

**COMPENSATORY AFFORESTATION  
SCHEME OVER 09.800 Ha. NON-FOREST  
GOVT. LAND IDENTIFIED IN VILLAGE  
CHAMPAJHAR UNDER BANSAPAL TAHASIL  
OF B.J.P. RANGE AGAINST DALPAHAR IRON  
& MANGANESE MINES  
OF  
M/S DHARAM CHAND JAIN.**

ELEMENTS OF THE SCHEME FOR COMPENSATORY AFFORESTATION

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## CHAPTER- I

### **BRIEF NOTE ON THE PROPOSED FOREST DIVERSION PROPOSAL**

The total mining lease area of Dalpahar Iron & Manganese ore mines of M/s. D.C. Jain over 101.171 ha. is within Baitarani Reserve Forest. The M.L. area is located within latitude 21° 58'05"N to 22° 58'43"N and longitude 85° 23'00" E to 85° 24'00" E in the survey of India Topo sheet No. 73 G/5. The first renewal of mining lease has been applied for Iron & Manganese ore over the same area on 01.06.2005 i.e., one year prior to the expiry of the Mining Lease.

Forest Diversion Proposal over an area of 101.171 ha. (in Form-B) under 1<sup>st</sup> RML has been submitted by Dalpahar Iron & Manganese ore mines of M/s. D.C. Jain on dated 18.05.2005. The applied forest land involves 79.407 ha. of virgin, 16.464 ha. of broken up forest land and 5.300 ha. of safety zone. During the original mining lease period, an area of 16.464 ha. of non-forest land has been allotted for Compensatory Afforestation against the broken up forest land of 16.464 ha. In the instant 1<sup>st</sup> renewal of mining lease, 69.64 ha. of non-forest land in village Dandargouni under Telkoi Tahasil and 9.80 ha. of non-forest land in village Champajhar under Bansapal Tahasil has been allotted for Compensatory Afforestation against 79.407 ha. of virgin forest land involved in the applied Forest Diversion Proposal.

The present Compensatory Afforestation scheme is prepared over an area of 09.80 hectares of non-forest land identified in village Champajhar under Bansapal Tahasil in B.J.P. Range with a maintenance period of 10 (ten) years.



## CHAPTER- II

### DETAILS OF LAND IDENTIFIED FOR COMPENSATORY AFFORESTATION

#### A. LAND IDENTIFICATION AND JOINT VERIFICATION OF THE IDENTIFIED SITE.

The site for Compensatory Afforestation has been identified in village Champajhar under Bansapal Tahasil in B.J.P. Range of Keonjhar Forest Division over 09.800 ha. and has been jointly verified by the Tahasildar, Bansapal, Revenue Inspector, Nayakote, Range Officer, B.J.P. Range and Forest Section Officer, Suakati. The above identified land has been allotted against Dalpahar Iron & Manganese Mines of M/s. D.C. Jain by the Collector, Keonjhar vide letter No.2255 dated.23.11.2009. The identified site bears Khata No.24 and Plot No.42/171(P) & 42/193(P) surrounded by Plot No. 171, 193, 89 & 49, and 41 on the North, South, East and West respectively.

#### B. INFORMATION ON NON-ENCROACHMENT AND NON-ENCUMBRANCE.

The Tahasildar, Bansapal has given certificate regarding non-encroachment and non-encumbrance on the identified non-forest land for raising Compensatory Afforestation.

#### C. INFORMATION ON LAND STATUS.

The land scheduled and land status identified and allotted for Compensatory Afforestation is furnished hereunder:-

Tahasil	Village	Khata No.	Plot No.	Area(in Ha)	Kissam.
Bansapal	Champajhar	24	42/171	7.310	Parbat-II
			42/193	2.490	Parbat-II
			Total	9.800	

#### D. SUITABILITY OF IDENTIFIED SITE FOR COMPENSATORY AFFORESTATION.

The identified land is free from encroachment and encumbrance. This land is neither covered under Section-4 of Orissa Forest Act, 1972 nor included in DLC report.

The non-forest Govt. land identified in village Champajhar is in one patch situated in hilly slopes with existing growth of Sal and its associates. The slope of the identified site is moderate and suitable for Compensatory Afforestation in ANR with gap plantation model.

The topography of the area is mainly hilly. The soil is prone to erosion necessitating soil conservation measures. However good depth of sandy-loam soil is still available which is conducive for plantation with suitable soil conservation measures. The average temperature varies from 13.5° C minimum in December to 45°C maximum in May. The annual rainfall varies from 1200 mm to 1500 mm. The maximum rainfall is received during the rainy season from July to September. The identified land is therefore taken up for Compensatory Afforestation in ANR with gap plantation model over 9.800 Ha.



### CHAPTER-III

#### DELINEATION OF PROPOSED AREA ON SUITABLE MAP

##### A. VILLAGE SHEET SHOWING COMPENSATORY AFFORESTATION SITE.

The identified non-forest land depicted in village sheet and submitted by the Tahasildar, Bansapal is annexed herewith.

##### B. GPS COORDINATES AND GPS MAP OF THE COMPENSATORY AFFORESTATION SITE

The area has been demarcated through GPS survey and 14 nos of 4' height RCC pillars have been posted around the identified area and the same has been depicted in the village sheet map. A durable sign board has been erected at the identified site with name of the project, year of allotment, name of the scheme, details of plots etc.

### CHAPTER- IV

#### AGENCY RESPONSIBLE FOR COMPENSATORY AFFORESTATION

##### A. AGENCY RESPONSIBLE FOR PLACEMENT OF FUNDS

The user agency shall provide funds for raising Compensatory Afforestation as per approved scheme.

##### B. AGENCY RESPONSIBLE FOR EXECUTION OF COMPENSATORY AFFORESTATION

The Territorial Wing of the Forest Department i.e. Divisional Forest Officer, Keonjhar Division will be assigned with the task for execution of Compensatory Afforestation.

