SCHEME FOR COMPENSATORY AFFORESTATION

OVER 4.046 HA FOR CONSTRUCTION OF MEGA PIPED WATER SUPPLY PROJECT TO JHARSUGUDA, KIRMIRA, KOLABIRA & LAIKERA

(Revenue Non Forest land selected for Compensatory Afforestation -4.046 ha at Khajurikhaman under Laikera Tahasil of district Jharsuguda.)

Block Plantation@1600 plant:01.00 ha
ANR with planting @200 plants: 12.23 ha

By Divisional Forest Officer,
Jharsuguda Division

SCHEME FOR COMPENSATORY AFFORESTATION

1. Introduction:

Construction of Water Treatment Plant (WTP) by overhead reservoirs with laying of DI & HDPE pipelines (Max dia. 800mm) at H. katapali village under Jharsuguda Tahsil by RWW&S, Division, Jharsuguda is aimed for providing the portable drinking water to 2.1 lakhs rural population which cover 193 villages in 42 Gps in Jharsuguda, Kirimira, kolabira, Laikera Blocks in Jharsuguda district. The main aims/objectives of the project are to supply safe drinking water to the rural areas.

Hence the requirement of non-forest land for Compensatory Afforestation comes to 4.046 ha. for the purpose of diversion of 4.046 Ha. forest land has been identified in Khajurikhaman of Tahasil Laikera in Jharsuguda District under Jharsuguda Forest Division. The land is suitable for Compensatory Afforestation. The Compensatory Afforestation scheme is therefore prepared as per the minimum wage rate of Rs. 308.00 per day

2. Details of Non-forest land allotted for Compensatory afforestation:

The Degraded Revenue Forest Land for Compensatory Afforestation purpose is identified at village Talamunda under Laikera Tahasil of district Jharsuguda. The particulars of land identified for Compensatory Afforestation is furnished below.

Tahasil	Village name	Khata No	Plot no	Total area of the Plot in Acre	Area identified for CA in Acre	Kissam of the Land at present
Laikera	Khajurikhaman	49(AJA)	647	35.35	10.00	PATIT

The District Collector, Jharsuguda has provided the above land for compensatory Afforestation purpose vide letter No noXVIII-C-22/2020/ 15158 / Rev dated 21.09.2020 (Annexure-IV)

3. Description of Area.

Location:

The Govt. Non-Forest Land over 4.046 ha allotted for Compensatory Afforestation Purpose. The CA Land has been superimposed on Survey of India Topo Sheet No. F45M6 (73C/5) bounded by Latitude **22^0 00' 00" N** to **21^0 45' 00"** North and Longitude **84^0 15' 00"** E to **84^0 30' 00"** East.

District :	Jharsuguda.
Name of Forest Division:	Jharsuguda Forest Division.
Tahasil:	Laikera.
Forest Section/ Range:	Talmunda/ Bagdihi.
Name of Village allotted for C.A:	Khajurikhaman.
Nearest PRF:	Bhaibahen-Budhikuten
Nearest human habitation:	Khajurikhaman Village
Allotted area for C.A:	4.046 ha.
Khata No./Plot No.	49(AJA)/647
Topo Sheet No.	F45M6 (73C/5)

Accessibility: The Compensatory land area can be approached easily in all seasons. The above C.A. land area is situated at a distance of about 17 KMs from Laikera Town & about 32 KMs from Jharsuguda, the district head quarter as well as from Jharsuguda Railway station

Soil: The land is having a good soil depth to bear healthy vegetation. Soil is of red alluvial soil with small patches of gravelly soil. The area is well drained.

Climate: The area experiences a tropical climate. The average rainfall is 1779mm.summer is from March to June. The South West monsoon brings usual rain and most of the rainfall receives within July to October. Depression in Bay of Bengal brings wide spread rainfall to this region though it is away from the sea. It also experiences heavy rainfall due to depression in Bay of Bengal. The rain fall for last three years is furnished below.

Rainfall data of Laikera Block of Jharsuguda District													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2018	0.00	0.00	3.20	38.80	158.50	169.90	443.10	423.70	115.90	22.00	0.00	92.70	1467.80
2019	0.00	37.20	10.30	39.30	29.40	224.30	268.90	769.60	359.70	147.10	0.00	0.00	1885.80
2020	5.10	33.50	132.20	104.20	99.80	460.20	286.60	607.80	186.80	35.00	33.40	0.00	1984.60
Total	5.10	70.70	145.70	182.30	287.70	854.40	998.60	1,801.1	662.4	204.10	33.40	92.70	5338.20
Aver.	**1.70**	**23.57**	**48.57**	**60.77**	**95.90**	**284.80**	**332.87**	**600.37**	**220.80**	**68.03**	**11.13**	**30.90**	**1779.4**

Vegetation: As the area is plain, it bears good Sal poles but under constant biotic pressure. Sal mixed with other miscellaneous associates of dry Sal is observed. In the areas, Kendu, Palas, Khair Asan, Dry Jamun, planted Teak, Zyziphus species are seen. The crop is mostly of drier tract. Phoenix, Dhataki (Wodfodia) are seen in open patch. Bamboo is not encountered during field visit.

4. Plantation Model:

The patch wise area available for Block Plantation and ANR@200 plants per ha is as follows.

Name of the Village/RF	Area in Ac	Area in ha	Suitable for Block Plantation in Ha	Suitable for ANR @200 plants / Ha	Periphery in Mts
Khajurikhaman	10.00	4.046	1.00	0.00	1057.64
Amakhaman Sagarpali RF	30.22	12.23	0.00	12.23	NA
Total	40.22	16.276	1.0	12.23	1057.64

It is proposed to take up in **Block Plantation Mode @1600 plants per hectare and ANR @200 plants per ha model over the area as stated above.** Soil& Moisture Conservation measures as prescribed in the cost norm will be strictly followed. In additional cost for SMC will also be taken up as described under para --- below. The approved cost norm by PCCF, Odisha updated to wage rate Rs.308.00 will be applicable.

