


**SCHEME FOR COMPENSATORY
AFFORESTATION OVER
1400 Ha. OF DEGRADED FOREST LAND
UNDER
KORAPUT FOREST DIVISION
FOR DIVERSION OF 697.979Ha. OF FOREST LAND
FOR
POTTANGI BAUXITE MINES
UNDER POTTANGI TAHASIL, DIST. KORAPUT
(ODISHA)
OF
M/s. NATIONAL ALUMINIUM COMPANY LIMITED,
BHUBANESWAR (ODISHA)**

LAND SUITABILITY CERTIFICATE

This is to certify that 1400 Ha. of degraded forest land in Janiguda PRF-100 Ha, Kankadabari RF- 100 Ha of Koraput Forest Range, Nandapur Ext. PRF-40 Ha, Kasandi PRF-50 Ha, Ampavali RF-90 Ha of Semiliguda Forest Range, Malibhimdol RF-200 Ha, Hatibari RF-60 Ha of Balda Forest Range, Ghodabeda PRF-100 Ha of Lamtaput Forest Range, Jamuguda PRF-100 Ha of Narayanpatna Forest Range and Raisil RF-90 Ha, Totaguda PRF-100 Ha, Hatimali DPF- 100 Ha Godmak PRF-120 Ha and Gouda Ramji DPF-150 Ha of Laxmipur Forest Range in Koraput Forest Division identified for Compensatory Afforestation in lieu of 697.979 ha. of forest land for diversion of Pottangi Bauxite mines by M/s. NALCO is suitable for plantation from management point of view and the degraded Forest land are free from encroachments and encumbrances. No plantation has been carried out in the particular area previously.


Divisional Forest Officer
Koraput Forest Division
Divisional Forest Officer
Koraput Forest Division

SCHEME FOR COMPENSATORY AFFORESTATION FOR DIVERSION OF FOREST LAND FOR POTTANGI BAUXITE MINES, KORAPUT

Introduction:

This scheme is prepared for Compensatory Afforestation in Forest land in view of diversion of forest by M/s. National Aluminium company limited (NALCO) as required under section 3 of forest (Conservation) act-1980. NALCO is a Navaratna Public Sector Undertaking under Ministry of Mines, Govt of India, with its registered office at Bhubaneswar, Odisha. The Mines and Alumina Refinery is one of the largest integrated Bauxite-Alumina-Aluminium-Power Complex in the country. The Company Has a 2.275MTPA Alumina Refinery along with a 6.825 MTPA Bauxite Mine (Panchpatmali) located near Damanjodi in Koraput district of Odisha. NALCO is expanding its Alumina refinery capacity by proposing 5th stream of the alumina refinery at Damanjodi for additional production of one million tons per annum (MTPA) of alumina. To cater the raw material requirement of this project, the Pottangi bauxite deposit near Pottangi Village of Koraput district, Odisha has been identify by NALCO for mining lease which was discovered by the Geological Survey of India (GSI) in Nov-1971. The Mining Plan has been prepared for 697.979Ha and submitted under Rule 16(1) of Minerals (other than Atomic and Hydrocarbons Energy Mineral) Concession Rule 2016 along with Progressive Mine Closure Plan under Rule 23 of MCDR 2017 for approval. Govt of Odisha has granted the lease in favour of NALCO for a period of 50 years and issued a fresh letter of Terms and Conditions governing the grant of mining lease vide letter no 3794/SM dated 14.05.2018.

The mine is proposed over a total area of 697.979 Ha. Coming under forest category. However, the M/s. NALCO has agreed of provide fund for raising of Compensatory plantation over 1400 Ha. having forest land in lieu of 697.979 Ha. Forest land of Koraput Division.


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DETAILS OF LAND FOR COMPENSATORY AFFORESTATION:

The identified Degraded Forest land for Compensatory Afforestation has been listed below. The DFO, Koraput Forest Division vide his letter No. 8433 dated 22/12/2021 allotted 1400 Ha. of Degraded Forest land for Compensatory Afforestation purpose.

Land schedule **(770 Ha.)** of land prepared for Compensatory Afforestation ANR with gap. @ 500/Ha.


Sl. No.	Name of the Range	Name of Forest Block	Area in Ha.	Remarks
1	Koraput	Janiguda PRF	100	Suitable for ANR with Gap Plantation @500 Plants/Ha
2	Koraput	Kankadabari RF	100	
3	Semiliguda	Nandapur Ext. PRF	40	
4	Semiliguda	Kasandi PRF	50	
5	Semiliguda	Ampavali RF	90	
6	Balda	Mali Bhimdol RF	200	
7	Lamtaput	Ghodabeda PRF	100	
8	Laxmipur	Raisil RF	90	
Total			770	

Land schedule **(200 Ha.)** of land prepared for Compensatory Afforestation Block @ 1000/Ha.

Sl. No.	Name of the Range	Name of Forest Block	Area in Ha.	Remarks
1	Narayanpatna	Jamuguda PRF	100	Suitable for AR Plantation @1000 Plants/Ha
2	Laxmipur	Totaguda PRF	100	
Total			200	

Land schedule **(430 Ha.)** of land prepared for Compensatory Afforestation Block Plantation @ 1600/Ha.

Sl. No.	Name of the Range	Name of Forest Block	Area in Ha.	Remarks
1	Balda	Hatibari RF	60	Suitable for AR Plantation @1600 Plants/Ha
2	Laxmipur	Hatimali DPF	100	
3	Laxmipur	Godmak PRF	120	
4	Laxmipur	Gouda Ramji DPF	150	
Total			430	


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Koraput Forest Division

VEGETATION DENSITY:

The density of the crop of the above selected compensatory afforestation area of Block Plantation site is 0.05 where it is 0.1 to 0.3 in ANR Plantation sites .

DESCRIPTION OF EXISTING VEGETATION

This area is covered with unwanted obnoxious weeds like Eupatorium and Lantana along with some pole crops in scattered manner. No prominent economic species are available within the proposed site. However, saplings and bushy growth of Mersunga leaf plant (*Murraya coinghii*), Mango (*Mangifera indica*), Jackfruit (*Artocarpus heterophyllus*), Poksungha (*Chromelana Sp.*), Khakada (*Gelonium multiflorum*), Asan (*Terminalia alata*), Naguari (*Lantana camara*), Begunia (*Vitex negundo*), Palas (*Butea monosperma*) etc are existing now Besides, some shrubs/ herbs of Bhuin-neem (*Andrographis paniculata*), Kurei (*Hollarhena anti-dysenterica*), Kendu (*Dyospyrus melanoxylon*) etc are also noticed in some patches. The growth of the weeds and bushes are too much congested.


Description of the Area:

- (i) **Topography:** The terrain of the above degraded Forest area are gently slope to hilly with some where good soil and drainage.
- (ii) **Climatic Condition:** The climatic condition of the area favouring 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, rainy season is from July to September and winter from November to February.
- (iii) **Slope:** The slopes are gentle to moderate, rarely steep. When the slopes are gentle to moderate, they are congenial for formation of thick bauxite profile. The slope gradient varies from 1:6 to 1:12. The peak portions of the deposit are occupied by khondalites forming the ridges.
- (iv) **Drainage Pattern:** The drainage pattern is of dendritic type.
- (v) **Temperature:** The area enjoys a tropical climate. Lying at an altitude of over 1000m. Above M.S.L., Pottangi area has a pleasant climate during summer. The temperature in May rarely exceeds 40°C. The winter months are pretty cold and in December-January, the temperature often drops down to 5°C.

SURVEY & DEMARCATION

The area is to be surveyed in field with reference to the Forest map using G.P.S. system and the survey as well as posting of RCC Pillar will be done by the user agency.

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 would contain the name of the plantation site, area, year of planting, planting module, no. of seedlings planted, funding agency & other details, if necessary.


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Technical Details:-

OBJECTIVE OF THE SCHEME -

It is mandatory requirement under the provision of Forest (Conservation) Act, 1980.

- (i) To replenish the loss of forest land to be diverted for non-forestry purpose i.e. mining of Bauxite.
- (ii) To generate employment to the villagers living around the identified area.
- (iii) To increase the ground water table through Soil & Moisture Conservation.
- (iv) To increase the bio-diversity for improvement of the local ecology.
- (v) To fulfil the requirement of fuel wood & small timber of the local inhabitants.
- (vi) To provide a green clothing to the area by means of artificial regeneration or plantation in-order to reduce soil erosion.
- (vii) The pattern of plantation will be "ANR with 500 plants per Ha" & AR with 1000 & 1600 plants per Ha. is to be carried out on the selected CA area.

PLANTATION TECHNIQUE

The area should be well demarcated before raising plantation by G.P.S. survey and fixing of Boundary pillar (where missing) by engraving thereon the co-ordinates and distance to next pillar. As far as possible weeds will be removed especially prior to 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.

PLANTING & POST-PLANTING:

RAISING OF NURSERY

18 Month old Seedlings will be planted on the selected CA site where the seedlings for the plantation shall be raised in the different Permanent Central nursery's of concerned CA Plantation Range of Koraput Forest Division and transportation of seedlings shall be done from each CN to Plantation site during planting period. Further 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. Species like Gmelina arborea (Gambhar), Terminalia alata (Asan), Pongamia glabra (Karanj), Emblica officinalis (amla), Kurum (Adina cordifolia), Tectona grandis and other species as per the suitability of the sites will be preferred to be raised and planted on the sites.


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Koraput Forest Division

ALIGNMENT AND STACKING

Alignment, stacking and pitting will be taken up in the month of January-February, pits of size 45cm X 45cm X 45cm will be dug maintaining a spacing of 2.5 mt. x 2.5 mt in all selected CA sites of AR & ANR before going to pitting.

PLANTING

The seedlings will be planted in dug out pits of 45 cm³ maintaining a spacing of 2.5 mt between the pits i.e. @ 1600 & @1000 Seedlings/Ha in the Block (AR) Plantation sites respectively and @500 Plants/Ha in the ANR Plantation sites. Plantation should be taken up after first regular shower of monsoon and should ideally be completed by end of July. NPK/DAP/etc. will be applied as per the plantation guideline in the norm for basal dose. Anti- termite and insecticide 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 of the Ranges.

