

SCHEME FOR  
COMPENSATORY AFFORESTATION  
OVER  
190.0 HA. IN DEGRADED FOREST LAND AT  
KANKALI R. F. (60 ha), Putana (90 ha) and Sindurabadi  
(40.0 ha) IN BOUDH FOREST DIVISION

AGAINST DIVERSION OF FOREST LAND FOR PROPOSED 765 KV D/C  
JHARSUGUDA (SUNDARGARH) – DRUG POOL TRANSMISSION LINE of M/S  
ODISHA GENERATION PHASE II TRANSMISSION LTD. BY STERLITE IN  
SUNDERGARH FOREST DIVISION

Prepared by  
Divisional Forest Officer  
Boudh Forest Division

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**SCHEME FOR COMPENSATORY AFFORESTATION OVER 190.0 ha IN KANKELI  
RESERVE FOREST (60 ha), PUTANA (90.0 ha) and SINDURABADI (40.0 ha) OF  
MANMUNDA RANGE IN BOUDH FOREST DIVISION AGAINST DIVERSION OF  
FOREST LAND FOR PROPOSED 765 KV TRANSMISSION LINE of M/S ODISHA  
GENERATION PHASE II TRANSMISSION LTD. BY STERLITE IN SUNDERGARH  
FOREST DIVISION**

**01. INTRODUCTION:**

“Odisha Generation Phase II Transmission Limited (OGPTL) having its registered office at Flat No. 209, 2nd Floor, Amrit Plaza, Near Bombay Chowk, Jharsuguda, which has been awarded project development of **765 kv D/C Jharsuguda (Sundargarh) – Raipur pool transmission line** from Power Finance Corporation Limited (PFCL). The said project initiated by Ministry of Power, Govt. of India vide Gazette Notification dated 9<sup>th</sup> February, 2015, enclosed as **Annexure-I**. The prior approval of Central Govt. for transmission system for “Common Transmission system for Phase II Generation Projects in Odisha and immediate evacuation system for OPGC (1320 MW) Project in Odisha” has already been obtained under sub section (1) of section 68 of the Electricity Act, 2003 by Ministry of Power, Govt. of India, copy enclosed as **Annexure-II**. The project shall form part of National Grid and would become a vital link for bulk power transfer between State of Odisha and Chhattisgarh. The identification of three alternative route for **765 KV D/C Jharsuguda (Sundargarh) – Raipur Pool Transmission line using** Survey of India Topo-Sheets and associated field work between PGCIL Kenapali substation in Sundergarh odisha (**Longitude 22°05'39.44"N and latitude 83°58'56.45"E**) and Raipur in Chhattisgarh (**Longitude 21°22'36.26"N and latitude 81°21'05.03"E**) with **B-Line length of 283.417km** .

The total land involved in this Project is 329.446 ha including 94.656 ha of forest land in Sundergarh Forest Division as detailed below:-

Sl.No.	Division	Forest Land (Ha)	Non-Forest Land (Ha)	Total (Ha)
01	Sundergarh	94.656	234.790	329.446

As per Para 3.2.(vi)(c) of Guideline to F (C) Act, for transmission line upto 220 KV compensatory Afforestation has to be raised over degraded forest twice in extent. This has been modified in Guideline No.11-68/2014-FC (pt) Dt.11.07.2014 of MoEF which reveals that creation of Compensatory Afforestation in degraded forest twice in extent is applicable to all transmission lines. Normally the Compensatory Afforestation is to be raised in the same Dist. As per recent procedure adopted by MoEF, Compensatory Afforestation in degraded forests will be raised to the tune of 800 plants per Ha. Since degraded forest is not available in Sundergarh Division where 800 plants per Ha can be planted, DFO, Sundergarh vide his letter No. 6711 Dt. 08.12.2016 requested DFO, Boudh Division to identify degraded forest twice in extent for raising

Compensatory Afforestation for this Project. Therefore, degraded forest need to be identified over 94.656 ha x 2 = 189.312 ha.