5. Schedule of Plantation Program:

The area is in a single village. Area selected for Block Planting is 1.0 ha and ANR over 12.23 ha. The seedlings that could be planted is 4046 nos seedlings as detailed below.

Sl no	Planting Model	Area in Ha	No of Seedlings per ha	Total Seedlings to be planted
Khajurikhaman	Block Planting	1.00	1600	1600
Amakhaman Sagarpali RF	ANR	12.23	200	2446
Total		13.23		4046

As the selected patch is a degraded forest area, Sal is in pole crop / degraded stage after a good fencing, the area will be fully covered with Sal and miscellaneous crop. Planting of 200 plants per ha may not be uniformly possible but can be easily planted up. The selected area is in a village and it is proposed to cover up in a single year which will be most effective and convenient from plantation management point of view.

Hence it is proposed to take up the plantation work in a year and subsequent maintenance for 10 years as per approved cost norm. The Soil conservation measures are also proposed

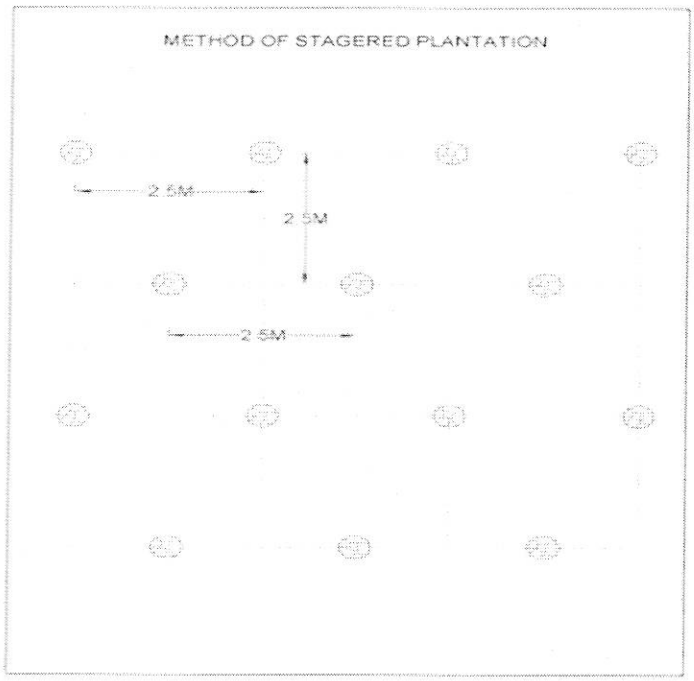
to be taken up in the 0th Year, 1st yr and 2nd yr. The Cost norm @Rs.308/- wage rate for Block Plantation (With Fencing) and ANR @200 plants per ha with 10 years maintenanceis at **Annexure-I & II .**Separate Barbed wire fencing is provided to the plantation. The boundary line common with Reserved Forest is not to be fenced inorder to maintain continuity with the RF and Wildlife movement. The cost for planting is calculated as a single project than individual patches.

6. Technical details:-

a) **General:**The plantation will be taken up in Block Plantation Mode over 1.0 ha only in 4.046 ha and ANR @200 seedling per ha mode over balance 12.23 ha in Amakhaman Sagarpali RF. The year wise activities to be implemented has been enumerated in the approved Cost norm at **Annexure- I & II**

For Block Planting @1600 plants per ha

b) **Spacing:** The plant density proposed for planting is @1600 plants per ha. The spacing is 2.5mX2.5m which is generally adopted in this tract. It is suggested to have the line of planting along the contour and plant to plant in adjacent row is staggered.



This will reduce the runoff and encourage percolation of water and enrichment of vegetation.

C. Choice of Species: The suitable species for the site as indicated from the present vegetation are mostly of indigenous species. The Species suggested are

1. *Azadirachta indica (neema)*
2. *Derris Indica* (Karanja)
3. *Emblica officinalis* (Amla)
4. *Dalbergia Sisoo* (Sisoo)
5. *Melia Azedarach* (Maha Neem)
6. *Dendrocalamus Strictus* (Salia Bamboo)
7. *Terminalia Arjuna* (Arjun)
8. *Tamarindus Indica* (Tentuli)
9. *Swietenia* (Mehagani)
10. *Artocarpus heterophyllus* (Panasa)
11. *Mangifera Indica* (Mango)

d) Plantation Method.

d(i) Survey Demarcation & Pillar Posting:

The Allotted area has been demarcated, Pillars posted and duly surveyed by DGPS. The coordinated (Latitude / Longitude) of pillars are provided in the DGPS Map attached to this scheme.

The area finds place in Survey of India Topo Sheet No F45M6 (73C/5).

The Pillar No / Latitude / Longitude of pillars posted are at Annexure – IV.

d(ii)Alignment, Stacking and Pitting.

Alignment and stacking will be taken up in the month of January. Pits of size 30 cm x 30 cm x 30cm are to be dugout with a spacing of 2.5mt x 2.5mt @1600 plants per hectare. Alignment will be made along the contour strictly. It is also suggested to have plants staggered within adjacent rows to reduce runoff.

d(iii) Planting

Plantation will be done after first regular shower of monsoon and to be completed within a week. Basal dose of NPK/DAP fertilizer @50gm per plant to be given. Utmost care is to be taken to apply insecticides @5gm per pit. Casualty replacement is to be taken up during 1st

year of plantation just after one month of planting. 10% causality replacement is also suggested during 2nd Year.

d(iv) Weeding, Soil working and Application of Fertilizer:

Post planting operation is most vital in success of any planting program. It is proposed to carry out two weeding during first year. Preferable total Weeding along the contour will be taken up. One weeding and soil working has to be done in second year and third year of plantation. Application of 70 gms of Urea to be added to the soil per plant at the time of soil working during rains during 1st, 2nd& 3rd year of plantation.

d(v) Application of insecticide:

To prevent infestation of planted seedlings with diseases due to influx of insects and pests into the area, it is required to apply insecticides like Forate /themet at the time of planting. Foliar spraying of insecticide may be done if badly necessary.

d(vi) Fire line tracing and maintenance:

Tender seedlings planted are subject to damage by ground fire. It is required to protect the plantation and forest growth from fire hazard by tracing of fire lines. Boundary of the plantation and several internal lines need to be scrapped to a width of 2mtr during February-March. The cut back materials and dry leaves along with fire lines should be separated and dumped in pits outside the plantation area.