CHOICE OF SPECIES

Species like Artocarpus hetrophylla (Jackfruit), Bombax ceiba (Simili), Cassia fistula (Sunari), Dendrocalamus strictus. (Bamboo), Gmelina arborea (Gambhari), Azadirachta indica (Neem), Madhuca latifolia (Mahula), Terminalia chebula (Harida), Terminalia belerica (Bahada) Mangifera indica (Aamba-Local variety), Albizzia procera/Lebbek (Sirisa), Emblica officinalis (Amla), Pongamia pinnata (karanja), Terminalia arjuna (Arjuna), Aegle marmelos (Bela), Dalbergia sishoo (Bali Sisoo), Samania saman (Bada Chakunda), Syzygium cumini (Jamun), Tamarindus indica (Tentuli), Terminalia tomentosa (Asan), Ziziphus mauritiana (Bara Koli), Swietenia mahagoni (Mehagani), Bauhinia vahlii (Siali), Simaruba glauca (Simaruba), Tectona grandish (Saguan), Acacia auniciloformin, Acacia Magnum, Silver Oak etc. and species as per the suitability of the sites will be choised and select during the planting period.

PLANTING TECHNIQUES & MODEL

Out of the above species the intensity of plantation for Fuel yielding and Timber species will be planted 35:35 % and Bamboo and Fruit yielding species in 10:20 ratio.

The planting of species shall be planted in such a manner that the long term fruit, timber yielding species/Bamboo shall be surrounded with short term fuel wood yielding species. The species should be planted alternate to each other & no repetition of species in close of pits shall be done.


Divisional Forest Officer
Koraput Forest Division

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 vermin 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 Block & 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).

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 60cm to 1 Mtr 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 fertilizer and insecticide can 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.


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Koraput Forest Division

The Schedule of operation for preparation of site, pre-planting, planting, post-planting are prescribed herewith:-

OPERATIONS	PERIOD OF COMPLETION
i. Advance preparation of site.	End of October
ii. Alignment & Digging of pits	End of February
iii. Stacking	End of February
iv. Planting.	1 st week of July
v. Casualty replacement	End of July
vi. Soil working, weeding, manuring	End of August
vii. Soil & water conservation measuring	End of September
viii. Fire line tracing	During December
ix. Watch & Ward	July to March

**Post planting operation
in 2nd year.**

- a. Casualty replacement, 1st weeding soil Working & manuring. : End of July
- b. Fire line tracing : During December
- c. Watch & Ward : Throughout the year

In 3rd year.

- a. Weeding, soil working and application of manure : End of July
- b. Fire line tracing : December
- c. Watch & Ward : Throughout the year

In 4th year

- a. Fire line tracing : End of December
- b. Pruning : September
- c. Watch & Ward : Throughout the year

5th year to 10th year


- a. Fire line tracing : End of December
- b. Pruning : September
- c. Watch & Ward : Throughout the year

WATERING:

The watering provision is to be provided to all AR/Block and ANR CA plantation sites for the period from November to March in 1st year, April to June and November to March from 2nd year to 5th year maintenance by the help of diesel pump sets to provide better growth of the plantation and to avoid damage due to hot sunlight or scarcity of water as well as to success of the plantation. The cost norm of watering model W-II/ Ha is enclosed.

WATCH & WARD:

The important element of successful plantation is Protection. Watchers are to be engaged on daily wage basis for ten years but they should 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 ten years but considering the work efficiency the person, if not found suitable should be changed. Since in all plantation sites enough care should be taken to engage efficient worker for protection as there is every possibility of damage by grazing. Therefore, in the planting design non browsable tree species like Simaruba should be planted in three four rows to-wards periphery of the plantation at the foot hill before Agave Plantation.


Divisional Forest Officer
Koraput Forest Division

FENCING:

To protect the plantation from grazing and other biotic interference, it will be provided Bamboo twigs and thorns fencing along the periphery of all AR/Block and ANR Plantation sites of the degraded Forest Land for better protection as well as survival of the Plantations. The cost estimate for Bamboo Twig fencing/Ha has been enclosed.

CONTROL MEASURES:

- 1) The nursery journal, the plantation journal and other records shall be maintained separately in accordance with the provision of "The Orissa Forest Plantation Manual 1977" indicating the physical and financial achievements. Necessary entries with regard to plantation activities undertaken shall be entered in the journals and shall be produced before the inspecting officers. In case of any eventuality like cyclone, thunder storm, hail storm etc. if caused destruction to the plantation, this should also be noted. It is also necessary to note the distribution of rain fall which not only helps in the growth of plants at site but also acts as a guideline for the ensuing years nursery schedule to be formulated.
- 2) For protection, measures shall be taken to save the plantation from fire incidence and prevent accidental trespass of cattle, goat etc. to the premises of the nursery. Boundary area will be scrapped to a width of 2 mtr. During February / March the cut materials are to be burnt under strict supervision.

SOIL MOISTURE CONSERVATION:

Soil and moisture conservation activities are essentially required to be dove-tailed to plantation activities in order to improve water availability in Forest. In order to achieve the objective and implement the programme efficiently a well planned strategy is essential. The natural slope of the Forest land selected for Compensated Afforestation are varies from 0 degree to 35 degree being the foothill. The areas selected for the catchment where the precipitation touches the ground and subsequently drained through the drainage line. So this becomes the focus area of the soil moisture conservation programme. The intervention suggested below is aimed at capturing the rain water to enhance the retention period and to increase the quantum of infiltration.


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Koraput Forest Division

Forest floor treatment:

- **Staggered Trenches-** The staggered trenches are primarily aim to break the runoff which otherwise will form reels and gullies. Such reels when conversed will form gullies. Continuous gullies when joined together will form a ditch. Therefore it is aimed at excavating staggered trenches as per the field requirement during execution of works. Each such trench will be 2 m (length) X 0.5 m (width) x 0.5m (depth). These trenches will conserve rain water of this region and facilitates its percolation. Therefore while aligning such trenches adequate care should be taken so that gullies are not formed by the water flowing downhill from the wedges of trench.
- **Graded Earthen Bund-** Earthen graded bunds can be erected on the low slope (<5%) Forest and pediments of hills. These bunds would be 1.5 Meter high (minimum) and follow a longitudinal slope of 0.2% to 0.5%. The purpose of these bunds is to guide the runoff along a longer path to increase time of concentration and promote infiltration. Preferably burrow pits to be located on the upstream.

This can be laid on the border of Forest land or it can be on the where the hill slope ends and pediment begins. This bund will prevent direct entry of runoff from hills/forest into cultivable land. Its main purpose is to delay the runoff and increase the time of concentration substantially. The alignment of the bund will be such that the flow path will be as wide as possible. This will provide sufficient width for the rain water to flow at shallow depth thus facilitating quick infiltration. Earth borrowed from the pits dug from the upstream should meet the requirement of earth work for the graded bund.

The burrow pits of this bund will be discontinuous and act as soak pits to enhance infiltration. Burrow pits may be located on the downstream side if sufficient earth is not available on the upstream.

The top of the bund should have longitudinal slope of 0.2 to 0.5% so that the flow path is non-silting & non-erosive. If required Loose Boulder spurs would be put up across the flow path to control the longitudinal slope.

It may be noted that this bund is not to retain water for very long as in case of reservoir bunds. Its purpose is to change the direction of flow of runoff. Stone pitching on the upstream side may be necessary to prevent scouring by runoff coming downhill.

DRAINAGE LINE TREATMENT:

Drainage line treatment can be done on the site by Construction of Loose Boulder Structure , Wire mesh structure etc. as per the requirement of the sites where the structure is to be created across the drainage line for retention of run-off and reduction of velocity. Such structure should preferably have top width of 1m with upstream slope of 1:1 ration and downstream ration of 1:5 ratios.


Divisional Forest Officer
Koraput Forest Division

PEOPLE'S PARTICIPATION:

In order to involve the adjoining villages in the protection of plantation, meetings are to be conducted in the adjoining villages and efforts to be made to constitute VSS who will be assigned with the task of protection and management of the compensatory Afforestation with sharing benefit as per JFM Resolution 1993 for all plantation site. For the above purpose supporting activities like livelihood improvement/Socio economic development of the VSS members, strengthening of the local level institution, Capacity Building and local level training and Entry Point Activities (EPA) is to be conducted on every VSS of the plantation site. For the success of the above and to create Assets for the communities bonafide requirement and to improve the socio economic status during the project implementation period will be meet from 5 % funds of the CA cost is to be provided by the User Agency as per the direction of the Divisional Forest Officer, Koraput to meet the VSS's fulfilment.

PROTECTION SQUAD:

For protecting the growing Forest for 10 years from illicit felling one dedicated squads having 10 persons with one driver for riding of squad vehicle per squad are required. The user agency- NALCO to provide 1 Nos Mahindra Scorpio (S-11), 1 Nos. Mahindra Thar LX 4-STR and 1 Nos. Mahindra Bolero B6 (O) for better monitoring of the project activities by the executing, inspecting and monitoring authorities (DFO, ACFs & FROs & Other Officials) and for movement of the squad members. One squads (10 members) consisting of 10 members & one driver to ride the squad vehicle will be recruited locally through service provider for better protection and survive of the plantation sites as well as of the adjoining Forest area. Accordingly provisions has been made to provided for one squad. The details of cost of Vehicle, POL and annual maintenance of the vehicle has been enclosed (**Cost of Vehicles, RTO charges, Insurance cost of POL, Annual Maintenance, Squad & Driver Remuneration etc**) and will be deposited by the user agency M/s NALCO as per the suggestion of the DFO or to supply the same in shape of kinds in favour of Divisional Forest Officer, Koraput to meet the above expenses.

PROTECTION FROM FOREST FIRE & INCLUDING PREVENTION & MANAGEMENT:

The Selected degraded Forest Land for Compensatory Afforestation of 1400 Ha consist in 14 Nos sites are venerable to Forest Fire. If Fire occurs in those CA sites then it causes extensive damage to flora and fauna site by site generate heat and smoke causing pollution to local Environment. Generally Forest Fire occurs starting from January to End of June. So to avoid the Forest Fires in those areas and to save the areas from damage and loss of flora and fauna as well as surrounding Environment, prevention measures like prevention and management plan, procurement of adequate Fire Fighting equipment, Tools, First Aid Box, Communication by Mobile Network/VHF, Muck drill, Maintenance of Fire line, Boundary line, Provision of Fire Fighting Squad Members with Vehicle & POL, coordination with village/VSS members, organization of meeting,

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Koraput Forest Division

Rally, Proper display sign boards/Banners, including pictorial depiction of do and don't do in local language in odia, reward and awareness programmes etc. is to be required. For all the above purpose of prevention of Fire Management of those areas provision of 5 % of the cost of CA scheme has been provided for the project period of 10 years and will be deposited by the user agency M/s NALCO as per the suggestion of the DFO, Koraput to meet the above expenses.

