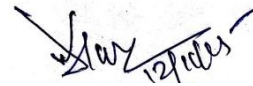


**SCHEME
FOR
COMPENSATORY AFFORESTATION OVER 07.20 Ha
OF DEGRADED FOREST LAND IDENTIFIED IN
PARAPIT R.F., HARABHANGA TAHASIL,
PURURNAKATAK RANGE, BOUDH DIST. IN LIEU OF
FOREST LAND TO BE DIVERTED OVER 3.544 HA
FOR
WIDENING OF NATIONAL HIGHWAY NO.57
FROM BOLANGIR TO KHORDHA
IN
BOUDH DISTRICT
AND
BOUDH FOREST DIVISION**

PREPARED BY
D.F.O., BOUDH DIVISION

SUITABILITY CERTIFICATE

Certified that 07.20 Ha. of Degraded Forest Land identified in Parapit Reserve Forest in Purunakatak Forest Range under Harbhanga Tahasil of Boudh Dist. and Boudh Forest Division is suitable for the purpose of Compensatory Afforestation (ANR model 800 Plants per Ha) in lieu of 03.544 ha of Reserve Forest Land to be used by National Highway for widening to N H 57 from Bolangir to Khordha reach 153/010 to 153/250 and 158/840 to 162/01 K.M.



Divisional Forest Officer,
Boudh Division

1. **INTRODUCTION**

National Highway Department has submitted a proposal for diversion of 03.544 ha of forest land for widening to NH 57 i.e. Bolangir to Khordha reach 153/010 to 153/250 and 158/840 to 162/01 K.M. purpose u/s 02 of Forest (Conservation) Act, 1980 and Forest (Conservation) Rule, 2003. Since National Highway is a Govt. of India organisation, as per Para 3.2 (ix) (a) of guideline to F (C) Act, degraded forest land twice in extent of forest land to be diverted has been identified over 07.20 ha in Parapit R.F. of Pururnakatak Range in Boudh Forest Division.

In the present approved Working Plan of this Division, this R.F. has been allocated to Rehabilitation Working Circle . The total area of this R.F. is 1,397.0 ha. This Reserve Forest has been allocated to Rehabilitation Working Circle as adequate root stock is available which needs protection alongwith gap planting to re-stock and re-juvenate the R.F.

The existing vegetation of this R.F. is as narrated below:-

Sl. No.	Name of the plants	Local Name	Family
01	<i>Shorea robusta</i>	Sal	Dipterocarpaceae
02	<i>Terminali alata</i>	Asan	Combreatceae
03	<i>Aegle marmelos</i>	Bel	Rutaceae
04	<i>Buchanania lanzana</i>	Char	Anacardiaceae
05	<i>Anogeissus latifolia</i>	Dhaura	Combretaceae
06	<i>Cleistanthus collinus</i>	Karada	Euphorbeaceae
07	<i>Diospyros melanoxylon</i>	Kendu	Ebenaceae
08	<i>Tectona grandis</i>	Teak	Verbenaceae
09	<i>Boswellia serrata</i>	Salai	Burseraceae
10	<i>Bobax ceiba</i>	Simul	Bombacaceae

11	<i>Xylia xylocarpa</i>	Kangada	Fabaceae
12	<i>Dendrocalamus strictus</i>	Salia Bamboo	Poaceae
13	<i>Stereospermum chelonoides</i>	Patuli	Bignoneaceae
14	<i>Madhuca indica</i>	Mahul	Sapotaceae
15	<i>Pterocarpus marsupium</i>	Bija	Fabaceae
16	<i>Adina cordifolia</i>	Kururm	Rubiaceae

2. LAND INVOLVED

DFO, Boudh Division has allotted 07.20 ha of degraded forest land to National Highway. It has been decided to undertake the whole area in ANR model with gap planting @ 800 plants per Ha. This degraded-forest land is in a close proximity to Charichhak Town ship at a distance of nearly 5.0 K.Ms. Villages like Baghachhepra, Lokapada, Karanjakata, Pabalipada, Upperkata, Tukulunda, Chithakakhol, Ektala, Sarisapankala. The biotic interference like illicit felling, grazing and fire of these villagers and their cattle have degraded the R.F.. Un-metalled road at a distance of 05.00 Km connects to this R.F. and mostly used during dry season. The site is a leveled land having good depth of soil. Therefore, the total identified area of 07.20 ha will be treated under ANR model with 800 plants of Gap Planting per Ha.

3. TOPOGRAPHY & SOIL

The site is shown in Village sheet of Parapit. The soil type occurring in the area is mostly sandy loam having good soil depth to support Planted species. The selected patch is slightly undulating terrain having very good drainage system The existing vegetation are mostly in pole stage (u/30cm gbh).