## CHAPTER- V

### DETAILS OF WORK SCHEDULE PROPOSED FOR COMPENSATORY AFFORESTATION IN ANR WITH GAP MODEL

#### A. PLANTING PLAN

Planting Plan reflects the species specific treatment of the identified site. Choice of species is based on the geo-morphology of the site, soil-texture, structure, fertility and depth, proneness of the site to water logging etc. Specific treatment of the site in terms of soil and moisture conservation intervention will be depicted in the treatment map. A treatment map will invariably be prepared for Species to be planted and treatments to be applied to the different patches shown in the treatment map and planting plan. This plan will be followed when actual planting is carried out.

##### Species to be planted:-

1. *Syzgiumcumini*(Jamu)
2. *Adina cardifolia*(Kuruma)
3. *Anogeissuslatifolia*(Dhaura)
4. *Accacia catechu* (Khair)
5. *Dalbergiasissoo*(Sissoo)
6. *Azadirrachtaindica*(Neem)
7. *Gmelinaarborea* (Gambar)
8. *Terminaliabelerica*(Bahada)
9. *Terminaliachebula*(Harida)
10. *Pongamiapinnata* (Karanja)
11. *Emblicaofficinalis* (Ainla)

#### B. PRE-PLANTING OPERATION

##### B(I)-RAISING OF PLANTATION STOCK- NURSERY-

Nursery will be raised @220 seedlings per ha. including seedlings for 10% causality replacement.

##### B(II)-SURVEY, DEMARCATION & PILLAR POSTING, GPS READING WITH MAPPING-

The area has been demarcated through GPS survey and 14 nos of 4' height RCC pillars have been posted around the identified area and the same has been depicted in the village sheet map. A durable sign board has been erected at the identified site with name of the project, year of allotment, name of the scheme, details of plots etc.



### B(III)-SITE PREPARATION AND SILVICULTURAL OPERATION INCLUDING CLEARANCE OF WEED, CLIMBER CUTTING, HIGH STUMP CUTTING, SINGLING OF SHOOTS-

The clearing of the site involving removal of invasive weeds, bushes, climbers, high stumps and singling of shoots will be taken up preferably by the end of February and latest by the end of March. Pits of the dimension 30 x 30 x 30 cm. will be dug @200 per ha. in the available gaps preferably 2 months before or at least a month before planting of seedlings.

### C. PLANTING OPERATION

Planting of seedlings will be taken up in the month of July. The polythene covering of the balls of earth will be carefully removed before planting. Care will be taken to see that the ball of earth is not broken while doing so. The seedling with the ball of earth will then be placed firmly in the pit and buried at such a depth that the root collar is well below the surface of the soil. The soil around the plant will be well compacted with the heel as a final step so that there is a proper bond between the ball and the surrounding soil. The earth close to the collar will be slightly elevated so that rain water does not accumulate very close to the plant.

### D. POST PLANTING OPERATION

#### D(1)-CASUALTY REPLACEMENT

The entire area will be gone over in the same order as plantation was carried out and casualties, if any, will be replaced as soon as the main plantation operation is over.

#### D(2)-WEEDING AND SOIL WORKING

Regular and efficient weeding will start immediately after sprouting of the stumps is complete or after the seedlings have started throwing up new buds.

#### D(3)-MANURING AND INSECTICIDE APPLICATION

On degraded sites urban compost or farmyard manure, wherever available, will be added to the soil while refilling the pits. As regards artificial fertilizers, the minerals required and dosage @ 50 grammes of patent mixtures like 'Gromor' or N.P.K. (2:2:1) will be applied in two split doses one in August and the other in September.

#### D(4)-SOIL MOISTURE CONSERVATION MEASURES

Special Soil Moisture Conservation Measures will be taken up through construction of LBCD structures of 1 mtr span to the tune of 20 Nos. and 2 mtr span to tune of 15 Nos., 3 mtr span to the tune of 10 Nos. over the entire plantation site and staggered trenches of dimension 2 x 0.5 x 0.5 mtr to the tune of 250 Nos. per ha.

#### D(5)-PROTECTION AGAINST FIRE AND GRAZING

Fire line tracing will be ensured to protect the plantation from fire and watch & ward will be provided as per the approved norm for protecting the plantation from grazing.



## CHAPTER- VI

### COST STRUCTURE OF PLANTATION, PROVISION OF FUNDS AND UTILIZATION

#### A. ESTIMATE OF COST FOR 1.00 HA. UNDER ANR WITH GAP PLANTATION MODEL

0<sup>th</sup> year ( Advance work) Pre-planting operation.

Sl. No.	Item of work	Person days	Labor rate (Rs)	Material cost. (Rs)	Total. (Rs)
1	Survey, Demarcation & pillar posting, GPS Reading with mapping	2	300	0	300
2	Site preparation.	2	300	0	300
3	Silvicultural Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots	5	750	0	750
4	Raising Nursery @220seedlings/ ha (Including10% Casualty replacement) and watch & ward (part-1)	8	900	300	1200
5	Contingency and Unforeseen Expenditures	1	0	150	150
Sub Total		18	2250	450	2700
<b>1<sup>st</sup>Year/ Planting</b>					
1	Maintenance of Nursery(Balance)	4	600	0	600
2	Pitting 30 cm cube size	7	1050	0	1050
3	Carriage and planting including casualty replacement.	4.5	675	0	675
4	Complete weeding, Soil working, Manuring	5.5	825	0	825
5	Cost of Vermi compost and Insecticide for plantation	3	0	450	450
6	Cost of Chemical fertiliser	1	0	150	150
7	Fireline Tracing and Inspection path.	3	450	0	450
8	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	15	2250	0	2250
9	Soil Conservation Measures	20	3000	0	3000
10	Watch & ward	8	1200	0	1200
11	Contingency and Unforeseen Expenditures	2	0	300	300
Sub Total		73	10050	900	10950
<b>2<sup>nd</sup> Year Maintenance</b>					
1	Casualty Replacement including cost of seedling, carriage and planting.	2	300	0	300
2	Complete weeding and pruning	2	300	0	300
3	Soil working and manuring	2	300	0	300
4	Cost of Fertiliser and insecticide	1	0	150	150
5	Fireline Tracing and Inspection path.	1	150	0	150
6	Soil Conservation Measures	8	1200	0	1200
7	Watch & ward (whole year)	8	1200	0	1200
8	Contingency and Unforeseen Expenditures	1	0	150	150
Sub Total		25	3450	300	3750