PROVISION FOR GIS LAB:

Now a day's Geographic information system (GIS) is required to do the technical hub for mapping, analysis and planning and serves the entire programme by digital system in which this Division wants to introduction and Installation of GIS, Insertion of data from "Google earth" into "GIS", Insertion of data into Arc Map GIS, Rectify image in Arc Map GIS, Creation of shape file, Editing shape file in G.I.S, creation of Buffer, Use of "SELECT" toll in Arc GIS, Over lay Analysis/ Union of two layers in this Division on which it provide image based guidance to the officials of this Division so that they will become able to use the basics of GIS tool and get benefits from GIS. Accordingly provisions has been made to install one GIS Lab inside the DFO office campus, Koraput for which a provision of Rs. 25,00,000/- (Rupees Twenty Five Lakh) only has been provided and will be deposited by the user agency M/s NALCO as per the suggestion of the DFO, Koraput to meet the above expenses which help for Monitoring and Evaluation purpose also.

MONITORING & EVALUATION:


The Range Officers of project implementing Ranges will undertake field checks of the works undertaken a the identified sites and will be cross checked by the Asst. Conservator of Forests (ACFs) and Divisional Forest Officer, Koraput Forest Division. GPS co-ordinates along with other required informations of compensatory Afforestation and other activities will be uploaded in the e-Green watch Portal of NIC, MoEF, and CC, Govt. Of India for the purpose of online monitoring Annual progress of plantation involving growth of planted seedlings, survival percentage etc. will be monitored a recorded in the plantation journal by the field staffs of project implanting Ranges and reported to the Divisional Forest Officer for necessary action. The same will be reported to higher authorities for monitoring and evaluation of the activities every year.


Divisional Forest Officer
Koraput Forest Division

Funding Agency : M/s National Aluminium Company Limited (NALCO)


Proposed Monitoring Mechanism : The Scheme shall be executed by the Divisional Forest Officer, Koraput Forest Division with his staff and all Prescribed records are to be maintained.

Total Cost of the Project : Total Cost of the project is Rs. 128,99,18,970/- (Rupees One Hundred Twenty Eight Corer Ninety Nine Lakh Eighteen Thousand Nine Hundred Seventy) only as detailed in Annexure- XII which shall be payable by the user agency as per the advice of DFO, Koraput Forest Division.


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Koraput Forest Division

Annexure-I**COST NORM FOR AIDED NATURAL REGENERATION (ANR) @ 500 PLANTS PER HECTARE (18 Months old Seedlings)**
WAGE RATE Rs.315/- PER DAY


Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour cost @ Rs.315/- per day	Material cost (Rs)	Total cost (Rs.)
1	2	3	4	5	6	7
0th year (Advance work) Pre-Planting Operation						
1	Survey, demarcation and pillar posting	Nov/Dec	2	630	0	630
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	315	100	415
3	Site preparation	Nov/Dec	2	630	0	630
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	4725	0	4725
5	Alignment and stacking for digging of pits	Feb/Mar	1	315	0	315
6	Digging of pits (45 cm x 45 cm x 45 cm) in hard and gravelly soil	Feb/Mar	20	6300	0	6300
	Total		41	12915	100	13015
1ST YEAR/PLANTING YEAR						
1	Refilling of pits by altering the dugout soil of the pits, application of Organic compounds/ CDM/FYM and Mixing the same perfectly.	June/July	4	1260	2500	3760
2	Transportation of 18 Month old poly pot seedlings in Hired Truck/ Tractor from the Permanent/Megha Nursery to Planting Site including loading and unloading (Average Lead of 10 RKM) & Stacing the seedlings @ Rs.6/- per seedlings (550 Nos)	July/Aug	0	0	3300	3300
3	Watering the Polypot Seedlings at Planting site of plantation	July/Aug	1	315	0	315
4	Convenne of Polythene bag seedlings on Headload from the stacking site to indivisual dugui pits within the Planting site, applying insecticides, Fertilizers and Planting after scooping the soil with other applied materials and pressing the soil prperly around the planted seedlings	July/Aug	11	3465	0	3465
5	Cost of insecticide and fertilizer	July/Aug	0	0	1500	1500
	(a) NPK/ Bio Fertilizer @ 50 gms per plant as basal dose = 25Kg @ Rs.30/- per kg = Rs. 750.00					
	(b) Urea/Vermicompost/ Mo Khata/ any other Fertilizes @ Rs.375.00					
	(c) Insecticides/ Bio pesticides @ 5 gms/plant =2.5 Kg @Rs.150/- per kg= Rs 375.00					
6	Casualty replacement@ 10% (50 Nos)	July/Aug	1.5	472.5	0	472.5
7	1st weeding & Manuaring	Aug/Sept	5	1575	0	1575
8	2nd weeding, Soil Working (1 Mtr diameter around the plant) & Manuring	Oct/Nov	8	2520	0	2520
9	Fire line tracing & inspection path	Feb/Mar	3	945	0	945
10	Watch & Ward including watering as per requirment	Aug-Mar	8	2520	0	2520
	Total		41.5	13072.5	7300	20372.5



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 Scanned with CamScanner

2ND YEAR MAINTENANCE						
1	Transportation of 50 Nos. of seedlings from Nursery to Planting Site including loading and unloading & Conveyance by tractor @ Rs.6/- per seedlings (50 Nos)	July	0	0	300	300
2	Casualty replacement@ 10% (50 Nos)	July	1.5	472.5	0	472.5
3	Cost of insecticide and fertilizer	July/Aug	0	0	1437.5	1437.5
	(a) cost of insecticides/ Bio Pesticides (Themet/Forate) @ 5 Gms/Plant = 0.25 Kg @Rs.150/- Per Kg = Rs.37.50					
	(b) Urea/NPK/Bio Fertilizer/Vermicompost/ Mo Khata/ any other Fertilizes @ Rs. 1400/-					
4	Weeding (complete weeding), Manuaring and Soil Working (1 Mtr diameter around the plant)	Sept/Oct	8	2520	0	2520
5	Fire line tracing (2 Mtr Wide Fireline) and inspection path	Feb/Mar	3	945	0	945
6	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780
	Total		24.5	7717.5	1737.5	9455
3RD YEAR MAINTENANCE						
1	Cost of Fertilizers Urea/NPK/Bio Fertilizer/Vermicompost/ Mo Khata/ any other Fertilizes= @ Rs. 1400.00	July/Aug	0	0	1400	1400
2	Weeding (complete weeding), Manuaring and Soil Working (1 Mtr diameter around the plant)	Sept/Oct	8	2520	0	2520
3	Fire line tracing (2 Mtr Wide Fireline) & inspection path	Feb/Mar	3	945	0	945
4	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780
	Total		23	7245	1400	8645
4TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline) & inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780
	Total		15	4725	0	4725
5TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780
	Total		15	4725	0	4725
6 TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780
	Total		15	4725	0	4725
7 TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780
	Total		15	4725	0	4725


 Divisional Forest Officer
 Koraput Forest Division


8 TH YEAR MAINTENANCE							
1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	945	0	945	
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780	
	Total		15	4725	0	4725	
9 TH YEAR MAINTENANCE							
1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	945	0	945	
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780	
	Total		15	4725	0	4725	
10 TH YEAR MAINTENANCE							
1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	945	0	945	
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780	
	Total		15	4725	0	4725	
YEAR WISE ABSTRACT OF COST NORM (SHOWING SEEDLING COST SEPARATELY)							
Sl. No	Year	No. Person Day	Labour Cost @Rs.315/- per day	Material Cost in Rs.	MELD & Other Contingency 5 % of (4+5)	Cost of Seedlings @ Rs. 50.81 per seedlings	Total Cost in Rs.
1	2	3	4	5	6	7	8
1	0th Year	41	12,915.00	100.00	650.00	0	13,665
2	1st Year	41.5	13,072.50	7,300.00	1,019.00	27,945.50	49,337
3	2nd Year	24.5	7,717.50	1,737.50	472.50	2,540.50	12,468
4	3rd Year	23	7,245.00	1,400.00	432.00	0	9,077
5	4th Year	15	4,725.00	-	236.00	0	4,961
6	5th Year	15	4,725.00	-	236.00	0	4,961
7	6th Year	15	4,725.00	-	236.00	0	4,961
8	7th Year	15	4,725.00	-	236.00	0	4,961
9	8th Year	15	4,725.00	-	236.00	0	4,961
10	9th Year	15	4,725.00	-	236.00	0	4,961
11	10th Year	15	4,725.00	-	236.00	0	4,961
	Total	235	74,025.00	10,537.50	4225.50	30,486.00	1,19,274


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COST NORM FOR BLOCK PLANTATION @ 1000 PLANTS PER HECTARE (18 Months old Seedlings)
WAGE RATE Rs.315/- PER DAY

Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour cost @ Rs.315/- per day	Material cost (Rs)	Total cost (Rs.)
1	2	3	4	5	6	7
0th year (Advance work)						
1	Survey demarcation and pillar posting	Nov/Dec	2	630	0	630
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	315	100	415
3	Site preparation (Cleaning & Removal of debris)	Nov/Dec	12	3780	0	3780
4	Creation of 4.00 Mtr Wide Inspection Path	Feb/Mar	1	315	0	315
5	Alignment and stacking of pits	Feb/Mar	1	315	0	315
6	Digging of pits (45 cm x 45 cm x 45 cm) /50 cm diameter augur hole in hard & gravelly soil	Feb/Mar	40	12600	0	12600
7	Construction of Temporary Labour Shed, Drinking Water Facility and First Aid etc.	Jan/Mar	0	0	3500	3500
	Total		57	17955	3600	21555
1ST YEAR/PLANTING YEAR						
1	Refilling of pits by altering the dugout soil of the pits, application of Organic compounds/ CDM/FYM and Mixing the same properly.	June/July	7.5	2362.5	5000	7362.5
2	Transportation of 18 Month old poly pot seedlings in Hired Truck/ Tractor from the Permanent/Megha Nursery to Planting Site including loading and unloading (Average Lead of 10 RKM) & Stacing the seedlings @ Rs.6/- per seedlings (1100 Nos)	July/Aug	0	0	6600	6600
3	Watering the Polypot Seedlings at Planting site	July/Aug	2	630	0	630
4	Convene of Poly pot seedlings on Headload from the stacking site to individual dugut pits within the Planting site, applying insecticides, Fertilizers and Planting after scooping the soil with other applied materials and pressing the soil properly around the planted seedlings	July/Aug	22.5	7087.5	0	7087.5
5	Cost of insecticide and fertilizer	July/Aug	0	0	3000	3000
	(a) NPK/ Bio Fertilizer @ 50 gms per plant as basal dose = 50Kg @ Rs.30/- per kg = Rs. 1500.00					
	(b) Urea/Vermicompost/ Mo Khata/ any other Fertilizes in two subsequent doses @ Rs.750.00					
	(c) Insecticides/ Bio pesticides @ 5 gms/plant =5 Kg @Rs.150/- per kg= Rs.750.00					
6	Casualty replacement@ 10% (100 Nos)	July/Aug	2.5	787.5	0	787.5
7	1st weeding & Manuring	Aug/Sept	12	3780	0	3780
8	2nd weeding, Soil Working (1 Mtr diameter around the plant) & Manuring	Oct/Nov	15	4725	0	4725
9	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
10	Watch & Ward including watering as per requirment	Aug-Mar	12	3780	0	3780
	Total		76.5	24097.5	14600	38697.5