4. CLIMATIC CONDITION

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

5. OBJECTIVE OF THE SCHEME

It is mandatory requirement under the provision of F.(C). Act, 1980

- (i) To restrict the degradation by reducing the biotic interference to barest minimum and reverse the trend towards the process of restoration.
- (ii) To develop the forest by providing site-specific required silvicultural treatment.
- (iii) To facilitate the boosting of natural regeneration and ensure its establishment.
- (iv) To take up appropriate soil and moisture conservation measures to improve the soil and moisture regime with special emphasis on upper reaches of the hill slope to ensure the perennial nature of the streams, nallas etc.
- (v) To conserve the area for bio diversity.
- (vi) To improve the microclimate of the area as a whole, thereby ensuring environmental stability.
- (vii) To meet the need of local people with regard to firewood and small timber to the extent possible, depending upon the productivity, to ensure people's participation in protection of forests.

6. PLANTATION TECHNIQUE

The area should be well demarcated before raising plantation by D.G.P.S. survey and fixing of Boundary pillars with engraving thereon the co-ordinates and distance to next pillar. As far as possible weeds will be removed especially during flowering time in-order-to prevent fruiting and dispersal of seeds. Preferably indigenous species are to be planted in the area coupled with soil and moisture conservation measures.

7. CHOICE OF SPECIES

Considering the edaphic and micro climatic conditions of the site, the following species are recommended.

Common Name	Scientific Name
Asan	<i>Terminalia alata</i>
Arjuna	<i>Terminalia arjuna</i>
Salia Bamboo	<i>Dendrocalamus strictus</i>
Jack fruit	<i>Artocarpur heterophyllus</i>
Simuli	<i>Bombax ceiba</i>
Neem	<i>Azadirachta indica</i>
Bel	<i>Aegle marmelos</i>
Sunari	<i>Cassia fistula</i>
Saguan	<i>Tectona gandis</i>
Khaira	<i>Acacia catechu</i>
Karanaj	<i>Pongamia pinnata</i>

Amla	<i>Emblica officinalis</i>
Chakunda	<i>Cassia siamea</i>
Siris	<i>Albizzia procera</i>
Bija	<i>Pterocarpus marsupium</i>

8. SURVEY & DEMARCATION

The area should be surveyed in the field with reference to the revenue map to ascertain the exact area available for plantation using G.P.S. system. The masonry pillars of length 4ft height erected on the boundary of the site which are to be numbered with reference to 4" = 1 mile scale map available and the pillar number with G.P.S. reading i.e. latitude & longitude to be written over the pillars. The pillars are to be painted with white paint whereas the writings there-on will be in black paint.

The plantation area to be indicated by sign boards at corners or at point of intersection with roads, inspection paths and boundary lines. The sign boards should contain the name of the plantation site, area, year of planting, planting module, No. of seedlings planted & other details, if necessary.

9. PLANTING TECHNIQUE

1. PLANTING & POST-PLANTING:

The sites will be re-stocked by way of raising plantation @ 800 plants per hectare in ANR model. Taking into consideration of the soil condition and existing species growing there naturally, the species mentioned in Para 09 are proposed to be planted in the area.

2. RAISING OF NURSERY

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

3. ALIGNMENT AND STACKING

Alignment, stacking and pitting will be taken up in the month of January-February, Pits of size 30cmX 30cm X 30cm will be dug maintaining a spacing of 2.5 mt.

4. REGENERATION CLEANING AND TENDING OPERATION

The operation aims at tending (climber cutting, cleaning, double shoot cutting, pruning etc.) of the existing crop to create situation to give opportunity for the growth of promising principal species of the locality for ensuring better growth of the plants. It includes removal of inferior, diseased, malformed, dead, drying and defective tree growth and disposal of them either by distributing it among the local VSS members. Apart from it, weed eradication is also an integral part as they interfere with the growth of both planted species and natural regeneration.

The detailed operation to be carried out is as follows-

- i) High stumps of good coppice species like Sal, Krum, Moi, Sissoo shall be cut back flush to the ground for encouraging emergence of coppice shoots from ground level.

- ii) Cutting of herbs and shrubs interfering with the growth of the promising species.
 - iii) Cutting back of individual top broken poles interfering with growth of well formed pole crops.
 - iv) Cutting back of malformed and diseased species.
 - v) Wherever a climber is creating hindrance in the growth of promising pole/tree, said climber will be cut at two points. **It is important to note that climber like Combretum decandrum shall not be cut as this is a good food for elephants.**
 - vi) Sharp cutting of high stumps flush to the ground to get a smooth stool with least damage to the cortex.
 - vii) Singling of coppice shoots coming out from stools and retaining the most promising one.
 - viii) Pruning of the branches of the pole crops up to hand reach.
 - ix) Wherever there is congested patch of pole crop of sal and its associate species, light thinning should be carried to retain promising stems.
- During the 1st year, climber cutting, and cutting of high stumps, weeds and malformed and diseased species will be done. In the next two years, cutting back of malformed individuals and singling of coppice shoots in case of desired species will be done in the subsidiary silvicultural activities.

