SCHEME FOR
SITE SPECIFIC COMPENSATORY AFFORESTATION SCHEME
OVER 52.55 HA. OF DEGRADED FOREST LAND IDENTIFIED IN GANIA
(40.34 HA. IN BANKAMUNDA RF)
&
KHANDAPADA RANGE
(12.210 HA. OF REVENUE FOREST LAND IN MOUZA NUAGAON)
IN
NAYAGARH DISTRICT
UNDER NAYAGARH FOREST DIVISION
AGAINST CONSTRUCTION OF 2 X 220 MVA, 220/33 KV GRID SUBSTATION AT DASAPALLA BY WAY OF DRAWING 220 KV LILO LINE FROM THE EXISTING 220KV DC LINE FROM BHANJANAGAR-MERAMUNDALI WITH APPROXIMATE LENGTH 29.774 KM
BY
ODISHA POWER TRANSMISSION CORPORATION (OPTCL) UNDER DASAPALLA TAHASIL OF NAYAGARH DISTRICT, ODISHA.

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Land Suitability Certificate

This is to certify that 52.55 ha comprising of 40.34 Ha. (Patch-1, 38.39 ha. & Patch-2, 1.95 ha.) of degraded Forest land in Bankamunda RF under Gania Range and 12.21 ha. of Revenue forest in village Nuagaon under Khandapada Range in Nayagarh Forest Division is identified for Compensatory Afforestation and found suitable for plantation and from management point of view. No plantation has been carried out in the aforesaid areas in any scheme previously.

Divisional Forest Officer
Nayagarh Forest Division

Divisional Forest Officer
Nayagarh Division

BRIEF PROJECT DESCRIPTION

Odisha Power Transmission Corporation Ltd. (OPTCL), a state-owned company proposes to install 2 x 20 MVA, 220/33 KV Grid Substation at Dasapalla by way of drawing 220 KV LILO LINE from the existing 220KV DC line from Bhanjanagar-Meramundali with approximate length 29.774 KM. The total scope of works as envisaged in the proposed project is detailed below.

i.	220 KV LILO arrangements from Bhanjanagar – Meramundali DC line	: 29.774 Kms.
ii.	Installation of 20MVA, 220/33 KV Transformers	: 2 No.
iii.	220 KV transformer bay	: 2 Nos.
iv.	220 KV feeder bays	: 2 No.
v.	220 KV bus-Coupler bay	: 1 Nos.
vi.	33 KV transformer bays	: 2 Nos.
vii.	33 KV bus coupler bay	: 1 No.
viii.	33 KV feeder bays	: 5 Nos.
ix.	250 KVA, 33 / 0.4 KV station transformer with its auxiliaries	: 2 Set

The proposed 220 KV LILO line shall pass through villages like Madhyakhanda, Dwargaon, Dihagaon, Goudapankalasani, Jani Sahi, Pathuria, Lachhipur, Sriramchandrapur, JamuSahi, Raiser, Alapanga, Birapaju, Guriabari, Ostia, Mondabari, Makar Prasad, Rathipur& Gopalpur.

a) The project will have physical benefits to public in and around DaspallaTahasil area as under:
b) Improvement of voltage profile at the Dasapalla command area.
c) Minimize interruption of power supply to consumers.
d) Enhance security / reliability of power system.
e) Strengthening of transmission system of OPTCL at 220 KV level.
f) Improving the economic condition of the rural habitats.
g) Will meet the load growth of the upcoming / existing small scale industries, irrigation projects.
h) Will meet the load growth due to 'ODSSP' scheme
i) It will attract new industrial investment.

The project will yield gross return of 5.97% as financial benefit. The senior General Manager (Construction) zone-I, OPTCL, Bhubaneswar is the Nodal Authority and the Dy. General Manager (Elect.) OPTCL, EHT (Construction) Division, Berhampur is the implementing authority of the project. Administrative approval was accorded by Board of Directors (BOD), OPTCL in its 80th meeting held on 31.08.2016.

LAND INVOLVED:

This liner project spreads over 29.774 km. with ROW 35 meters in 18 villages as narrated above in DaspallaTahasil of Nayagarh District, comprises of 23.986 Ha. of forest land &80.226 Ha. of non-forest land totalling to 104.209 Ha.

The total forest land is revenue forests in 16 no of villages as mentioned in the above para & comprises of Chhota Jungle, Gramya Jungle, Jungle-1 & Jungle-2 as on 25.10.1980 according to Revenue record totalling to23.983 ha.Therefore, forest diversion under section 2 of F.C. Act, 1980 is proposed for diversion of 23.983 ha. of Revenue Forest land.

INTRODUCTION

Compensatory Afforestation is one of the most important requirement/condition stipulated by Ministry of Environment, Forests and Climate Change (MoEF & CC), Govt. of India while approving proposal for diversion of forest land for non-forest use. The purpose of Compensatory Afforestation (CA) is to compensate the loss of "Land by Land" and loss of "Trees by Trees". The instant proposal is **a linear** one stretching over a length of about 29.774 KM with ROW 35 meter involving forest area 23.98 ha.

Therefore, in pursuance to MoEF guideline and clarifications vide F. No. 5-2/2017-FC. Dt. 28.3.2019, this CA scheme is prepared based on "**special provisions for CA for certain categories of project", i.e. para 2.5 (i) 'a' of the guideline (Annexure-XIII)**. on "degraded forest land twice the extent of forest area diverted". As total forest area proposed to be diverted is 23.983 ha. therefore, CA can be raised over 23.983 ha. x 2 = 47.966 ha. or 48 ha. of degraded forest land having canopy density below 40 percent.

Besides as it is a proposal for Transmission, the user agency also proposes to prepare detailed scheme for creation and maintenance of plantation of dwarf species (preferably medicinal plants) in the right of way under the transmission line in consultation with State Forest Department at the time of compliance of Stage-I conditions of the proposal. Both CA and the above plantations can compensate the loss of forests by forests as per the guideline of CA.

In view of the above, 40.34 ha. (Patch-1, 38.39 ha. & Patch-2, 1.95 ha.) of suitable degraded forest land in Bankamunda RF (Extension) in Gania Range and 12.210 ha. of degraded Revenue Forest land in village Nuagaon under Khandapada Range of Nayagarh Division below 0.4 canopy density have been identified totalling to (40.34 ha. + 12.210 ha.) = 52.55 ha. in net to accommodate total 24,000 seedlings as under to satisfy the condition of "loss of Land by land and Loss oftree by tree".

The proposed compensatory afforestation area has been verified on DSS (Decision Support System) domain and density of the areas are less than 40%.On field observation it was found that seedlings @ 200 per ha. can be planted in gaps over 40.34 ha. (Patch-1, 38.39 ha. & Patch-2, 1.95 ha.) area in Bankamunda RF in ANR model of plantation with a total of about 8,058no.s of seedlings.

However in order to compensate the loss of land by land i.e. 24 ha. x 2 = 48 ha. and loss of tree by tree i.e 24,000 nos. (24 ha. of forest land proposed to be diverted x 1000 per ha.), balance 16000 nos. are to be accommodated in degraded revenue forest land over 12.210 ha. identified in Nuagaon mouza under Khandapada range of Nayagarh Division.

From the gross 12.210 ha. net area was available for plantation from which 10 ha. being completely barren (with few scarcely present bushes)can be planted with 1600 plant per ha. and therefore the plantation model at Nuagaon revenue forest has been taken as core plantation model.

COMPENSATORY AFFORESTATION SCHEME:

Details of land selected for the CA Scheme

Sl. No	Name of Range	Name of the site	Khata No. & Plot No.	Total Area	Mode of Plantation	No of seedling /ha.	Net area for plantation	No. of seedlings to be planted
1.	Gania	Bankamunda RF (extension)	Reserve Forest	40.34	ANR	200	40.34	8,058
2	Khandapada	Revenue Forest Land in village Nuagaon	Khata No-182 Plot No-761	12.21	AR	1600	10.00	16000
	Total			52.55			**50.34**	**24,058**

Scheme for Compensatory Afforestation over 40.34 ha @ 200 no. of seedlings/ha in Bankamunda RF of Gania Range

District	:	Nayagarh
Forest Division	:	Nayagarh
Range	:	Gania
RF Name	:	Bankamunda
Area suitable for CA	:	40.34 Ha

Description of area:

Bankamunda RF situated in Gania Range of Nayagarh Division classified underforest type Northen Dry Mixed Deciduous Forest (5B/C2) as per Champion and Seth's Forest classification. The vegetation constitutes mainly Sal (*Shorearobusta*), Mahula (*Madhuca indica*), Asan (*Terminalia tomentosa*), Chara (*Buchananialanzan*), Kendu (*Diospyros embryopteris*), Rohini (*Mallotusphillipinensis*), Piasal *(Pterocarpus marsupium*), Dhaura (*Anogeissus latifolia*) etc. in degraded condition. Climbers like Siali (*Bauhinia vahili*), Dantari (*Acacia sinuate*), Dhatki (*Woodfordiafruiticosa*), Satabari (*Asparagus racemosa*) and shrubs like Khajur (*Phoenix dactylifera*), Kurum (*Adina cordifolia*), Kaintha (*Limoniaacisidissima*) etc. The Canopy density is around 30%.

The site of the patch inside Bankamunda RF finds place on Survey of India **Open Series Topo sheet no. F45S15 ($73\frac{D}{15}$) confined within latitude: 84054'51.349" – 84054'48.025", longitude: 20024'30.46" - 20023'56.554"** indicated on the map enclosed as plate-I (Page No. 7). The proposed area of plantation is free from encroachment, other encumbrances and found suitable for ANR gap plantation.

Soil type:
The soil is red-alluvial in nature on the slopes and hill top mixed with stones and pebbles. However the foot hill contains fairly deep loamy and alluvial soil.

Topography and slope:
The proposed site in Bankamunda RF (Extension) is partly hilly, undulating with gently slope.

Whether the area bear any root stock of vegetation:
The site selected for Compensatory Afforestation has existing root stock of local species and the existing vegetation are in degraded stage.

Plate-I

Survey of Indiatopo No. F45S15 showing 40.34ha. (Patch-1, 38.39 ha. & Patch-2, 1.95 ha.) degraded forest land in Bankamunda RF

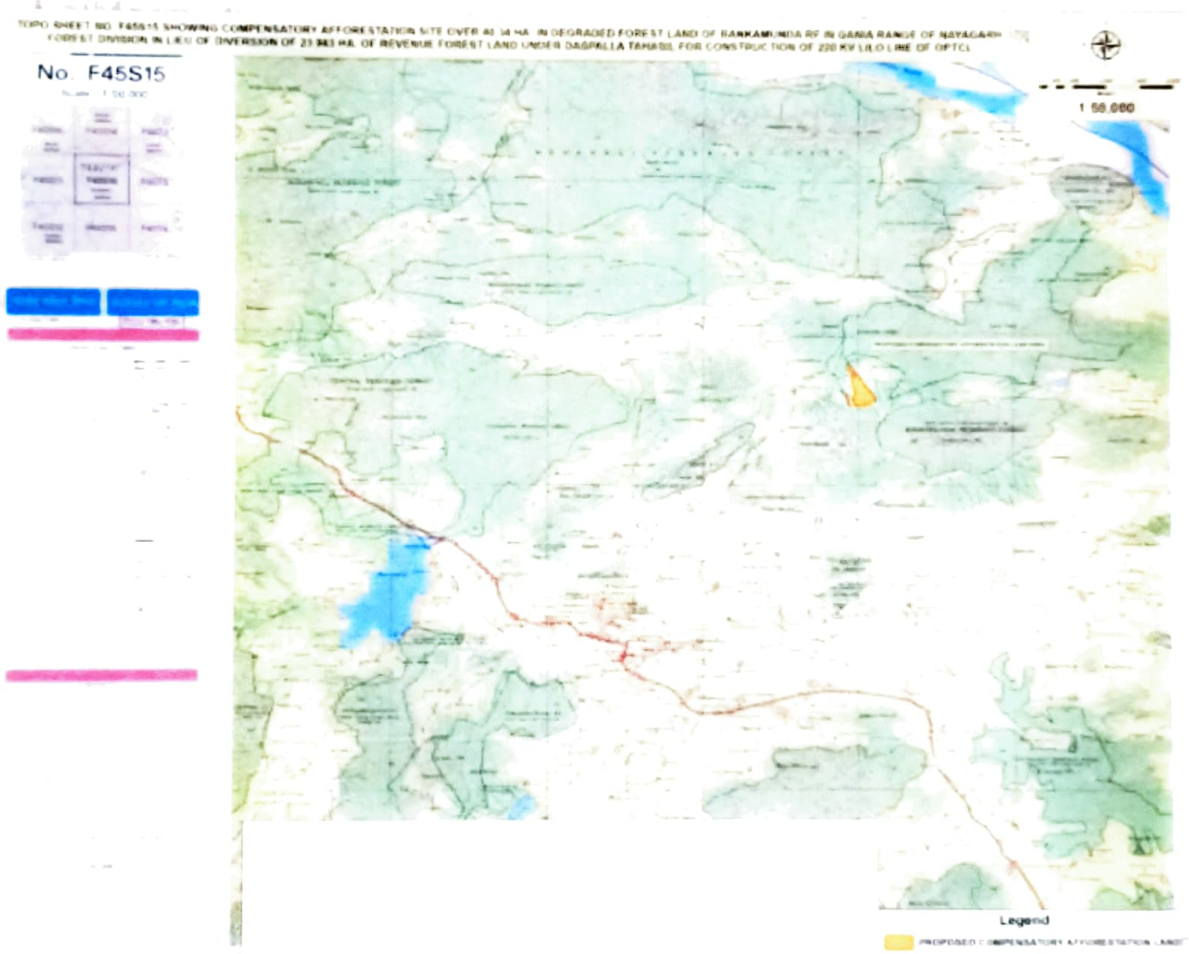


Plate-II

Geo Referenced Map of the site in the Bankmunda RF DULY AUTHETICATED BY ORSAC:

