

## **CHECK LIST SERIAL NUMBER: 18**

### **SCHEME FOR COMPENSATORY AFFORESTATION**

**In lieu of Diversion of 2.0234 ha. ha of forest land (1.6578 ha. in falling Jharsuguda Division- & 0.3656 ha.) in favour of Gail India Ltd, Bhbaneswar, for laying of Natural Gas pipeline to Aditya Birla Plant (ABPL) & Tata Refractories Limited (TRL) under Bakaro Angul Pipeline Project of JHBDPL Phase-II Project in Sambalpur and Jharsuguda District**

**(Degraded Forest land selected for Compensatory Afforestation -5.0 ha. at Hondatopa Notified Village Forest under Bagdihi Range of Jharsuguda Forest Division**

**Block planting @ 1000 plants: 5.0 ha.**

**By Divisional Forest Officer,  
Jharsuguda Division**

# SCHEME FOR COMPENSATORY AFFORESTATION

## 1. Introduction:

As per guidelines issued by the MoEF & CC, Govt. of India vide their letter No.11-423/2011-FC, dt.10.04.2019, 1000 plants per ha. needs to be planted to be diverted in lieu of diversion of 2.0234 ha. of forest land (1.6578 ha. falling in Jharsuguda Division & 0.3656 ha. in Smbalpur Division ) in favour of Gail India Ltd, Bhubaneswar, for laying of Natural gas pipeline to Aditya Birla Plant (ABPL) & Tata Refractories Limited (TRL) under Bakaro Angul Pipeline Project of JHBDPL Phase-II Project in Sambalpur and Jharsuguda District. In case of 2.0234 ha. forest land proposed to be diverted of the project in Jharsuguda and Sambalpur District. As per principle contained in the above guidelines. The Compensatory Afforestation is proposed over 5.0 ha. of Degraded forest land identified in Handatopa Notified Village Forest under Bagdihi Range of this Division. For the purpose, Compensatory Afforestation Scheme for raising Block Plantation @ 1000 seedlings per ha over 5.0 ha in the above area has been prepared against 2.0234 ha area proposed to be diverted in favour of Gail India Limited, Bhubaneswar

## 2. Details of degraded forest land allotted for Compensatory afforestation:

The Degraded Forest Land for Compensatory Afforestation purpose is identified at Hondatopa Notified Village Forest under Bagdihi Range of this Division. The particulars of land identified for Compensatory Afforestation is furnished below.

Name of Range.	Name of the VF	Area ( Ha.)	Area ( Ac.)	Pillar No.	Geo-coordinates Point		Remarks
					Latitude	Longitude	
Bagdihi	Handatopa	5.0	12.355	1	21 59 05.79354	84 11 24.22075	
				2	21 59 00.75627	84 11 57.18033	
				3	21 58 55.35088	84 11 56.71346	
				4	21 58 55.14422	84 11 56.18747	
				5	21 58 56.32489	84 11 53.79899	
				6	21 58 57 01184	84 11 53.60386	
				7	21 58 57.50239	84 11 51.91253	
				8	21 58 59.25100	84 11 49.22649	
				9	21 59 01.49272	84 11 49.22649	
				10	21 59 04.27106	84 11 48.79361	



The above Village Forest has been notified vide notification No.22719-AFFN (SIDA)-98/91-F&E dt.23.12.1991 of the Forest & Environment Department, Govt. of Odisha (copy enclosed)

### 3. Description of Area:

The identified land is in the Jurisdiction of Bagdihi Range of Jharsuguda Forest Division.

The area identified for Compensatory Afforestation is in one patch. The area finds place in Survey of India Topo Sheet No.F45M1.

**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.

**Topography:** The area is mostly Plain land. The topographical configuration of the selected site is suitable for undertaking plantation activities in Block mode. Soil erosion is occasionally noticed in the site for which the scheme proposes, to dovetail adequate soil and moisture conservation measures into the afforestation programme.

**Climate:** The area experiences a tropical climate. The average rainfall is 1400mm.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 data of 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
2017	2.10	0.00	5.00	0.00	84.50	256.40	584.30	311.90	293.60	116.90	0.00	0.00	1654.70
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
Total	2.10	37.20	18.50	78.10	272.40	650.60	1296.30	1505.20	769.20	286.00	0.00	92.70	5008.30
Aver.	0.70	12.40	6.17	26.03	90.80	216.87	432.10	501.73	256.40	95.33	0.00	30.90	1669.43

**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 degraded areas, Kendu, Palasa, Asan 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.

#### **Biotic interference:**

The area experiences grazing pressure to some extent.

**Villages surrounding the area:** The land is surrounded by village- Handatopa of Jharsuguda district. The population in this village is as given below.

Demographic Profile of villages surrounding.							
District	Name of village	No_HH	TOT_P	TOT_M	TOT_F	P_SC	P_ST
Jharsuguda	Handatopa	413	1,891	926	965	495	1412

#### 4. Plantation Model:

The patch wise area available for Block Plantation per ha is as follows.

Patch	Area in Ac	Area in ha	Suitable for ANR @ 500/ Ha	No. of Seedlings
Patch-I	12.355	5.0	5.0	5000.00

It is proposed to take up in Block Plantation Mode @1000 plants per hectare model over the area as stated above .Soil & Moisture Conservation measures as prescribed in the cost norm will be strictly followed.