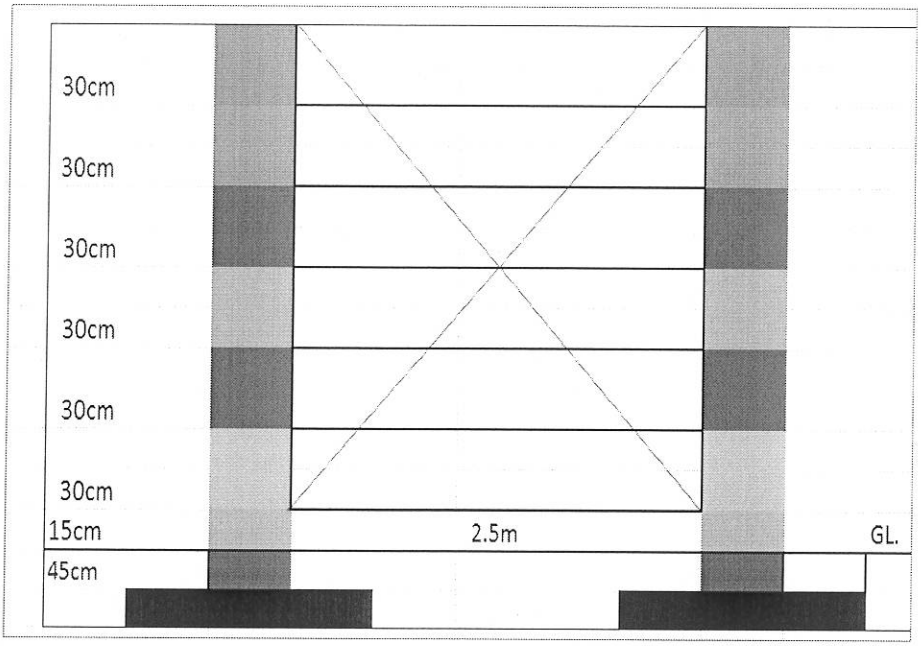
d(vii) Fencing:

The periphery of the patch selected is 1057.64 meter. There is a provision of fencing in the cost norm of "Block Plantation" as approved by PCCF, Odisha. It is proposed to provide Barbed Wire fencing instead of Brushwood fencing.

Description of Barbed Wire Fencing.

It is suggested to put T shaped pillars at an interval of 2.5m. The length of such pillar is 2.40 m. (1.95 m above the ground & 0.45m below the ground.) Size:15cmx15cm at bottom and 10cm x10cm at top. The Lower bar of inverted "T" is of 30cm including the width of the pillar. There will be 7 strands of two ply barbed wires and to be placed at a height of 15cm, 45cm, 75cm, 105cm, 135cm, 165cm and 195cm from the ground level. Two strands will be put diagonally (connecting 15cm point to 195 cm point & 195cm point to 15cm point of adjacent pillar).

The total amount for Barbed wire fencing for 1057.24 RM. @ **6,86.00** Per RM comes to Rs.7,25,266.64/-. The Barbed Wire Fencing Estimate is enclosed in Annexure-III



d(viii) Watch and Ward:

Watch and ward is necessary to protect the area from grazing, fire accident and other biotic interference. Necessary provisions have been made in the approved cost norm.

e) Soil and Moisture Conservation Works:

In order to enhance soil moisture, check run off and arrest carrying of silt in the flow water it is required to have staggered trenches (Size 2m longx0.50 m width X0.5 m Deep) along the contour. In the cost norm 30 numbers of staggered trenches per hectare has been provided.

For ANR @200 Plants per ha:

f) silvicultural Cleaning:

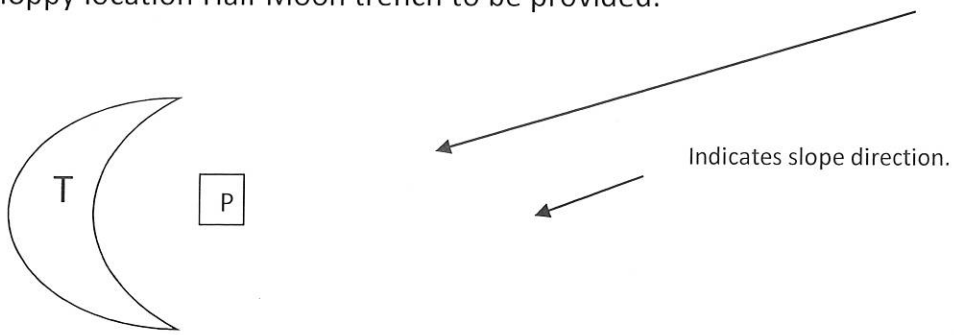
The selected area is having Sal shoots of promising vigour and also some ruminants of old plantation. Only few teak plants are available. It is proposed to take up Silvicultural cleaning over the area. The activities are intended to achieve healthy growth of existing seedlings / saplings / coppice shoots of favoured species. The operation includes

- Cutting back of high stumps with preference to living stumps and having a good coppicing power.
- Cutting of climbers those are of annual nature and uprooting them wherever possible.
- Singling out of multiple coppice shoots and retaining most promising ones.
- Pruning of teal plants available within the area.

The natural seedlings available in the treatment area are to be given appropriate attention to ensure its establishment.

The following measures are prescribed.

- Deep Soil Working around the seedlings at a width of 0.50 m with application of fertilizer.
- Weeds to be removed / uprooted at a radius of 1 meter.
- In case of sloppy location Half Moon trench to be provided.



- T : Half Moon Trench
- P: Plant position.

i) Restocking of Area by Planting (Artificial Regeneration) &Post-care operation.