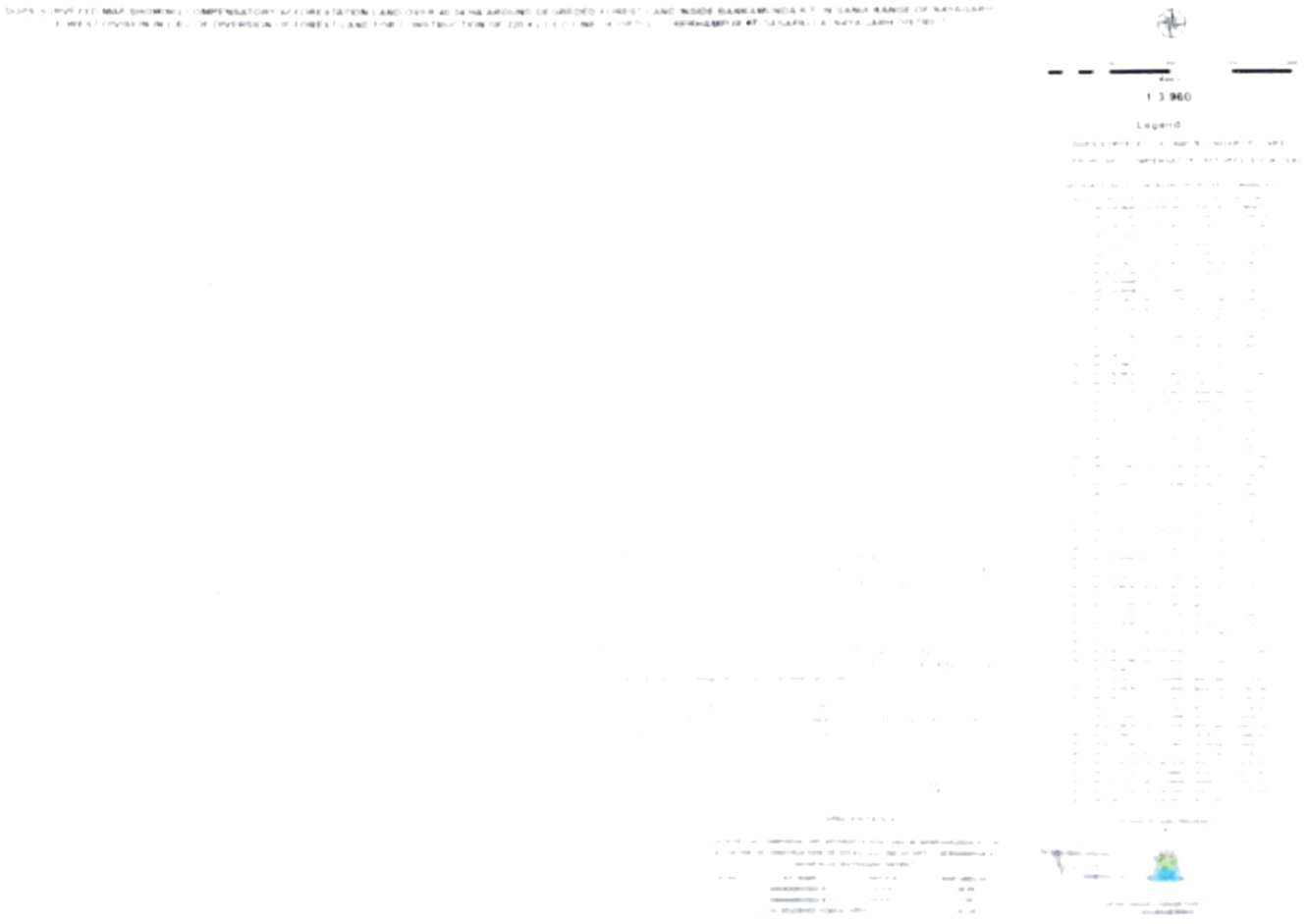
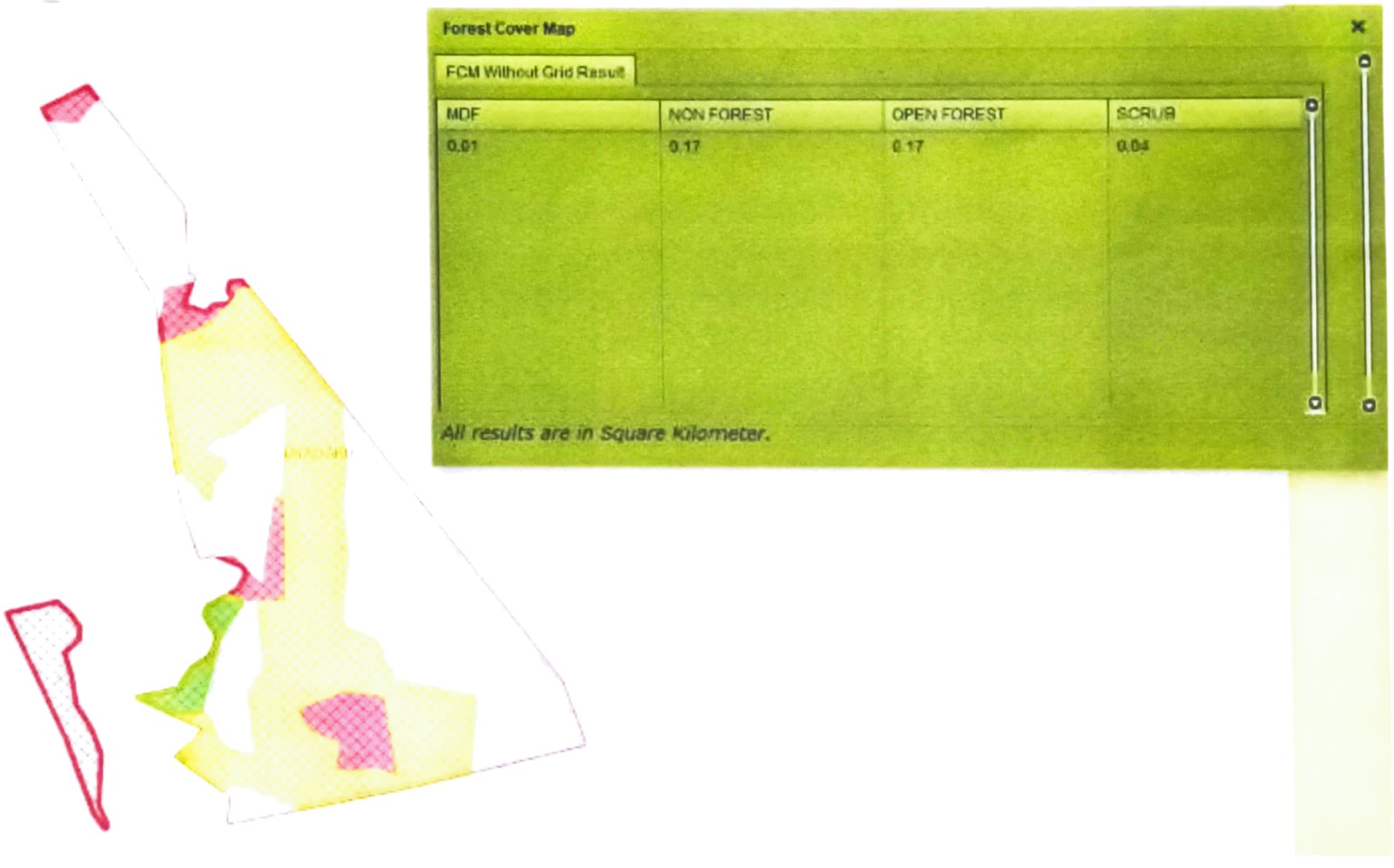


Plate-III

DSS (Decision Support System) Map of the site in Bankamunda RF



Temperature :

The area experiences cold weather between November – January when the temperature drops to less than 13° C. the temperature rises steadily from January onwards reaching 32° C to 45° C in summer (May). So it is under tropical condition with limited rainy days.

Climate& Rainfall:

The area has tropical climate with monsoon rains from June to September and occasional rains during the autumn. This area also experiences occasional gutsy wind to heavy thunderstorms during summer season (April to June). Monsoon breaks out in early to middle of June and continues up to September. The average annual rainfall is about 1600 mm under the influence of south west monsoon. On average, there are about 100 rainy days. The humidity is maximum in the month of July to August (90%) and minimum in February (36%). The wind velocity varies between 40 KMPH and 80 KMPH, although occasional higher values have also been reported. Lightening incidents are rarely reported in this area.

Plantation Model:

The identified site over 40.34Ha. (Patch-1, 38.39 ha. & Patch-2, 1.95 ha.) in Bankamunda RF isa patch of degraded Forests with density <0.4. Thus, it is proposed to take up plantation under ANR model with 200 seedling/ha in02 number of patches.

Special Objectives of Compensatory Afforestation at Bankamunda RF are as follows :

- To restrict the degradation by reducing the biotic interference to barest minimum and reverse the trend towards the process of restoration of vegetation.
- To develop the forest by providing site-specific silvicultural treatment.
- To facilitate the boosting of natural regeneration and ensure their establishment.
- To take up appropriate soil moisture conservation (SMC) measures to improve the soil and moisture regime.
- To take up SMC measures to capture maximum rain water in the forest area, reduce surface run off, increase percolation of rain water and recharge the ground water.
- To improve the bio-diversity of the forest block.
- 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.).
- To provide a green clothing to the area by means of artificial regeneration and plantation in order to reduce soil erosion and to save the catchment area of river Mahanadi.
- To improve the wildlife habitat by enrichment plantation consisting of fruit bearing and fodder species.

Item of works to be taken up:

To achieve the above objectives, the following items of works are mainly prescribed to be taken up:

- Survey & Demarcation.
- Fencing.
- Site Clearance & Planting in gaps
- Site Specific Soil & Moisture Conservation Measures.
- Protection of Plantation
- EPA (Entry Point Activity)
- Monitoring & Evaluation Mechanism

Survey &Demarcation:

The identified area has been surveyed by DGPS and also map has been prepared DGPS Coordinates of Survey Stations of Compensatory Afforestation area is given in the following table. The area will be demarcated with RCC pillars of size 1.0 m x 10 cm x 10 cm for clear identification of the area.

Geo-coordinates of boundary with distances from pillar to pillar of CA site inside Bankamunda RF.

Sl. No. of Pillar	Latitude	Longitude	Pillar to Pillar	Distance In Mt.
1	84°54'50.98383"	20°24'30.26975"	1 to 2	257
2	84°54'56.05281"	20°24'23.43703"	2 to 3	122
3	84°54'56.22319"	20°24'19.46919"	3 to 4	10
4	84°54'56.59199"	20°24'19.47822"	4 to 5	34
5	84°54'56.29113"	20°24'18.42642"	5 to 6	7
6	84°54'56.10256"	20°24'18.24784"	6 to 7	5
7	84°54'56.18614"	20°24'18.08734"	7 to 8	6
8	84°54'56.01264"	20°24'17.95600"	8 to 9	5
9	84°54'56.04604"	20°24'17.78325"	9 to 10	19
10	84°54'56.68708"	20°24'17.63807"	10 to 11	16
11	84°54'57.19654"	20°24'17.40189"	11 to 12	16
12	84°54'57.57403"	20°24'17.81345"	12 to 13	15
13	84°54'58.11121"	20°24'17.86615"	13 to 14	14
14	84°54'58.59162"	20°24'17.98952"	14 to 15	7
15	84°54'58.66498"	20°24'18.22582"	15 to 16	14
16	84°54'58.42216"	20°24'18.61724"	16 to 17	16