#### 5. Schedule of Plantation Program:

The area is in a single village. Area selected for Block Planting is 5.0 ha. The seedlings that could be planted is 5000 nos seedlings as detailed below.

Sl no	Planting Model	Area in Ha	No of Seedlings per ha	Total Seedlings to be planted
Patch-I	Block Planting	5.0	1000	5000
Total		5.0	1000	5000

As the selected patch is a degraded forest area, after a good fencing, the area will be fully covered with Sal and miscellaneous crop. 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 onetime cost norm. The Soil conservation measures are also proposed to be taken up in the 0<sup>th</sup> Year, 1<sup>st</sup> yr and 5<sup>nd</sup> yr. The Cost norm for Block Plantation (Without Fencing) with 10 years' maintenance is at **Annexure-I**. Separate Iron Angel & Chain Link wire mesh fencing is provided to the plantation.

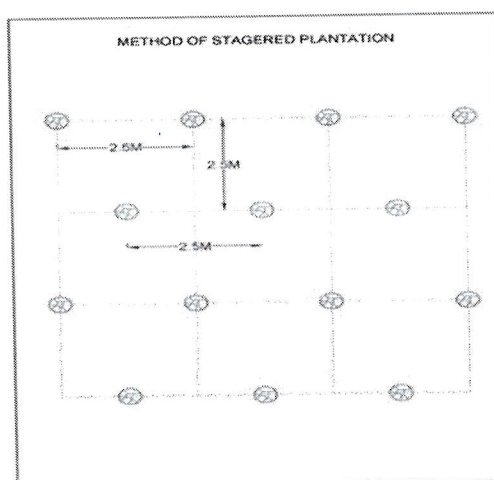


## 6. Technical details: -

- a) **General:** The plantation will be taken up in Block Plantation Mode over 5.0 ha. The year wise activities to be implemented has been enumerated in the approved onetime Cost norm at Annexure-I

### For Block Planting @1000 plants per ha

- b) **Spacing:** The plant density proposed for planting is @1000 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

Sl No.	Local Name of Species	Botanical Name of Species
1	Asan	<i>Terminalia tomentosa</i>
2	Bela	<i>Aegle marmelos</i>
3	Khair	<i>Acacia catechu</i>
4	Simili	<i>Bombax ceiba</i>
5	Sunari	<i>Cassia fistula</i>
6	Sisoo	<i>Dalbergia Sisoo</i>
7	Pahadi sisoo	<i>Dalbergia latifolia</i>
8	Gambhari	<i>Gmelinaar borea</i>
9	Anla	<i>Emblica officinalis</i>
10	Arjun	<i>Terminalia arjuna</i>
11	Jamun	<i>Syzygium cumini</i>
12	Sal	<i>Shorea Robusta</i>

13	<i>Bara</i>	<i>Ficus bengalensis</i>
14	<i>Pipal</i>	<i>Ficus religiosa</i>
15	<i>Panas</i>	<i>Artocarpus heterophyllus</i>
16	<i>Any other species suggested by the VSS.</i>	

#### **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 is bounded by

Name of Range.	Name of the VF	Area ( Ha.)	Area ( Ac.)	Pillar No.	Geo-coordinates Point		Remarks
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				10	21 59 04.27106	84 11 48.79361	

The area finds place in Survey of India Topo Sheet No. F45M1.

##### **d(ii) Alignment, Stacking and Pitting.**

Alignment and stacking will be taken up in the month of January. Pits of size 45 cm x 45 cm are to be dugout with a spacing of 2.5mt x 2.5mt @1000 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 1<sup>st</sup> year of plantation just after one month of planting. 10% causality replacement is also suggested during 2<sup>nd</sup> 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 35gms of Urea to be added to the soil per plant at the time of soil working during rains during 1<sup>st</sup>, 2<sup>nd</sup> & 3<sup>rd</sup> 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:**

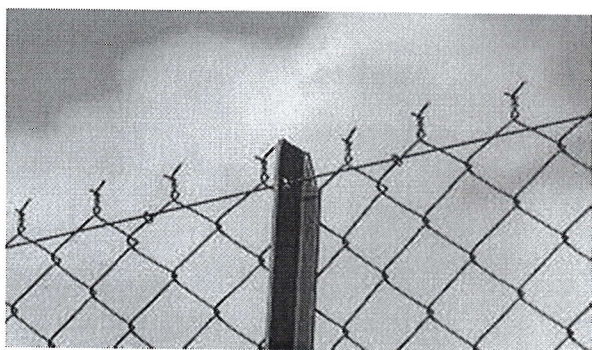
Tender seedlings planted are subject to damage by ground fire. It is required to protect the plantation and forest growth from fire hazard by tracing of fire lines. Boundary of the plantation and several internal lines need to be scrapped to a width of 2mtr during February-March. The cut back materials 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 1250 Rmt. There is a provision of fencing in the onetime cost norm of "Block Plantation" as approved by PCCF, Odisha. It is proposed to provide Iron Angel & Chain Link wire mesh fencing. Approved cost norm is Rs.4,40,299/- for 250 Rmt/per ha. (Cost norm is enclosed as Annexure-III)

#### **Description of Iron Angel & Chain Link Wire Mesh Fencing.**

It is suggested to put Iron Angel at an interval of 2.5m. The length of such Angel is 2.40 m. Size:50 m x 50 mm x 6 mm.