3 <sup>rd</sup> Year Maintenance					
1	Complete weeding and pruning	1	150	0	150
2	Soil working	1	150	0	150
3	Fireline Tracing and Inspection path.	1	150	0	150
4	Watch & ward (whole year)	8	1200	0	1200
5	Contingency and Unforeseen Expenditures	0	0	0	0
Sub Total		11	1650	0	1650
4 <sup>th</sup> Year Maintenance					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
5 <sup>th</sup> Year Maintenance					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
6 <sup>th</sup> Year Maintenance					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
7 <sup>th</sup> Year Maintenance					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
8 <sup>th</sup> Year Maintenance					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
9 <sup>th</sup> Year Maintenance					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
10 <sup>th</sup> Year Maintenance					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
GRAND TOTAL		148	20550.00	1650.00	22200.00



### ABSTRACT

Year	Labour	Material	Contingencies	Total
0 <sup>th</sup> Year	2250.00	300.00	150.00	2700.00
1 <sup>st</sup> Year	10050.00	600.00	300.00	10950.00
2 <sup>nd</sup> Year	3450.00	150.00	150.00	3750.00
3 <sup>rd</sup> Year	1650.00	0.00	0.00	1650.00
4 <sup>th</sup> Year	450.00	0.00	0.00	450.00
5 <sup>th</sup> Year	450.00	0.00	0.00	450.00
6 <sup>th</sup> Year	450.00	0.00	0.00	450.00
7 <sup>th</sup> Year	450.00	0.00	0.00	450.00
8 <sup>th</sup> Year	450.00	0.00	0.00	450.00
9 <sup>th</sup> Year	450.00	0.00	0.00	450.00
10 <sup>th</sup> Year	450.00	0.00	0.00	450.00
Total	20550.00	1050.00	600.00	22200.00
Person days Equivalent	137	7	4	148
Total Cost Norm per ha.				22,200.00
Total Cost of plantation (9.80 ha.)				2,17,560.00



# ESTIMATE OF COST FOR THE COMPENSATORY AFFORESTATION SCHEME

Description	Unit	Unit cost (in Rs.)	Total Cost (in Rs.)
ANR Plantation	9.800 Ha.	22,200.00	2,17,560.00
<b>Soil Moisture Conservation Measures</b>			
Cost for LBS 1 Mtr.	20 Nos.	2,693.00	53,860.00
Cost for LBS 2 Mtr.	15 Nos.	5,339.00	80,085.00
Cost for LBS 3 Mtr.	10 Nos.	11,198.00	1,11,980.00
<b>Special Soil Moisture Conservation Structure</b>			
Straggered Trench (2 Mtr. X 0.5 Mtr. X 0.5 Mtr.)	9.800 Ha.	29,500.00	2,89,100.00
<b>Fencing</b>			
Barbed Wire Fencing	1.445 Kms.	7,50,500.00	10,84,472.00
Barbed wire fencing-maintenance @ 5% /Annum	10 Yrs.	54,224.00	5,42,240.00
Barbed wire fencing-Provision of gate @Rs. 9,600/ gate	01 No.	9,600.00	9,600.00
Sub-Total			23,88,897.00
Add 10% escalation			2,38,890.00
Grand Total			26,27,787.00 Or 26,28,000.00

(Rupees Twenty Six lakh twenty eight thousand)only

N.B:- Unit cost of LBCD structures of different dimension along with staggered trenches is enclosed as Annexure- I, II, III, & IV.

## PROVISION OF FUNDS AND FUND UTILIZATION

Rs. 26,28,000.00/- (Rupees Twenty Six lakh twenty eight thousand )only shall be deposited by the User Agency on approval of the scheme to the Ad-hoc CAMPA Account and the funds will be utilized for raising of Compensatory Afforestation by the Divisional Forest Officer, Keonjhar Division on allotment by the Principal Chief Conservator of Forests, Odisha, Bhubaneswar.

Divisional Forest Officer,  
Keonjhar Division

## A. ESTIMATE OF COST FOR ONE LOOSE BOULDER STRUCTURE

It has been proposed to take up Soil Conservation Measures by construction of Loose Boulder Structure over the area of size (1mt=20 Nos., 2mt =15 Nos., 3mt= 10 Nos.) in the Compensatory Afforestation site in consideration of the degraded area due to soil erosion.

Span of 1 Mtr. Size

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit (No/ Cum)	Total cost (in Rs.)
1.	Leveling the unshape surface of the selected site & layout the structure foundation L.S. 1 MD.	150	1	150.00
2.	Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.	66.67	1.908	127.20
	Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 = 1.728$			
	Wing wall- $4 \times 0.50 \times 0.30 \times 0.30 = 0.180$			
	@ Rs.6667.00 per 100 cum.			
3.	Rough stone dry packing	571.87	4.224	2415.58
	up to GL			
	Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 = 1.728$			
	Wing wall- $4 \times 0.50 \times 0.30 \times 0.30 = 0.180$			
	Above GL			
	Super structure – $1 \times 1.00 \times \frac{(2.60+0.50)}{2} \times 0.60 = 0.930$			
	Wing wall- $4 \times 0.50 \times 0.30 \times 0.30 = 0.180$			
	Side wall-			
i.	$2 \times \frac{0.3 + 0.9}{2} \times 0.3 = 0.324$			
ii.	$2 \times \frac{0.3 + 0.9}{2} \times 1.2 \times 0.3 = 0.432$			
iii.	$2 \times 0.5 \times 0.9 \times 0.3 = 0.270$			
iv.	$2 \times 1.0 \times 0.3 \times 0.3 = 0.180$			
	@ Rs.571.87 per cum			
	G. Total:-			2692.78 or 2693.00