Plantation of indigenous species matching with the local species is required to be planted following the cost norm of Plantations approved by Forest department. The species suggested are Azadirachta indica (neema), Derris Indica (Karanja), Emblica officinalis (Amla), Dalbergia Sisoo(Sisoo), Melia Azedarach(Maha Neem), Dendrocalamus Strictus(Salia Bamboo), Terminalia Arjuna(Arjun), Tamarindus Indica(Tentuli), Swietenia(Mehagani), Albizia Lebbeck(Sirisa), Artocarpus heterophyllus(Panasa), Mangifera Indica(Mango).

ii) Control of Grazing.

The area is required to be closed to grazing at least for three years. As fencing is provided it will not be a problem to check grazing.

iii) Fire Protection Measures.

The area is to be protected against fire. Fire line is required to be maintained along the periphery and internal lines. Controlled burning of weeds / fallen leafs may be taken up under strict supervision of section forester.

iv) Soil & Moisture conservation.

In the cost norm staggered trenches @ 60 no per ha is provided. This is to be implemented.

All the operations as per cost norm is to be followed.

f) Additional Soil & Moisture Conservation work:

As per the recent guidelines 25% of the Planting cost is to be provided for additional SMC activities. The following activities under Additional Soil & Moisture Conservation are proposed.

a) Treatment of natural recruits and seedlings (within 1meter height) available within the area. Half moon trench, soil working around the plants at a width of 0.5m radius to be taken up.
b) Contour bonding along the contour is to be constructed; Size (1.5m+1m)/2 X 1m to provide a check to runoff. At least two / three contour bonds parallel to each other is to be constructed as the run off velocity is likely to be high.
c) Staggered trenches in between contour bonds are suggested which will check the accumulation of runoff and reduce the velocity.
d) There is one water body which will be maintained to retain water throughout the year to provide water to animals and also help in in-situ Nursery for proposed plantation/ causality replacement.

g) Proposed Monitoring Mechanism:

Implementation of the planting program will be monitored by the DFO, Jharsuguda and RCCF, Sambalpur periodically. As other technical facilities / tools are now available at the hands of supervising authority and KML file along with Coordinates available it can be easily monitored from Satellite imagery / Google earth maps. Plantation journal is also to be regularly maintained by Field staff.

7. Abstract of Cost Estimate:

	(Wage Rate 308 per Day)	
Sl No	Description	Amount in Rs
1	Cost of Block Plantation @1600 plants per ha over1.00ha @ Rs 136661.20	136661.20
2	Barbed Wire fencing over 1057.64m with 3 years maintenance @2% of initial cost per RM @ **686.00**	725266.64
3	The balance seedlings i.e. 2446 seedlings will be planted up as per Working Plan prescription as ANR 200/plant over 12.23 ha. in Amakhaman Sagarpali RF under Belpahar Range under this Division. The Cost per ha @ 45665.00	558482.95
4	25% of total plantation cost towards soil & moisture conservation.	3,55,102.70
5	15% of total Plantation Cost towards Entry Point Activities / Incentive to VSS including monitoring & Evaluation.	2,13,061.62
	Total: -	19,88,575.11
6	Add Escalation Cost (20%)	3,97,715.02
	Total: -	23,86,290.13
7	Administrative expenses, including improvement of office infrastructure (To be provided in kind)	200000.00
	Grand Total:-	2586290.13 or 2586300.0

(Rupees Twenty-Five Lakhs Eighty-Six Thousand Three Hundred) only

Encl:

1. Topo sheet showing area for CA, (Plate-III enclosed in the DP)
2. DGPS Map of the CA area. (Plate-IV enclosed in the DP)
3. Annexure- I, II, III & IV.

Divisional Forests Officer,
Jharsuguda Forest Division

Divisonal Forest Officer
Jharsuguda Forest Division

SCHEME FOR BLOCK PLANTATION (COMPENSATORY AFFORESTATION) ANNEXURE-I

Name of the Scheme :-	BLOCK PLANTATION
Name of the Project :-	SCHEME FOR COMPENSATORY AFFORESTATION TO BE CARRIED OUT IN LIEU OF 4.046 HA. OF FOREST AREA TO BE DIVERTED FOR CONSTRUCTION OF MEGA PIPED WATER SUPPLY PROJECT IN JHARSUGUDA DISTRICT.
Name of Implementing Agency:-	Divisional Forest Officer, Jharsuguda Forest Division

1. MODEL	BLOCK
2. NO. OF PLANTS PER HA.	1,600
3. TOTAL AREA TO BE PLANTED(In HA.)	1
4. SPACING TO BE ADOPTED	2.5MtrX2.5Mtr
5. TOTAL NOS. OF PLANTS TO BE PLANTED	1,600
6. Wage Rate [Per MD]	308.00

Sl. No.	Item of Works	Period of execution	Mandays	Labour Cost @ Rs.308	Material cost	Total in Rs.
1	2	3	4	5	6	7
	Preparatory Operation (0th Year)					
1	Survey, Demarcation and Pillar Posting	Nov/Dec	2	616.00	0.00	616.00
2	Site Preparation	Nov/Dec	12	3,696.00	0.00	3,696.00
3	Alignment & Stacking of Pits	Jan/Feb	2	616.00	0.00	616.00
4	Nursery cost (6 months old seedlings)part @Rs.12.66 seedlings(Rs.8.83 in 0th year + Rs.3.83 in 1st year) for 1760 seedlings(1600+160)	Jan-March	44	13,552.00	1,988.80	15,540.80
5	Pitting 30 cm cube size	Feb-March	40	12,320.00	0.00	12,320.00
	Total :-		**100**	**30,800.00**	**1,988.80**	**32,788.80**
6	**Monitoring & Supervision Charge 5% of Total Cost**					**1,639.00**
	Total of 0th Year :-		**100**	**30,800.00**	**1,988.80**	**34,427.80**
	Planting Operation (1st Year)					
1	Nursery Cost (6 months odl seedlings)balance @3.83/- per seedling for 1760 seedlings	April-July	21.5	6,622.00	118.80	6,740.80
2	Fencing provision has been omitted as barbed wire fence is provided.					
3	Carriage and planting, casualty replacement & application of Insecticides, manure etc.	July/Aug	21	6,468.00	0.00	6,468.00
4	Cost of Insecticide and Fertilizer					
(a)	NPK @50 gm/plant as Basal dose = 80 Kg @Rs.24/- per Kg = Rs.1,920.00	July/Aug			1,920.00	1,920.00
(b)	Urea @70 gm/plant in two subsequent doses @Rs.6/- per Kg = Rs.672.00	July/Aug			672.00	672.00
(c)	Granular Insecticide (Themet, Forate etc.) @5 gm/plant @Rs.80/- per Kg. = Rs.640.00	July/Aug			640.00	640.00
5	1st Weeding (Complete weeding)	Aug/Sept	7	2,156.00	0.00	2,156.00
6	Manuring Urea 35 gm/plant	Aug/Sept	5	1,540.00	0.00	1,540.00
7	2nd Weeding (Complete weeding)	Sept/Oct	5	1,540.00	0.00	1,540.00
8	Soil Working (50 cms radius around plants)	Sept/Oct	7	2,156.00	0.00	2,156.00