The total amount for Iron Angel & Chain Link wire mesh fencing for 1250 Rmt. @ 440299/- for 250 Rmt comes to Rs.2201495/-

**Entry Part activity (EPA):** Participation of local mass is quintessential in forest and environment conservation. Therefore 15% of plantation cost has been earmarked towards VSS (Van Sarakshya Samiti) involvement and incentives.

**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.

**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:

AS PER ONETIME COST NORMS		
Sl No	Description	Amount in Rs
<b>A</b>		
1	Cost of Block Plantation @1000 plants per ha over 5.0ha @ Rs.246454.00 with 10 years maintenance(without nursery cost) ( <i>Cost Norm enclosed as Annexure-I</i> )	1232270.00
<b>Total (A)</b>		<b>1232270.00</b>
<b>B. Cost of Nursery</b>		
2	1 <sup>st</sup> Financial Year (Seedlings Cost for 3 Months) @ 1000 plants per ha. over 5.0 ha @ Rs.10122.00)	50610.00
3	2 <sup>nd</sup> Financial Year (Seedlings Cost for 12 Months) @ 1000 plants per ha. over 5.0 ha @ Rs.34271.00	171355.00
4	3 <sup>rd</sup> Financial Year (Seedlings Cost for 3 Months) @ 1000 plants per ha. over 5.0 ha @ Rs.5917.00 ( <i>Cost Norm enclosed as Annexure-II</i> )	29585.00
5	Escalation cost of nursery @20%.	50310.00
<b>Total (B)</b>		<b>301860.00</b>
<b>C. Cost of Fencing.</b>		
6	Angel Iron & Chain Link wire mesh fencing over 1250 Rmt with 10 <sup>th</sup> years maintenance .The cost 250 Rmt/per ha. @ 440299.00 ( <i>Cost Norm enclosed as Annexure-III</i> )	2201495.00
<b>Total (C)</b>		<b>2201495.00</b>
<b>D. Cost of SMC Work.</b>		
7	Soil & Moisture Conservation work (1000Plants/Ha.) with 10 <sup>th</sup> year maintenance over 5.0 ha. The cost per ha. @ 37415.00 ( <i>Cost Norm enclosed as Annexure-IV</i> )	187075.00
<b>Total (D)</b>		<b>187075.00</b>
<b>E. Watering.</b>		
8	Solar system with Bore well (1 system for 5 Ha. Plantation) fitted with Drip system with 5 <sup>th</sup> Year maintenance. The cost per ha @233786.00 ( <i>Cost Norm enclosed as Annexure-V</i> )	1168930.00
<b>Total(E)</b>		<b>1168930.00</b>
<b>F. Cost of Entry Point Activities.</b>		
9	5% total Plantation Cost towards Entry Point Activities / Incentive to VSS including monitoring & Evaluation.	230119.50
<b>Total (F)</b>		<b>230119.50</b>
<b>Grand Total :</b>		<b>5321749.5 or 5321750.00</b>

(Rupees Fifty Three Lakhs Sixty Twenty One Thousand Seven Hundred Fifty) only

  
 Divisional Forest Officer,  
 Jharsuguda Forest Division  
 Divisional Forest Officer  
 Jharsuguda Forest Division