 Divisional Forest Officer
 Forest Division

2ND YEAR MAINTENANCE

1	Transportation of 100 Nos. of seedlings from Nursery to Planting Site including loading and unloading & Conveyance by tractor @ Rs.6/- per seedlings (100 Nos)	July	0	0	600	600
2	Casualty replacement@ 10% (100 Nos)	July	2.5	787.5	0	787.5
3	Cost of insecticide and fertilizer					
	(a) cost of insecticides/ Bio Pesticides @ 5 Gms/Plant = 0.5 Kg @Rs.150/- Per Kg = Rs.75.00	Aug/Sept	0	0	2875	2875
	(b) Urea/NPK/Bio Fertilizer/Vermicompost/ Mo Khata/ any other Fertilizes @ Rs. 2800.00					
4	Weeding (complete weeding), Manuaring and Soil Working (1 Mtr diameter around the plant)	Sept/Oct	15	4725	0	4725
5	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
6	Watch & Ward including watering as per requirement	Apr-Mar	18	5670	0	5670
7	Maint. of Temporary Labour Shed, Drinking Water Facilities & First Aid etc.	Apr-Mar	0	0	1000	1000
	Total		38.5	12127.5	4475	16602.5

3RD YEAR MAINTENANCE

1	Cost of Fertilizers (Urea/NPK/Bio Fertilizer/Vermicompost/ Mo Khata/ any other Fertilizes) @ Rs. 2800.00	July/Aug	0	0	2800	2800
2	Weeding (complete weeding), Manuaring and Soil Working (1 Mtr diameter around the plant)	Sept/Oct	15	4725	0	4725
3	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
4	Watch & Ward including watering as per requirment	Apr-Mar	18	5670	0	5670
5	Maint. of Temporary Labour Shed, Drinking Water Facilities & First Aid etc.	Apr-Mar	0	0	1000	1000
	Total		36	11340	3800	15140

4TH YEAR MAINTENANCE


1	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward including watering as per requirment	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

5TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M length)	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

6 TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M length)	Feb/Mar	3	945	0	945
2	Pruning of branches, Singling out of multiple shoots	Jan/Mar	3	945	0	945
3	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		24	7560	0	7560


 Divisional Forest Officer
 Koraput Forest Division

7 TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M length)	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

8 TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M length)	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

9 TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M length)	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

10 TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M length)	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

YEAR WISE ABSTRACT OF COST NORM (SHOWING SEEDLING COST SEPARATELY)

Sl. No	Year	No. Person Day	Labour Cost @Rs.315/- per day	Material Cost in Rs.	MELD & Other Contingency 5 % of (4+5)	Cost of Seedlings @ Rs. 50.81 per seedlings	Total Cost in Rs.
1	2	3	4	5	6	7	8
1	0th Year	57	17,955.00	3,600	1,078	-	22,633
2	1st Year	76.5	24,097.50	14,600	1,935	55,891	96,523
3	2nd Year	38.5	12,127.50	4,475	830	5,081	22,513
4	3rd Year	36	11,340.00	3,800	757	-	15,897
5	4th Year	21	6,615.00	-	331	-	6,946
6	5th Year	21	6,615.00	-	331	-	6,946
7	6th Year	24	7,560.00	-	378	-	7,938
8	7th Year	21	6,615.00	-	331	-	6,946
9	8th Year	21	6,615.00	-	331	-	6,946
10	9th Year	21	6,615.00	-	331	-	6,946
11	10th Year	21	6,615.00	-	331	-	6,946
	Total	358	1,12,770	26,475	6,963	60,972	2,07,180

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Annexure-III

COST NORM FOR BLOCK PLANTATION @ 1600 PLANTS PER HECTARE (18 Months old Seedlings) WAGE RATE Rs.315/- PER DAY

Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour cost @ Rs.315/- per day	Material cost (Rs)	Total cost (Rs.)
1	2	3	4	5	6	7
0th year (Advance work)						
1	Survey demarcation and pillar posting	Nov/Dec	2	630	0	630
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	315	100	415
3	Site preparation (Cleaning & Removal of debris)	Nov/Dec	12	3780	0	3780
4	Creation of 4.00 Mtr Wide Inspection Path	Feb/Mar	1	315	0	315
5	Alignment and stacking of pits	Feb/Mar	2	630	0	630
6	Digging of pits (45 cm x 45 cm x 45 cm) /50 cm diameter augur hole in hard & gravelly soil	Feb/Mar	64	20160	0	20160
7	Construction of Temporary Labour Shed, Drinking Water Facility and First Aid etc.		0	0	3500	3500
	Total		82	25830	3600	29430
1ST YEAR/PLANTING YEAR						
1	Refilling of pits by altering the dugout soil of the pits, application of Organic compounds/ CDM/FYM and Mixing the same properly.	June/July	12	3780	8000	11780
2	Transportation of 18 Month old poly pot seedlings in Hired Truck/ Tractor from the Permanent/Megha Nursery to Planting Site including loading and unloading (Average Lead of 10 RKM) & Stacing the seedlings @ Rs.6/- per seedlings (1760 Nos)	July/Aug	0	0	10560	10560
3	Watering the Polypot Seedlings at Planting site	July/Aug	3	945	0	945
4	Conveyance of Poly pot seedlings on Headload from the stacking site to individual dugout pits within the Planting site, applying insecticides, Fertilizers and Planting after scooping the soil with other applied materials and pressing the soil properly around the planted seedlings	July/Aug	36	11340	0	11340
5	Cost of insecticide and fertilizer	July/Aug	0	0	4800	4800
	(a) NPK/ Bio Fertilizer @ 50 gms per plant as basal dose = 80Kg @ Rs.30/- per kg = Rs. 2400.00					
	(b) Urea/Vermicompost/ Mo Khata/ any other Fertilizers in two subsequent doses @ Rs.1200/-					
	(c) Insecticides/ Bio pesticides @ 5 gms/plant =8 Kg @Rs.150/- per kg= Rs.1200.00					
6	Casualty replacement@ 10% (160 Nos)	July/Aug	4	1260	0	1260
7	1st weeding & Manuring	Aug/Sept	15	4725	0	4725
8	2nd weeding, Soil Working (1 Mtr diameter around the plant) & Manuring	Oct/Nov	20	6300	0	6300
9	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
10	Watch & Ward including watering as per requirement	Aug-Mar	12	3780	0	3780
	Total		105	33075	23360	56435


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Koraput Forest Division

2ND YEAR MAINTENANCE						
1	Transportation of 160 Nos. of seedlings from Nursery to Planting Site including loading and unloading & Conveyance by tractor @ Rs.6/- per seedlings (160 Nos)	July	0	0	960	960
2	Casualty replacement@ 10% (160 Nos)	July	4	1260	0	1260
3	Cost of insecticide and fertilizer	Aug/Sept	0	0	4606	4606
	(a) cost of insecticides/ Bio Pesticides @ 5 Gms/Plant = 0.8 Kg @Rs.150/- Per Kg = Rs.120/-					
	(b) Urea/NPK/Bio Fertilizer/Vermicompost/ Mo Khata/ any other Fertilizes @ Rs. 4486/-					
4	Weeding (complete weeding), Manuaring and Soil Working (1 Mtr diameter around the plant)	Sept/Oct	20	6300	0	6300
5	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
6	Watch & Ward including watering as per requirment	Apr-Mar	18	5670	0	5670
7	Maint. of Temporary Labour Shed, Drinking Water Facilities & First Aid etc.	Apr-Mar	0	0	1000	1000
	Total		45	14175	6566	20741
3RD YEAR MAINTENANCE						
1	Cost of Fertilizers (Urea/NPK/Bio Fertilizer/Vermicompost/ Mo Khata/ any other Fertilizes) @ Rs. 4486/-	Sept/Oct	0	0	4486	4486
2	Weeding (complete weeding), Manuaring and Soil Working (1 Mtr diameter around the plant)	Sept/Oct	20	6300	0	6300
3	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
4	Watch & Ward including watering as per requirment	Apr-Mar	18	5670	0	5670
5	Maint. of Temporary Labour Shed, Drinking Water Facilities & First Aid etc.	Apr-Mar	0	0	1000	1000
	Total		41	12915	5486	18401
4TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward including watering as per requirment	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615
5TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward including watering as per requirment	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615
6 TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Pruning of branches, Singling out of multiple shoots	Apr-Mar	5	1575	0	1575
3	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		26	8190	0	8190


 Divisional Forest Officer
 Koraput Forest Division

7 TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

8 TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

9 TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

10 TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M long) including Maint. of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615

YEAR WISE ABSTRACT OF COST NORM (SHOWING SEEDLING COST SEPARATELY)

Sl. No	Year	No. Person Day	Labour Cost @Rs.315/- per day	Material Cost in Rs.	MELD & Other Contingency 5 % of (4+5)	Cost of Seedlings @ Rs. 50.81 per seedlings	Total Cost in Rs.
1	2	3	4	5	6	7	8
1	0th Year	82	25,830	3,600	1,471	-	30,901
2	1st Year	105	33,075	23,360	281	89,426	1,46,142
3	2nd Year	45	14,175	6,566	1,037	8,130	29,908
4	3rd Year	41	12,915	5,486	920	-	19,321
5	4th Year	21	6,615	-	331	-	6,946
6	5th Year	21	6,615	-	331	-	6,946
7	6th Year	26	8,190	-	409	-	8,599
8	7th Year	21	6,615	-	331	-	6,946
9	8th Year	21	6,615	-	331	-	6,946
10	9th Year	21	6,615	-	331	-	6,946
11	10th Year	21	6,615	-	331	-	6,946
	Total	425	1,33,875	39,012	6,104	97,556	2,76,547