Sl. No.	Item of Works	Period of execution	Mandays	Labour Cost @ Rs.308	Material cost	Total in Rs.
1	2	3	4	5	6	7
9	Soil conservation measures in form of Staggered trenches of dimension 2 m x 0.5 m x 0.5 m @ 30 Nos. per Ha	Sept/Oct	10	3,080.00	0.00	3,080.00
10	Fire line tracing & inspection path	Feb/March	3	924.00	0.00	924.00
11	Watch and ward.	Aug-March	7	2,156.00	0.00	2,156.00
	Total :-		**86.5**	**26,642.00**	**3,350.80**	**29,992.80**
12	**Monitoring & Supervision Charge 5% of Total Cost**					**1,500.00**
	Total of 1st Year		**86.5**	**26,642.00**	**3,350.80**	**31,492.80**

Maintenance Operation (2nd Year)

1	Casualty Replacement(10%) including cost of seeding, carriage @Rs.12.66 per seedings	July/Aug	4	1,232.00	2,025.60	3,257.60
2	Weeding (Complete Weeding)	Sept/Oct	6	1,848.00	0.00	1,848.00
3	Cost of Insecticide and Fertilizer					
(a)	NPK @70 gm/plant for 160 plants = 11.2 Kg @Rs.24/- per Kg = Rs.2668.00	Sept/Oct			2,688.00	2,688.00
(b)	Insecticide @5 gm/plant for 160 plants @Rs.80/- per Kg. = Rs.64.00	Sept/Oct			64.00	64.00
4	Soil Working (50 cms radius around plants)	Oct/Nov	7	2,156.00	0.00	2,156.00
5	Application of Fertilzer & insecticide	Sept/Oct	4	1,232.00	0.00	1,232.00
6	Fireline Tracing (2 mtr wide fireline over 400 mtr long)	Feb/March	3	924.00	0.00	924.00
7	Watch and ward (Whole year)	Apr-March	15	4,620.00	0.00	4,620.00
	Total :-		**39**	**12,012.00**	**4,777.60**	**16,789.60**
8	**Monitoring & Supervision Charge 5% of Total Cost**					**839.00**
	Total of 2nd Year:-		**39**	**12,012.00**	**4,777.60**	**17,628.60**

Maintenance Operation (3rd Year)

1	Complete weeding and application of Fertilizer	Aug/Sept	7	2,156.00	0.00	2,156.00
2	Cost of Fertilizer (NPK @50 gm/plant @Rs.24/- per Kg.)				1,920.00	1,920.00
3	Soil Working (50 cms radius around plants) & application of fertilizer	Oct/Nov	7	2,156.00	0.00	2,156.00
4	Fireline Tracing (2 mtr wide fireline over 400 mtr long) & cultural operation	Feb/March	3	924.00	0.00	924.00
5	Watch and ward (Whole year)	Apr-March	15	4,620.00	0.00	4,620.00
	Total :-		**32**	**9,856.00**	**1,920.00**	**11,776.00**
6	**Monitoring & Supervision Charge 5% of Total Cost**					**589.00**
	Total of 3rd Year		**32**	**9,856.00**	**1,920.00**	**12,365.00**

Maintenance Operation (4th Year)

1	Fireline Tracing (2 mtr wide fireline over 400 mtr long) & cultural operation	Feb/March	3	924.00	0.00	924.00
2	Watch and ward (Whole year)	Apr-March	15	4,620.00	0.00	4,620.00
	Total :-		**18**	**5,544.00**	**0.00**	**5,544.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**					**277.00**
	Total of 4th Year		**18**	**5,544.00**	**0.00**	**5,821.00**

Sl. No.	Item of Works	Period of execution	Mandays	Labour Cost @ Rs.308	Material cost	Total in Rs.
1	2	3	4	5	6	7

Maintenance Operation (5th Year)

1	Fireline Tracing (2 mtr wide fireline over 400 mtr long) & cultural operation	Feb/March	3	924.00	0.00	924.00
2	Watch and ward (Whole year)	Apr-March	15	4,620.00	0.00	4,620.00
	Total :-		**18**	**5,544.00**	**0.00**	**5,544.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**					**277.00**
	Total of 5th Year		**18**	**5,544.00**	**0.00**	**5,821.00**

Maintenance Operation (6th Year)

1	Fireline Tracing (2 mtr wide fireline over 400 mtr long) & cultural operation	Feb/March	3	924.00	0.00	924.00
2	Watch and ward (Whole year)	Apr-March	15	4,620.00	0.00	4,620.00
	Total :-		**18**	**5,544.00**	**0.00**	**5,544.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**					**277.00**
	Total of 6th Year		**18**	**5,544.00**	**0.00**	**5,821.00**

Maintenance Operation (7th Year)