## Annexure-I

BASE COST NORM FOR COMPENSATORY AFFORESTATION (BLOCK PLANTATION) @ 1000 PLANTS PER HECTARE (18 months old seedling)						
WAGE RATE Rs- 311/- PER MANDAY						
Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Material Cost (In Rs.)	Total cost (In Rs.)
1	2	3	4	5	6	7
<b>0th Year (Advance work) Pre-Planting Operation</b>						
1	Survey, Demarcation and Pillar posting	Nov/Dec	2	622	0	622
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	311	100	411
3	Site preparation (Cleaning & removal of debris)	Nov/Dec	12	3732	0	3732
4	Creation of 4.00 mt wide Inspection Path	Feb/Mar	1	311	0	311
5	Alignment and stacking of pits	Feb/Mar	1	311	0	311
6	Digging of pits (45 cm x 45 cm X 45 cm) in hard and gravelly soil	Feb/Mar	40	12440	0	12440
7	Construction of Temporary Labour Shed, Drinking water facility and First-Aid etc.	Jan/Mar	0	0	3500	3500
<b>Total</b>			<b>57</b>	<b>17727</b>	<b>3600</b>	<b>21327</b>
<b>1st Year/Planting Year</b>						
1	Refilling of pits by altering the dugout soil of the pits, application of organic compounds/ CDM/ FYM & mixing the same properly.	Jun/Jul	7.5	2332.50	5000	7332.50
2	Transportation of 18 months old polythene bag seedlings in hired truck /tractor from the Permanent/Mega nursery to planting site including loading & unloading. (Average lead of 10 Rkm) & stacking the seedling @ Rs.6/- per Seedling. (1100 nos.)	Jul/Aug	0	0	6600	6600
3	Watering polypot seedlings at planting site	Jul/Aug	2	622	0	622
4	Conveyance of polypot seedlings on head load from the stacking site to individual dugout pits within the planting site, applying insecticide, fertilizers & planting after scooping the soil with other applied materials & pressing the soil perfectly around the planted seedlings.	Jul/Aug	22.5	6997.50	0	6997.50
5	<b>Cost of Fertilizer &amp; Insecticide</b> (a) NPK/Bio-fertilizer @ 50 gms/plant as basal dose = 50kg @ Rs.30/- per kg = Rs. 1500.00 (b) Urea/Vermicompost/Mo Khata/any other fertilizer in two subsequent doses @ Rs. 750.00 (c) Insecticide/ Bio-pesticide @ 5 gms/plant=5 kg @ Rs.150/- per kg = Rs. 750.00	Jul/Aug	0	0	3000	3000
6	Casualty Replacement @ 10% (100 nos.)	Jul/Aug	2.5	777.5	0	777.5
7	1st weeding & Manuring	Aug/Sept	12	3732	0	3732
8	2nd Weeding, Soil working (1mt. diameter around the plants) & Manuring	Oct/Nov	15	4665	0	4665
9	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
10	Watch & Ward including watering as per requirement	Aug-Mar	12	3732	0	3732
<b>Total</b>			<b>76.50</b>	<b>23791.50</b>	<b>14600.00</b>	<b>38391.50</b>
<b>2nd Year Maintenance</b>						
1	Transportation of 100 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs.6/- per seedling	Jul	0	0	600	600
2	Casualty replacement- 10%	Jul	2.5	777.5	0	777.5
3	<b>Cost of Fertilizer &amp; Insecticide-</b> A) Cost of Insecticide/ Bio-pesticide @ 5 gms/plant = 0.5 Kg @ Rs.150/- per kg = Rs.75/- B) Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer @Rs. 2800/-	July/Aug	0	0	2875	2875
4	Weeding (Complete weeding), Manuring & Soil working, (1mt. diameter around the plants)	Sep/Oct	15	4665	0	4665
5	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
6	Watch & Ward including watering as per requirement	Apr-Mar	18	5598	0	5598
7	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc.	Apr-Mar		0	1000	1000
<b>Total</b>			<b>38.5</b>	<b>11973.5</b>	<b>4475</b>	<b>16448.5</b>



Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrrial Cost (In Rs.)	Total cost (In Rs.)
1	2	3	4	5	6	7
<b>3rd Year Maintenance</b>						
1	Cost of Fertilizer(Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer)	July/Aug	0	0	2800	2800
2	Weeding (Complete weeding), Manuring & Soil working, (1mt. diametre around the plants)	Sep/Oct	15	4665	0	4665
3	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
4	Watch & Ward including watering as per requirement	Apr/Mar	18	5598	0	5598
5	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc.	Apr/Mar	0	0	1000	1000
<b>Total</b>			<b>36.0</b>	<b>11196</b>	<b>3800</b>	<b>14996</b>
<b>4th Year Maintenance</b>						
1	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward including maintenace of vegetative fencing	Apr-Mar	18	5598	0	5598
<b>Total</b>			<b>21</b>	<b>6531</b>	<b>0</b>	<b>6531</b>
<b>5th Year Maintenance</b>						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933
2	Watch & Ward	Apr/Mar	18	5598.00	0	5598
<b>Total</b>			<b>21</b>	<b>6531</b>	<b>0</b>	<b>6531</b>
<b>6th Year Maintenance</b>						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933.0
2	Pruning of branches, Singling out of multiple shoots	Jan/Mar	3	933.00	0	933.0
3	Watch & Ward	Apr/Mar	18	5598.00	0	5598.0
<b>Total</b>			<b>24</b>	<b>7464</b>	<b>0</b>	<b>7464.0</b>
<b>7th Year Maintenance</b>						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933
2	Watch & Ward	Apr/Mar	18	5598.00	0	5598
<b>Total</b>			<b>21</b>	<b>6531</b>	<b>0</b>	<b>6531</b>
<b>8th Year Maintenance</b>						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933
2	Watch & Ward	Apr/Mar	18	5598.00	0	5598
<b>Total</b>			<b>21</b>	<b>6531</b>	<b>0</b>	<b>6531</b>
<b>9th Year Maintenance</b>						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933.00	0	933
2	Watch & Ward	Apr/Mar	18	5598.00	0	5598
<b>Total</b>			<b>21</b>	<b>6531</b>	<b>0</b>	<b>6531</b>
<b>10th Year Maintenance</b>						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	933	0	933
3	Watch & Ward	Apr/Mar	18	5598.00	0	5598
<b>Total</b>			<b>21</b>	<b>6531</b>	<b>0</b>	<b>6531</b>

Year wise Abstract of Cost Norm (showing seedling cost separately)



Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour Cost (In Rs.)	Matrrial Cost (In Rs.)	Total cost (In Rs.)	
1	2	3	4	5	6	7	
Sl. No	Year	No. of Mandays	Labour cost (In Rs)	Material Cost(In Rs.)	Monitoring, Evaluation, Learning, Documentation and Other Contingency (5%) of (4+5)	Cost of Seedlings @Rs.50.31 per seedlings	TOTAL COST(In Rs)
1	2	3	4	5	6	7	8
1	0th year	57.0	17727.0	3600.0	973.00	0.00	22300.00
2	1st year	76.5	23791.5	14600.0	1918.50	55341.00	95651.00
3	2nd year	38.5	11973.5	4475.0	821.50	5031.00	22301.00
4	3rd year	36.0	11196.0	3800.0	749.00	0.00	15745.00
5	4th year	21.0	6531.0	0.0	326.00	0.00	6857.00
6	5th year	21.0	6531.0	0.0	326.00	0.00	6857.00
7	6th year	24.0	7464.0	0.0	373.00	0.00	7837.00
8	7th year	21.0	6531.0	0.0	326.00	0.00	6857.00
9	8th year	21.0	6531.0	0.0	326.00	0.00	6857.00
10	9th year	21.0	6531.0	0.0	326.00	0.00	6857.00
11	10th year	21.0	6531.0	0.0	326.00	0.00	6857.00
Total:		358.0	111338.0	26475.0	6791.0	60372.0	204976.0

**Note:**

- 1 Priority must be given to the indigenous local species available nearby to the site of plantation.
- 2 10 % indigenous fruit bearing trees must be preferred to Plantation.
- 3 Site specific Soil conservation work like LBCD, Gully Plugging, Staggered Trench, Contour Trench, Graded Bund, etc. may be taken up
- 4 Chain link fencing can be adopted in the CA plantation taken up outside the forest area and Bamboo twigs fencing may be preferred
- 5 Watering facilities for procurement of water & watering may be adopted as per the availability of water.
- 6 The Cost Norm of various items can be changed with the approval of the concerned RCCFs keeping the overall cost norm fixed for each Financial Year

APCCF (Forest Diversion & NO, FC Act)



Matrix for Model-I A Conventional CA Plantation (AR) 1000 plants per Ha

In Rupees

Sl. No.	Comment	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost (10 Years)
Base Norm		22300	95651	22301	15745	6857	6857	7837	6857	6857	6857	6857											
1	2021-22	22300	100434	24585	18226	8335	8751	10502	9648	10131	10637	11169											234718
2	2022-23		23415	105456	25814	19137	8752	9189	11027	10130	10638	11169	11727										246454
3	2023-24			24586	110729	27105	20094	9190	9648	11578	10637	11170	11727	12313									258777
4	2024-25				25815	116265	28460	21099	9650	10130	12157	11169	11729	12313	12929								271716
5	2025-26					27106	122078	29883	22154	10133	10637	12765	11727	12315	12929	13575							285302
6	2026-27						28461	128182	31377	23252	10640	11169	13403	12313	12931	13575	14254						299567
7	2027-28							29884	134591	32946	24425	11172	11727	14073	12929	13578	14254	14967					314546
8	2028-29								31378	141321	34593	25646	11731	12313	14777	13575	14257	14967	15715				330273
9	2029-30									32947	146387	36323	26928	12318	12929	13516	14254	14970	15715	16501			346788
10	2030-31										34594	155806	38139	28274	12934	13575	14292	14967	15719	16501	17326		364127

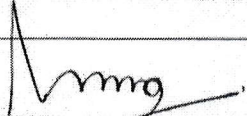
APCCF (Forest Diversion & NO, FC Act)



## Annexure-II

Nursery Cost Norm for raising of 1000 (18 months) seedlings								
		Wage rate @	311	per Manday				
Sl. No	Items of work	Preferable Period of Execution	Unit	Unit Cost	No./ Qty.	Labour Cost	Material Cost	Total Cost
A. 1st Financial Year (Seedlings Cost for 3 Months)								
1	Cost for Polythene (9" X 5"X 200G) 300 nos./Kg. = 3.33 Kg@Rs.208/- per Kg. (including GST)	Nov- Dec	Kg	208	3.33	0	693	693
2	Procurement of raw & crude Polypot Mixture (Soil, Sand & CDM in ratio (2:1:1)							
	(i) Soil	Nov- Dec	Cft	10	22	0	220	220
	(ii) Sand	Nov- Dec	Cft	16	11	0	176	176
	(iii) CDM/ Vermi compost/ Bio-Fertilizers etc.	Nov- Dec	Cft	25	11	0	275	275
	(iv) Insecticide/ Bio-Pesticide	Nov- Dec	Kg	150	2	0	300	300
3	Preparation of Soil Mixture includes pulverisation, Straining & mixing the ingredients in proper ratio. (2:1:1)	Nov- Dec	MD	311	2	622	0	622
4	Filling of polythene bags & Setting in the bed	Nov- Dec	MD	311	3	933	0	933
5	Collection of Seed, Grading & Treatment	Dec	MD	311	2	622	0	622
6	Preparation of germination bed & dibbling of seed.	Jan	MD	311	0.5	155.5	0	155.5
7	Pricking out the Seedlings from germination beds & transplanting in the Poly bags and providing sheds.	Jan	MD	311	2	622	500	1122
8	Watering (Jan to March)	Jan-Mar	MD	311	9	2799	0	2799
9	Maintenance of Nursery including fencing	Jan-Mar	MD	311	4	1244	500	1744
10	Contingencies (Water can, Buckets, Nursery shed, Electricity charges/ Diesel charges/ Maintenance of pump set/ Maintenance of Nursery, etc.)			0	0	0	460.5	460.5
	TOTAL				22.5	6997.5	3124.1	10121.6
B. 2nd Financial Year (Shifting of Seedlings to larger Polythene bag to avoid root coiling & better growth) April-March								
1	Watering for 3 months (April to June)	April-June	MD	311	9	2799	0.0	2799
2	Cost of Insecticides/ Bio-Pesticide	May-June	Kg/ Lt	0	0	0	400.0	400
3	Application of insecticides/ Bio-Pesticide	May-June	MD	311	1	311	0	311
4	Cost of Poly pot (12" X 10" X 300 gauge) 60 nos. = 17 Kg & Rs.208 per Kg. (including GST)	May-June	Kg	208	17	0	3536	3536