Sl. No. of Pillar	Latitude	Longitude	Pillar to Pillar	Distance In Mt.
17	84°54'58.54123"	20°24'19.13959"	17 to 18	19
18	84°54'59.18871"	20°24'19.26074"	18 to 19	74
19	84°55'00.68634"	20°24'17.28494"	19 to 20	369
20	84°55'08.05176"	20°24'07.45262"	20 to 21	308
21	84°55'14.27678"	20°23'59.29031"	21 to 22	109
22	84°55'16.47611"	20°23'56.32994"	22 to 23	115
23	84°55'17.74003"	20°23'52.79292"	23 to 24	285
24	84°55'08.11319"	20°23'50.36539"	24 to 25	286
25	84°54'58.44437"	20°23'48.40478"	25 to 26	46
26	84° 54' 58.527"	20° 23' 49.862"	26 to 27	110
27	84°54'55.56451"	20°23'52.10798"	27 to 28	46
28	84° 54' 56.729"	20° 23' 53.177"	28 to 29	21
29	84° 54' 57.088"	20° 23' 53.768"	29 to 30	29
30	84°54'56.10193"	20°23'54.16732"	30 to 31	88
31	84°54'53.39447"	20°23'55.45788"	31 to 32	66
32	84° 54' 55.631"	20° 23' 55.928"	32 to 33	40
33	84°54'56.32426"	20°23'57.07273"	33 to 34	40
34	84°54'57.42693"	20°23'57.84131"	34 to 35	32
35	84°54'57.78513"	20°23'58.83111"	35 to 36	48
36	84°54'57.04739"	20°24'00.15582"	36 to 37	13
37	84°54'57.22995"	20°24'00.59062"	37 to 38	35
38	84°54'58.25642"	20°24'01.18842"	38 to 39	21
39	84°54'58.84066"	20°24'01.56161"	39 to 40	28
40	84°54'59.27211"	20°24'02.34163"	40 to 41	13
41	84°54'59.16416"	20°24'02.81681"	41 to 42	67
42	84°54'56.88436"	20°24'03.38035"	42 to 43	94
43	84°54'55.92170"	20°24'06.28517"	43 to 44	186
44	84°54'55.10189"	20°24'12.25821"	44 to 45	177
45	84°54'54.64636"	20°24'18.00189"	45 to 46	164
46	84°54'51.98448"	20°24'22.71429"	46 to 47	116

Sl. No. of Pillar	Latitude	Longitude	Pillar to Pillar	Distance In Mt.
47	84°54'50.11972"	20°24'26.01336"	47 to 48	102
48	84°54'48.51713"	20°24'28.97669"	48 to 49	80
49	84°54'46.37217"	20°24'00.20046"	49 to 1	83
50	84°54'49.14168"	20°24'00.86640"	50 to 51	31
51	84°54'49.88217"	20°24'00.14465"	51 to 52	25
52	84°54'50.35826"	20°23'59.43994"	52 to 53	23
53	84°54'50.30978"	20°23'58.68096"	53 to 54	31
54	84°54'49.52510"	20°23'57.94813"	54 to 55	40
55	84°54'49.91155"	20°23'56.67839"	55 to 56	52
56	84°54'50.16587"	20°23'54.99688"	56 to 57	48
57	84°54'50.98554"	20°23'53.62069"	57 to 58	44
58	84°54'51.48451"	20°23'52.25412"	58 to 59	50
59	84°54'51.40786"	20°23'50.63801"	59 to 60	40
60	84°54'51.34276"	20°23'49.31731"	60 to 61	39
61	84°54'51.84125"	20°23'48.13536"	61 to 62	7
62	84°54'51.71753"	20°23'47.88863"	62 to 63	35
63	84°54'49.56753"	20°23'53.08918"	63 to 64	135
64	84°54'51.02752"	20°23'48.92094"	64 to 65	116
65	84°54'48.02342"	20°23'56.55971"	65 to 66	122

Fencing:

To protect the plantation from grazing and other biotic interference, it is proposed to provide Vegetative fencing (Bamboo Twig and Thorns) along the 4.715 km periphery of the site. The approved cost estimate for Vegetative fencing (Bamboo Twig and Thorns) as approved by PCCF Odisha in onetime cost norm for CA vide O.O No.-1109 dt. 08.11.2021 as Annexure-IX (Page No. 60)

Site Clearance & Planting:

Plantation over 40.34 ha. (Patch-1, 38.39 ha. & Patch-2, 1.95 ha.) shall be taken up with planting model of ANR @ 200 plants per hectares at a spacing of 2.5 m x 2.5 m. in permanent blacks and in staggard manner in gaps having natural vegetation Site clearance and cleaning to be done in the treatment area to create gap for plantation. Silvicultural cleaning by cutting of high stumps, removal of weeds, singling of multiple shoots, pruning of retained shoots, cutting of climbers and unwanted species in congested areas will be done, so that the plants get optimum condition for growth. All planting and post planting measures like casualty replacement, soil working, manuring, fire protection etc. will be undertaken as per the prescription and guideline issued by PCCF Odisha in onetime cost norm vide O.O no. sited above. (**Annexure-VIII**).

The materials so removed from the site clearance and SSO to be distributed among the villagers/VSS people. A register of distribution to be maintained at Range level.

Choice of Species:

Considering adverse soil & moisture conditions, preference should be given on hardy indigenous light demander species. In view of presence of wild animals particularly small herbivores, fruit bearing and fodder species shall also be planted. Besides considering the topography, soil and moisture availability of the plantation area, the following species will be planted.

Sl. No	Scientific Name of species	Common name	Sl. No	Scientific Name of species	Common name
1	*Terminalia arjuna*	Arjun	10	*Dalbergia sissoo*	Sissoo
2	*Azadirachta indica*	Neem	11	*Gmelina arborea*	Gambhari
3	*Pongamia pinata*	Karanja	12	*Dendrocalamus strictus*	Salia Bamboo
4	*Emblica oficinalis*	Amla	13	*Terminalia tomentosa*	Asana
5	*Terminalia belerica*	Bahada	14	*Madhuca indica*	Mahul
6	*Albizia lebbeck*	Sirisa	15	*Acacia catechu*	Khaira
7	*Zizyphusmauritania*	Barakoli	16	*Mangifera indica*	Mango
8	*Syzygiumcumini*	Jamun	17	*Ficus benghalensis*	Bara
9	*Ficus religiosa*	Pipal	18	*Artocarpus heterophyllous*	Panasa

Other fodder species as would be available locally can also be planted from wildlife grazing point of view.

Soil and Moisture Conservation Works:

Rain water harvesting, run off management and enhancement of percolation are the cardinal activities to improve infiltration of water for re-charging of ground aquifer. It enhances the moisture availability to the vegetation in forest eco-system. Soil and moisture conservation activities have been taken up in forestry in various scales and levels as a subsidiary activity and dovetailed to plantation and other afforestation activities. In order to improve water availability in forests, it is to be practiced as core forestry activity independent of other forestry interventions.

The strategy adopted for rain water harvesting in forest areas is enumerated below:

I. Forest Floor Treatment :

The forest floor is the catchment where the precipitation touches the ground and subsequently is drained through the drainage line. It forms the focus area in the rain water harvesting. Permissible interventions will not only capture the rain water but also enhance the retention period ultimately leading to increased infiltration.

- **Staggered Trench**:

In a Ha. of land up to 300 nos. of Staggered Trenches will be created. The dimension of the Staggered Trenches will be 2.5mt. X 0.5 mt X 0.5 mt. The size of the contour bunds shall be as per requirement in field. It will help in conserving rain waters of that region and facilitate its percolation. Adequate care should be taken during alignment of such trenches so that gullies are not formed by the water flowing downhill from the edges of the Trench.

The identified nalas will be treated, from top to bottom (ridge to valley) approach as per the specific site condition, which will retard the velocity of run-off and be helpful in recharging as well as feeding ground water to the plants planted below it.

II. Drainage line Treatment-

The micro catchment, drain the water into drainage line and rain water flows from the ridge to bottom and higher slope to lower slope in varying velocity. The primary objective of drainage line treatment is therefore, centres around reducing the velocity and increasing the retention of water at various levels. It is therefore, required to have appropriate interventions along drainage line to alter the pattern of rain water flow. A sketch map showing the drainage lines and nalas is enclosed in Page No. 17.

- **Loose Boulder Check Dams (LBCD):**

This structure of various size and dimension will be created across the drainage line for retention of runoff and reduction of velocity. Such structures should preferably have top width of one meter with upstream slope of 1:1 and downstream slope of 1:5. The dimensions of each structure are dependent on several factors such as gradient, catchment size, etc. Hence, designs will be fixed with appropriate dimensions as per the size of the nallas on which it will be constructed.

- **LBCD with Wire Mesh:**

At very vulnerable locations, such a structure should be planed where boulders will be stacked on steps and width of the drainage line is very large. In such structure, the actual cost of the wire mesh will be added.

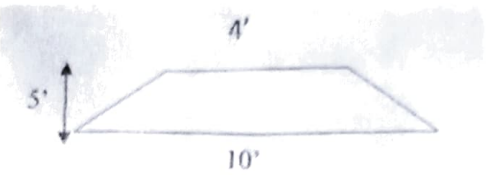
- **Strategy for Implementation:**

The terrain of the RF is hilly and undulating. However the area identified has 1 nos. of nalas of 1st Order (primary nala) and 4 no.s of nalas of 2nd order (secondary nalas) to be taken up for treatment. In order to achieve the objective and implement the programme efficiently, a well-planned strategy is indispensable. The entire area will be treated with major focus on the drainage line treatment by providing LBCD in the major nalas within the prescribed cost norm. A zonation map indicating vulnerabilities may be prepared before treatment. After completion of all works geo-tagging of all structures are to be mapped.

The detail cost norm of SMC is given in **Annexure- III (Page No-28).**

DRAINAGE LINE TREATMENT

LOOSE BOULDER CHECK DAM



(A) Size- 10' X 10' X 5'

i. Requirement of boulder (**Procured from quarry**)

½ (10' + 4') x 10' x 5' = 350cft or 9.90 cum

ii. Labour for construction of LBCD for 1 cum

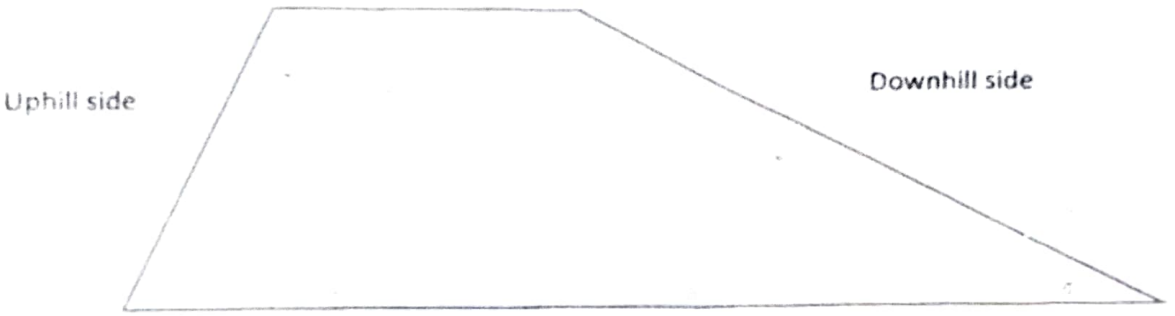
Mulia 1.04 No.

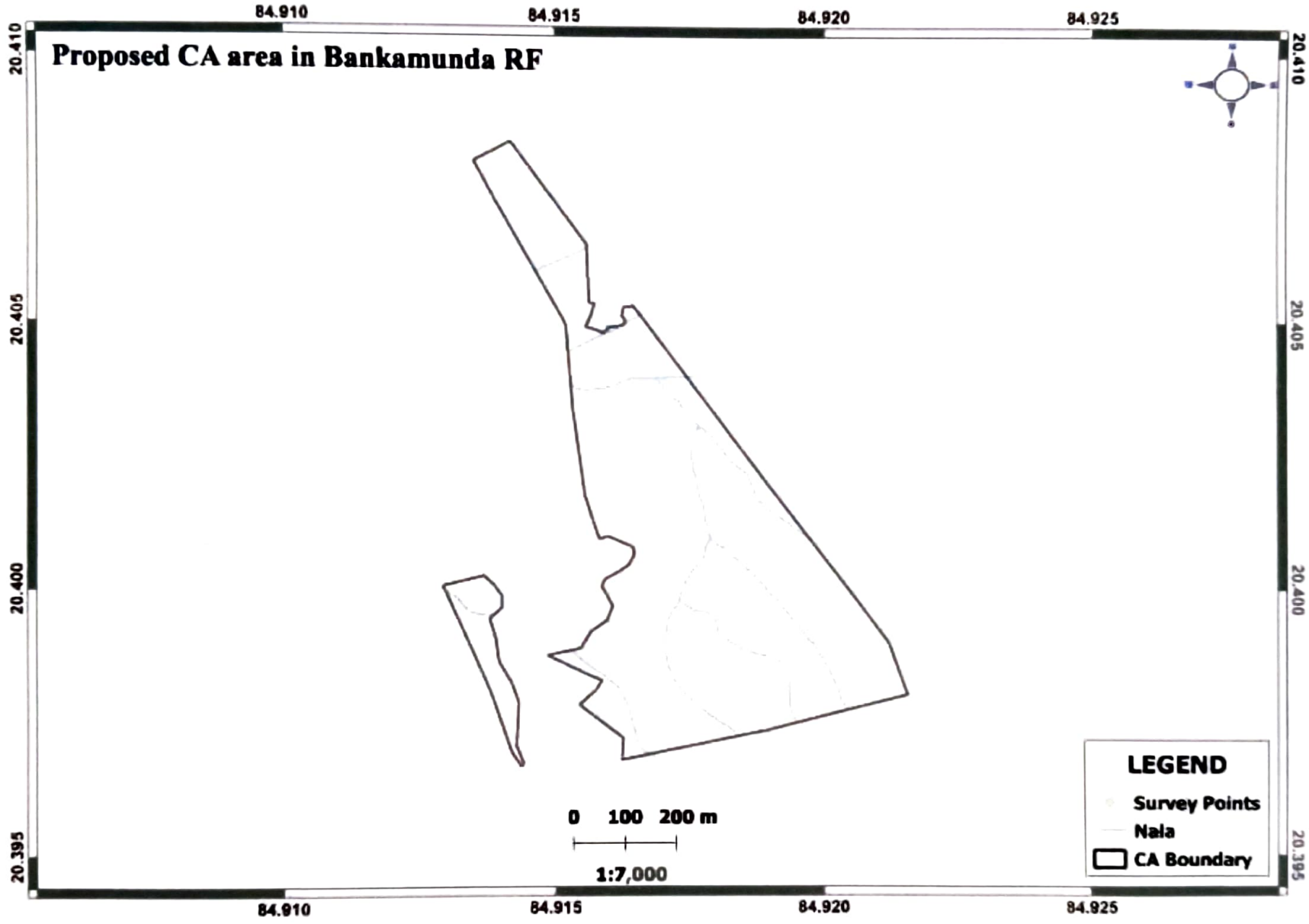
Mason special 0.17 No.

