation	April-March	48	9600	800	10400
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	April-March	20.8	4160	0	4160
	Total 9th Year		**68.8**	**13760**	**800**	**14560**

Material Cost =Rs.800.00
Labour Cost (66 man days)= Rs. 13760.00
Total =Rs.14560.00

ABSTRACTS

Sl.No.	Year	Material Cost in Rs.	Mandays	Labour Cost in Rs.	Total in Rs.
1	0th	14160.00	340	68000.00	82160.00
2	1st	21200.00	253	50600.00	71800.00
3	2nd	6590.00	116	23200.00	29790.00
4	3rd	800.00	98.8	19760.00	20560.00
5	4th	800.00	68.8	13760.00	14560.00
6	5th	800.00	68.8	13760.00	14560.00
7	6th	800.00	68.8	13760.00	14560.00
8	7th	800.00	68.8	13760.00	14560.00
9	8th	800.00	68.8	13760.00	14560.00
10	9th	800.00	68.8	13760.00	14560.00
	Total	47550.00	1220.6	244120.00	291670.00

Rs.2,91,670/- x 15 Ha = Rs.43,75,050.00

Annexure-2

Costestimate for Assisted Natural Regeneration (RDF) with 800 seedlings /ha. with 10 years maintenance and wage rate of Rs.200/- per day.

Sl.No.	Item of Work	Person days	Labour (Rs)	Material (Rs)	Total (Rs)
0th Year					
1	Survey, Demarcation and Pillar Posting, GPS Reading with mapping	2	400	0	400
2	Site Preparation	2	400	0	400
3	Silvicultural Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots	5	1000	0	1000
4	Raising Nursery @ 880 seedling / ha (including 10 % Casualty replacement) and watch & ward (Part-1)	32	4800	1600	6400
5	Contingency and Unforeseen Expenditure	1	0	200	200
	Sub Total	**42**	**6600**	**1800**	**8400**
1st Year					
1	Maintenance of Nursery (Balance)	16	3200	0	3200
2	Pitting 30 cm cube size	28	5600	0	5600
3	Carriage and planting including casualty replacement	18	3600	0	3600
4	Complete weeding, Soil working, manuring	22	4400	0	4400
5	Cost of Vermi compost and	12	0	2400	2400

	insecticide for Plantation				
6	Cost of Chemical Fertilizer	4	0	800	800
7	Fire line tracing and inspection path	3	600	0	600
8	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoot etc.	15	3000	0	3000
9	Soil conservation measures	20	4000	0	4000
10	Watch & Ward	39	7800	0	7800
11	Contingency and unforeseen expenditure	2	0	400	400
	Sub Total	**179**	**32200**	**3600**	**35800**
2nd Year					
1	Casualty Replacement including cost of seedling, carriage and planting.	8	1600	0	1600
2	Complete weeding and pruning	8	1600	0	1600
3	Soil working and manuring	8	1600	0	1600
4	Cost of fertilizers and Insecticides	4	0	800	800
5	Fire line tracing and inspection path	1	200	0	200
6	Soil conservation measures	8	1600	0	1600
7	Watch & Ward (Whole Year)	39	7800	0	7800
8	Contingency and unforeseen expenditure	**1**	**0**	**200**	**200**
	Sub Total	**77**	**14400**	**1000**	**15400**
3rd Year					
1	Compete weeding and pruning	4	800	0	800
2	Soil working	4	800	0	800
3	Fire line tracing and inspection path	1	200	0	200
4	Watch & Ward (Whole Year)	39	7800	0	7800
5	Contingency and unforeseen expenditure	0	0	0	0

	Sub Total	**48**	**9600**	**0**	**9600**
4th Year					
1	Fire line tracing and inspection path	1	200	0	200
2	Watch, Ward & Pruning	39	7800	0	7800
	Sub Total	**40**	**8000**	**0**	**8000**
5th Year					
1	Fire line tracing and inspection path	1	200	0	200
2	Watch, Ward & Pruning	39	7800	0	7800
	Sub Total	**40**	**8000**	**0**	**8000**
6th Year					
1	Fire line tracing and inspection path	1	200	0	200
2	Watch, Ward & Pruning	39	7800	0	7800
	Sub Total	**40**	**8000**	**0**	**8000**
7th Year					
1	Fire line tracing and inspection path	1	200	0	200
2	Watch, Ward & Pruning	39	7800	0	7800
	Sub Total	**40**	**8000**	**0**	**8000**
8th Year					
1	Fire line tracing and inspection path	1	200	0	200
2	Watch, Ward & Pruning	39	7800	0	7800
	Sub Total	**40**	**8000**	**0**	**8000**
9th Year					
1	Fire line tracing and inspection path	1	200	0	200
2	Watch, Ward & Pruning	39	7800	0	7800
	Sub Total	**40**	**8000**	**0**	**8000**
10th Year					
1	Fire line tracing and inspection path	1	200	0	200
2	Watch, Ward & Pruning	39	7800	0	7800
	Sub Total	**40**	**8000**	**0**	**8000**
	Grand Total	**626**	**118800**	**6400**	**125200**

Abstract

Year	Person Days	Labour (Rs)	Material (Rs.)	Total Cost (Rs)
0th Year	42	6600	1800	8400
1st Year	179	32200	3600	35800
2nd Year	77	14400	1000	15400
3rd Year	48	9600	0	9600
4th Year	40	8000	0	8000
5th Year	40	8000	0	8000
6th Year	40	8000	0	8000
7th Year	40	8000	0	8000
8th Year	40	8000	0	8000
9th Year	40	8000	0	8000
10th Year	40	8000	0	8000
TOTAL	626	118800	6400	125200

Rs.1,25,200 /- x8.0 ha = Rs.10,01,600.00

ABSTRACT OF THE PROJECT

Model of Plantation	Extent in Ha	Cost Norm in Rs.	Total Cost in Rs.
A – 1 Block Plantation with Bald Hill Norm in Thirjhira P. R. F. with 10 years maintenance.	15.00 ha	2,91,670.00	43,75,050.00
A- 2 RDF with Gap Plantation In Jhirjhira PRF with 10 years maintenance.	08.00 ha	1,25,200.00	10,01,600.00
Infrastructure a. One Bolero to be procured and supplied to DFO, Koraput for Protection/ supervision to plantation purpose. b. One Computer with Printer and other accessories.	-- --	-- --	8,00,000.00 2,00,000.00
Total	23.0 ha	--	63,76,650.00

(Rupees Sixty-three Lakhs Seventy-six thousand and six hundred fifty) only.

Submitted by

Range Forest Officer
LAKMIPUR

Forest Range Officer
LAKMIPUR

Checked by

Asst. Conservator Of Forests
Koraput Division

Asst. Conservator of Forests
Koraput Forest Division
KORAPUT

Countersigned by

Divisional Forest Officer,
Koraput Division

Divisional Forest Officer
Koraput Division

Approved By

Addl. Principal Chief Conservator of Forest,
Forest Diversion & Nodal Officer
F. C. Act., Odisha