Nursery Cost Norm for raising of 1000 (18 months) seedlings								
	Wage rate @ 311		per Mandy					
Sl. No	Items of work	Preferable Period of Execution	Unit	Unit Cost	No./ Qty.	Labour Cost	Material Cost	Total Cost
5	Procurement of raw & crude Polypot Mixture (Soil, Sand & CDM in ratio (2:1:1))							
	(i) Soil	Apr/May	Cft	10	100	0	1000	1000
	(ii) Sand	Apr/May	Cft	16	50	0	800	800
	(iii) CDM/Vermi compost/ Bio-Fertilizers etc.	Apr/May	Cft	25	50	0	1250	1250
	(iv) Insecticide/ Bio-Pesticide	Apr/May	Kg	150	3	0	450	450
6	Preparation of potting mixture including pulverization and straining	Oct-Nov	MD	311	6	1866	0	1866
7	Filling of Polythene bags including repotting and setting	Oct-Nov	MD	311	35	10885	0	10885
8	Watering	Oct- March	MD	311	19	5909	0	5909
9	Sorting, Weeding, grading and resetting over one year period	April-March	MD	311	15	4665	0	4665
10	Contingencies (Water can, Buckets, Nursery shed, Electricity charges/ Diseal charges/ Maintenance of pump set/ Maintenance of Nursery, etc.)						400	400
	<b>TOTAL</b>				85	26435	7836	34271
<b>C. 3rd Financial Year (Maintenance upto Planting) April-June</b>								
1	Watering for 3 months (April to June)	April-June	MD	311	12	3732	0	3732
2	Weeding, Shifting and grading	April-June	MD	311	4	1244	0	1244
3	Cost of Insecticides/ Bio-Pesticide					0	400	400
4	Application of insecticides/ Bio-Pesticide		MD	311	1	311	0	311
5	Contingencies						230	230
	<b>TOTAL</b>				17	5287	630	5917
<b>ABSTRACT</b>								
	<b>Item of work</b>					<b>Labour Cost</b>	<b>Material Cost</b>	<b>Total Cost</b>
A	1st Financial Year (Seedlings Cost for 3 Months)					6997.5	3124.1	10122
B	2nd Financial Year (12 Months)					26435	7836	34271
C	3rd Financial Year (3 Months)					5287	630	5917
<b>Total</b>						<b>38719.5</b>	<b>11590.1</b>	<b>50310</b>
Cost per 18 months old Seedlings= 50310/1000 = Rs 50.31/-								
The Cost Norm of various items can be changed with the approval of the concerned RCCFs keeping the overall cost norm fixed for each Financial Year								
<div> APCCF (Forest Diversion &amp; NO, FC Act)</div>								