Stone packer 0.35 No.

Design of LBCD

Cross Section




Proposed CA area in Bankamunda RF
84.910
84.915
84.920
84.925
20.410
20.405
20.400
20.395
0 100 200 m
1:7,000
LEGEND
Survey Points
Nala
CA Boundary

Protection of the plantation:
Vegetative fencing all along the periphery of the plantation will be provided. Few watchers will also be engaged for protection of the plantation. Assistance of V.S.S is necessary for better protection of plantation.

Peoples Participation:
In the recent times, no scheme shall be effective if the local villagers are not involved in the implementation of the scheme itself. The villagers who are having a right on the NTFP items in the adjoining forest area are to be associated with the implementation of the scheme at all different levels. For that, Van Sangrakshan Samiti (VSS) is proposed to be constituted in all the villages around the Compensatory Afforestation site. The villagers are to be motivated, inspired and above all, explained the benefits they will be getting, if plantation is protected by them.

EPA (Entry Point Activity):
To build the confidence of the local public and smooth execution of the works, Entry-Point Activities in compliance to Govt Resolution of 1993 and 2011, are proposedto orient the community members towards thrift and credit activities. EPA will be taken up after discussion with the nearby villages surrounding the CA site at Bankamunda RF.

Monitoring & Evaluation Mechanism:
The scheme shall be effective for a period of 10 years. The cost will be deposited by the user agency and work will be executed by the Divisional Forest Officer, Nayagarh Division with his staff and all prescribed records are to be maintained. In addition to internal monitoring by Forest Officers of State Government, a Monitoring Committee under item no. 3.4 (iii) of consolidated guidelines under F.C Act 1980 issued by MoEF, shall be established with a nominee of the Central Government to oversee that the stipulations, including those pertaining to Compensatory Afforestation are carried out for Bankamunda RF.

ANNEXURE-I

COST NORM FOR PLANTATION

Cost Norm for Compensatory Afforestation through Aided Natural Regeneration (ANR)@ 200 Seedlings /Ha. (18 months old seedling) 40.34 Ha. in Bankamunda RF under Gania Range
Wage Rate Rs.333/-per Mandays

Base Cost Norms for Compensatory Afforestation through Aided Natural Regeneration (ANR) @ 200 Seedlings/Ha. (18 months old seedling)						
WAGE RATE Rs- 333/- 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.)**
0th Year (Advance work) Pre-Planting Operation						
1	Survey, Demarcation and Pillar posting	Nov/Dec	2	666	0	666
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	333	100	433
3	Site preparation	Nov/Dec	2	666	0	666
4	Silvicultural operations including clearance of weed, cutting of climber, High stump cutting, singling of shoots & removal of cut out after drying from the field to blank space.	Jan/Feb	15	4995	0	4995
5	Alignment and stacking for digging of pits	Feb/Mar	0.5	167	0	167
6	Digging of pits (45 cm x 45 cm X 45 cm) in hard and gravelly soil	Feb/Mar	8	2664	0	2664
	Total		**28.5**	**9490.5**	**100.0**	**9590.5**

1st Year/Planting Year						
1	Refilling of pits by altering the dugout soil of the pits, application of organic compounds/ CDM/ FYM & mixing the same perfectly.	June/Jul	1.5	499.5	1000	1500
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/-/ Seedling. (220 nos.)	Jul/Aug	0	0	1320	1320
3	Watering polythene bag seedlings at stacking site of plantation	Jul/Aug	0.5	166.5	0	167
4	Conveyance of polythene bag seedlings on head load from the stacking site to individual dugout pits within the planting site, applying insecticide, fertilizer & planting after scooping the soil with other applied materials and pressing the soil perfectly around the planted seedling.	Jul/Aug	4.5	1498.5	0	1499
5	Cost of Fertilizer & Insecticide (a)NPK/ Bio-fertilizer @ 50 gms/plant as basal dose = 10kg @ Rs.30/- per kg = Rs. 300.0 (b) Urea/Vermicompost/Mo Khata/any other fertilizer @ Rs. 150.00 (c) Insecticide/ Bio-pesticide @ 5 gms/plant= 1 kg @ Rs.150/- per kg = Rs. 150/-	Jul/Aug	0	0	600	600
6	Casualty Replacement @ 10% (20 nos.)	Jul/Aug	0.5	167	0	167
7	1st weeding & Manuring	Aug/Sept	2	666	0	666

8	2nd Weeding, Soil working (1mt. diameter around the plants) & Manuring	Oct/Nov	3	999	0	999
9	Fire line tracing & Inspection path	Feb/Mar	3	999	0	999
10	Watch & Ward including watering as per requirement	Aug-Mar	8	2664	0	2664
	Total		**23**	**7659**	**2920**	**10579**
2nd Year Maintenance						
1	Transportation of 20 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs.6/- per seedling	Jul	0	0	120	120
2	Planting for casualty replacement	Jul	0.5	166.5	0.0	166.5
3	Cost of Fertilizer & Insecticide- A) Cost of Insecticide/ Bio- pesticide (Themet/ Forate) @ 5 gms/plant = 0.1 Kg @ Rs.150/- per kg = Rs.15/- B) Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer= Rs. 560/-	Jul	0	0	575	575
4	Weeding (Complete weeding), Manuring & Soil working, (1mt. diameter around the plants)	Sep/Oct	4	1332	0.0	1332
5	Fire line tracing (2 m. wide fire line over 400 m long) & Inspection path	Feb/Mar	3	999	0.0	999
6	Watch & Ward including watering as per requirement	Apr/Mar	12	3996	0.0	3996
	Total		**19.5**	**6493.5**	**695.0**	**7188.5**

3rd Year Maintenance						
3	Cost of Fertilizer- Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer= Rs. 560/-	Sep/Oct	0	0	560	560
4	Weeding (Complete weeding), Manuring & Soil working, (1mt. Diameter around the plants)	Aug/Sep	4	1332	0	1332
5	Fire line tracing (2 m. wide fire line over 400 m long) & Inspection path	Feb/Mar	3	999	0	999
6	Watch & Ward including watering as per requirement	Apr/Mar	12	3996	0	3996
	Total		**19.0**	**6327.0**	**560.0**	**6887.0**
4th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m long) & Inspection path	Feb/Mar	3	999	0	999
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3732	0	3732
	Total		**15**	**4731**	**0**	**4,731**
5th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	999.00	0	999
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3996.00	0	3996
	Total		**15.0**	**4995.0**	**0**	**4995**

6th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	999.00	0	999
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3996.00	0	3996
	Total		**15.0**	**4995.0**	**0.0**	**4995.0**
7th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length) & inspection path	Feb/Mar	3	999.00	0	999
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3996.00	0	3996
	Total		**15.0**	**4995.0**	**0.0**	**4995.0**
8th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	999.00	0	999
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3996.00	0	3996
	Total		**15.0**	**4995.0**	**0.0**	**4995.0**
9th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	999.00	0	999
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3996.00	0	3996
	Total		**15.0**	**4995.0**	**0.0**	**4995.0**
10th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length) &inspection path	Feb/Mar	3	999.00	0	999
2	Watch & Ward including watering as per requirement	Apr/Mar	12	3996.00	0	3996
	Total		**15.0**	**4995.0**	**0.0**	**4995.0**

Year wise Abstract of Cost Norm (showing seedling cost separately)							
Sl. No.	**Year**	**No. person days**	**Labour cost @ Rs. 333/-per day (Rs)**	**Material Cost**	**Monitoring Evaluation, Learning, Documentation and Other Contingency (5%) of (4+5)**	**Cost of Seedlings @Rs.53.048 per seedlings**	**TOTAL COST**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	0th year	28.5	9490.5	100	480	0	10070.5
2	1st year	23	7659	2920	529	11671	22779
3	2nd year	19.5	6493.5	695	359	1061	8608.5
4	3rd year	19	6327	560	344	0	7231
5	4th year	15	4995	0	250	0	5245
6	5th year	15	4995	0	250	0	5245
7	6th year	15	4995	0	250	0	5245
8	7th year	15	4995	0	20	0	5015
9	8th year	15	4995	0	250	0	5245
10	9th year	15	4995	0	250	0	5245
11	10th year	15	4995	0	250	0	5245
Total:		**195**	**64935**	**4275**	**3232**	**12732**	**85174**
Total cost of plantation (40.34 Ha)							**3435919.16 or 3435919.00**

ANNEXURE-II

COST NORM FOR FENCING

Cost Norm for Fencing using Bamboo Twigs and Thorns in 40.34 Ha. in Bankamunda RF under Gania Range
Wage Rate Rs.333/-per Mandays

Fencing for Compensatory Plantation raised inside the Forest Areas using Bamboo Twigs & Thorns (250 Rmt/ Ha.)						
WAGE RATE Rs- 333/- PER DAY						
Sl. No	Items of work	Preferable Period of Execution	Man days	Wages	Material cost (Rs)	Total Cost (Rs. per Ha.)
0th Year Maintenance						
1	NIL		0	0	0	0
1st Year Maintenance						
1	Taking an average perimetre of 250 Rmt/Ha. @ 93.85/ mt. (Half bundle Bamboo Twigs/mt @ 120/Bundle) Labour: Material = 40:60 (approx)	Sept./Oct	30	9990	14133	24123.0
2	Bamboo Poles of 8" height at a distance of 2mt spacing to be fixed (2" under soil & 2" above soil) 250/2 = 125+1= 126 Nos. of Bamboo Poles 1 Bamboo (approx) 24" height = 3 poles 126/3 = 42 Bamboos @ 200/Bamboo	Sept./Oct	0	0	8400	8400.0
3	Preparation of Bamboo poles, Digging of holes of 2 ft. depth & fixing Bamboo poles @ 20 poles/ MD	Sept./Oct	6.5	2164.5	0	2164.5
4	Cost of Bamboo for tieing the Bamboo twigs row fence with double side two strand Bamboo batten (One 6" above ground and other one 4 ft" above ground) (250x2)/ 24= 21 Bamboo @ 200/ Bamboo	Sept./Oct	0	0	4200	4200.0

5	Making Bamboo batten, Finishing the Batten &Tieing the same on double strand on Coir rope etc. @ Rs.11/ Rmt.	Sept./Oct	9	2997	0	2997.0
6	Cost of coir rope @ Rs.0.125 kg/ Rmt 500x 0.125 kg= 62.5 kg @ Rs.70/Kg	Sept./Oct	0	0	4375	4375.0
7	Making one Bamboo Twigs gate with Bamboo frame		0	0	500.5	500.5
	TOTAL		**45.5**	**15152**	**31608.5**	**46760.0**
Rate per running mt. 45759/ 250= 183/Rmt						
2nd Year Maintenance						
1	Repair & Maintenance of Bamboo Twigs fence including Material cost	Feb./Mar	20	6660	1500	**8160**
Rate per running mt. 7720/ 250= 30.88 or say Rs. 31-Rmt						
3rd Year Maintenance						
1	Repair & Maintenance of Bamboo Twigs fence including Material cost	Feb./Mar	20	6660	5675	**12335**
Rate per running mt. 11895/ 250= 47.58 or say Rs. 48-Rmt						
4th Year Maintenance						
1	Repair & Maintenance of Bamboo Twigs fence including Material cost	Feb./Mar	20	6660	5675	**12335**
Rate per running mt. 11895/ 250= 47.58 or say Rs. 48-Rmt						
5th Year Maintenance						
1	Repair & Maintenance of Bamboo Twigs fence including Material cost	Feb./Mar	20	6660	5675	**12335**
Rate per running mt. 11895/ 250= 47.58 or say Rs. 48-Rmt						

Abstract					
Sl. No	**Year**	**No. person days**	**Labour cost @ Rs. 333/- per day**	**Material Cost**	**Total cost (Rs.)**
1	0th year	0.0	0.0	0.0	0.0
2	1st year	45.5	15151.5	31608.5	46760.0
3	2nd year	20.0	6660.0	1500.0	8160.0
4	3rd year	20.0	6660.0	5675.0	12335.0
5	4th year	20.0	6660.0	5675.0	12335.0
6	5th year	20.0	6660.0	5675.0	12335.0
Total:		**125.5**	**41791.5**	**50133.5**	**91925.0**
Total (for 40.34 Ha)					**3708254.50 or say 3708255.00**

ANNEXURE- III

COST NORM FOR SMC

SMC Works Model-C			
Cost Norms for creation of Compensatory Afforestation with Stabilization of Soil & Conservation of Moisture (200 Plants/ Ha.)			
WAGE RATE Rs- 333/- PER DAY			
Sl.No	**Item of Works**	**Preferable Period of Execution**	**Total Cost**
0th Year (Pre-Planting Operation)			
1	Nil		0
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.	21,645
2nd Year			
3	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,246.75
3rd Year			
4	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,246.75
4th Year			
5	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,246.75
4th Year			
5	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,246.75
	Total		**34632.00**

Abstract					
Sl. No	**Year**	**No. person days**	**Labour cost @ Rs. 333/-per day**	**Material Cost**	**Total cost (Rs.)**
1	0th year	0.0	0.0	0.0	0.0
2	1st year	0.0	0.0	21,190	21,645.00
3	2nd year	0.0	0.0	3,178	3246.75
4	3rd year	0.0	0.0	3,178	3,246.75
5	4th year	0.0	0.0	3,178	3,246.75
6	5th year	0.0	0.0	3,178	3,246.75
Total		**0.00**	**0.00**	**33,902.0**	**34632.00**
Total (for 40.34 Ha)					**1397054.88 or say 1397055.00**

Different types of SMC structures will be taken up as per the scope & requirements of the plantation site out of the design & specification of different structures.