1	Fireline Tracing (2 mtr wide fireline over 400 mtr long) & cultural operation	Feb/March	3	924.00	0.00	924.00
2	Watch and ward (Whole year)	Apr-March	15	4,620.00	0.00	4,620.00
	Total :-		**18**	**5,544.00**	**0.00**	**5,544.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**					**277.00**
	Total of 7th Year		**18**	**5,544.00**	**0.00**	**5,821.00**

Maintenance Operation (8th Year)

1	Fireline Tracing (2 mtr wide fireline over 400 mtr long) & cultural operation	Feb/March	3	924.00	0.00	924.00
2	Watch and ward (Whole year)	Apr-March	15	4,620.00	0.00	4,620.00
	Total :-		**18**	**5,544.00**	**0.00**	**5,544.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**					**277.00**
	Total of 8th Year		**18**	**5,544.00**	**0.00**	**5,821.00**

Maintenance Operation (9th Year)

1	Fireline Tracing (2 mtr wide fireline over 400 mtr long) & cultural operation	Feb/March	3	924.00	0.00	924.00
2	Watch and ward (Whole year)	Apr-March	15	4,620.00	0.00	4,620.00
	Total :-		**18**	**5,544.00**	**0.00**	**5,544.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**					**277.00**
	Total of 9th Year		**18**	**5,544.00**	**0.00**	**5,821.00**

Maintenance Operation (10th Year)

1	Fireline Tracing (2 mtr wide fireline over 400 mtr long) & cultural operation	Feb/March	3	924.00	0.00	924.00
2	Watch and ward (Whole year)	Apr-March	15	4,620.00	0.00	4,620.00
	Total :-		**18**	**5,544.00**	**0.00**	**5,544.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**					**277.00**

Sl. No.	Item of Works	Period of execution	Mandays	Labour Cost @ Rs.308	Material cost	Total in Rs.
1	2	3	4	5	6	7
	Total of 10th Year		18	5,544.00	0.00	5,821.00
		G.Total:-	383.50	123,662.00	12,037.20	136,661.20

TOTAL COST FOR 1 HA.

Year	No. of MD	Labour Cost	Material Cost	5% Monitoring & Supersision Charges	Total
0th Year	100	30,800.00	1,988.80	1,639.00	34,427.80
1st Year	86.5	26,642.00	3,350.80	1,500.00	31,492.80
2nd Year	39	12,012.00	4,777.60	839.00	17,628.60
3rd Year	32	9,856.00	1,920.00	589.00	12,365.00
4th Year	18	5,544.00	0.00	277.00	5,821.00
5th Year	18	5,544.00	0.00	277.00	5,821.00
6th Year	18	5,544.00	0.00	277.00	5,821.00
7th Year	18	5,544.00	0.00	277.00	5,821.00
8th Year	18	5,544.00	0.00	277.00	5,821.00
9th Year	18	5,544.00	0.00	277.00	5,821.00
10th Year	18	5,544.00	0.00	277.00	5,821.00
TOTAL:-	383.5	118,118.00	12,037.20	6,506.00	136,661.20

Divisonal Forest Officer
Jharsuguda Forest Division

ANNEXURE-II

COST NORM FOR AIDED NATURAL REGENERATION (ANR) @200 PLANTS PER HECTARE WAGE RATE 308/DAY

Sl. No.	Item of Works	Period of execution	Mandays	Labour in Mandays	Material cost	Total in Rs.
1	2	3	4	5	6	7
		(0^{th} Year PO work)				
1	Survey, Demarcation and Pillar Posting	Nov/Dec	2	616.00	0.00	616.00
2	Site Preparation	Nov/Dec	2	616.00	0.00	616.00
3	Silvicultural Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots etc	Jan/Feb	5	1,540.00	0.00	1,540.00
4	Nursery cost (6 month old seedling) part @ 13.473/- seedling (Rs. 8.67 in 0th year + Rs.4.10 in 1st year) for 220 seedlings (200+20)	Jan-March	5.5	1,694.00	367.00	2,061.00
5	Cointingency & Unforseen Expenditure			0.00	133.00	133.00
	Total :-		**14.5**	4,466.00	**500.00**	**4,966.00**
6	**Monitoring & Supervision Charge 5% of Total Cost**				**248.00**	**248.00**
	Total of 0^{th} Year :-		**14.5**	**4,466.00**	**748.00**	**5,214.00**
		Planting Operation (1^{st} Year Creation)				
1	Nursery Cost (6 months odl seedlings)balance @/- per seedling for seedlings	April-July	2.5	770.00	128.00	898.00
2	Pitting 30 cm cube size	Feb/March	6	1,848.00		1,848.00
3	Carriage and planting, casualty replacement & application of Insecticides, manure etc.	July/Aug	5	1,540.00	0.00	1,540.00
4	Compele weeding, Soil working	Aug/Sept	6	1,848.00		1,848.00
5	Cost of Vermicompost @200 gms/Plant @ 20/per Kg= Rs.800.00 and Granular Insecticide 5 gms/Plant @ Rs.80/- per kg.= Rs.80.00	Aug/Sept			880.00	880.00
6	Cost of Chemical Fertilizer Urea 70 gms/plant in two subsequently does @ Rs.6/-per Kg= Rs.84.00 (b) NPK 50 gms/plant @ Rs.24/- per kg = Rs.240.00 as basal dose				324.00	324.00
7	Silvicultural Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots etc	Sept/Oct	15	4,620.00	0.00	4,620.00
8	Soil Conservation Measures (satggered trenches of dimension 2 m x 0.5 m x 0.5 m @ 60 nos per ha) or its equivalent	Sept/Oct	20	6,160.00	0.00	6,160.00
9	Fire line tracing & inspection path	Feb/March	3	924.00	0.00	924.00
10	Watch and ward.	Aug-March	7	2,156.00	0.00	2,156.00
11	Cointingency & Unforseen Expenditure				304.00	304.00
	Total :-		**64.5**	19,866.00	**1,636.00**	**21,502.00**
12	**Monitoring & Supervision Charge 5% of Total Cost**				**1,075.00**	**1,075.00**
	Total of 1^{st} Year		**64.5**	**19,866.00**	**2,711.00**	**22,577.00**
		Maintenance Operation (2^{nd} Year maintenance)				
1	Casualty Replacement(10%) including cost of seeding, carriage @Rs. per seedings	July/Aug	1	308.00	0.00	308.00
2	Weeding (Complete Weeding)	Sept/Oct	2	616.00	0.00	616.00
3	Soil working & manuring	Sept/Oct	2	616.00		616.00
4	Cost of Insecticide and Fertilizer			0.00		0.00
(a)	Vermicompost @200 gm/plant ,@Rs.20/- per Kg = Rs.800.00	Sept/Oct		0.00	800.00	800.00
(b)	Insecticide @5 gm/plant for 20 plants @Rs.80/- per Kg. = Rs.8.00	Sept/Oct		0.00	8.00	8.00