5. PLANTING

The seedlings will be planted in dug out pits of 30 cm³ maintaining a spacing of 2.5 mt between the pits i.e. @ 800 seedlings per hectare. Plantation should be taken up after first regular shower of monsoon and should ideally be completed by end of July. NPK/DAP fertilizer @ 30 gms per plant should be given as basal dose. Anti- termite and insecticide @ 5 gms. per plant should be applied per pit while planting. Casualty replacement whenever required during the planting year and in the

subsequent years upto third year should be undertaken for which the seedlings shall be raised and kept in stock at site as well as in the Central Nursery, Badghati.

6. WEEDING, SOIL WORKING AND MANURING

For establishment and better growth of the planted seedlings, weeding, soil working and manuring are necessary. It is prescribed to carry out one weeding, one soil working and manuring during the first year alongwith soil moisture conservation in the form of staggered trenches. One weeding, one soil working and application of fertilizer in second year of plantation Weeding and manuring for the first and second year shall be carried out during August- September along the contour. Application of vermi compost shall be given preference. First weeding shall be carried out after the first pair of leaf of the planted species have come up preferably in August. The detailed cost estimate of various operations to be taken up in ANR plantation has been furnished below. Fire line should be drawn in order to avoid damage to the plants during fire season (February to June).

7. POINTS OF IMPORTANCE:

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

- All care should be taken to raise healthy seedlings of minimum 45cm height and 10% extra of the required stock has to be raised. Pitting shall be invariably done during January-February, when the soil is moist by fall of dew. The sites being the hilly slopes, pits shall be dug along the contours and alternate liens should be staggered. Planting shall be done at the onset of monsoon.
- Basal dose of 30 grams of NPK and 5 grams of Aldrin be applied at the time of planting. Casualty replacement, weeding and soil

working, application of fertilizer and insecticides shall be taken up as per the provisions made in the cost- norm at the proper time. Engaging requisite watchers as per norm is mandatory.

- All out efforts be taken to keep the plantation free from grazing, fire and other biotic interference.

8. PROTECTION:

The important element of successful plantation is Protection. Watchers are to be engaged on daily wage basis for four years but they should be assigned with specific work and their involvement in protecting the plantation should be ensured. It is suggested not to engage a particular person for the entire four years but considering the work efficiency of the person, if not found suitable should be replaced. Since the plantation site is close to Charichhak, enough care should be taken to engage efficient worker for protection as there is every possibility of damage by biotic interference. Therefore, in the planting design non-browsable species like Simaruba should be planted in three four rows towards periphery of the plantation at the foot hill.

9. FUNDING AGENCY

National Highway, Sambalpur Division.

10. EXECUTING AGENCY

Divisional Forest Officer, Boudh Forest Division.

11. G.P.S. READING OF SURVEYED POINTS

G.P.S. reading taken up around the selected area of Parait R.F. for compensatory afforestation purpose is given below.

Survey starts from station / pillar No. 01 to 15.

SL. NO	GPS Reading	Station		Distance (in mtr.)	Bearing (in Degree)
		From	To		
1.	N20 36 12.7 E84 26 29.8	1	2	104m	269 ⁰
2.	N20 36 12.6 E84 26 26.2	2	3	63m	262 ⁰
3.	N20 36 12.3 E84 26 24.0	3	4	69m	342 ⁰
4.	N20 36 14.5 E84 26 23.3	4	5	92m	335 ⁰
5.	N20 36 17.1 E84 26 21.9	5	6	97m	320 ⁰
6.	N20 36 19.5 E84 26 19.8	6	7	91m	343 ⁰
7.	N20 36 22.4 E84 26 18.9	7	8	95m	322 ⁰
8.	N20 36 24.8 E84 26 16.9	8	9	90m	15 ⁰
9.	N20 36 27.6 E84 26 17.7	9	10	88m	107 ⁰
10.	N20 36 26.8 E84 26 20.6	10	11	75m	136 ⁰
11.	N20 36 25.0 E84 26 22.4	11	12	116m	146 ⁰
12.	N20 36 21.9 E84 26 24.6	12	13	45m	138 ⁰
13.	N20 36 20.8 E84 26 25.7	13	14	111m	157 ⁰
14.	N20 36 17.5 E84 26 27.2	14	15	69m	148 ⁰
15.	N20 36 15.6 E84 26 28.4	15	16	101m	157 ⁰

19. Norm of ANR with Gap Plantation (800 per ha)

The Cost norm for ANR Plantation is furnished below at the wage rate of Rs. 200/-day.