Total cost of the Scheme of CA over 40.34 ha in Bankamunda RF

Sl. No.	Components	Amount (in Rs)
1	Cost of Plantation	3435919.00
2	Cost of fencing	3708255.00
3	Cost of SMC	1397055.00
4	Cost of EPA (15% of cost of plantation)	515388.00
TOTAL		**90,56,617.00**

(Rupees ninety lakh fifty six thousand six hundred seventeen only)

Divisional Forest Officer
Nayagarh Division
Divisional Forest Office
Nayagarh Division

Scheme for Compensatory Afforestation over 12.210 ha in Nuagaon village, Khandapada

District	:	Nayagarh
Forest Division	:	Nayagarh
Range	:	Khandapada
Forest Land	:	Revenue Forest Land
Village	:	Nuagaon
Tahasil	:	Khandapada
Khata no	:	182
Plot No	:	761
Area suitable for CA	:	12.210 Ha.

Description of area:

The Revenue Forest land is located in village Nuagaon under Khandapada Range of Nayagarh Division has an area of 12.210 ha. having kissam Sal jungle as per Revenue Deptt. ROR. The site is close to Sapua and Hatimunda RF maintaining continuity through other revenue forest plots to the RF. The Revenue Forest patch is completely barren with degraded pole size Sal crop on the western and south eastern periphery of the plot.

The crop composition of the forest are Sal (*Shorearobusta*), Mahula (*Madhuca indica*), Asan (*Terminalia tomentosa*), Chara (*Buchananialanzan*), Kendu (*Diospyros embryopteris*), Rohini (*Mallotusphillipinensis*), Pia sal(*Pterocarpus marsupium*), Dhaura (*Anogeissus latifolia*) etc. in degraded condition. Climbers like Siali (*Bauhinia vahili*), Dantari (*Acacia sinuate*), Dhatki (*Woodfordiafruiticosa*), Satabari (*Asparagus racemosa*) and shrubs like Khajur (*Phoenix dactylifera*), Kurum (*Adina cordifolia*), Kaintha (*Limoniaacisidissima*) etcoccurring scattered here and there in the above locations. The entire land is filled with unwanted weeds, bushes, climber etc.

This revenue forest is located on Survey of India Open Series Topo sheet no. F45T3 confined within latitude: 85°06'24.669" - 85°06'22.327" longitude: 20°17'26.957" - 20°17'24.958" (Page No. 31).The proposed area of plantation is free from encroachment, other encumbrances and found suitable for Block plantation @ 1600 plant/ha. over 10 ha. & SSO over 2.21 ha.

Soil type:
Soil is fairly deep, well drained. It varies from Sandy loam to clayey loam in nature.

Topography and slope:
The topographical configuration of the identified site is undulating with a slope of less than 45° and medium to gentle slope.

Whether the area is bearing any root stock of vegetation:
The site selected for Compensatory Afforestation has root stock and the existing vegetation are in degraded stage.

Plate-IV

TOPO SHEET NO-F45I5 SHOWING ADDITIONAL COMPENSATORY AFFORESTATION SITE OVER 12.210 HA.IN REVENUE FOREST LAND OF NUAGAON VILLAGE KHANDAPADA RANGE OF NAYAGARH FOREST DIVISION IN LIEU OF DIVERSION OF 23.983 HA.OF REVENUE FOREST LAND UNDER DASPALLA TAHASIL FOR CONSTRUCTION OF 220 KV LILO LINE OF OPTCL

Plate-V

Geo Referenced Map of the site :

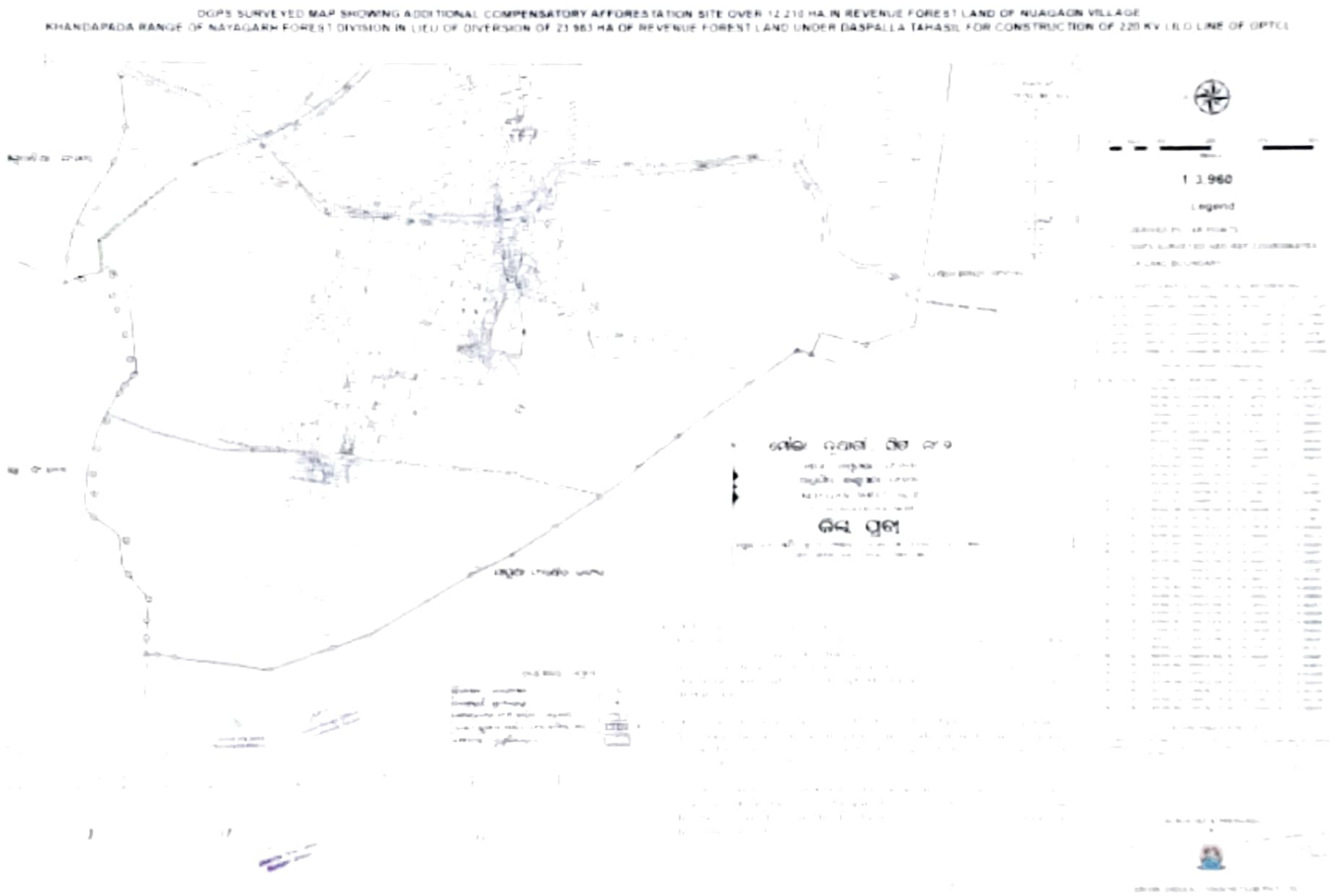
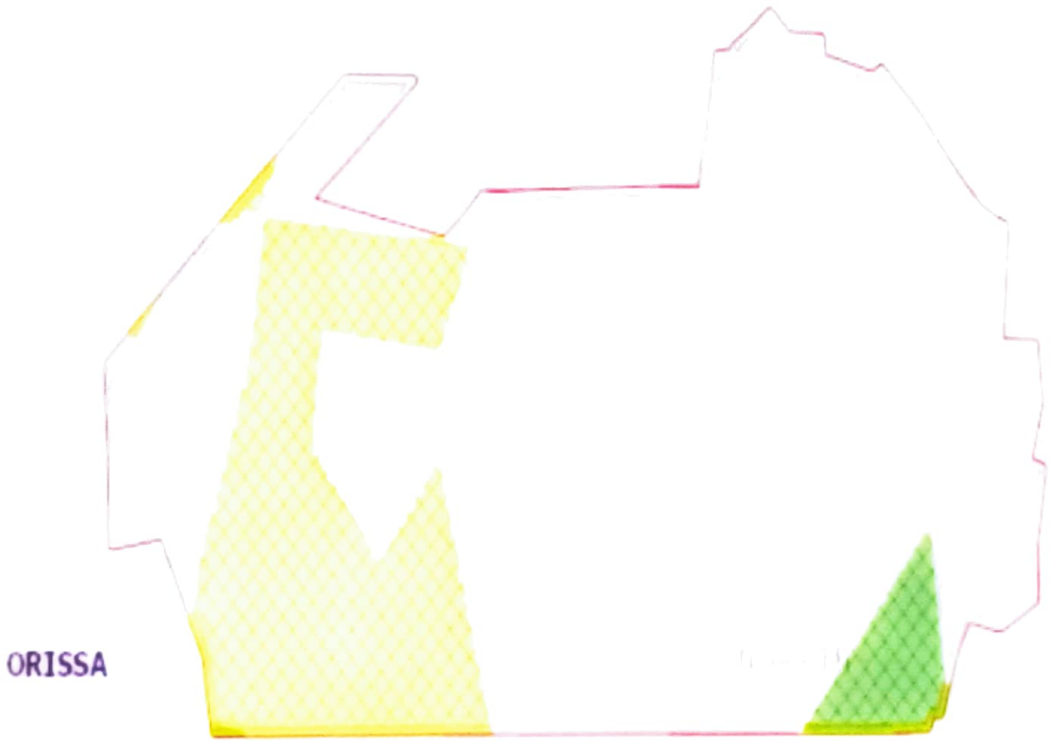
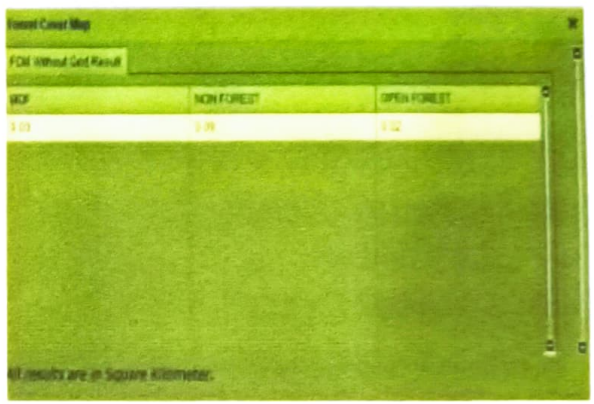


Plate-VI

DSS Map of the site in Nuagaon village under KhandapadaTahasil :





Temperature :
The area experiences cold weather between November – January when the temperature drops to less than 13° C. the temperature rises steadily from January onwards reaching 32° C to 45° C in summer (May). So it is under tropical condition with limited rainy days.

Climate& Rainfall:
The area has tropical climate with monsoon rains from June to September and occasional rains during the autumn. This area also experiences occasional gutsy wind to heavy thunderstorms during summer season (April to June). Monsoon breaks out in early to middle of June and continues up to September. The average annual rainfall is about 1600 mm under the influence of south west monsoon. On average, there are about 100 rainy days. The humidity is maximum in the month of July to August (90%) and minimum in February (36%). The wind velocity varies between 40 KMPH and 80 KMPH, although occasional higher values have also been reported. Lightening incidents are rarely reported in this area.