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COST NORM FOR RAISING 1000 SEEDLINGS (18 Month)
WAGE RATE Rs.315/- PER DAY

Sl. No	Items of work	Preferable Period of Execution	Unit	Unit Cost	No./ Quantity	Labour cost @ Rs.315/- per day	Material cost (Rs)	Total cost (Rs.)
1	2	3	4	5	6	7	8	9
A. 1st Financial Year (Seedling Cost for 3 Months)								
1	Cost of Polythene (9"×5"×200)300 Nos/Kg =3.33 Kg@ 208/- per Kg (Including GST)	Nov-Dec	Kg	208	3.33	-	693.00	693.00
2	Procurment of raw & crude Polypot Mixture (Soil, Sand & CDM in ratio (2:1:1))							
	(i)Soil	Nov-Dec	Cft	10	22	-	220.00	220.00
	(ii)Sand	Nov-Dec	Cft	16	11	-	176.00	176.00
	(iii)CDM	Nov-Dec	Cft	25	11	-	275.00	275.00
	(iv)Insecticides/ Bio-Pesticide	Nov-Dec	Kg	150	2	-	300.00	300.00
3	Preparation of Soil Mixture Includes Pulverisation and straining & Mixing ingredients in proper ratio (2:1:1)	Nov-Dec	MD	315	2	630.00	-	630.00
4	Filling of Polypot Bags & Setting in the beds	Nov-Dec	MD	315	3	945.00	-	945.00
5	Collection of seeds grading & Treatment	Dec	MD	315	2	630.00	-	630.00
6	Preparation of germination Bed & Sowing of Seeds	Jan	MD	315	0.5	157.50	-	157.50
7	Dibbling of Seeds/ Pricking out the seedlings from germination beds and Transplanting in the poly bags and Providing sheds.	Jan	MD	315	2	630.00	500.00	1,130.00
8	Watering (Jan to March)	Jan-Mar	MD	315	9	2,835.00	-	2,835.00
9	Maintenance of Nursery including Fencing	Jan-Mar	MD	315	4	1,260.00	500.00	1,760.00
10	Contingencies (Watercan, Buckets, Nursery Shed, Electric Charges/ Desel Charges/ Maint. of Pump Set/ Maint. of Nursery, etc.)		-	-	-	-	460.50	460.50
	Total				22.5	7,087.50	3,124.50	10,212.00
B. 2nd Financial Year (Shifting of Seedlings to larger Polythene bags to avoid root coiling & better growth (Apr to March))								
1	Waering for 3 Months (April to June)	April-June	MD	315	9	2,835.00	-	2,835.00
2	Cost of Insecticides/Bio pesticides	May-June	Kg/Lts	315	0	-	400.00	400.00
3	Application of insecticides/Bio Pesticides	May-June	MD	315	1	315.00	-	315.00
4	Cost of Polypot (12"×10"×300)60 Nos/Kg =17 Kg@ 208/- per Kg (Including GST)	May-June	Kg	208	17	-	3,536.00	3,536.00
5	Procurment of raw & crude Polypot Mixture (Soil, Sand & CDM in ratio (2:1:1))							
	(i)Soil	Apr/May	Cft	10	100	-	1,000.00	1,000.00
	(ii)Sand	Apr/May	Cft	16	50	-	800.00	800.00
	(iii)CDM	Apr/May	Cft	25	50	-	1,250.00	1,250.00
	(iv)Insecticides/ Bio-Pesticide	Apr/May	Kg	150	3	-	450.00	450.00
6	Preparation of Potting Mixture Includes Pulverisation and straining	Oct-Nov	MD	315	6	1,890.00	-	1,890.00
7	Filling of Polypot Bags including re-potting and setting	Oct-Nov	MD	315	35	11,025.00	-	11,025.00

8	Watering (Oct to March)	Oct-Mar	MD	315	19	5,985.00	-	5,985.00
9	Sorting, weeding, grading and re-setting over one year period	Apr-Mar	MD	315	15	4,725.00	-	4,725.00
10	Contingencies (Watercan, Buckets, Nursery Shed, Electric Charges/ Desel Charges/ Maint. of Pump Set/ Maint. of Nursery, etc.)		-	-	-	-	400.00	400.00
	Total				85	26,775.00	7,836.00	34,611.00


C. 3rd Financial Year (Maintenance upto Planting) April-June


1	Watering (Apr to June)	Apr-June	MD	315	12	3,780.00	-	3,780.00
2	Weeding, shifting and grading	Apr-June	MD	315	4	1,260.00	-	1,260.00
3	Cost of Insecticides/Bio pesticides	Apr-June			0	-	400.00	400.00
4	Application of insecticides/Bio Pesticides	Apr-June	MD	315	1	315.00	-	315.00
5	Contingencies		-	-	-	-	230.00	230.00
	Grand Total				17	5,355.00	630.00	5,985.00

ABSTRACT

Item of Works		MD	Labour cost @ Rs.315/- per day	Material Cost in Rs.	Total Cost in Rs.
A	1st Financial Year (3 Months)	22.5	7,087.50	3,124.50	10,212.00
B	2nd Financial Year (12 Months)	85	26,775.00	7,836.00	34,611.00
C	3rd Financial Year (3 Months)	17	5,355.00	630.00	5,985.00
	Total	124.5	39217.50	11590.50	50,808.00

Cost per 18 Months old Seedlings= 50808/1000=50.81


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FENCING FOR COMPENSATORY PLANTATION RAISED INSIDE THE FOREST AREAS USING BAMBOO TWIGS & THORNS (250 Rmt/Ha) Wage Rate Rs.-315/- Per day


Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour cost @ Rs.315/- per day	Material cost (Rs)	Total cost (Rs.)
1	2	3	4	5	6	7
0th year (PPO)						
1	NIL		0	0	0	0
	Total		0	0	0	0
1st year Maintenance						
1	Taking an average erimeter of 250 Rmt/Ha @93.85/mt (Half bundle Bamboo Twigs/Mt @ 120/Bundle) Labour: Materials = 40 : 60 (Approximate)	Set/Oct	30	9450	14133	23583
2	Bamboo Poles of 8 height a distance of 2 Mt spacing to be fixed (2" under soil & 2" above soil) 250/2=125+1=126 Nos. of Bamboo Poles 1 Bamboo (Approximate) 24" height = 3 Poles 1 Bamboo (Approximately) 24" Height = 3 Poles 126/3 = 42 Bamboos @ Rs.200/- Per Bamboo	Set/Oct	0	0	8400	8400
3	Preparation of Bamboo poles, Digging of holes of 2 ft depth and fixing Bamboo poles @20 Poles/Md	Set/Oct	6.5	2047.5	0	2047.5
4	Cost of Bamboo for tying 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	Set/Oct	0	0	4200	4200
5	Making Bamboo batten, Finishing the batten & Tying the same on doule strand on Coir rope etc. @Rs.11/Rmt.	Set/Oct	9	2835	0	2835
6	Cost of coir rope @Rs. 0.125 Kg/Rmt 500 x 0.125 kg = 62.5 Kg @Rs.70/Kg	Set/Oct	0	0	4375	4375
7	Making one Bamboo Twigs gate with Bamboo Frame		0	0	500.5	500.5
	Total		45.5	14332.5	31608.5	45941
Rate per running Mtr Rs.45941/250=183.764/Rmt Or Say Rs.184/-						
2ND YEAR MAINTENANCE						
1	Repair & Maintanance of Bamboo Twigs Fence including Materials Cost	Feb/Mar	20	6300	1500	7800
	Grand Total		20	6300	1500	7800
Rate per running Mtr Rs.7800/250=31.20/Rmt Or Say Rs.31/-						
3RD YEAR MAINTENANCE						
1	Repair & Maintanance of Bamboo Twigs Fence including Materials Cost	Feb/Mar	20	6300	5675	11975
	Grand Total		20	6300	5675	11975
Rate per running Mtr Rs.11975/250=47.90/Rmt Or Say Rs.48/-						
4TH YEAR MAINTENANCE						
1	Repair & Maintanance of Bamboo Twigs Fence including Materials Cost	Feb/Mar	20	6300	5675	11975
	Grand Total		20	6300	5675	11975
Rate per running Mtr Rs.11975/250=47.90/Rmt Or Say Rs.48/-						


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5TH YEAR MAINTENANCE						
1	Repair & Maintenance of Bamboo Twigs Fence including Materials Cost	Feb/Mar	20	6300	5675	11975
	Grand Total		20	6300	5675	11975

Rate per running Mtr Rs.11975/250=47.90/Rmt Or Say Rs.48/-

ABSTRACT							
Sl. No	Year	No. Person Day	Labour Cost @Rs.315/- per day	Material Cost in Rs.	MELD & Other Contingency	Seedling Cost in Rs.	Total Cost in Rs.
1	0th Year	0	-	-	0	0	-
2	1st Year	45.5	14,332.50	31,608.50	0	0	45,941
3	2nd Year	20	6,300.00	1,500.00	0	0	7,800
4	3rd Year	20	6,300.00	5,675.00	0	0	11,975
5	4th Year	20	6,300.00	5,675.00	0	0	11,975
6	5th Year	20	6,300.00	5,675.00	0	0	11,975
	Total	125.5	39,532.50	50,133.50	0	0	89,666


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WATERING MODEL W-II Watering Provision to CA Plantation

Diesel Pump set with Borewell (1 Pump set + Bore well for 5Ha Plantation), Wage Rate @315/-
Year of Installation (0th Year)

1	Cost of Borewell	1,50,000
2	Cost of Diesel Pump set 5HP	60,000
3	Diesel pump set & accessories like commander Pipes, etc.	30,000
4	Water Storage Tanks/ Flexible pipes	15,000
		2,55,000

Cost of Water per Plant (2,55,000/5000)= Rs51/- Cost of Water per Ha= Rs.51,000/-

51,000

1ST YEAR WATERING

1	Recurring expenditure i.e. Diesel, Mobil, Engine Oil, etc. for pumping water- 21 x 1000 =	21,000
2	Watering 1000 Plants (Nov-Mar) @200 Plants/Md with 7 days rotation 20 Md x 5 Month = 100 Md x 315=	31,500
	Total	52,500

2ND YEAR WATERING

1	Recurring expenditure i.e. Diesel, Mobil, Engine Oil, etc. for pumping water- 21 x 1000 =	21,000
2	Maintenance Diesel pump se etc. @15% of the installation cost	7,650
3	Watering 1000 Plants (Apr-June & Nov-Mar-8 Months) @200 Plants/Md with 7 days rotation 20 Md x 8 Month = 160 Md x 315=	50,400
	Total	79,050