**PER HECTARE COST NORM FOR AIDED NATURAL REGENERATION
(ANR) 800 PLANTS/ HA/ Wage rate Rs.200/ Day**

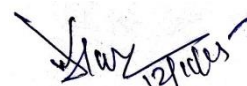
SI No.	Item of Work	Person days	Labour	Material	Total
0TH YEAR					
1	Survey, Demarcation and Pillar Posting, GPS Reading with mapping	2	400	0	400
2	Site Preparation	2	400	0	400
3	Silvicultural Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots	5	1000	0	1000
4	Raising Nursery @800 seedlings / ha (including 10% Casualty replacement) and watch & ward (part-1)	32	6400	1200	7600
5	Contingency and Unforeseen Expenditure	1	0	150	150
Sub Total		42	8200	1350	9550
1ST YEAR					
1	Maintenance of Nursery (Balance)	16	3200	0	3200
2	Pitting 30 cm cube size	28	5600	0	5600
3	Carriage and planting including casualty replacement	18	3600	0	3600
4	Complete weeding, Soil working, Manuring	22	4400	0	4400
5	Cost of Vermi compost and Insecticide for Plantation	12	0	1800	1800
6	Cost of Chemical fertiliser	4	0	600	600
7	Fireline Tracing and Inspection path	3	600	0	600
8	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	15	3000	0	3000
9	Soil Conservation Measures	20	4000	0	4000
10	Watch & ward	8	1600	0	1600
11	Contingency and Unforeseen Expenditure	2	0	300	300

Sub Total		148	26000	2700	28700
2ND YEAR					
1	Casualty Replacement including cost of seeding, carriage and planting	8	1600	0	1600
2	Complete weeding, prunning	8	1600	0	1600
3	Soil working and maurinig	8	1600	0	1600
4	Cost of Fertiliser and insecticide	4	0	600	600
5	Fireline Tracing and Inspection path	1	200	0	200
6	Soil Conservation Measures	8	1600	0	1600
7	Watch & ward (whole year)	8	1600	0	1600
8	Contingency and Unforeseen Expenditure	1	0	150	150
Sub Total		46	8200	750	8950
3RD YEAR					
1	Complete weeding and pruning	4	800	0	800
2	Soil Working	4	800	0	800
3	Fireline Tracing and Inspection path	1	200	0	200
4	Watch & ward (whole year)	8	1600	0	1600
Sub Total		17	3400	0	3400
4TH YEAR					
1	Fireline Tracing and Inspection path	1	200	0	200
2	Prunning, Watch & ward	2	400	0	400
Sub Total		3	600	0	600
5TH YEAR					
1	Fireline Tracing and Inspection path	1	200	0	200
2	Prunning, Watch & ward	2	400	0	400
Sub Total		3	600	0	600

6TH YEAR					
1	Fireline Tracing and Inspection path	1	200	0	200
2	Prunning, Watch & ward	2	400	0	400
Sub Total		3	600	0	600

7TH YEAR					
1	Fireline Tracing and Inspection path	1	200	0	200
2	Prunning, Watch & ward	2	400	0	400
Sub Total		3	600	0	600
8TH YEAR					
1	Fireline Tracing and Inspection path	1	200	0	200
2	Prunning, Watch & ward	2	400	0	400
Sub Total		3	600	0	600
9TH YEAR					
1	Fireline Tracing and Inspection path	1	200	0	200
2	Prunning, Watch & ward	2	400	0	400
Sub Total		3	600	0	600
10TH YEAR					
1	Fireline Tracing and Inspection path	1	200	0	200
2	Prunning, Watch & ward	2	400	0	400
Sub Total		3	600	0	600
SI No.	ABSTRACT				
1	0th Year	42	8250	1350	9600
2	1st Year	148	26000	2700	28700
3	2nd Year	46	8200	750	8950
4	3rd Year	17	3400	0	3400
5	4th Year	3	600	0	600
6	5th Year	3	600	0	600
7	6th Year	3	600	0	600
8	7th Year	3	600	0	600
9	8th Year	3	600	0	600
10	9th Year	3	600	0	600
11	10th Year	3	600	0	600
TOTAL		274	50050	4800	54850

Rs.54,850/- x 7.2 ha = Rs.3,94,920.00
Add escalation 20% Rs. 78,984.00
Total Rs.4,73,904.00



D.F.O., Boudh