DFO, Boudh has identified the degraded forest in three patches of different RF as detailed below.

SI No.	Name of the RF	Name of the Range	Name of the Section	Name of the Beat	Total RF area in Ha.	Working Circle	Area identified in Ha.
1	Putuna	Manamunda	Gundulia	Gundulia	1749	Plantation & Rehabilitation Working Circle Compt No. 1 & 2	90
2	Kankali		Manamunda	Manamunda	207	Plantation & Rehabilitation Working Circle Compt. No. 1	60
3	Sindurbhadi		Manamunda	Kadampal	1043	Plantation & Rehabilitation Working Circle Compt. No. 3	40
<b>Total</b>							<b>190 Ha.</b>

## **02. DETAILS OF THE SITE SELECTED:**

Due to biotic interference, erratic rainfall, prolonged heat condition the vegetation is in degraded condition. This includes bushy growth, pole size crop with scattered matured trees. The growing stock is struggling against the biotic interference like grazing, fire hazard and encroachment. However, whatever regeneration is sprouting do not grow vigorously due to biotic interference by fringe villagers encircling those R.Fs.

### ***(a) Crop Composition:***

The main species noticed on the above R.Fs are Sal (*Shorea robusta*), Asan (*Terminalia alata*), Dhaura (*Anogeissus latifolia*), Moi (*Lannea coromandelica*), Salai (*Boswellia serrata*), Kendu (*Diospyros melanoxylon*), Simal (*Bombax ceiba*), Karada (*Cleistanthus collinus*), Kangada (*Xylia xylocarpa*), Tangan (*Albizzia lebbek*), Char (*Buchnania lanza*) and Salia bamboo (*Dendocalamus strictus*).

**(b) Temperature:**

The average annual temperature varies from  $15^0\text{C}$  to  $49^0\text{C}$  the minimum being in December- January and the maximum in May-June.

**(c) Rain fall:**

The annual average rainfall varies from 780 to 1880 mm. The maximum rainfall is received during the rainy season from July to August.

**(d) Climate.**

The climate of this area is characterized by a hot dry summer and well distributed rainfall by the South-West monsoon season. The hot season starts from March and continues till May, which is the hottest month of the year with mean daily maximum temperature of  $49^0\text{C}$  and the mean daily minimum temperature of  $15^0\text{C}$ . The rainy season starts from June to September, July being the month with the heaviest shower. Relative humidity is high in the South-West monsoon season. The rainfall is fairly uniform throughout the Division. Storms and depressions from the Bay of Bengal during the monsoon season pass across the Division causing heavy rainfall and strong wind. The winter starts from November to February.

**03. SPECIAL OBJECTS OF MANAGEMENT:**

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

**04. ITEM OF WORK TO BE TAKEN UP:**

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

### **i) SURVEY AND DEMARCATON OF BOUNDARY**

The boundary line of this block will be cleared of weeds at a width of 5m and Stone pillars will be constructed at every curvature. The proposed Compensatory Plantation Area will be surveyed and demarcated in the field by the User Agency at the Project cost by putting RCC pillars. Before one year of planting, the treatment area will be surveyed and demarcated in the field. Silvicultural cleaning will be done in this area to provide facility to dominant prominent species to grow faster than the others. The plantation area will be indicated by signboards at corners or at points of intersection with roads, inspection paths and boundary lines. The signboard should contain the name of the plantation site, area, scheme year of planting, model of plantation, project cost species preferred and other details. Treatment map must be prepared before execution of work and the same should be approved by DFO with intimation to the RCCF, Berhampur.

### **ii) FENCING**

As the area is nearer to the habitation and lies adjacent to the agricultural land and there are every chances of biotic interference to the plantation area. Therefore it has been proposed to provide green fencing all along the boundary.