5	Soil Conservation Measures (Renovation of staggered trenches etc.)	Sept/Oct	8	2,464.00		2,464.00
6	Fireline Tracing and inspection path	Feb/March	1	308.00		308.00
7	Watch and ward (Whole year)	Apr-March	7	2,156.00		2,156.00
8	Cointingency & Unforseen Expenditure			0.00		0.00
	Total :-		**21**	**6,468.00**	**808.00**	**7,276.00**
8	**Monitoring & Supervision Charge 5% of Total Cost**				**364.00**	**364.00**
	Total of 2nd Year:-		**21**	**6,468.00**	**1,172.00**	**7,640.00**

Maintenance Operation (3rd Year maintenance)

1	Complete weeding and Cultural operations	Aug/Sept	1	308.00	0.00	308.00
2	Soil Working	Oct/Nov	1	308.00	0.00	308.00
3	Fireline Tracing & inspection path	Feb/March	1	308.00	0.00	308.00
4	Watch and ward (Whole year)	Apr-March	7	2,156.00	0.00	2,156.00
5	Cointingency & Unforseen Expenditure			0.00	200.00	200.00
	Total :-		**10**	3,080.00	**200.00**	**3,280.00**
6	**Monitoring & Supervision Charge 5% of Total Cost**				**164.00**	**164.00**
	Total of 3rd Year		**10**	**3,080.00**	**364.00**	**3,444.00**

Maintenance Operation (4th Year maintenance)

1	Fireline Tracing & inspection path	Feb/March	1	308.00	0.00	308.00
2	Watch and ward (Whole year)	Apr-March	2	616.00	0.00	616.00
	Total :-		**3**	924.00	**0.00**	**924.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**				**46.00**	**46.00**
	Total of 4th Year		**3**	**924.00**	**46.00**	**970.00**

Maintenance Operation (5th Year maintenance)

1	Fireline Tracing & inspection path	Feb/March	1	308.00	0.00	308.00
2	Watch and ward (Whole year)	Apr-March	2	616.00	0.00	616.00
	Total :-		**3**	924.00	**0.00**	**924.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**				**46.00**	**46.00**
	Total of 5th Year		**3**	**924.00**	**46.00**	**970.00**

Maintenance Operation (6th Year maintenance)

1	Fireline Tracing & inspection path	Feb/March	1	308.00	0.00	308.00
2	Watch and ward (Whole year)	Apr-March	2	616.00	0.00	616.00
	Total :-		**3**	924.00	**0.00**	**924.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**				**46.00**	**46.00**
	Total of 6th Year		**3**	**924.00**	**46.00**	**970.00**

Maintenance Operation (7th Year maintenance)

1	Fireline Tracing & inspection path	Feb/March	1	308.00	0.00	308.00
2	Watch and ward (Whole year)	Apr-March	2	616.00	0.00	616.00
	Total :-		**3**	924.00	**0.00**	**924.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**				**46.00**	**46.00**
	Total of 7th Year		**3**	**924.00**	**46.00**	**970.00**

Maintenance Operation (8th Year maintenance)

1	Fireline Tracing & inspection path	Feb/March	1	308.00	0.00	308.00
2	Watch and ward (Whole year)	Apr-March	2	616.00	0.00	616.00
	Total :-		**3**	924.00	**0.00**	**924.00**
3	**Monitoring & Supervision Charge 5% of Total Cost**				**46.00**	**46.00**
	Total of 8th Year		**3**	**924.00**	**46.00**	**970.00**

Maintenance Operation (9th Year maintenance)

1	Fireline Tracing & inspection path	Feb/March	1	308.00	0.00	308.00
2	Watch and ward (Whole year)	Apr-March	2	616.00	0.00	616.00
	Total :-		**3**	924.00	**0.00**	**924.00**

3	Monitoring & Supervision Charge 5% of Total Cost				46.00	46.00
	Total of 9th Year		3	924.00	46.00	970.00

Maintenance Operation (10th Year maintenance)

1	Fireline Tracing & inspection path	Feb/March	1	308.00	0.00	308.00
2	Watch and ward (Whole year)	Apr-March	2	616.00	0.00	616.00
	Total :-		3	924.00	0.00	924.00
3	Monitoring & Supervision Charge 5% of Total Cost				46.00	46.00
	Total of 10th Year		3	924.00	46.00	970.00

ABSTRACT FOR 1 HA ANR PLANTATION

Year	No. of MD	Labour Cost	Material Cost	Total
0th Year (Po work)	14.5	4,466.00	748.00	5,214.00
1st Year Creation	64.5	19,866.00	2,711.00	22,577.00
2nd Year maintenance	21	6,468.00	1,172.00	7,640.00
3rd Year maintenance	10	3,080.00	364.00	3,444.00
4th Year maintenance	3	924.00	46.00	970.00
5th Year maintenance	3	924.00	46.00	970.00
6th Year maintenance	3	924.00	46.00	970.00
7th Year maintenance	3	924.00	46.00	970.00
8th Year maintenance	3	924.00	46.00	970.00
9th Year maintenance	3	924.00	46.00	970.00
10th Year maintenance	3	924.00	46.00	970.00
TOTAL:-	131	40,348.00	5,317.00	45,665.00