3RD YEAR WATERING

1	Recurring expenditure i.e. Diesel, Mobil, Engine Oil, etc. for pumping water- 21 x 1000 =	21,000
2	Maintenance Diesel pump se etc. @15% of the installation cost	7,650
3	Watering 1000 Plants (Apr-June & Nov-Mar-8 Months) @200 Plants/Md with 7 days rotation 20 Md x 8 Month = 160 Md x 315=	50,400
	Total	79,050

4TH YEAR WATERING

1	Recurring expenditure i.e. Diesel, Mobil, Engine Oil, etc. for pumping water- 21 x 1000 =	21,000
2	Maintenance Diesel pump se etc. @15% of the installation cost	7,650
3	Watering 1000 Plants (Apr-June & Nov-Mar-8 Months) @200 Plants/Md with 7 days rotation 20 Md x 8 Month = 160 Md x 315=	50,400
	Total	79,050

5TH YEAR WATERING

1	Recurring expenditure i.e. Diesel, Mobil, Engine Oil, etc. for pumping water- 21 x 1000 =	21,000
2	Maintenance Diesel pump se etc. @15% of the installation cost	7,650
3	Watering 1000 Plants (Apr-June & Nov-Mar-8 Months) @200 Plants/Md with 7 days rotation 20 Md x 8 Month = 160 Md x 315=	50,400
	Total	79,050

ABSTRACT

Sl. No	Year	No. Person days	Labour Cost @Rs.315/- per day	Material Cost	Total Cost in Rs.
1	0th Year	0	-	51,000	51,000
2	1st Year	100	31,500	21,000	52,500
3	2nd Year	160	50,400	28,650	79,050
4	3rd Year	160	50,400	28,650	79,050
5	4th Year	160	50,400	28,650	79,050
6	5th Year	160	50,400	28,650	79,050
	Total	740	2,33,100	1,86,600	4,19,700

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Cost Norms for creation of Compensatory Afforestation with Stabilization of Soil & Conservation of Moisture Wage Rate @315/- PER DAY

Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour cost @ Rs.315/- per day	Material cost (Rs)	Total cost (Rs.)
1	2	3	4	5	6	7
0th year (PPO)						
1	NIL		0	0	0	0
	Total		0	0	0	0

1st year Maintenance

1	Soil Conservation measure structures like Staggered Trench, Percolation Pit, Contour trench, Graded earthen bund, LBCD, Wre mesh, LBCD, Sub Surface Dyke & WHS as per the slope & Sites requirement on LS	Apr/Sept	0	0	20215	20215
	Total		0	0	20215	20215

2ND YEAR MAINTENANCE

1	Maintenance of SMC structures @15 % of initial year cost	Apr/July	0	0	3032	3032
	Grand Total		0	0	3032	3032

3RD YEAR MAINTENANCE

1	Maintenance of SMC structures @15 % of initial year cost	Apr/July	0	0	3032	3032
	Grand Total		0	0	3032	3032

4TH YEAR MAINTENANCE

1	Maintenance of SMC structures @15 % of initial year cost	Apr/July	0	0	3032	3032
	Grand Total		0	0	3032	3032

5TH YEAR MAINTENANCE

1	Maintenance of SMC structures @15 % of initial year cost	Apr/July	0	0	3032	3032
	Grand Total		0	0	3032	3032

ABSTRACT

Sl. No	Year	No. Person Day	Labour Cost @Rs.315/- per day	Material Cost in Rs.	MELD & Other Contingency	Seedling Cost in Rs.	Total Cost in Rs.
1	0th Year	0	-	-	0	0	-
2	1st Year	0	-	20,215.00	0	0	20,215
3	2nd Year	0	-	3,032.00	0	0	3,032
4	3rd Year	0	-	3,032.00	0	0	3,032
5	4th Year	0	-	3,032.00	0	0	3,032
6	5th Year	0	-	3,032.00	0	0	3,032
	Total	0	-	32,343.00	0	0	32,343

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CALCULATION SHEET FOR COST OF VEHICLE INCLUDING MAINTENANCE ETC.

Sl. No	Work to be done	Estimated expenditure
1	Cost of one Mahindra Scorpio S11 on Road Price including RTO, Insurance & Other charges	Rs. 20,98,000=00
	POL @ Rs. 12,000 Month x 120 Month	Rs. 14,40,000=00
	Maintenance including Tyre & Tube etc. @ Rs. 60,000/- per year for 10 Year	Rs. 6,00,000=00
	Sub Total	Rs. 41,38,000=00
2	Cost of one Mahindra Thar LX 4-STR Convertible Diesel MT on Road Price including RTO, Insurance & Other charges	Rs. 16,00,000=00
	POL @ Rs. 12,000 Month x 120 Month	Rs. 14,40,000=00
	Maintenance including Tyre & Tube etc. @ Rs. 60,000/- per year for 10 Year	Rs. 6,00,000=00
	Sub Total	Rs. 36,40,000=00
3	Cost of 1 Nos of Mahindra Bolero B6 (O) on Road Price including RTO, Insurance & Other charges @ Rs. 11,00,000/-	Rs. 11,00,000=00
	POL @ Rs. 12,000 Month x 120 Month =Rs.14,40,000/-	Rs. 14,40,000=00
	Maintenance including Tyre & Tube etc. @ Rs. 60,000/- per year for 10 Year = Rs.6,00,000/-	Rs. 6,00,000=00
	Sub Total	Rs. 31,40,000=00
	Grand Total	Rs. 1,09,18,000=00

(Rupees One Crore Nine Lakh Eighteen Thousand) only

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Annexure-IX**Calculation sheet for deployment of Driver through Service Provider (In Rs.)**

Sl No	Category	Basic wage rate/day	Basic Wage per month	EPF 13% of the wage	ESI, 4.75% of the wage	GST @ 18%	Service Charges @100/- per person	Total requirement per month (Col.4+5+6+7)	Total Amount (Col. 8+9)
1	2	3	4	5	6	7	8	9	10
1	Deployment of Driver through service provider	405/-	12150/-	1580/-	577/-	2187/-	100/-	16594/-	16594/-

For 1 person @Rs. 16594/- per month for 1 persons for 10 years = Rs. 16594 x 1 x 12 x 10 = Rs. 19,91,280/-

(Rupees Nineteen Lakh Ninety One Thousand Two Hundred Eighty)only


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Annexure-X

Calculation sheet for deployment of Squad Person through Service Provider (In Rs.)

Sl No	Category	Basic wage rate/ day	Basic Wage per month	EPF 13% of the wage	ESI, 4.75% of the wage	GST @ 18%	Service Charges @100/- per person	Total requirement per month (Col.4+5+6+7)	Total Amount (Col. 8+9)
1	2	3	4	5	6	7	8	9	10
1	Deployment of Squad Person through service provider	315/-	9450/-	1229/-	449/-	1701/-	100/-	12929/-	12929/-

For 10 person @Rs. 12929/- each per month for for 10 years = Rs. 12929 x 10 x 12 x 10 = Rs. 1,55,14,800/-

(Rupees One Crore Fifty Five Lakh Fourteen Thousand Eight Hundred)only



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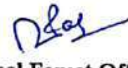

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Annexure-XI

**READY RECKONER (FINANCIAL OUTLET) FOR COMPENSATORY
AFFORESTATION SCHEMES ON DEGRADED FPREST LAND FOR THE FY 2021-22**

ANNEXURE - II - SUMMARY OF THE WORK DONE FOR THE FY 2021-22								
Sl No	CA-Code	Core Plantation	Watering	Fencing	SMC	Total Cost per Ha	Total CA Area In Ha	Grand Total Cost
			Diesel Pumpset with mannual	Bamboo Twigs				
CA 500+WATERING+FENCING		CA (ANR) 500						
1	ANR500 + DP+ BT+ SMC	1,36,098	4,78,294	99,967	35,633	7,49,992	770	57,74,93,840
CA 1000+WATERING+FENCING		CA (AR) 1000						
2	AR1000 + DP+ BT+ SMC	2,34,718	4,78,294	99,967	35,633	8,48,612	200	16,97,22,400
CA 1600+WATERING+FENCING		CA (AR) 1600						
3	CA1600 + DP+ BT+ SMC	3,10,117	4,78,294	99,967	35,633	9,24,011	430	39,73,24,730
Grand Total								1,14,45,40,970



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**TOTAL PROJECT COST OF THE COMPENSATORY
AFFORESTATION PLANTATION SCHEME**

Sl. No	Plantation Type	Extent area in Ha/Rmt etc	Cost Norm per Ha (Rs)	Total Cost (Rs)	Remarks
1	ANR With Gap Plantation @500 Plants/Ha including cost of Plantation+ Diesel Pump & Manual Watering + Bamboo Twig Fencing + Soil Moisture Conservation (SMC)	770 Ha	7,49,992/-	57,74,93,840	Rs. 114,45,40,970/- is to be deposited in Adhoc CAMPA Account
2	AR Plantation @1000 Plants/Ha including cost of Plantation+ Diesel Pump & Manual Watering + Bamboo Twig Fencing + Soil Moisture Conservation (SMC)	200 Ha	8,48,612/-	16,97,22,400	
3	AR Plantation @1600 Plants/Ha including cost of Plantation+ Diesel Pump & Manual Watering + Bamboo Twig Fencing + Soil Moisture Conservation (SMC)	430 Ha	9,24,011/-	39,73,24,730	
	Sub Total (1+2+3)	1400 Ha	--	114,45,40,970	
4	Strengthening of the VSS of the adjoining CA sites with provision of EPA activities/ Incentive etc for 10 Year i.e. from 5 % of the CA Cost			5,72,27,000	To be supplied in kinds (Vehicles). & POL, Maint. Cost & Remuneration etc. cost to be deposited as per the direction of the DFO, Koraput Forest Division
5	Monitoring & Supervision Cost i.e. Cost of Vehicles, POL, Maintenance etc. for 10 year			1,09,18,000	
6	Deployment of Protection Squad (10 Person) & Driver (1 Person) for ride of Squad Vehicle through service provider-Remuneration Cost for 10 years= (1,55,14,800+19,91,288= Rs.1,75,06,080/-) or say Rs. 1,75,06,000/-			1,75,06,000	
7	Protection from Forest Fire, Prevention and Management for 10 Years i.e. 5 % of the CA Cost. For all CA sites in six Ranges.			5,72,27,000	
8	Installation of one GIS Lab in DFO Office Campus.			25,00,000	
	Sub Total (4+5+6+7+8)			14,53,78,000	
	Grand Total			128,99,18,970	
(Rupees One Hundred Twenty Eight Crore Ninety Nine Lakh Eighteen Thousand Nine Hundred Seventy) only.					