Fencing Model-F-II						
Fencing for Compensatory Plantation raised outside the Forest Areas using Angle Iron & Chain Link wire mesh (250 Rmt/ Ha.)						
WAGE RATE Rs- 311/- PER DAY						
Sl. No	Items of work	Preferable Period of Execution	Man days	Wages	Material cost (Rs)	Total Cost (Rs. per Ha.)
0th Year (PPO)						
1	Earth work (Excavation of hole) in Hard soil at a distance 3 mt. 0.40m x 0.40m x 0.40m = 0.064 x 84 = 5.376 cum @ Rs. 140/ cum = Rs. 753.		2.42	752.62	0.0	752.6
2	Cement concrete (1: 4: 8) using 40 mm BHG metal 84 X 0.40m X 0.40m X 0.10m = 1.344 @ 3755.94/cum		0	0	5,047.4	5,047.4
3	Angle Iron pole of size 50 mm X 50 mm X 6 mm of height 2.40 mt. 84 x 2.40 = 201.60 Sqmt. @ 4.50/kg/ Sqmt. = 907.20 kg @ 69.50 per kg				63,050.0	63,050.0
4	Cement concrete (1: 2: 4) for fixing the iron angel pole using 12mm BHG Chips 84 X 0.40m X 0.40m X 0.30m = 4.032 cum @ 5486.77/cum				22,123.0	22,123.0
5	Cost of Chain link mess using 4 mm Dia GI wire having gap size 50 mm X 50 mm 250 Rmt X 2.10 mt. = 525 Sq.mt @ 331/Sqmt = Rs. 1,73,775				1,73,775.0	1,73,775.0
6	Double coat painting of iron angel pole over a coat of primer using good quality enamele paint 84 x 2.10 x 0.20 = 35.28 sqmt. @ Rs.108.80/Sqmt				3,838.0	3,838.0
7	Painting of GI chain link mess 250 x 2.10 x 2 = 1050/10 = 105 Sqmt. @ Rs. 108.80 Sqmt.				11,424.0	11,424.0
8	Transpotation of Chain link mess, Iron angle, Straighening & tying of chain link mess etc. @ 2% of the total cost.				5,600.0	5,600.0
	<b>TOTAL</b>		<b>2.42</b>	<b>752.62</b>	<b>2,84,857.4</b>	<b>2,85,610.0</b>
Rate per running mt. 2,85,610/ 250= Rs. 1142/Rmt						
1st Year Maintenance						
1	No Maintenance is required.	Sept./Oct	0	0	0	0
2nd Year Maintenance						
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1st yr. 1142x 1% = 11.42 say Rs. 11	Sept./Oct	0	0	11000	11000
3rd Year Maintenance						
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1st yr. 1142x 1% = 11.42 say Rs. 11	Sept./Oct	0	0	11000	11000
4th Year Maintenance						
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1st yr. 1142x 1% = 11.42 say Rs. 11	Sept./Oct	0	0	11000	11000
5th Year Maintenance						
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1st yr. 1142x 1% = 11.42 say Rs. 11	Sept./Oct	0	0	11000	11000
6th Year Maintenance						
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1st yr. 1142x 1% = 11.42 say Rs. 11	Sept./Oct	0	0	11000	11000
7th Year Maintenance						
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1st yr. 1142x 1% = 11.42 say Rs. 11	Sept./Oct	0	0	11000	11000
8th Year Maintenance						
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1st yr. 1142x 1% = 11.42 say Rs. 11	Sept./Oct	0	0	11000	11000
9th Year Maintenance						
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1st yr. 1142x 1% = 11.42 say Rs. 11	Sept./Oct	0	0	11000	11000
10th Year Maintenance						



Sl. No	Items of work	Preferable Period of Execution	Man days	Wages	Material cost (Rs)	Total Cost (Rs. per Ha.)
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1st yr. 1142x 1% = 11.42 say Rs. 11	Sept./Oct	0	0	11000	11000

Abstract					
Sl. No	Year	No. person days	Labour cost @ Rs. 311/- per day	Material Cost	Total cost (Rs.)
		2.42	752.6	284857.4	285610.0
1	0th year	0.0	0.0	0.0	0.0
2	1st year	0.0	0.0	11000.0	11000.0
3	2nd year	0.0	0.0	11000.0	11000.0
4	3rd year	0.0	0.0	11000.0	11000.0
5	4th year	0.0	0.0	11000.0	11000.0
6	5th year	0.0	0.0	11000.0	11000.0
7	6th year	0.0	0.0	11000.0	11000.0
8	7th year	0.0	0.0	11000.0	11000.0
9	8th year	0.0	0.0	11000.0	11000.0
10	9th year	0.0	0.0	11000.0	11000.0
11	10th year	0.0	0.0	11000.0	11000.0
Total:		2.42	752.62	383857.4	3,84,610.0

  
APCCF (Forest Diversion & NO, FC Act)

Matrix for Fencing Model-F- II (Iron angle with Chainlink wire mesh)

In Rupees

Sl. No.	Comment	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost
Base Norm		285610	0	11000	11000	11000	11000	11000	11000	11000	11000	11000											
1	2021-22	285610	0	12126	12734	13370	14039	14740	15478	16252	17064	17918											419331
2	2022-23		299891	0	12732	13371	14039	14741	15477	16252	17065	17917	18814										440299
3	2023-24			314886	0	13369	14040	14741	15478	16251	17065	17918	18813	19755									467316
4	2024-25				330630	0	14037	14742	15478	16252	17064	17918	18814	19754	20743								485432
5	2025-26					347162	0	14739	15479	16252	17065	17917	18814	19755	20742	21780							509705
6	2026-27						364520	0	15476	16253	17065	17918	18813	19755	20743	21779	22869						535191
7	2027-28							382746	0	16250	17066	17919	18814	19754	20743	21780	22868	24012					561951
8	2028-29								401883	0	17063	17919	18814	19755	20742	21780	22869	24011	25213				590049
9	2029-30									421977	0	17916	18815	19755	20743	21779	22869	24012	25212	26474			619552
10	2030-31										443076	0	18812	19756	20743	21780	22868	24012	25213	26473	27798		650531

A/CCF (Forest Diversion & NO, FC Act)

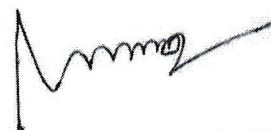




SMC Works Model-C			
Cost Norms for creation of Compensatory Afforestation with Stabilization of Soil & Conservation of Moisture (1000 Plants/ Ha.)			
WAGE RATE Rs- 311/- PER DAY			
Sl.No	Item of Works	Preferable Period of Execution	Total Cost
0th Year (Pre-Planting Operation)			0
1	Nil		
1st Year			
2	Soil Conservation measure structures like Staggered Trench, Percolation pit, Contour trench, Graded earthen bund, LBCD, Wire mesh LBCD, Sub surface Dyke & WHS as per the slope & site requirement on LS	Apr/Sept.	20,215
2nd Year			
3	Maintenance of SMC structures @ 15 % of initial year cost	Apr/jul	3,032
3rd Year			
4	Maintenance of SMC structures @ 15 % of initial year cost	Apr/jul	3,032
4th Year			
5	Maintenance of SMC structures @ 15 % of initial year cost	Apr/jul	3,032
4th Year			
5	Maintenance of SMC structures @ 15 % of initial year cost	Apr/jul	3,032
Total			32,343.0