Divisonal Forest Officer
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ESTIMATE FOR BARBED WIRE FENCING ANNEXURE-III

01)	02 PLY BARBED WIRE(5 Rmt per kg) 7 straight strand 1000 Mt. 2 Diagonal Strand= 2 X √ (6.5')2 + (8.2')2= 2 X 10.50 ft 21.00 ft X 400 nos= 8400 ft or Requirement of Barbed wire per Km Cost per KM= 9560/5=1912 Kg@Rs. 80/Kg	**Rs.7000.00** = 2560 Mt =9560 Mt **Rs. 1,52,960.00**
02)	Construction of RCC pillars of size- length-8ft, Bottom width 6" x6", Top width-4" x4" Reinforced with6mm rods with proper curing $\left\{8' \times \frac{6" + 4"}{2}\right\} - \frac{6" + 4}{2} \times = 1.34$ cft or 0.038 cum i) Cost of c.c. Work 1:2:4 = 0.038 cum @5408.17/ cum ii) Cost of rod including cutting, bending & binding 0.038 X 0.9 qtl = 0.0342 qtls @ Rs. 10966.12 /qtl. iii) Contingency (15%) including Curing, stacking, provision of hooks etc. Requirement of pillars per KM- Spacing = 2.5 mt X 2.5 mt Requirement = 1000 mt/2.5 mt Strut pillar in every 10th pillar = (400/10) x 2 Cost of pillars per Kilometer = 480 @ 668/-	= 205.51 = 375.04 = 87.08 Rs. 667.63 or Rs. 668.00 = 400 = 80 480 Nos **Rs. 3,20,640.00**
03)	Fitting fixing of RCC pillars in position with hbg metal (4cm) in C.M. (1:4:8) i) Digging of pits 1.5 ' x 1.5 'x 1.5' = 3.375 cft/ pit for 480 pits 480 x 3.375 = 1620 cft or 45.86 cum @ Rs. 13,244/ 100 cum ii) Fixing of pillars with 4 cm hbg metals in C.M. 1 :4 :8 pit size- 1.5 ' x 1.5' x 1.5' Deduct 1/3rd of butt of pillar i.e. 3.375/3 Total c.c. Work per pillar for 480 pillars = 480 x 2.25 = 1080 cft or 30.577 cum @ Rs. 3629.46/ cum	**Rs.6073.70** =3.375 cft = (-) 1.125 cft 2.25 cft **=Rs. 1,14,471.10**
04)	Labour for straightening the barbed wire & fixing & clipping with pillars 70 M.D per km. @ 308/-	**Rs. 21,560.00**
05)	Carriage of barbed wire & pillars to work site @ Rs. 1000/ & cost of loading & unloading within 5 km distance Approximately 10 tid @ 800/tld	**Rs. 18,000.00**
06)	Provision of one Iron Gate of size (4' x 5') on LS	**Rs. 7,500.00**
	Total	**Rs 6,41,204.80**
	Labour Cess 1%	**Rs. 6,412.05**
	Expenditure per 1 km of barbed wire fencing Or say Rs. 644.68/- or Rs. 645/- per meter	**Rs. 6,47,616.85**
07)	Expenditure towards maintenance for 3 years (3rd, 6th & 9th year) @ 2 % of cost per Rkm = 3 x 2% x Rs. 6,47, 616.85 /-	**Rs. 38, 857.01**
	Expenditure per 1 km of barbed wire fencing including maintenance	**Rs. 6,86473.86**
	So, expenditure per running meter for fencing = Rs. 686.47/ Mtr. Or Say **Rs.686.00 /- Mtr.**	

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ANNEXURE-IV

GPS CO-ORDINATES POINT OF CAMPENSATORY AFFORESTATION LAND

SL NO	POINT-ID	LONGITUDE	LATITUDE	EASTING	NORTHING
1	1	84°21'33.63516"	21°57'28.19556"	227278.628	2430510.687
2	2	84°21'37.51668"	21°57'35.92008"	227394.137	2430746.453
3	3	84°21'37.73916"	21°57'35.19756"	227400.133	2430724.112
4	4	84°21'37.99872"	21°57'34.67808"	227407.312	2430707.995
5	5	84°21'38.70360"	21°57'34.56756"	227427.482	2430704.246
6	6	84°21'39.19176"	21°57'34.44408"	227441.431	2430700.209
7	7	84°21'39.77784"	21°57'31.24728"	227456.553	2430601.553
8	8	84°21'39.05640"	21°57'31.18788"	227435.821	2430600.081
9	9	84°21'39.10284"	21°57'30.68424"	227436.882	2430584.56
10	10	84°21'40.01940"	21°57'30.39120"	227463.034	2430575.092
11	11	84°21'40.04856"	21°57'29.95776"	227463.64	2430561.741
12	12	84°21'40.23180"	21°57'29.53116"	227468.676	2430548.524
13	13	84°21'40.96836"	21°57'28.76040"	227489.412	2430524.438
14	14	84°21'41.38632"	21°57'28.51812"	227501.281	2430516.783
15	15	84°21'41.62284"	21°57'27.67536"	227507.62	2430490.73
16	16	84°21'41.97744"	21°57'27.33624"	227517.619	2430480.117
17	17	84°21'42.14700"	21°57'26.83764"	227522.223	2430464.693
18	18	84°21'42.19848"	21°57'26.47764"	227523.507	2430453.598
19	19	84°21'42.18300"	21°57'26.37000"	227523.008	2430450.285
20	20	84°21'42.08724"	21°57'26.27460"	227520.205	2430447.395
21	21	84°21'42.01344"	21°57'25.22376"	227517.532	2430415.102
22	22	84°21'42.02892"	21°57'25.00272"	227517.857	2430408.294
23	23	84°21'42.64740"	21°57'23.40324"	227534.763	2430358.768
24	24	84°21'42.27912"	21°57'23.24376"	227524.106	2430354.048
25	25	84°21'39.58740"	21°57'26.03592"	227448.331	2430441.289
26	26	84°21'37.07928"	21°57'26.69364"	227376.689	2430462.772

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