Plantation Model:
The identified site over 12.210 Ha. in Nuagaon village includes a blank patch of degraded revenue forests of 10 ha without any forest vegetation. The topography is plain with gentle slopes. Thus, it is proposed to take up plantation under Block plantation mode with 1600 seedling/ha at a spacing of 2.5 m. X 2.5 m. on 10 ha totalling to 16000 no.s and SSO to be taken up in the balance surveyed area of 2.210 Ha.

Special Objectives of Compensatory Afforestation Scheme are as follows :

- To restrict the degradation by reducing the biotic interference and encroachment to barest minimum and reverse the trend towards the process of restoration of vegetation way of Block plantation with native species.
- To develop the forest by providing site-specific silvicultural treatment to the plantation and degraded open forest areas of 2 ha. and the nala banks about 01 ha.
- To facilitate the boosting of natural regeneration wherever possible and ensure their establishment.
- To take up appropriate soil moisture conservation (SMC) measures to improve the soil and moisture regime of the site and to prevent siltation in the adjoining corn fields, and nala.
- To improve the bio-diversity.
- To meet the need of the local villagers with regard to firewood and small timber depending upon the productivity.
- To prevent encroachment and trespass by local people.
- To restrict further land degradation by direct hit of rain water causing soil erosion, gully formation etc.
- To provide a green clothing to the area by means of core plantation and natural regeneration in order to reduce soil erosion and to save the catchment area of river Mahanadi.
- To provide food to the small herbivores residing in the nearby forest blocks.

Item of works to be taken up :

To achieve the above objectives, the following items of works are mainlyprescribed to be taken up:

- Survey & Demarcation.
- Fencing.
- Site Clearance alignment stacking, pitting and Planting.
- Soil & Moisture Conservation Measures.
- Protection of Plantation
- EPA (Entry Point Activity)
- Monitoring & Evaluation Mechanism.

Survey & Demarcation :

The identified area has been surveyed by DGPS and also map has been prepared. DGPS Coordinates of Survey Stations of Compensatory Afforestation area is given in the following table. The area will be demarcated with RCC pillars of size 1.0 m x 10 cm x 10 cm for clear identification of the area. Geo co-ordinates of boundary with distances from pillar to pillar of 12.210 ha. of the CA land site at Nuagaon village under Khandapada Range are furnished below.

Sl. No. of Pillar	Latitude	Longitude	Pillar to Pillar	Distance In Mtr
1	85°06'24.66972"	20°17'26.95704"	1 TO 2	41 mtr
2	85°06'26.06760"	20°17'26.95704"	2 TO 3	79 mtr
3	85°06'24.00264"	20°17'25.28952"	3 TO 4	79 mtr
4	85°06'26.65296"	20°17'24.70380"	4 TO 5	30 mtr
5	85°06'27.40896"	20°17'25.36944"	5 TO 6	128 mtr
6	85°06'31.81356"	20°17'25.43136"	6 TO 7	60 mtr
7	85°06'32.12964"	20°17'27.35088"	7 TO 8	9 mtr
8	85°06'32.43708"	20°17'27.37176"	8 TO 9	29 mtr
9	85°06'33.20028"	20°17'27.95892"	9 TO 10	15 mtr
10	85°06'33.58368"	20°17'27.61296"	10 TO 11	19 mtr
11	85°06'34.25400"	20°17'27.58776"	11 TO 12	8 mtr
12	85°06'34.26804"	20°17'27.31344"	12 TO 13	30 mtr
13	85°06'35.27532"	20°17'27.06108"	13 TO 14	6 mtr
14	85°06'35.46216"	20°17'27.16692"	14 TO 15	30 mtr
15	85°06'36.20412"	20°17'26.50848"	15 TO 16	54 mtr
16	85°06'37.44900"	20°17'25.18080"	16 TO 17	17 mtr
17	85°06'37.98036"	20°17'24.94104"	17 TO 18	51 mtr
18	85°06'37.88604"	20°17'23.28180"	18 TO 19	20 mtr

Sl. No. of Pillar	Latitude	Longitude	Pillar to Pillar	Distance In Mtr
19	85°06'38.57976"	20°17'23.26776"	19 TO 20	24 mtr
20	85°06'38.68848"	20°17'22.48260"	20 TO 21	27 mtr
21	85°06'38.45988"	20°17'21.62868"	21 TO 22	9 mtr
22	85°06'38.73960"	20°17'21.50016"	22 TO 23	32 mtr
23	85°06'38.55996"	20°17'20.46660"	23 TO 24	25 mtr
24	85°06'38.56860"	20°17'19.64436"	24 TO 25	24 mtr
25	85°06'37.84320"	20°17'19.24728"	25 TO 26	20 mtr
26	85°06'37.18368"	20°17'19.38156"	26 TO 27	45 mtr
27	85°06'36.61812"	20°17'18.03372"	27 TO 28	5 mtr
28	85°06'36.45540"	20°17'18.06252"	28 TO 29	7 mtr
29	85°06'36.36684"	20°17'17.85408"	29 TO 30	104 mtr
30	85°06'32.78520"	20°17'17.84580"	30 TO 31	103 mtr
31	85°06'29.22840"	20°17'17.85372"	31 TO 32	99 mtr
32	85°06'25.80156"	20°17'17.86092"	32 TO 33	105 mtr
33	85°06'22.19760"	20°17'17.86884"	33 TO 34	32 mtr
34	85°06'22.01220"	20°17'18.91104"	34 TO 35	58 mtr
35	85°06'21.14820"	20°17'20.59548"	35 TO 36	29 mtr
36	85°06'20.14668"	20°17'20.45148"	36 TO 37	77 mtr
37	85°06'20.02788"	20°17'22.94592"	37 TO 38	91 mtr
38	85°06'22.32792"	20°17'24.95868"	38 TO 1	92 mtr

Fencing :

To protect the plantation from grazing, encroachment and other biotic interferences, it is proposed to provide **Angle iron chain link wire mesh** fencing along about 1.714 km periphery of the site. The approved cost estimate for Angle iron chain link wire mesh fencing with 10 years maintenance has been provided as **Annexure-X (Page No. 61).**Assistance of V.S.S is necessary for better social fencing for protection of plantation.

Site Clearance & Planting :

Plantation shall be taken up over 10.0 ha with planting model of core plantation @ 1600 plants per hectares at a spacing of 2.5 m x 2.5 m. totalling to 16000 nos. of plants. SSO will be taken up over balance 2.210 ha of area as per the cost norm mentioned in Annexure-VII. All post planting measures like casualty replacement, soil working, manuring, fire protection etc. for the planted species will be undertaken as per approved cost norm of core plantation @ 1600 plant per ha. (**Annexure-IV**) Page no- . The materials so removed from the site clearance and SSO to be distributed among the villagers/VSS people. A register of distribution to be maintained at Range level.

Species:

Considering the openness and degraded land condition of the site preference should be given on hardy indigenous, light demander, drought hardy and fodder species. Considering the topography, soil and moisture availability of the plantation area, the following species will be planted.

Sl.no	Scientific Name of species	Common name	Sl.no	Scientific Name of species	Common name
1	*Terminalia arjuna*	Arjun	10	*Dalbergia sissoo*	Sissoo
2	*Azadirachta indica*	Neem	11	*Gmelina arborea*	Gambhari
3	*Pongamia pinata*	Karanja	12	*Dendrocalamusstrictus*	Salia Bamboo
4	*Emblicaoficinalis*	Amla	13	*Terminalia tomentosa*	Asana
5	*Terminalia belerica*	Bahada	14	*Madhuca indica*	Mahul
6	*Albizia lebbeck*	Sirisa	15	*Acacia catechu*	Khaira
7	*Zizyphusmauritania*	Barakoli	16	*Mangifera indica*	Mango
8	*Syzygiumcumini*	Jamun	17	*Ficus benghalensis*	Bara
9	*Ficus religiosa*	Pipal	18	*Artocarpus heterophyllous*	Panasa

Soil and Moisture Conservation Works :

Rain water harvesting, run off management and enhancement of percolation are the cardinal activities to improve infiltration of water for re-charging of ground aquifer. It enhances the moisture availability to the vegetation in forest eco-system. Soil and moisture conservation activities have been taken up in forestry in various scales and levels as a subsidiary activity and dovetailed to plantation and other afforestation activities. In order to improve water availability in Forests, it is to be practiced as core forestry activity independent of other forestry interventions.

The strategy adopted for rain water harvesting in forest areas is enumerated below.

1. **Forest Floor Treatment :**

The forest floor is the catchment where the precipitation touches the ground and subsequently is drained through the drainage line. It forms the focus area in the rain water harvesting. Permissible interventions will not only capture the rain water but also enhance the retention period ultimately leading to increased infiltration. The Staggered Trenches primarily aims to break the run off. In a Ha. of land up to 300 nos. of Staggered Trenches will be created. The dimension of the Staggered Trenches will be 2.5mt. X 0.5 mt X 0.5 mt. It will help in conserving rain waters of that region and facilitate its percolation. Adequate care should be taken during alignment of such trenches so that gullies are not formed by the water flowing downhill from the edges of the Trench. The identified nalas will be treated, from top to bottom (ridge to valley) approach as per the specific site condition, which will retard the velocity of run-off and be helpful in recharging as well as feeding ground water to the plants planted below it.

- **Drainage line Treatment** :

The micro catchment drains the water into drainage line and rain water flows in varying velocity this can be prevented by erecting small vegetative barriers and guided bunds. The primary objective of drainage line treatment is therefore, centres around reducing the velocity and increasing the retention of water at various levels. It is therefore, required to have appropriate interventions along drainage line to alter the pattern of rain water flow.

- **Loose Boulder Check Dams (LBCD)** :

This structure will be created across the drainage line for retention of runoff and reduction of velocity. Such structures should preferably have top width of one meter with upstream slope of 1:1 and downstream slope of 1:5. The dimensions of each structure are dependent on several factors such as gradient, catchment size, etc. Hence, designs will be fixed with appropriate dimensions as per the size of the seasonal nallas and deep gullies on which it will be constructed.

- **LBCD with Wire Mesh:**

At very special locations, such a structure should be planned where boulders will be stacked on steps and width of the drainage line is very large. In such structure, the actual cost of the wire mesh will be added.

- **Strategy for Implementation:**

In order to achieve the objective and implement the programme efficiently, a well-planned strategy is indispensable. The entire area will be treated with major focus on the drainage line treatment by providing LBCD in the major nalas, gullies, water channels of required size within the prescribed cost norm.

The detail cost norm of SMC is given in **Annexure- VI**.

DRAINAGE LINE TREATMENT

LOOSE BOULDER CHECK DAM

A. Size- 10' X 10' X 5'

a) Requirement of boulder (**Procured from quarry**)

½ (10' + 4') x 10' x 5' = 350cft or 9.90 cum

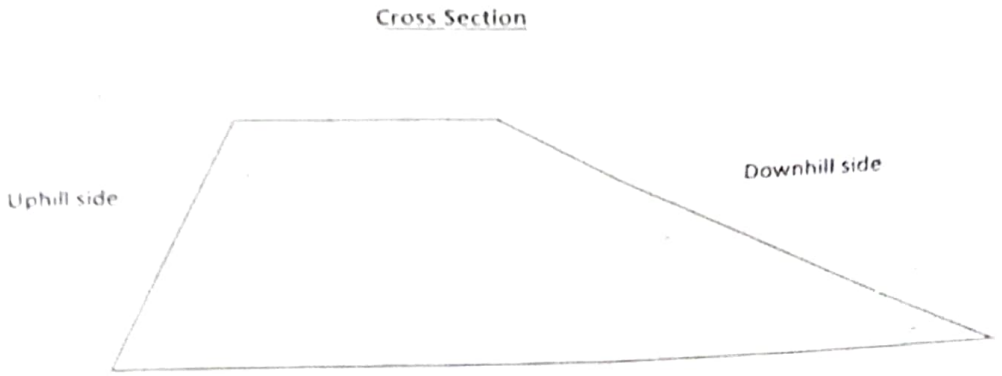
ii) Labour for construction of LBCD for 1 cum

Mulia 1.04 No.

Mason special 0.17 No.

Stone packer 0.35 No.

Design of LBCD



Peoples Participation :

In the recent times, no scheme shall be effective if the local villagers are not involved in the implementation of the scheme itself. The villagers who are having a right on the NTFP items in the adjoining forest area are to be associated with the implementation of the scheme at all different levels. For that, Van SamrakhyanSamiti (VSS) is proposed to be constituted in all the villages around the Compensatory Afforestation site. The villagers are to be motivated, inspired and above all, explained the benefits they will be getting, if plantation is protected by them.

EPA (Entry Point Activity) :

To build the confidence of the local public and smooth execution of the works, Entry-Point Activities in compliance to Govt Resolution of 1993 and 2011, are proposed to orient the community members towards thrift and credit activities. EPA will be taken up after discussion with the nearby villages surrounding the CA site at Nuagaon.

Monitoring & Evaluation Mechanism :

The scheme shall be effective for a period of 10 years. The cost will be deposited by the user agency and work will be executed by the Divisional Forest Officer, Nayagarh Division with his staff and all prescribed records are to be maintained. In addition to internal monitoring by Forest Officers of State Government, a Monitoring Committee under item no. 3.4 (iii) of consolidated guidelines under F.C Act 1980 issued by MoEF, shall be established with a nominee of the Central Government to oversee that the stipulations, including those pertaining to Compensatory Afforestation are carried out for Revenue forest land.