Annexure - IISpan of 2 Mtr. Size

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit (No/ Cum)	Total cost (in Rs.)
1.	Leveling the unshpe surface of the selected site & layout the structure foundation L.S. 1 MD.	150	1	150.00
2.	Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.	66.67	3.63	242.01
	Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 = 3.33$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	@ Rs.6667.00 per 100 cum.			
3.	Rough stone dry packing	571.87	8.65	4946.67
	up to GL			
	Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 = 3.33$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	Above GL			
	Super structure $1 \times 2.00 \times (2.70 + 0.60)/2 \times 0.60 = 1.980$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.50 = 0.50$			
	Side wall-			
i.	$2 \times (0.50 + 1.10)/2 \times 0.9 \times 0.5 = 0.72$			
ii.	$2 \times (0.5 + 1.10)/2 \times 1.2 \times 0.5 = 0.96$			
iii.	$2 \times 0.6 \times 0.6 \times 0.5 = 0.36$			
iv.	$2 \times 1.0 \times 0.5 \times 0.5 = 0.50$			
	@ Rs.571.87 per cum			
	G. Total:-			5338.68 or 5339.00



Span of 3 Mtr. Size

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit (No/ Cum)	Total cost (in Rs.)
1.	Leveling the unshpe surface of the selected site & layout the structure foundation L.S. 1 MD.	150	1	150.00
2.	Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.	66.67	6.42	428.02
	Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 = 6.12$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	@ Rs.6667.00 per 100 cum.			
3.	Rough stone dry packing	571.87	18.57	10619.62
	up to GL			
	Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 = 6.12$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	Above GL			
	Super structure - $1 \times (4.10 + 0.60)/2 \times 1.00 \times 3.0 = 7.05$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.50 = 0.50$			
	Side wall-			
i.	$2 \times (0.50 + 1.50)/2 \times 1.5 \times 0.5 = 1.50$			
ii.	$2 \times (0.5 + 1.50)/2 \times 2.0 \times 0.5 = 2.00$			
iii.	$2 \times 0.6 \times 1.0 \times 0.5 = 0.60$			
iv.	$2 \times 1.0 \times 0.5 \times 0.5 = 0.50$			
	@ Rs.571.87 per cum			
	G. Total:-			11197.64 Or 11198.00

**ESTIMATE OF COST FOR ONE SPECIAL SMC STRUCTURE (2 Mtr. x 0.5 Mtr. x 0.5 Mtr.)**

Estimate for digging of one no. of Staggered Trench of size 2 mtr x 0.5mtr x 0.5 mtr along with Agave Plant on the dugout soil.

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit (No/ Cum)	Total cost (in Rs.)
1	Earth Work in excavation if staggered trench in hard soil including Rough dressing and leveling the beds and heaping the dugout soil at the downhill side of the trench and leveling the same too. Size of a trench = 2.0 Mtr x 0.5 Mtr x 0.5 Mtr = 0.5 Cum @ Rs. 104.00 per Cum	104	0.5	52.00
2.	Cost of Agave Planting on the dugout soil and its maintenance including weeding, soil working, manuring, cost of fertilizer etc. for seven years 03 nos. of Agave plants per trench @ Rs.22.00 per plant on LS	22.00	3	66.00
	<b>Total</b>			<b>118.00</b>
	<b>Cost of 250 nos. of Staggered Trenches per Ha.</b>	<b>118.00</b>	<b>250</b>	<b>29500.00</b>

**ESTIMATE OF COST FOR ONE KM BARBED WIRE FENCING**

No of pillars required 500 nos.			
Cost of 1 pillar	:	Rs.	568.00
Transportation charges	:	Rs.	244.00
Cost of base fixing	:	Rs.	244.00
Cost of fixing barbed wire @ 49.00	:	Rs.	49.00
Total Cost for fixing 1 pillar	:	Rs.	1105.00
Cost for 500 pillars	:	Rs.	5,52,500.00
Cost of barbed wire (1 Qntls.) @ 13,200.00			
Cost barbed wire (5+2) strand			
7500 mtrs or 15 Qntls.	:	Rs.	1,98,000.00
Total cost for 1 Km.	:	Rs.	7,50,500.00
 Total cost for fencing over 1.445 Kms	:	Rs.	10,84,472.00
Maintenance 5% - Rs.54,224/- per annum			
For 10 years	:	Rs.	5,42,240.00
Provision of Gate 1 no. @ Rs.9,600/- per gate	:	Rs.	9,600.00
Total barbed wire fencing over 1.445 Kms.	:	Rs.	16,36,312.00



## CHAPTER- VII

### DETAILS OF PROPOSED MONITORING MECHANISM

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

Divisional Forest Officer,  
Keonjhar Division

**COMPENSATORY AFFORESTATION SCHEME  
OVER 69.64 Ha. NON-FOREST GOVT LAND  
IDENTIFIED IN VILLAGE DANDARGOUNI  
UNDER TELKOI TAHASIL OF TELKOI RANGE  
AGAINST DALPAHAR IRON & MANGANESE  
MINES  
OF  
M/S DHARAM CHAND JAIN.**

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## CHAPTER- I

### **BRIEF NOTE ON THE PROPOSED FOREST DIVERSION PROPOSAL**

The total mining lease area of Dalpahar Iron & Manganese ore mines of M/s. D.C. Jain over 101.171 ha. is within Baitarani Reserve Forest. The M.L. area is located within latitude 21° 58'05"N to 22° 58'43"N and longitude 85° 23'00" E to 85° 24'00" E in the survey of India Topo sheet No. 73 G/5. The first renewal of mining lease has been applied for Iron & Manganese ore over the same area on 01.06.2005 i.e., one year prior to the expiry of the Mining Lease.