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CERTIFICATE ON DSS ANALYSIS FOR CA/ACA/PCA

This is to certify that DSS Analysis of land identified for CA/ACA/PCA and subsequent ground truthing have been done. To outcome is as mentioned below:

Sl. No	Name of Range	Name of the Forest Block (RF/PRF/PF/DPF/Revenue Forest)	Area identified for CA/ACA/PCA (in Ha)	Classification of identified Land (in Ha)						Area suitable for Plantation (in Ha)				Plantation Model (AR/ANR)	Remarks
				Very Dense Forest	Moderately Dense Forest	Open Forest	Non-Forest	Scrub	Water	Total	Open Forest	Non-Forest	Scrub	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Koraput	Jamuguda PRF	100	0	0	58.704	8.099	33.197	0	100	58.704	8.099	33.197	100	ANR
2	Koraput	Kankadabari RF	100	0	0	88.129	2.627	9.244	0	100	88.129	2.627	9.244	100	ANR
3	Semiliguda	Nandapur Ext. PRF	40	0	0	6.968	32.162	0.87	0	40	6.968	32.162	0.87	40	ANR
4	Semiliguda	Kasandi PRF	50	0	0	36.727	13.273	0	0	50	36.727	13.273	0	50	ANR
5	Semiliguda	Ampavali RF	90	0	0	62.036	19.424	8.54	0	90	62.036	19.424	8.54	90	ANR
6	Balda	Mali Bhimdol RF	200	0	0	121.067	72.041	6.892	0	200	121.067	72.041	6.892	200	ANR
7	Lamtaput	Ghodabeda PRF	100	0	0	0	18.915	81.085	0	100	0	18.915	81.085	100	ANR
8	Laxmipur	Raisil RF	90	0	0	65.62	24.38	0	0	90	65.62	24.38	0	90	ANR
9	Narayanpataka	Jamuguda PRF	100	0	0	25.568	64.552	9.88	0	100	25.568	64.552	9.88	100	AR
10	Laxmipur	Toituguda PRF	100	0	0	11.667	29.535	58.798	0	100	11.667	29.535	58.798	100	AR
11	Balda	Hatibari RF	60	0	0	0	60	0	0	60	0	60	0	60	AR
12	Laxmipur	Hatimali DPF	100	0	0	75.966	21	3.034	0	100	75.966	21	3.034	100	AR
13	Laxmipur	Godmak PRF	120	0	0	24.802	11.886	83.312	0	120	24.802	11.886	83.312	120	AR
14	Laxmipur	Gouda Ramji DPF	150	0	0	16.828	41.802	91.37	0	150	16.828	41.802	91.37	150	AR

Suitable for ANR with Cap Plantation @500 Plants/Ha

Suitable for AR Plantation @1000 Plants/Ha

Suitable for AR Plantation @1600 Plants/Ha

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 Koraput Forest Division

Countersigned

Regional Chief Conservator of Forests
 Koraput Circle, Koraput

**SCHEME FOR ADITIONAL COMPENSATORY
AFFORESTATION OVER
140 Ha. AT GODMAK PRF OF LAXMIPUR
RANGE
UNDER
KORAPUT FOREST DIVISION
FOR DIVERSION OF 697.979Ha. OF FOREST LAND
FOR
POTTANGI BAUXITE MINES
UNDER POTTANGI TAHASIL, DIST. KORAPUT
(ODISHA)
OF
M/s. NATIONAL ALUMINIUM COMPANY LIMITED,
BHUBANESWAR (ODISHA)**

SCHEME FOR ADDITIONAL COMPENSATORY AFFORESTATION FOR DIVERSION OF FOREST LAND FOR POTTANGI BAUXITE MINES, KORAPUT

Introduction:

This scheme is prepared for Additional Compensatory Afforestation in Forest land in view of diversion of forest by M/s. National Aluminium company limited (NALCO) as required under section 3 of forest (Conservation) act-1980. NALCO is a Navaratna Public Sector Undertaking under Ministry of Mines, Govt of India, with its registered office at Bhubaneswar, Odisha. The Mines and Alumina Refinery is one of the largest integrated Bauxite-Alumina-Aluminium-Power Complex in the country. The Company Has a 2.275MTPA Alumina Refinery along with a 6.825 MTPA Bauxite Mine (Panchpatmali) located near Damanjodi in Koraput district of Odisha. NALCO is expanding its Alumina refinery capacity by proposing 5th stream of the alumina refinery at Damanjodi for additional production of one million tons per annum (MTPA) of alumina. To cater the raw material requirement of this project, the Pottangi bauxite deposit near Pottangi Village of Koraput district, Odisha has been identify by NALCO for mining lease which was discovered by the Geological Survey of India (GSI) in Nov-1971. The Mining Plan has been prepared for 697.979Ha and submitted under Rule 16(1) of Minerals (other than Atomic and Hydrocarbons Energy Mineral) Concession Rule 2016 along with Progressive Mine Closure Plan under Rule 23 of MCDR 2017 for approval. Govt of Odisha has granted the lease in favour of NALCO for a period of 50 years and issued a fresh letter of Terms and Conditions governing the grant of mining lease vide letter no 3794/SM dated 14.05.2018.

The mine is proposed over a total area of 697.979 Ha. Coming under forest category. However, the M/s. NALCO has agreed of provide fund for raising of Additional Compensatory plantation over 140 Ha. having forest land in lieu of 697.979 Ha. Forest land of Koraput Division.

DETAILS OF LAND FOR ADDITIONAL COMPENSATORY AFFORESTATION:

The identified Degraded Forest land for Additional Compensatory Afforestation has been listed below. The DFO, Koraput Forest Division vide her letter No. 4231 dated 07.09.2022 allotted 140 Ha. of Degraded Forest land for Compensatory Afforestation purpose.

Land schedule **(140 Ha.)** of land prepared for Additional Compensatory Afforestation ANR with gap. @ 500/Ha.

Sl. No.	Name of the Range	Name of Forest Block	Area in Ha.	Remarks
1	Laxmipur	Godmak PRF	140	Suitable for ANR with Gap Plantation @ 500 Plants/Ha
Total			140	

VEGETATION DENSITY:

The density of the crop of the above selected compensatory afforestation area of Block Plantation site is 0.05 where it is 0.1 to 0.3 in ANR Plantation sites .

DESCRIPTION OF EXISTING VEGETATION

This area is covered with unwanted obnoxious weeds like Eupatorium and Lantana along with some pole crops in scattered manner. No prominent economic species are available within the proposed site. However, saplings and bushy growth of Mersunga leaf plant (Murraya coinghii), Mango (Mangifera indica), Jackfruit (Artocarpus heterophyllus), Poksungha (Chromelana Sp.), Khakada (Gelonium multiflorum), Asan (Terminalia alata), Naguari (Lantana camara), Begunia (Vitex negundo), Palas (Butea monosperma) etc are existing now Besides, some shrubs/ herbs of Bhuin-neem (Andrographis paniculata), Kurei (Hollarhena anti-dysenterica), Kendu (Dyospyrus melanoxylon) etc are also noticed in some patches. The growth of the weeds and bushes are too much congested.

Description of the Area:

- (i) **Topography:** The terrain of the above degraded Forest area are gently slope to hilly with some where good soil and drainage.
- (ii) **Climatic Condition:** The climatic condition of the area favouring 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, rainy season is from July to September and winter from November to February.
- (iii) **Slope:** The slopes are gentle to moderate, rarely steep. When the slopes are gentle to moderate, they are congenial for formation of thick bauxite profile. The slope gradient varies from 1:6 to 1:12. The peak portions of the deposit are occupied by khondalites forming the ridges.

- (iv) **Drainage Pattern:** The drainage pattern is of dendritic type.
- (v) **Temperature:** The area enjoys a tropical climate. Lying at an altitude of over 1000m. Above M.S.L., Pottangi area has a pleasant climate during summer. The temperature in May rarely exceeds 40°C. The winter months are pretty cold and in December-January, the temperature often drops down to 5°C.

SURVEY & DEMARCATION

The area is to be surveyed in field with reference to the Forest map using G.P.S. system and the survey as well as posting of RCC Pillar will be done by the user agency.

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 would contain the name of the plantation site, area, year of planting, planting module, no. of seedlings planted, funding agency & other details, if necessary.

Technical Details:-

OBJECTIVE OF THE SCHEME -

It is mandatory requirement under the provision of Forest (Conservation) Act, 1980.

- (i) To replenish the loss of forest land to be diverted for non-forestry purpose i.e. mining of Bauxite.
- (ii) To generate employment to the villagers living around the identified area.
- (iii) To increase the ground water table through Soil & Moisture Conservation.
- (iv) To increase the bio-diversity for improvement of the local ecology.
- (v) To fulfil the requirement of fuel wood & small timber of the local inhabitants.
- (vi) To provide a green clothing to the area by means of artificial regeneration or plantation in-order to reduce soil erosion.
- (vii) The pattern of plantation will be "ANR with 500 plants per Ha" is to be carried out on the selected Additional CA area.

PLANTATION TECHNIQUE

The area should be well demarcated before raising plantation by G.P.S. survey and fixing of Boundary pillar (where missing) by engraving thereon the co-ordinates and distance to next pillar. As far as possible weeds will be removed especially prior to 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.

PLANTING & POST-PLANTING:

RAISING OF NURSERY

18 Month old Seedlings will be planted on the selected Additional CA site where the seedlings for the plantation shall be raised in the different Permanent Central nursery's of concerned CA Plantation Range of Koraput Forest Division and transportation of seedlings shall be done from each CN to Plantation site during planting period. Further 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. Species like *Gmelina arborea* (Gambhar), *Terminalia alata* (Asan), *Pongamia glabra* (Karanj), *Emblica officinalis* (amla), *Kurum* (*Adina cordifolia*), *Tectona grandis* and other species as per the suitability of the sites will be preferred to be raised and planted on the sites.

ALIGNMENT AND STACKING

Alignment, stacking and pitting will be taken up in the month of January-February, pits of size 45cm X 45cm X 45cm will be dug maintaining a spacing of 2.5 mt. x 2.5 mt in all selected CA sites of AR & ANR before going to pitting.

PLANTING

The seedlings will be planted in dug out pits of 45 cm³ maintaining a spacing of 2.5 mt between the pits i.e. @500 Plants/Ha in the ANR Plantation sites. Plantation should be taken up after first regular shower of monsoon and should ideally be completed by end of July. NPK/DAP/etc. will be applied as per the plantation guideline in the norm for basal dose. Anti- termite and insecticide 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 of the Ranges.