Abstract					
Sl. No	Year	No. person days	Labour cost @ Rs. 311/-per day	Material Cost	Total cost (Rs.)
		0.0	0.0	0.0	0.0
1	0th year	0.0	0.0	20,215.0	20,215.00
2	1st year	0.0	0.0	3,032.00	3,032.00
3	2nd year	0.0	0.0	3,032.00	3,032.00
4	3rd year	0.0	0.0	3,032.00	3,032.00
5	4th year	0.0	0.0	3,032.00	3,032.00
6	5th year	0.0	0.0	3,032.00	3,032.00
Total		0.00	0.00	32,343.0	32,343.0

Different types of SMC structures may be taken up as per the scope & requirements of the plantation site out of the design & specification of different structures annexed along this document.

  
APCCF (Forest Diversion & NO, FC Act)

## Matrix for (SMC)

In Rupees

Sl. NO.	Commence ment Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	Total Cost
Base Norm		0	20215	3032	3032	3032	3032											
1	2021-22	0	21226	3342	3510	3685	3870											35633
2	2022-23		0	22287	3509	3686	3869	4064										37415
3	2023-24			0	23401	3684	3870	4062	4267									39284
4	2024-25				0	24571	3868	4064	4265	4480								41248
5	2025-26					0	25800	4061	4267	4478	4704							43310
6	2026-27						0	27090	4264	4480	4702	4939						45475
7	2027-28							0	28445	4477	4704	4937	5186					47749
8	2028-29							0	29867	4701	4939	5184	5445					50136
9	2029-30								0	31360	4936	5186	5443	5717				52642
10	2030-31									0	32928	5183	5445	5715	6003			55274

APCF (Forest Diversion &amp; NO, FC Act)





# Annexure-V

Watering Model-W-I			
Watering provision to CA Plantation			
Solar system with Bore well (1 system for 5 Ha Plantation) fitted with Drip system, Wage rate @ Rs.311/-			
Year of Installation (0th Year)			
1	Cost of Borewell	1,50,000	
2	Installation of Solar panel & other System	3,00,000	
3	Cost of 0.5 HP submersable motor with accessories	50,000	
4	Water Storage Tanks/ Flexible pipes	15,000	
5	Cost of laying Drip system including all accessories, fittings etc. with 12% GST	3,02,431	
<b>Total</b>		<b>8,17,431</b>	
6	Cost of Water & watering per Ha. $(8,17,431 / 5) = \text{Rs. } 1,63,486/-$		1,63,486
1st Year Watering			
7	No maintenance required		0
<b>Total</b>			<b>0</b>
2nd Year Watering			
8	Maintenance of system @ 5% of initial cost of instalation		8,174
<b>Total</b>			<b>8,174</b>
3rd Year Watering			
9	Maintenance of system @ 5% of initial cost of instalation		8,174
<b>Total</b>			<b>8,174</b>
4th Year Watering			
10	Maintenance of system @ 5% of initial cost of instalation		8,174
<b>Total</b>			<b>8,174</b>
5th Year Watering			
11	Maintenance of system @ 5% of initial cost of instalation		8,174
<b>Total</b>			<b>8,174</b>

Abstract					
Sl. No	Year	No. person days	Labour cost @ Rs. 311/-per day	Material Cost	Total cost (Rs.)
1	0th year	0	0.0	163486.0	163486.0
2	1st year	0	0.0	0.0	0.0
3	2nd year	0	0.0	8174.0	8174.0
4	3rd year	0	0.0	8174.0	8174.0
5	4th year	0	0.0	8174.0	8174.0
6	5th year	0	0.0	8174.0	8174.0
<b>Total:</b>		<b>0</b>	<b>0</b>	<b>196182</b>	<b>1,96,182</b>

APCCF (Forest Diversion & NO, FC Act)



Matrix for Watering W1 (Solar Borewell) fitted with Drip System (per Ha)

In Rupees

Sl. NO.	Commence ment Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	Total Cost
	Base Norm	163486	0	8174	8174	8174	8174											
1	2021-22	163486	0	9011	9463	9935	30758											222653
2	2022-23		171650	0	9462	9936	10432	32296										233786
3	2023-24			180243	0	9935	10433	10954	33911									245476
4	2024-25				189255	0	10432	10955	11502	35607								257751
5	2025-26					198718	0	10954	11503	12077	37387							270639
6	2026-27						208654	0	11502	12078	12681	39256						284171
7	2027-28							219087	0	12077	12682	13315	41219					298380
8	2028-29								230041	0	12681	13316	13981	43280				313299
9	2029-30									241543	0	13315	13982	14680	45444			328964
10	2030-31										253620	0	13981	14681	15414	47716		345412

APCCF (Forest Diversion &amp; NO, FC Act)