Forest Diversion Proposal over an area of 101.171 ha. (in Form-B) under 1<sup>st</sup> RML has been submitted by Dalpahar Iron & Manganese ore mines of M/s. D.C. Jain on dated 18.05.2005. The applied forest land involves 79.407 ha. of virgin, 16.464 ha. of broken up forest land and 5.300 ha. of safety zone. During the original mining lease period, an area of 16.464 ha. of non-forest land has been allotted for Compensatory Afforestation against the broken up forest land of 16.464 ha. In the instant 1<sup>st</sup> renewal of mining lease, 69.64 ha. of non-forest land in village Dandargouni under Telkoi Tahasil and 9.80 ha. of non-forest land in village Champajhar under Bansapal Tahasil has been allotted for Compensatory Afforestation against 79.407 ha. of virgin forest land involved in the applied Forest Diversion Proposal.

The present Compensatory Afforestation scheme is prepared over an area of 69.640 hectares of non-forest Govt. land identified in village Damdargouni under Telkoi Tahasil in Telkoi Range with a maintenance period of 10 (ten) years.

## CHAPTER- II

### DETAILS OF LAND IDENTIFIED FOR COMPENSATORY AFFORESTATION

#### A. LAND IDENTIFICATION AND JOINT VERIFICATION OF THE IDENTIFIED SITE.

The site for Compensatory Afforestation has been identified in village Dandargouni under Telkoi Tahasil in Telkoi Range of Keonjhar Forest Division over 69.640 ha. and has been jointly verified by the Tahasildar, Telkoi, Revenue Inspector, Telkoi, Range Officer, Telkoi Range and Forest Section Officer, Telkoi. The above identified land has been allotted against Dalpahar Iron & Manganese Mines of M/s. D.C. Jain by the Collector, Keonjhar vide letter No.2255 dated.23.11.2009 The identified site bears Khata No.164 and Plot No.876 & surrounded by Plot No. 100, 1313, 849 and 363 on the North, South, East and West respectively and Plot No.1250(P) surrounded by Plot No.948, 1248, 1252 and 949 on the North, South, East and West respectively.

#### B. INFORMATION ON NON-ENCROACHMENT AND NON-ENCUMBRANCE.

The Tahasildar, Telkoi has given certificate regarding non-encroachment and non-encumbrance on the identified non-forest land for raising Compensatory Afforestation.

#### C. INFORMATION ON LAND STATUS.

The land scheduled and land status identified and allotted for Compensatory Afforestation is furnished hereunder:-

Tahasil	Village	Khata No.	Plot No.	Area(in Ha)	Kissam.
Telkoi	Dandargouni	164	876	59.76	Parbat – II
			1250(P)	9.88	-do-
			Total	69.64	

#### D. SUITABILITY OF IDENTIFIED SITE FOR COMPENSATORY AFFORESTATION.

The identified land is free from encroachment and encumbrance. This land is neither covered under Section-4 of Orissa Forest Act, 1972 nor included in DLC report.

The non-forest land identified in village Dandargouni is in two patches. Both of these patches situated in undulating plain area with existing growth of Sal and its associates and suitable for Compensatory Afforestation in ANR with Gap plantation Model.

The soil is prone to erosion necessitating soil conservation measures. However good depth of sandy-loam soil is available for afforestation. The average temperature varies from 13.5° C minimum in December to 45°C maximum in May. The annual rainfall varies from 1200 mm to 1500 mm. The maximum rainfall is received during the rainy season from July to September. The identified land is therefore taken up for Compensatory Afforestation in ANR with gap plantation model over 69.64 Ha.

### CHAPTER-III

#### DELINEATION OF PROPOSED AREA ON SUITABLE MAP

##### A. VILLAGE SHEET SHOWING COMPENSATORY AFFORESTATION SITE.

The identified non-forest land depicted in village sheet and submitted by the Tahasildar, Telkoi is annexed herewith.

##### B. GPS COORDINATES AND GPS MAP OF THE COMPENSATORY AFFORESTATION SITE

The area has been demarcated through GPS survey and 89 nos of 4' height RCC pillars have been posted around the identified area and the same has been depicted in the village sheet map. A durable sign board has been erected at the identified site with name of the project, year of allotment, name of the scheme, details of plots etc.

### CHAPTER- IV

#### AGENCY RESPONSIBLE FOR COMPENSATORY AFFORESTATION

##### A. AGENCY RESPONSIBLE FOR PLACEMENT OF FUNDS

The user agency shall provide funds for raising Compensatory Afforestation as per approved scheme.

##### B. AGENCY RESPONSIBLE FOR EXECUTION OF COMPENSATORY AFFORESTATION

The Territorial Wing of the Forest Department i.e. Divisional Forest Officer, Keonjhar Division will be assigned with the task for execution of Compensatory Afforestation.



## CHAPTER- V

### DETAILS OF WORK SCHEDULE PROPOSED FOR COMPENSATORY AFFORESTATION IN ANR WITH GAP MODEL

#### A. PLANTING PLAN

Planting Plan reflects the species specific treatment of the identified site. Choice of species is based on the geo-morphology of the site, soil-texture, structure, fertility and depth, proneness of the site to water logging etc. Specific treatment of the site in terms of soil and moisture conservation intervention will be depicted in the treatment map. A treatment map will invariably be prepared for Species to be planted and treatments to be applied to the different patches shown in the treatment map and planting plan. This plan will be followed when actual planting is carried out.

##### Species to be planted:-

1. *Syzgiumcumini*(Jamu)
2. *Adina cardifolia*(Kuruma)
3. *Anogeissuslatifolia*(Dhaura)
4. *Accacia catechu* (Khair)
5. *Dalbergiasissoo*(Sissoo)
6. *Azadirrachtaindica*(Neem)
7. *Gmelinaarborea* (Gambar)
8. *Terminaliabelerica*(Bahada)
9. *Terminaliachebula*(Harida)
10. *Pongamiapinnata* (Karanja)
11. *Embllicaofficinalis* (Ainla)

#### B.PRE-PLANTING OPERATION

##### B(I)-RAISING OF PLANTATION STOCK- NURSERY-

Nursery will be raised @220 seedlings per ha. including seedlings for 10% causality replacement.