### **iii) PROTECTION MEASURE:**

The identified site of Kankeli, Putana and Sindurabadi is having very thin forest cover with a few scattered trees of miscellaneous species and good plantations at sparse. Due to biotic interference and to save the area from damage, the following protection measures have been prescribed.

#### **(a) Watch and ward.**

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

#### **(b) Motivation of people:**

As per Govt. resolution of 1993, the villagers of Ratakhandi, Putana, Sindurbhadi etc. villages have to be involved in protection of plantation raised under compensatory scheme. For this purpose, meeting to be conducted and local V.S.S will be associated with the field work from very inception of the plantation.

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

## PLANTATION:

The area will be stocked by way of raising plantations @ 800 plants per hectare in ANR model with the following species

1. *Tectona grandis* (Teak)
2. *Pongamia pinnata* (Karanja)
3. *Simaruba glauca* (Simaruba)
4. *Azadirachta indica* (Neem)
5. *Pterocarpus marsupium* (Bija)
6. *Emblica officinalis* (Amla)
7. *Terminalia belerica* (Belerica)
8. *Terminalia chebula* (Harida)
9. *Dalbergia latifolia* (Pahadi sissoo)
10. *Cassia siamensis* (Chakunda)
11. *Gmelina arborea* (Gambhar)
12. *Madhuca latifolia* (Mohula)
13. *Terminalia tomentosa* (Asan)
14. *Dendrocalamus strictus* (Salia Bamboo)

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

### *i) Raising of nursery:*

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

### *ii) Alignment and pitting:*

Alignment and pitting will be taken up in the month of November-December and pits of size 30 cm x 30 cm x 30 Cm will be dug maintaining a spacing of 2.5 mtr x 2.5 mtr and dug up earth will be piled preferably on the northern aspect.

### *iii) Actual planting:*

The seedlings will be planted in the dugout pits with initial dose of manure. Plantation should be taken up after first regular shower of monsoon and should be completed by the end of July. Species should be planted as per the suitability of the soil condition. As per norm application of manure & fertilizer of deised dose most be applied. Anti-termite insecticide should also be applied to each pit while planting. Casualties if any noticed should be replaced with the excess seedling raised for the

purpose. During second year also casualty replacement will be done for which seedling shall be raised.

**iv) Weeding, Soil working & manuring:**

For establishment and better growth of the planted seedling, circular weeding, soil working and manuring are necessary. It is prescribed that two weddings; soil working and manuring will be done during the first year and second year of plantation and one weeding and soil working during third year. During the first year and second year first weeding and manuring shall be carried out during August-September and the second one during October-November. First weeding shall be an entire area weeding (scraping) and the second will be of strip weeding along the contour. The weeding of third year will be a strip weeding which will be carried out during August.

**Application of insecticides.**

In the plantation site after planting good healthy seedling may cause influx of insects, which usually eat and damage the roots of the plants. To get rid of such insects attack application of the insecticides will be taken up in required doses at desired intervals. Spraying of insecticides shall be done preferably in a sunny day in the afternoon.

**05. INSPECTION, MONITORING & EVALUATION:**

It was told by Late H.F.Mooney, Conservator of Forests that every visit of Forest Officer to plantation site will add manure to the plantation. Therefore, to make this Afforestation scheme successful, intensive inspection of the plantation by forest field staff and the officers at different level is required. Moreover for frequent monitoring & evaluation proper infrastructure facility shall have to be made in the scheme.

**06. CONTROL:**

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

**07. EXECUTIVE AGENCY:**

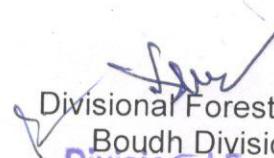
The Divisional Forest Officer, Boudh Forest Division through his staff will execute the scheme as per fund to be provided by the user agency.