Transfer / Mutation and notification of revenue forest land as PF / RF:

The identified 12.210 ha. of revenue forest land in Nuagaon mouza under Khandapada Tahasil shall be transferred and mutated in the name of State Forest Department i.e DFO Nayagarh forest division after stage-I forest clearance of the project is obtained in pursuance to letter no. 19462 dt. 06.11.2021 of Forest, Environment & Climate Change Department Govt. Of Odisha. The above land shall be notified as RF/PF under Odisha Forest Act 1972 and shall be managed by the State Forest Department. (**Annexure-VI**).

ANNEXURE- IV

COST NORM FOR PLANTATION

Cost Norm for Compensatory Afforestation @ 1600 Seedlings /Ha. (18 months old seedling) 10.00 Ha. in Nuagaon Revenue area of Khandapada Range
Wage Rate Rs.333/-per Mandays

BASE COST NORM FOR COMPENSATORY AFFORESTATION (BLOCK PLANTATION) @ 1600 PLANTS PER HECTARE (18 months old seedling) WAGE RATE Rs- 333/- 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
0th Year (Advance work) Pre-Planting Operation						
1	Survey, Demarcation and Pillar posting	Nov/Dec	2	666	0	666
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	333	100	433
3	Site preparation (Cleaning & removal of debrises)	Nov/Dec	12	3996	0	3996
4	Creation of 4.00 mt wide Inspection Path	Feb/Mar	1	333	0	333
5	Alignment and stacking	Feb/Mar	2	666	0	666
6	Digging of pits (45 cm x 45 cm X 45 cm) in hard and gravelly soil	Feb/Mar	64	21312	0	21312
7	Construction of Temporary Labour Shed, Drinking water facility and First-Aid etc.	Jan/Mar	0	0	3500	3500
	Total		**82**	**27306**	**3600**	**30906**

1st Year/Planting Year						
1	Refilling of pits by altering the dug-out soil of the pits, application of Organic compounds/ CDM/ FYM & mixing the same properly.	Jun/Jul	12	3996	8000	11996
2	Transportation of 18 months old poly pot 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. (1760 nos.)	Jul/Aug	0	0	10560	10560
3	Watering the poly pot seedlings at planting site	Jul/Aug	3	999	0	999
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 properly around the planted seedlings.	Jul/Aug	36	11988	0	11988
5	Cost of Fertilizer & Insecticide (a)NPK/Bio-fertilizer @ 50 gms/plant as basal dose = 80kg @ Rs.30/- per kg = Rs. 2400.00 (b) Urea/Vermi compost/Mo Khata/any other fertilizer in two subsequent doses @ Rs. 1,200.00 (c) Insecticide/ Bio-pesticide @ 5 gms/plant= 8 kg @ Rs.150/- per kg = Rs. 1200.00	Jul/Aug	0	0	4800	4800
6	Casualty Replacement @ 10% (160 nos.)	Jul/Aug	4	1332	0	1332
7	1st weeding & Manuring	Aug/Sept	15	4995		4995

8	2nd Weeding, Soil working (1mt. diameter around the plants) and Manuring	Oct/Nov	20	6660	0	6660
9	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	999	0	999
10	Watch & Ward including watering as per requirement	Aug-Mar	12	3996	0	3996
	Total		**105**	**34965**	**23360**	**58325**
2nd Year Maintenance						
1	Transportation of 160 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs.6/- per seedlings	Jul	0	0	960	960
2	Causality replacement- 10%	Jul	4	1332	0	1332
3	Cost of Fertilizer & Insecticide- A) Cost of Insecticide/ Bio-pesticide @ 5 gms/plant = 0.8 Kg @ Rs.150/- per kg = Rs.120/- B)Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer @Rs. 4486/-	Aug/Sept	0	0	4606	4606
4	Weeding (Complete weeding), Manuring & Soil working (1mt. diametre around the plants)	Sep/Oct	20	6660	0	6660
5	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	999	0	999
6	Watch & Ward including watering as per requirement	Apr-Mar	18	5994	0	5994
7	Maintenance of Temporary Labour Shed, Drinking water facility and First-Aid etc.				1000	1000
	Total		**45**	**14985**	**6566**	**21551**

3rd Year Maintenance						
3	Cost of Fertilizer Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer	Sept/Oct	0	0	4486	4486
4	Weeding, Manuring & Soil working, (1mt. diameter around the plants)	Sep/Oct	20	6660	0	6660
5	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	999	0	999
6	Watch & Ward including watering as per requirement	Apr/Mar	18	5994	0	5994
7	Maintenance of Temporary Labour Shed, Drinking water facility and First-Aid etc.	Apr/Mar			1000	1000
	Total		**41**	**13653**	**5486**	**19139**
4th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	999	0	999
2	Watch & Ward	Apr-Mar	18	5994	0	5994
	Total		**21**	**6993**	**0**	**6993**
5th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	999.00	0	999
2	Watch & Ward	Apr/Mar	18	5994.00	0	5994
	Total		**21**	**6993**	**0**	**6993**

6th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	999.00	0	999.0
2	Pruning of branches, Singling out of multiple shoots	Jan/Mar	5	1665.00	0	1665.0
3	Watch & Ward	Apr/Mar	18	5994.00	0	5994.0
	Total		**26**	**8658**	**0**	**8658.0**
7th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	999.00	0	999
2	Watch & Ward	Apr/Mar	18	5994.00	0	5994
	Total		**21**	**6993**	**0**	**6993**
8th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	999.00	0	999
2	Watch & Ward	Apr/Mar	18	5994.00	0	5994
	Total		**21**	**6993**	**0**	**6993**
9th Year Maintenance						
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	999.00	0	999
2	Watch & Ward	Apr/Mar	18	5598.00	0	5598
	Total		**21**	**6597**	**0**	**6597**
10th Year Maintenance						
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	5994.00	0	5994
	Total		**21**	**6927**	**0**	**6927**

Year wise Abstract of Cost Norm (showing seedling cost separately)							
Sl. No	Year	No. person days	Labour cost @ Rs. 333/- per day (Rs)	Material Cost	Monitoring, Evaluation, Learning, Documentation and Other Contingency (5%) of (4+5)	Cost of Seedlings @Rs.53.048 per seedlings	TOTAL COST (in Rs)
1	2	3	4	5	6	7	8
1	0th year	82	27306	3600	1545	0	32451
2	1st year	105	34965	23360	2916	93364	154605
3	2nd year	45	14985	6566	1078	8488	31117
4	3rd year	41	13653	5486	957	0	20096
5	4th year	21	6993	0	350	0	7343
6	5th year	21	6993	0	350	0	7343
7	6th year	26	8658	0	433	0	9091
8	7th year	21	6993	0	350	0	7343
9	8th year	21	6993	0	350	0	7343
10	9th year	21	6993	0	350	0	7343
11	10th year	21	6993	0	350	0	7343
Total:		**425**	**141525**	**39012**	**9029**	**101852**	**291418**
Total requirement (for 10.00 ha)							**2914180.00**

ANNEXURE- V

COST NORM FOR FENCING

Cost Norm for Fencing using Angle Iron & Chain Link Wire Mesh in 12.210 Ha in Nuagaon Revenue area of Khandapada Range (250 Rmt/Ha)
Wage Rate Rs.333/-per Mandays

Fencing for Compensatory Plantation raised outside the Forest Areas using Angle Iron & Chain Link wire mesh (250 Rmt/ Ha.)						
WAGE RATE Rs- 333/- 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	805.86	0.0	805.9
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 cost painting of iron angel pole over a coat of primer using good quality enamale 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	Transportation of Chain link mess, Iron angle, Straighening & tieing of chain link mess etc. @ 2% of the total cost.				5,600.0	5,600.0
	TOTAL		**2.42**	**805.86**	**2,84,857.4**	**2,85,663.3**
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						
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. 333/- per day**	**Material Cost**	**Total cost (Rs.)**
1	0th year	2.42	805.9	284857.4	285663.3
2	1st year	0.0	0.0	0.0	0.0
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**	**805.86**	**383857.4**	**3,84,663.3**
Requirement for 12.210 Ha					**4696738.89 or 4696739.00**

ANNEXURE- VI

COST NORM FOR SMC

SMC Works Model-C			
Cost Norms for creation of Compensatory Afforestation with Stabilization of Soil & Conservation of Moisture (over 10.0 Ha)			
WAGE RATE Rs- 333/- PER DAY			
Sl.No	**Item of Works**	**Preferable Period of Execution**	**Total Cost**
0th Year (Pre-Planting Operation)			
1	Nil		0
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.	21,190
2nd Year			
3	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,178
3rd Year			
4	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,178
4th Year			
5	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,178
4th Year			
5	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,178
	Total		**33,902.0**

Abstract					
Sl. No	**Year**	**No. person days**	**Labour cost @ Rs. 333/-per day**	**Material Cost**	**Total cost (Rs.)**
1	0th year	0.0	0.0	0.0	0.0
2	1st year	0.0	0.0	21,190	21,190.00
3	2nd year	0.0	0.0	3,178	3,178.00
4	3rd year	0.0	0.0	3,178	3,178.00
5	4th year	0.0	0.0	3,178	3,178.00
6	5th year	0.0	0.0	3,178	3,178.00
Total		**0.00**	**0.00**	**33,902.0**	**33,902.0**
Total Requirement for10.0 Ha					**3,39,020.00**

Different types of SMC structures will be taken up as per the scope & requirements of the plantation site out of the design & specification of different structures.

ANNEXURE-VII

COST NORM FOR SSO

Cost norm for SSO Over 2.210 ha. @Rs 333/- per mandays.

Sl. No.	Item of work	Period	Person days	Labour Cost @Rs 333/- per mandays	Material cost	Total Cost	For 2.210 Ha
1	2	3	4	5	6	7	8
	0TH YEAR OPERATION						
1	Survey, Demarcation and Pillar posting, GPS reading with mapping	Nov-Dec	2	666	0	666	1471.86
2	Site preparation	Nov-Dec	2	666	0	666	1471.86
3	Cutting of high stumps	Nov-Dec	5	1665	0	1665	3679.65
	Sub total		**9**	**2997**	**0**	2997	**6623.37**
4	Monitoring & supervision charges 5% of the total cost					150	331.5
	Grand Total:		**9**	**2997**	**0**	3147	**6954.87**
	1ST YEAR OPERATION						
1	Silvicultural operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sept - Oct	15	4995	0	4995	11038.95
2	Soil Conservation Measures 9Stagger trenches of diameter 2m x 0.5m x 0.5m @ 60 Nos per Ha) or its equivalent	Sept - Oct	20	6660	0	6660	14718.6
3	Fire line Tracing and Inspection path	Feb - March	3	999	0	999	2207.79
4	Watch and ward	Aug - March	5	1665	0	1665	3679.65
5	Contingency and Unforeseen expenditures		0	0	500	500	1105
	Sub total		**43**	**14319**	**500**	**14819**	**32749.99**
6	Monitoring & supervision charges 5% of the total cost					741	1637.61

	Grand Total:		**43**	**14319**	**500**	**15560**	**34387.6**
			2ND YEAR OPERATION				
1	Soil Conservation Measures (renovation of stagger trenches etc.)	Sept - Oct	8	2664	0	2664	5887.44
2	Fire line tracing and inspection path	Feb - March	1	333	0	333	735.93
3	Watch and ward whole year	April- March	7	2331	0	2331	5151.51
4	Contingency and Unforeseen expenditures			0	300	300	663
	Sub total		**16**	**5328**	**300**	**5628**	**12437.88**
5	Monitoring & supervision charges 5% of the total cost					281	621.01
	Grand Total:		**16**	**5328**	**300**	**5909**	**13058.89**
			3RD YEAR OPERATION				
1	Fireline tracing and inspection path	Feb - March	1	333	0	333	735.93
2	Watch & ward (whole Year)	April- March	2	666	0	666	1471.86
3	Contingency and Unforceen expenditures				100	100	221
	Sub total		**3**	**999**	**100**	**1099**	**2428.79**
4	Monitoring & supervision charges 5% of the total cost					55	121.55
	Grand Total:		**3**	**999**	**100**	**1154**	**2550.34**
			4TH YEAR OPERATION				
1	Fireline tracing and inspection path	Feb - March	1	333	0	333	735.93
2	Watch & ward (whole Year)	April- March	2	666	0	666	1471.86
3	Contingency and Unforceen expenditures				100	100	221
	Sub total		**3**	**999**	**100**	**1099**	**2428.79**
4	Monitoring & supervision charges 5% of the total cost					55	121.55
	Grand Total:		**3**	**999**	**100**	**1154**	**2550.34**