##### B(II)-SURVEY, DEMARCATION & PILLAR POSTING, GPS READING WITH MAPPING-

The area has been demarcated through GPS survey and 89 nos of 4' height RCC pillars have been posted around the identified area and the same has been depicted in the village sheet map. A durable sign board has been erected at the identified site with name of the project, year of allotment, name of the scheme, details of plots etc.

### B(III)-SITE PREPARATION AND SILVICULTURAL OPERATION INCLUDING CLEARANCE OF WEED, CLIMBER CUTTING, HIGH STUMP CUTTING, SINGLING OF SHOOTS-

The clearing of the site involving removal of invasive weeds, bushes, climbers, high stumps and singling of shoots will be taken up preferably by the end of February and latest by the end of March. Pits of the dimension 30 x 30 x 30 cm. will be dug @200 per ha. in the available gaps preferably 2 months before or at least a month before planting of seedlings.

### C. PLANTING OPERATION

Planting of seedlings will be taken up in the month of July. The polythene covering of the balls of earth will be carefully removed before planting. Care will be taken to see that the ball of earth is not broken while doing so. The seedling with the ball of earth will then be placed firmly in the pit and buried at such a depth that the root collar is well below the surface of the soil. The soil around the plant will be well compacted with the heel as a final step so that there is a proper bond between the ball and the surrounding soil. The earth close to the collar will be slightly elevated so that rain water does not accumulate very close to the plant.

### D. POST PLANTING OPERATION

#### D(1)-CASUALTY REPLACEMENT

The entire area will be gone over in the same order as plantation was carried out and casualties, if any, will be replaced as soon as the main plantation operation is over.

#### D(2)-WEEDING AND SOIL WORKING

Regular and efficient weeding will start immediately after sprouting of the stumps is complete or after the seedlings have started throwing up new buds.

#### D(3)-MANURING AND INSECTICIDE APPLICATION

On degraded sites urban compost or farmyard manure, wherever available, will be added to the soil while refilling the pits. As regards artificial fertilizers, the minerals required and dosage @ 50 grammes of patent mixtures like 'Gromor' or N.P.K. (2:2:1) will be applied in two split doses one in August and the other in September.

#### D(4)-SOIL MOISTURE CONSERVATION MEASURES

Special Soil Moisture Conservation Measures will be taken up through construction of LBCD structures of 1 mtr span to the tune of 20 Nos. and 2 mtr span to tune of 15 Nos., 3 mtr span to the tune of 10 Nos. & 4 mtr span to the tune of 10 Nos. over the entire plantation site and staggered trenches of dimension 2 x 0.5 x 0.5 mtr to the tune of 250 Nos. per ha.

#### D(5)-PROTECTION AGAINST FIRE AND GRAZING

Fire line tracing will be ensured to protect the plantation from fire and watch & ward will be provided as per the approved norm for protecting the plantation from grazing.



## CHAPTER- VI

### COST STRUCTURE OF PLANTATION, PROVISION OF FUNDS AND UTILIZATION

#### A. ESTIMATE OF COST FOR 1.00 HA. UNDER ANR WITH GAP PLANTATION MODEL

0<sup>th</sup> year ( Advance work) Pre-planting operation.

Sl. No.	Item of work	Person days	Labor rate (Rs)	Material cost. (Rs)	Total. (Rs)
1	Survey, Demarcation & pillar posting, GPS Reading with mapping	2	300	0	300
2	Site preparation.	2	300	0	300
3	Silvicultural Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots	5	750	0	750
4	Raising Nursery @220seedlings/ ha (Including10% Casualty replacement) and watch & ward (part-1)	8	900	300	1200
5	Contingency and Unforeseen Expenditures	1	0	150	150
Sub Total		18	2250	450	2700
<b>1<sup>st</sup>Year/ Planting</b>					
1	Maintenance of Nursery(Balance)	4	600	0	600
2	Pitting 30 cm cube size	7	1050	0	1050
3	Carriage and planting including casualty replacement.	4.5	675	0	675
4	Complete weeding, Soil working, Manuring	5.5	825	0	825
5	Cost of Vermi compost and Insecticide for plantation	3	0	450	450
6	Cost of Chemical fertiliser	1	0	150	150
7	Fireline Tracing and Inspection path.	3	450	0	450
8	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	15	2250	0	2250
9	Soil Conservation Measures	20	3000	0	3000
10	Watch & ward	8	1200	0	1200
11	Contingency and Unforeseen Expenditures	2	0	300	300
Sub Total		73	10050	900	10950
<b>2<sup>nd</sup> Year Maintenance</b>					
1	Casualty Replacement including cost of seedling, carriage and planting.	2	300	0	300
2	Complete weeding and pruning	2	300	0	300
3	Soil working and manuring	2	300	0	300
4	Cost of Fertiliser and insecticide	1	0	150	150
5	Fireline Tracing and Inspection path.	1	150	0	150
6	Soil Conservation Measures	8	1200	0	1200
7	Watch & ward (whole year)	8	1200	0	1200
8	Contingency and Unforeseen Expenditures	1	0	150	150
Sub Total		25	3450	300	3750



<b>3<sup>rd</sup> Year Maintenance</b>					
1	Complete weeding and pruning	1	150	0	150
2	Soil working	1	150	0	150
3	Fireline Tracing and Inspection path.	1	150	0	150
4	Watch & ward (whole year)	8	1200	0	1200
5	Contingency and Unforeseen Expenditures	0	0	0	0
Sub Total		11	1650	0	1650
<b>4<sup>th</sup> Year Maintenance</b>					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
<b>5<sup>th</sup> Year Maintenance</b>					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
<b>6<sup>th</sup> Year Maintenance</b>					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
<b>7<sup>th</sup> Year Maintenance</b>					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
<b>8<sup>th</sup> Year Maintenance</b>					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
<b>9<sup>th</sup> Year Maintenance</b>					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
<b>10<sup>th</sup> Year Maintenance</b>					
1	Fireline Tracing and Inspection path.	1	150	0	150
2	Prunning, watch & ward	2	300	0	300
Sub Total		3	450	0	450
GRAND TOTAL		148	20550.00	1650.00	22200.00