**08. FUNDING AGENCY:**

Odisha Generation Phase II Trasmission Limitied (OGPTL)

**09. TOTAL FINANCIAL OUTLAY FOR THE SCHEME:**

The total financial outlay of the scheme is ***Rs. 2,30,96,000/-***  
***(Rupees)***

  
Divisional Forest Officer  
Boudh Division  
**Divisional Forest Officer**  
**Boudh Division**

**Annexure-1**

**TOTAL FINANCIAL OUT LAY**

<b>SL. No.</b>	<b>PARTICULARS</b>	<b>AMOUNT IN RS.</b>
01	Cost of BLOCK PLANTATION @ 800 Plants per Ha over 190.0 Ha. @ Rs.56,912/- + 20%	1,29,75,936.00
02	Cost of green fencing over 126mt/Ha. @ Rs. 106/- per KM	25,37,640.00
03	Boundary line clearance/ masonry pillar posting L.S	4,00,000.00
04	Pillar Posting around periphery of RF @5000/ pillar (82 pillar)	4,10,000.00
05	Soil Moisture Conservation @ 20 MD per Ha	7,60,000.00
06	EPA activities including supply of Gas Chullah, Solar light, meeting hall etc. @ 15% of the Project cost.	30,12,500.00
07	Concrete check dams to conserve soil & moisture to enhance soil moisture regime and further degradation @ 3Lakh/CD (10 CD)	30,00,000.00
<b>Total</b>		<b>2,30,96,076.00</b>

  
Divisional Forest Officer  
Boudh Division  
**Divisional Forest Officer**  
**Boudh Division**

**Cost Norms for AIDED NATURAL REGENERATION (ANR) @ 800  
Plants per Ha Wage rate Rs. 200/day**

Sl.No.	Item of Work	Preferable period of Execution	Person days	Labour (Rs)	Material (Rs)	Total (Rs)
<b>0<sup>th</sup> Year</b>						
1	Survey, Demarcation and Pillar Posting, GPS Reading with mapping	Nov/Dec	2	400	0	400
2	Site Preparation	Nov/Dec	2	400	0	400
3	Silvicultural Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots etc	Jan/Feb	5	1000	0	1000
4	Nursery cost (6 months old seedling) part @ Rs 9.45/- seedling ( Rs. 6.67 in 0 <sup>th</sup> year + Rs. 2.78 in 1 <sup>st</sup> year ) for 880 seedling (800 + 80)	Jan-Mar	22	4400	1470	5870
5	Contingency and Unforeseen Expenditures		0		230	230
<b>Sub Total</b>			<b>31</b>	<b>6200</b>	<b>1700</b>	<b>7900</b>
<b>1<sup>st</sup> Year</b>						
1	Nursery cost (6 months old seedling) balance @ Rs. 2.78 for 880 seedlings.	Apr-Jul	11	2200	246	2446
2	Pitting 30 cm cube size	Feb/Mar	24	4800	0	4800
3	Carriage and planting including casualty replacement	Jul/Aug	20	4000	0	4000
4	Complete weeding, Soil working, manuring	Aug/Sep	24	4800		4800
5	Cost of Vermi compost 200 gms/plant @ Rs 20/- per kg = Rs 3200.00 and Granular Insecticide 5 gms/ plant @ Rs 80/- per kg = Rs 320.00	Aug/Sep	0	0	3520	3520
6	Cost of Chemical Fertiliser a. Urea 70 gms/plant in two subsequent doses @ Rs 6/-	Feb/Mar	0	0	1296	1296