			5TH YEAR OPERATION				
1	Fire line tracing and inspection path	Feb - March	1	333	0	333	735.93
2	Watch & ward (whole Year)	April- March	2	666	0	666	1471.86
3	Contingency and Unforceen expenditures				100	100	221
	Sub total		**3**	**999**	**100**	**1099**	**2428.79**
4	Monitoring & supervision charges 5% of the total cost					55	121.55
	Grand Total:		**3**	**999**	**100**	**1154**	**2550.34**
			6TH YEAR OPERATION				0
1	Fire line tracing and inspection path	Feb - March	1	333	0	333	735.93
2	Watch & ward (whole Year)	April- March	2	666	0	666	1471.86
3	Contingency and Unforceen expenditures				100	100	221
	Sub total		**3**	**999**	**100**	**1099**	**2428.79**
4	Monitoring & supervision charges 5% of the total cost					55	121.55
	Grand Total:		**3**	**999**	**100**	**1154**	**2550.34**
			7TH YEAR OPERATION				0
1	Fire line tracing and inspection path	Feb - March	1	333	0	333	735.93
2	Watch & ward (whole Year)	April- March	2	666	0	666	1471.86
3	Contingency and Unforceen expenditures				100	100	221
	Sub total		**3**	**999**	**100**	**1099**	**2428.79**
4	Monitoring & supervision charges 5% of the total cost					55	121.55
	Grand Total:		**3**	**999**	**100**	**1154**	**2550.34**

			8TH YEAR OPERATION				
1	Fire line tracing and inspection path	Feb - March	1	333	0	333	735.93
2	Watch & ward (whole Year)	April- March	2	666	0	666	1471.86
3	Contingency and Unforeseen expenditures				100	100	221
	Sub total		**3**	**999**	**100**	**1099**	**2428.79**
4	Monitoring & supervision charges 5% of the total cost					55	121.55
	Grand Total:		**3**	**999**	**100**	**1154**	**2550.34**
			9TH YEAR OPERATION				
1	Fire line tracing and inspection path	Feb - March	1	333	0	333	735.93
2	Watch & ward (whole Year)	April- March	2	666	0	666	1471.86
3	Contingency and Unforeseen expenditures				100	100	221
	Sub total		**3**	**999**	**100**	**1099**	**2428.79**
4	Monitoring & supervision charges 5% of the total cost					55	121.55
	Grand Total:		**3**	**999**	**100**	**1154**	**2550.34**
			10TH YEAR OPERATION				
1	Fire line tracing and inspection path	Feb - March	1	333	0	333	735.93
2	Watch & ward (whole Year)	April- March	2	666	0	666	1471.86
3	Contingency and Unforeseen expenditures				100	100	221
	Sub total		**3**	**999**	**100**	**1099**	**2428.79**
4	Monitoring & supervision charges 5% of the total cost					55	121.55
	Grand Total:		**3**	**999**	**100**	**1154**	**2550.34**
	G.Total for 10 years:		**92**	**30636**	**1600**	**33848**	**74804.08**

Abstract					
Sl.no	Year	No. person days	Labour cost @ Rs. 333/- per day	Material Cost	Total cost (Rs.)
1	0^{th} Year	9	2997	0	3147
2	1^{st} Year	43	14319	500	15560
3	2^{nd} Year	16	5328	300	5909
4	3^{rd} Year	3	999	100	1154
5	4^{th} Year	3	999	100	1154
6	5^{th} Year	3	999	100	1154
7	6^{th} Year	3	999	100	1154
8	7^{th} Year	3	999	100	1154
9	8^{th} Year	3	999	100	1154
10	9^{th} Year	3	999	100	1154
11	10^{th} Year	3	999	100	1154
Grand total		92	30636	1600	33848
Total for 2.210 Ha					74804.08 or 74804.00

Total cost of the Scheme of CA over 12.210 ha in revenue forest land in Nuagaon village under Khandapada Range.

Sl. No.	Components	Amount (in Rs)
1	Cost of Plantation (over 10.0 Ha)	**29,14,180.00**
2	Cost of fencing (over 12.210 Ha)	**46,96,739.00**
3	Cost of SMC (over 10.0 Ha)	**3,39,020.00**
4	Cost of SSO (over 2.210 Ha)	**74,804.00**
5	Cost of EPA	**4,37,127.00**
TOTAL		**84,61,870.00**

(Rupees Eighty Four Lakh Sixty One Thousand Eight Hundred Seventy Only)

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Nayagarh, Division

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Nayagarh Division

TOTAL FINANCIAL REQUIREMENT FOR THE CA SCHEME.

Sl. No.	Name of the site	Name of the range	Cost of plantation	Cost of SMC	Cost of Fencing	Cost of SSO	Cost of EPA	Total
1	Bankamunda RF	Gania Range	34,35,919.00	13,97,055.00	37,08,255.00	0	5,15,388.00	**90,56,617.00**
2	**Revenue Forest in Nuagaon**	**Khandapada Range**	**29,14,180.00**	**3,39,020.00**	**46,96,739.00**	**74804.00**	**4,37,127.00**	**84,61,870.00**
	GRAND TOTAL		**63,50,099.00**	**17,36,075.00**	**84,04,994.00**	**74,804.00**	**9,52,515.00**	**1,75,18,487.00**

(Rupees one crore seventy-five lakhs eighteen thousand four hundred eighty-seven) only.

This amount will be paid by the user agency and the work will be executed by DFO , Nayagarh with his staffs for a period of 10 years.

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Nayagarh Division

Matrix for (SMC)

In Rupees

Sl. NO.	Commencement 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**

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Nayagarh Division

ANNEXURE- IX

Matrix for Fencing Model F-1 (Bamboo Twig)

In Rupees

Sl. NO.	Commence-ement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	Total Cost
Base Norm		**0**	**45759**	**7720**	**11895**	**11895**	**11895**											
1	2021-22	0	48047	8511	13770	14458	15181											99967
2	2022-23		0	50449	8937	14459	15181	15940										104966
3	2023-24			0	52971	9384	15182	15940	16737									110214
4	2024-25				0	55620	9853	15941	16737	17574								115725
5	2025-26					0	58401	10346	16738	17574	18453							121512
6	2026-27						0	61321	10863	17575	18453	19376						127588
7	2027-28							0	64387	11406	18454	19376	20345					133968
8	2028-29								0	67606	11976	19377	20345	21362				140666
9	2029-30									0	70986	12575	20346	21362	22430			147699
10	2030-31										0	74535	13204	21363	22430	23552		155084

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Nayagarh Division

ANNEXURE - X

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

Sl. NO.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost In Rupees
Base Norm		285610	0	11000	11000	11000	110000	11000	110000	110000	110000	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									462316
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	17918	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

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Nayagarh Division

ANNEXURE- XI

Matrix for Model-I B Conventional CA Plantation (AR) 1600 plants per Ha

In Rupees

Sl. NO.	Commencement Year	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		30500	147361	29639	19148	6857	6857	8490	6857	6857	6857	6857											
1	2021-22	30500	154729	32674	22166	8335	8751	11377	9648	10131	10637	11169											310117
2	2022-23		32025	162465	34308	23274	8752	9189	11946	10130	10638	11169	11727										325623
3	2023-24			33626	170588	36023	24438	9190	9648	12543	10637	11170	11727	12313									341903
4	2024-25				35307	179117	37824	25660	9650	10130	13170	11169	11729	12313	12929								358998
5	2025-26					37072	188073	39715	26943	10133	10637	13829	11727	12315	12929	13575							376948
6	2026-27						38926	197477	41701	28290	10640	11169	14520	12313	12931	13575	14254						395796
7	2027-28							40872	207351	43786	29705	11172	11727	15246	12929	13578	14254	14967					415587
8	2028-29								42916	217719	45975	31190	11731	12313	16008	13575	14257	14967	15715				436366
9	2029-30									45062	228605	48274	32750	12318	12929	16808	14254	14970	15715	16501			458186
10	2030-31										47315	240035	50688	34388	12934	13575	17648	14967	15719	16501	17326		481096

Divisional Forest Officer
Nayagarh Division

ANNEXURE-XII

Matrix for ANR-200 Plants/ Ha

Sl. NO.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost In Rupees
Base Norm		9400	21568	8006	6700	4800	4800	4800	4800	4800	4800	4800											
1	2021-22	9400	22646	8826	7756	5834	6126	6432	6754	7092	7446	7819											96131
2	2022-23		9870	23778	9267	8144	6126	6432	6754	7092	7447	7818	8210										100938
3	2023-24			10364	24967	9730	8551	6432	6754	7092	7447	7819	8209	8621									105986
4	2024-25				10882	26215	10217	8979	6754	7092	7447	7819	8210	8619	9052								111286
5	2025-26					11426	27526	10728	9428	7092	7447	7819	8210	8621	9050	9505							116852
6	2026-27						11997	28902	11264	9899	7447	7819	8210	8621	9052	9503	9980						122694
7	2027-28							12597	30347	11827	10394	7819	8210	8621	9052	9505	9978	10479					128829
8	2028-29								13227	31864	12418	10914	8210	8621	9052	9505	9980	10477	11003				135271
9	2029-30									13888	33457	13039	11460	8621	9052	9505	9980	10479	11001	11553			142035
10	2030-31										14582	35130	13691	12033	9052	9505	9980	10479	11003	11551	12131		149137

Divisional Forest Officer
Nayagarh Division

Annexure-XIII

F. No. 5-2/2017- FC
Government of India
Ministry of Environment, forests and Climate Change
(FC Division)

Indira Paryavaran Bhawan,
Aliganj, Jor Bag Road,
New Delhi - 110003

Dated: 28th March, 2019

To,

The Principal Secretary/Secretary (Forests),
All State/UT Governments.

Sub: Handbook of guidelines for effective and transparent implementation of the provisions of Forest (Conservation) Act, 1980.

Sir,

In supersession of all guidelines issued in the past, a handbook of guidelines is issued for effective and transparent implementation of the provisions of Forest (Conservation) Act, 1980. All the provisions enshrined in these guidelines will be applicable from 8th March 2019 onwards. The copy of comprehensive guidelines is available on Ministry's website: www.parivesh.nic.in.

This issue with the approval of competent authority.

Yours faithfully,

(Sandeep Sharma)
Assistant Inspector General of Forest (FC)

Copy to:

1. Prime Minister's Office, New Delhi.
2. Secretary, Ministry of Mines/Coal/Steel/MoRTH/MoPNG/MHA/MoP/MoTA, Government of India, New Delhi.
3. Principal Chief Conservator of Forests, all State/UT Governments.
4. Nodal Officer (FCA), all State/ UT Governments.
5. All Regional Offices, Ministry of Environment, Forest and Climate Change (MoEF&CC), GoI, New Delhi.
6. Joint Secretary in-charge, Impact Assessment Division, MoEF&CC, GoI, New Delhi.
7. All JGF/ DIGF/AIGF in MoEF&CC, GoI, New Delhi.
8. Sr. Director (Technical), NIC, MoEF&CC **with a request to place a copy of the letter on website of this Ministry.**
9. PPS to Secretary (EF&CC)/DGF&SS/ADGF(FC)/ADGF(Wildlife), MoEF&CC, New Delhi.
10. Guard File.

(Sandeep Sharma)
Assistant Inspector General of Forest (FC)

(viii) In case of bifurcation of States, during processing of proposals seeking prior approval of Central Government under the Forest (Conservation) Act, 1980, if the land identified for creation of CA is within the undivided State, and the forest land proposed to be diverted does not fall in the same newly created State, proposals shall continue to be processed without insisting on identification of non-forest land for creation of compensatory afforestation in the State in which the forest land proposed to be diverted is located. In such cases, if Central Government agrees In-principle for diversion of forest land for non-forest purpose, it shall be subject to a condition that amounts realized from the user agency for creation and maintenance of compensatory afforestation shall be transferred from the State with which the money has been deposited to the State in which the land identified for creation of compensatory afforestation is located. In case for some valid and cogent reason, cost of creation and maintenance of compensatory afforestation needs to be revised, additional amount, if any, will be realized from the concerned user agency and transferred to the State where CA is proposed. All other levies realized from the user agency in lieu of diversion of such forest land will however be retained in the State in which the forest land proposed to be diverted is located.

(ix) Non-forest land, not coming under the purview of FC Act, 1980 reclaimed by any user agency by planting native species of a minimum of 1000 trees per hectare and of minimum 10 cm diameter at breast height can be considered as CA in lieu of forest land to be diverted, without levying planting cost.The ownership of the non-forest land identified for the purpose of CA is to be transferred and mutated in favour of the State/UT Forest Department and declared as RF/PF under the Indian Forest Act, 1927 or State Forest Act / Rules / Regulations, before the Stage II approval.

2.5 Special provisions for CA for certain categories of projects:

(i) CA shall be raised and maintained at the cost of the user agency on degraded forest land twice in extent of the forest area diverted in the cases of:

a. Laying of transmission lines;

b. Laying of telephone/optical fibre lines;

c. Mulberry plantation undertaken for silkworm rearing,

d. Diversion of linear or 'strip' plantations declared as protected forest along road/ rail/canal sides for widening or expansion of road/rail/canal,

e. Extraction of minor materials from the river beds,

f. The projects implemented by the Central Government/PSUs, excluding Central Govt./Central PSUs Projects implemented by/through State Government and State Sector Projects implemented by the Central Government/PSUs

g. Construction of link roads, small water works, minor irrigation works, school building, dispensaries, hospital, tiny rural industrial sheds of the Government or any other similar work excluding mining and encroachment cases, which directly benefit the people of the areain hill districts and in other districts having forest area exceeding 50% of the total geographical area, provided diversion of forest area does not exceed 20 hectares.