ABSTRACT

Year	Labour	Material	Contingencies	Total
0 <sup>th</sup> Year	2250.00	300.00	150.00	2700.00
1 <sup>st</sup> Year	10050.00	600.00	300.00	10950.00
2 <sup>nd</sup> Year	3450.00	150.00	150.00	3750.00
3 <sup>rd</sup> Year	1650.00	0.00	0.00	1650.00
4 <sup>th</sup> Year	450.00	0.00	0.00	450.00
5 <sup>th</sup> Year	450.00	0.00	0.00	450.00
6 <sup>th</sup> Year	450.00	0.00	0.00	450.00
7 <sup>th</sup> Year	450.00	0.00	0.00	450.00
8 <sup>th</sup> Year	450.00	0.00	0.00	450.00
9 <sup>th</sup> Year	450.00	0.00	0.00	450.00
10 <sup>th</sup> Year	450.00	0.00	0.00	450.00
Total	20550.00	1050.00	600.00	22200.00
Person days Equivalent	137	7	4	148
Total Cost Norm per ha.				22,200.00
Total Cost of plantation (69.64 ha.)				15,46,008.00

### ESTIMATE OF COST FOR THE COMPENSATORY AFFORESTATION SCHEME

Description	Unit	Unit cost (in Rs.)	Total Cost (in Rs.)
ANR Plantation	69.64 Ha.	22,200.00	15,46,008.00
<b>Soil Moisture Conservation Measures</b>			
Cost for LBS 1 Mtr.	20 Nos.	2,693.00	53,860.00
Cost for LBS 2 Mtr.	15 Nos.	5,339.00	80,085.00
Cost for LBS 3 Mtr.	10 Nos.	11,198.00	1,11,980.00
Cost for LBS 4 Mtr.	10 Nos.	40,677.00	4,06,770.00
<b>Special Soil Moisture Conservation Structure</b>			
Straggered Trench (2 Mtr. X 0.5 Mtr. X 0.5 Mtr.)	69.64 Ha.	29,500.00	20,54,380.00
<b>Fencing</b>			
Barbed Wire Fencing	5.214 Kms.	7,50,500.00	39,13,107.00
Barbed wire fencing-maintenance @ 5% /Annum	10 Yrs.	1,95,655.00	19,56,550.00
Barbed wire fencing-Provision of gate @Rs. 9,600/ gate	03 No.	9,600.00	28,800.00
<b>Sub-Total</b>			<b>1,01,51,540.00</b>
Add 10% escalation			10,15,154.00
<b>Grand Total</b>			<b>1,11,66,694.00</b> Or <b>1,11,67,000.00</b>

(Rupees one crore eleven lakh sixty seven thousand) only

N.B:- Unit cost of LBCD structures of different dimension along with staggered trenches is enclosed as Annexure- I, II, III, IV, V & VI.

### PROVISION OF FUNDS AND FUND UTILIZATION

Rs. 1,11,67,000.00 (Rupees one crore eleven lakh sixty seven thousand) only shall be deposited by the user agency on approval of the scheme to the Ad-hoc CAMPA Account and the funds will be utilized for raising of Compensatory Afforestation by the Divisional Forest Officer, Keonjhar Division on allotment by the Principal Chief Conservator of Forests, Odisha, Bhubaneswar.

Divisional Forest Officer,  
Keonjhar Division



## ESTIMATE OF COST FOR ONE LOOSE BOULDER STRUCTURE

It has been proposed to take up Soil Conservation Measures by construction of Loose Boulder Structure over the area of size ( 1mt=20 Nos., 2mt =15 Nos., 3mt= 10 Nos. & 4 mt. = 10 Nos.) in the Compensatory Afforestation site in consideration of the degraded area due to soil erosion.

Span of 1 Mtr. Size

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit (No/ Cum)	Total cost (in Rs.)
1.	Leveling the unshaped surface of the selected site & layout the structure foundation L.S. 1 MD.	150	1	150.00
2.	Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.	66.67	1.908	127.20
	Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 = 1.728$			
	Wing wall- $4 \times 0.50 \times 0.30 \times 0.30 = 0.180$			
	@ Rs.6667.00 per 100 cum.			
3.	Rough stone dry packing	571.87	4.224	2415.58
	up to GL			
	Base with apron- $1 \times 3.60 \times 1.60 \times 0.30 = 1.728$			
	Wing wall- $4 \times 0.50 \times 0.30 \times 0.30 = 0.180$			
	Above GL			
	Super structure - $1 \times 1.00 \times \frac{(2.60+0.50)}{2} \times 0.60 = 0.930$			
	Wing wall- $4 \times 0.50 \times 0.30 \times 0.30 = 0.180$			
	Side wall-			
i.	$2 \times \frac{0.3 + 0.9}{2} \times 0.3 = 0.324$			
ii.	$2 \times \frac{0.3 + 0.9}{2} \times 1.2 \times 0.3 = 0.432$			
iii.	$2 \times 0.5 \times 0.9 \times 0.3 = 0.270$			
iv.	$2 \times 1.0 \times 0.3 \times 0.3 = 0.180$			
	@ Rs.571.87 per cum			
	G. Total:-			2692.78 or 2693.00

Annexure - II

Span of 2 Mtr. Size

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit (No/ Cum)	Total cost (in Rs.)
1.	Leveling the unshpe surface of the selected site & layout the structure foundation L.S. 1 MD.	150	1	150.00
2.	Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.	66.67	3.63	242.01
	Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 = 3.33$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	@ Rs.6667.00 per 100 cum.			
3.	Rough stone dry packing	571.87	8.65	4946.67
	up to GL			
	Base with apron- $1 \times 3.70 \times 3.00 \times 0.30 = 3.33$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	Above GL			
	Super structure $1 \times 2.00 \times (2.70 + 0.60)/2 \times 0.60 = 1.980$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.50 = 0.50$			
	Side wall-			
i.	$2 \times (0.50 + 1.10)/2 \times 0.9 \times 0.5 = 0.72$			
ii.	$2 \times (0.5 + 1.10)/2 \times 1.2 \times 0.5 = 0.96$			
iii.	$2 \times 0.6 \times 0.6 \times 0.5 = 0.36$			
iv.	$2 \times 1.0 \times 0.5 \times 0.5 = 0.50$			
	@ Rs.571.87 per cum			
	G. Total:-			5338.68 or 5339.00