3 <sup>rd</sup> Year						
1	Compete weeding and cultural operations		4	800	0	800
2	Soil working		4	800	0	800
3	Fire line tracing and inspection path		1	200	0	200
4	Watch & Ward (Whole Year)		7	1400	0	1400
<b>Sub Total</b>			<b>16</b>	<b>3200</b>	<b>0</b>	<b>3200</b>
4 <sup>th</sup> Year						
1	Fire line tracing and inspection path	Feb/Mar	1	200	0	200
2	Watch, Ward & Pruning	Apr-Mar	2	400	0	400
<b>Sub Total</b>			<b>3</b>	<b>600</b>	<b>0</b>	<b>600</b>
5 <sup>th</sup> Year						
1	Fire line tracing and inspection path		1	200	0	200
2	Watch, Ward & Pruning		2	400	0	400
<b>Sub Total</b>			<b>3</b>	<b>600</b>	<b>0</b>	<b>600</b>
6 <sup>th</sup> Year						
1	Fire line tracing and inspection path		1	200	0	200
2	Watch, Ward & Pruning		2	400	0	400
<b>Sub Total</b>			<b>3</b>	<b>600</b>	<b>0</b>	<b>600</b>
7 <sup>th</sup> Year						
1	Fire line tracing and inspection path		1	200	0	200
2	Watch, Ward & Pruning		2	400	0	400
<b>Sub Total</b>			<b>3</b>	<b>600</b>	<b>0</b>	<b>600</b>
8 <sup>th</sup> Year						
1	Fire line tracing and inspection path		1	200	0	200
2	Watch, Ward & Pruning		2	400	0	400
<b>Sub Total</b>			<b>3</b>	<b>600</b>	<b>0</b>	<b>600</b>
9 <sup>th</sup> Year						
1	Fire line tracing and inspection path		1	200	0	200
2	Watch, Ward & Pruning		2	400	0	400
<b>Sub Total</b>			<b>3</b>	<b>600</b>	<b>0</b>	<b>600</b>

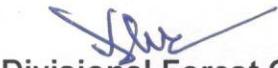
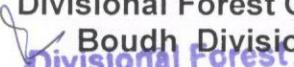
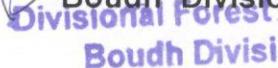
10 <sup>th</sup> Year						
1	Fire line tracing and inspection path		1	200	0	200
2	Watch, Ward & Pruning		2	400	0	400
	<b>Sub Total</b>		<b>3</b>	<b>600</b>	<b>0</b>	<b>600</b>
	<b>Grand Total</b>		<b>228</b>	<b>45600</b>	<b>11312</b>	<b>56912</b>

Abstract

Year	Person Days	Labour (Rs)	Material (Rs.)	Total Cost (Rs)
0 <sup>th</sup> Year	31	6200	1700	7900
1 <sup>st</sup> Year	124	24800	5400	30200
2 <sup>nd</sup> Year	36	7200	4212	11412
3 <sup>rd</sup> Year	16	3200	0	3200
4 <sup>th</sup> Year	3	600	0	600
5 <sup>th</sup> Year	3	600	0	600
6 <sup>th</sup> Year	3	600	0	600
7 <sup>th</sup> Year	3	600	0	600
8 <sup>th</sup> Year	3	600	0	600
9 <sup>th</sup> Year	3	600	0	600
10 <sup>th</sup> Year	3	600	0	600
<b>TOTAL</b>	<b>228</b>	<b>45600</b>	<b>11312</b>	<b>56912</b>

Rs.56,912/- x 190 Ha= Rs.1,08,13,280/- + 20% escalation Rs.21,62,656/=

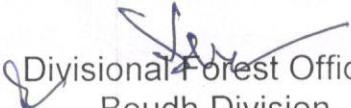
Rs.1,29,75,936/-

  
 Divisional Forest Officer  
  
 Boudh Division  
  
 Divisional Forest Officer  
 Boudh Division

## Land Suitability Certificate

This is to certify that 190ha. in Kankali R.F 60ha., Putuna R.F 90ha. & Sindurbhadi R.F 40ha. of Manamunda Range in Boudh Forest Division identified for Compensatory Afforestation is suitable for plantation form management point of view and his free from encroachments and encumbrances.

Place.....  
Date.....

  
Divisional Forest Officer,  
Boudh Division  
**Divisional Forest Officer**  
**Boudh Division**