Annexure - III

Span of 3 Mtr. Size

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit (No/ Cum)	Total cost (in Rs.)
1.	Leveling the unshpe surface of the selected site & layout the structure foundation L.S. 1 MD.	150	1	150.00
2.	Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.	66.67	6.42	428.02
	Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 = 6.12$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	@ Rs.6667.00 per 100 cum.			
3.	Rough stone dry packing	571.87	18.57	10619.62
	up to GL			
	Base with apron- $1 \times 5.10 \times 4.00 \times 0.30 = 6.12$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	Above GL			
	Super structure - $1 \times (4.10 + 0.60)/2 \times 1.00 \times 3.0 = 7.05$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.50 = 0.50$			
	Side wall-			
i.	$2 \times (0.50 + 1.50)/2 \times 1.5 \times 0.5 = 1.50$			
ii.	$2 \times (0.5 + 1.50)/2 \times 2.0 \times 0.5 = 2.00$			
iii.	$2 \times 0.6 \times 1.0 \times 0.5 = 0.60$			
iv.	$2 \times 1.0 \times 0.5 \times 0.5 = 0.50$			
	@ Rs.571.87 per cum			
	G. Total:-			11197.64 Or 11198.00



Annexure - IV

Span of 4 Mtr. Size

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit (No/ Cum)	Total cost (in Rs.)
1.	Leveling the unshpe surface of the selected site & layout the structure foundation L.S. 1 MD.	150	1	150.00
2.	Excavation of foundation in hard soil within initial lead of 50 mtr. including rough dressing and breaking of clods to maximum size 5 cm. to 7 cm. laying in layer not exceeding 0.3 in depth to strengthening both side U/S approx. bund of loose boulder structure.	66.67	9.525	635.03
	Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 = 9.225$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	@ Rs.6667.00 per 100 cum.			
3.	Rough stone dry packing up to GL	571.87	31.785	18176.88
	Base with apron- $1 \times 6.15 \times 5.00 \times 0.30 = 9.225$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.30 = 0.30$			
	Above GL			
	Super structure $1 \times \frac{(5.15 + 0.60)}{2} \times 1.30 \times 4.0 = 14.95$			
	Wing wall- $4 \times 0.50 \times 0.50 \times 0.50 = 0.50$			
	Side wall-			
i.	$2 \times \frac{(0.50 + 1.80)}{2} \times 1.95 \times 0.5 = 2.24$			
ii.	$2 \times \frac{(0.5 + 1.80)}{2} \times 2.6 \times 0.5 = 2.99$			
iii.	$2 \times 0.6 \times 1.8 \times 0.5 = 1.08$			
iv.	$2 \times 1.0 \times 0.5 \times 0.5 = 0.50$			
	@ Rs.571.87 per cum			
4.	Cement Pointing on the Surface of Boulder Wall @1206.38/m <sup>2</sup>	1206.38	18m <sup>2</sup>	21714.99
	G. Total:-			40676.90 Or 40677.00

Annexure - V

**ESTIMATE OF COST FOR ONE SPECIAL SMC STRUCTURE (2 Mtr. x 0.5 Mtr. x 0.5 Mtr.)**

Estimate for digging of one no. of Staggered Trench of size 2 mtr x 0.5mtr x 0.5mtr along with Agave Plant on the dugout soil.

Sl. No.	Item of activity	Cost per unit (Rs.)	Total unit (No/ Cum)	Total cost (in Rs.)
1	Earth Work in excavation if staggered trench in hard soil including Rough dressing and leveling the beds and heaping the dugout soil at the downhill side of the trench and leveling the same too. Size of a trench = 2.0 Mtr x 0.5 Mtr x 0.5 Mtr = 0.5 Cum @ Rs. 104.00 per Cum	104	0.5	52.00
2.	Cost of Agave Planting on the dugout soil and its maintenance including weeding, soil working, manuring, cost of fertilizer etc. for seven years 03 nos. of Agave plants per trench @ Rs.22.00 per plant on LS	22.00	3	66.00
	<b>Total</b>			<b>118.00</b>
	<b>Cost of 250 nos. of Staggered Trenches per Ha.</b>	<b>118.00</b>	<b>250</b>	<b>29500.00</b>

Annexure - VI

ESTIMATE OF COST FOR ONE KM BARBED WIRE FENCING

No of pillars required 500 nos.

Cost of 1 pillar : Rs. 568.00

Transportation charges : Rs. 244.00

Cost of base fixing : Rs. 244.00

Cost of fixing barbed wire @ 49.00 : Rs. 49.00

Total Cost for fixing 1 pillar : Rs. 1105.00

Cost for 500 pillars : Rs. 5,52,500.00

Cost of barbed wire (1 Qntls.) @ 11,000.00

Cost barbed wire (5+2) strand

7500 mtrs or 15 Qntls. : Rs. 1,98,000.00

Total cost for 1 Km. : Rs. 7,50,500.00

Total cost for fencing over 5.214 Kms : Rs. 39,13,107.00

Maintenance 5% - Rs.1,95,655/- per annum

For 10 years : Rs. 19,56,550.00

Provision of Gate 3 no. @ Rs.9,600/- per gate : Rs. 28,800.00

Total barbed wire fencing over 5.214 Kms. : Rs. 58,98,457.00



## CHAPTER- VII

### DETAILS OF PROPOSED MONITORING MECHANISM

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

Divisional Forest Officer,  
Keonjhar Division