CHOICE OF SPECIES

Species like *Artocarpus heterophylla* (Jackfruit), *Bombax ceiba* (Simili), *Cassia fistula* (Sunari), *Dendrocalamus strictus*. (Bamboo), *Gmelina arborea* (Gambhari), *Azadirachta indica* (Neem), *Madhuca latifolia* (Mahula), *Terminalia chebula* (Harida), *Terminalia belerica* (Bahada), *Mangifera indica* (Aamba-Local variety), *Albizia procera*/Lebbek (Sirisa), *Emblica officinalis* (Amla), *Pongamia pinnata* (karanja), *Terminalia arjuna* (Arjuna), *Aegle marmelos* (Bela), *Dalbergia sissoo* (Bali Sisoo), *Samanea saman* (Bada Chakunda), *Syzygium cumini* (Jamun), *Tamarindus indica* (Tentuli), *Terminalia tomentosa* (Asan), *Ziziphus mauritiana* (Bara Koli), *Swietenia mahagoni* (Mehagani), *Bauhinia vahlii* (Siali), *Simaruba glauca* (Simaruba), *Tectona grandis* (Saguan),

Acacia aunciloformin, Acacia Magnum, Silver Oak etc. and species as per the suitability of the sites will be choised and select during the planting period.

PLANTING TECHNIQUES & MODEL

Out of the above species the intensity of plantation for Fuel yielding and Timber species will be planted 35:35 % and Bamboo and Fruit yielding species in 10:20 ratio.

The planting of species shall be planted in such a manner that the long term fruit, timber yielding species/Bamboo shall be surrounded with short term fuel wood yielding species. The species should be planted alternate to each other & no repetition of species in close of pits shall be done.

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 vermin 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).

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 60cm to 1 Mtr 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 fertilizer and insecticide can 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.

The Schedule of operation for preparation of site, pre-planting, planting, post-planting are prescribed herewith:-

OPERATIONS	PERIOD OF COMPLETION
i. Advance preparation of site.	End of October
ii. Alignment & Digging of pits	End of February
iii. Stacking	End of February
iv. Planting.	1 st week of July
v. Casualty replacement	End of July
vi. Soil working, weeding, manuring	End of August
vii. Soil & water conservation measuring	End of September
viii. Fire line tracing	During December
ix. Watch & Ward	July to March

Post planting operation in 2nd year.

- | | | |
|--|---|---------------------|
| a. Casualty replacement, 1 st weeding soil
Working & manuring. | : | End of July |
| b. Fire line tracing | : | During December |
| c. Watch & Ward | : | Throughout the year |

In 3rd year.

- | | | |
|--|---|---------------------|
| a. Weeding, soil working and application of manure | : | End of July |
| b. Fire line tracing | : | December |
| c. Watch & Ward | : | Throughout the year |

In 4th year

- | | | |
|----------------------|---|---------------------|
| a. Fire line tracing | : | End of December |
| b. Pruning | : | September |
| c. Watch & Ward | : | Throughout the year |

5th year to 10th year

- | | | |
|----------------------|---|---------------------|
| a. Fire line tracing | : | End of December |
| b. Pruning | : | September |
| c. Watch & Ward | : | Throughout the year |

WATERING:

The watering provision is to be provided to all ANR Additional CA plantation sites for the period from November to March in 1st year, April to June and November to March from 2nd year to 5th year maintenance by the help of diesel pump sets to provide better growth of the plantation and to avoid damage due to hot sunlight or scarcity of water as well as to success of the plantation. The cost norm of watering model W-II/ Ha is enclosed.

WATCH & WARD:

The important element of successful plantation is Protection. Watchers are to be engaged on daily wage basis for **ten years** but they should 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 ten years but considering the work efficiency the person, if not found suitable should be changed. Since in all plantation sites enough care should be taken to engage efficient worker for protection as there is every possibility of damage by grazing. Therefore, in the planting design non browsable tree species like Simaruba should be planted in three four rows to-wards periphery of the plantation at the foot hill before Agave Plantation.

FENCING:

To protect the plantation from grazing and other biotic interference, it will be provided Bamboo twigs and thorns fencing along the periphery of ANR Plantation sites of the degraded Forest Land for better protection as well as survival of the Plantations. The cost estimate for Bamboo Twig fencing/Ha has been enclosed.

CONTROL MEASURES:

- 1) The nursery journal, the plantation journal and other records shall be maintained separately in accordance with the provision of "The Orissa Forest Plantation Manual 1977" indicating the physical and financial achievements. Necessary entries with regard to plantation activities undertaken shall be entered in the journals and shall be produced before the inspecting officers. In case of any eventuality like cyclone, thunder storm, hail storm etc. if caused destruction to the plantation, this should also be noted. It is also necessary to note the distribution of rain fall which not only helps in the growth of plants at site but also acts as a guideline for the ensuing years nursery schedule to be formulated.
- 2) For protection, measures shall be taken to save the plantation from fire incidence and prevent accidental trespass of cattle, goat etc. to the premises of the nursery. Boundary area will be scrapped to a width of 2 mtr. During February / March the cut materials are to be burnt under strict supervision.

SOIL MOISTURE CONSERVATION:

Soil and moisture conservation activities are essentially required to be dove-tailed to plantation activities in order to improve water availability in Forest. In order to achieve the objective and implement the programme efficiently a well planned strategy is essential. The natural slope of the Forest land selected for Compensated Afforestation varies from 0 degree to 35 degree being the foothill. The areas selected for the catchment where the precipitation touches the ground and subsequently drained through the drainage line. So this becomes the focus area of the soil moisture conservation programme. The intervention suggested below is aimed at capturing the rain water to enhance the retention period and to increase the quantum of infiltration.

Further the additional soil moisture conservation measures is to be provided for the Moderate Dense Forest (MDF) area as per the DSS identification of MoEF and CC (Forest Conservation Nodal) New Delhi to avoid the soil erosion and to conserve the soil as well as moisture of the Forest area for which additional cost has been provided in the scheme.

Forest floor treatment:

- **Staggered Trenches-** The staggered trenches are primarily aim to break the runoff which otherwise will form reels and gullies. Such reels when conversed will form gullies. Continuous gullies when joined together will form a ditch. Therefore it is aimed at excavating staggered trenches as per the field requirement during execution of works. Each such trench will be 2 m (length) X 0.5 m (width) x 0.5m (depth). These trenches will conserve rain water of this region and facilitates its percolation. Therefore while aligning such trenches adequate care should be taken so that gullies are not formed by the water flowing downhill from the wedges of trench.
- **Graded Earthen Bund-** Earthen graded bunds can be erected on the low slope (<5%) Forest and pediments of hills. These bunds would be 1.5 Meter high (minimum) and follow a longitudinal slope of 0.2% to 0.5%. The purpose of these bunds is to guide the runoff along a longer path to increase time of concentration and promote infiltration. Preferably burrow pits to be located on the upstream.

This can be laid on the border of Forest land or it can be on the where the hill slope ends and pediment begins. This bund will prevent direct entry of runoff from hills/forest into cultivable land. Its main purpose is to delay the runoff and increase the time of concentration substantially. The alignment of the bund will be such that the flow path will be as wide as possible. This will provide sufficient width for the rain water to flow at shallow depth thus facilitating quick infiltration. Earth borrowed from the pits dug from the upstream should meet the requirement of earth work for the graded bund.

The burrow pits of this bund will be discontinuous and act as soak pits to enhance infiltration. Burrow pits may be located on the downstream side if sufficient earth is not available on the upstream.

The top of the bund should have longitudinal slope of 0.2 to 0.5% so that the flow path is non-silting & non-erosive. If required Loose Boulder spurs would be put up across the flow path to control the longitudinal slope.

It may be noted that this bund is not to retain water for very long as in case of reservoir bunds. Its purpose is to change the direction of flow of runoff. Stone pitching on the upstream side may be necessary to prevent scouring by runoff coming downhill.

DRAINAGE LINE TREATMENT:

Drainage line treatment can be done on the site by Construction of Loose Boulder Structure , Wire mesh structure etc. as per the requirement of the sites where the structure is to be created across the drainage line for retention of run-off and reduction of velocity. Such structure should preferably have top width of 1m with upstream slope of 1:1 ration and downstream ration of 1:5 ratios.

PEOPLE'S PARTICIPATION:

In order to involve the adjoining villages in the protection of plantation, meetings are to be conducted in the adjoining villages and efforts to be made to constitute VSS who will be assigned with the task of protection and management of the compensatory Afforestation with sharing benefit as per JFM Resolution 1993 for all plantation site. For the above purpose supporting activities like livelihood improvement/Socio economic development of the VSS members, strengthening of the local level institution, Capacity Building and local level training and Entry Point Activities (EPA) is to be conducted on every VSS of the plantation site. For the success of the above and to create Assets for the communities bonafide requirement and to improve the socio economic status during the project implementation period will be met from 5 % funds of the CA cost is to be provided by the User Agency as per the direction of the Divisional Forest Officer, Koraput to meet the VSS's fulfilment.

MONITORING & EVALUATION:

The Range Officer of Laxmipur Range will undertake field checks of the works of the additional CA sites and will be cross checked by the Asst. Conservator of Forests (ACFs) and Divisional Forest Officer, Koraput Forest Division. GPS co-ordinates along with other required informations of Addl CA and other activities will be uploaded in the e-Green watch Portal of NIC, MoEF, and CC, Govt. Of India for the purpose of online monitoring Annual progress of plantation involving growth of planted seedlings, survival percentage etc. will be monitored and recorded in the plantation journal by the field staffs of project implanting Ranges and reported to the Divisional Forest Officer for necessary action. The same will be reported to higher authorities for monitoring and evaluation of the activities every year.


Funding Agency : M/s National Aluminium Company Limited (NALCO)


Proposed Monitoring Mechanism : The Scheme shall be executed by the Divisional Forest Officer, Koraput Forest Division with his staff and all Prescribed records are to be maintained.

Total Cost of the Project : Total Cost of the project is Rs. 12,69,94,830/- (Rupees Twelve Corer Sixty Nine Lakh Ninety Four Thousand Eight Hundred Thirty) only as detailed in the Total Project Cost which shall be payable by the user agency as per the advice of the concerned authority.

**READY RECKONER (FINANCIAL OUTLET) FOR ADDITIONAL COMPENSATORY
AFFORESTION SCHEMES AT GODMAK PRF FOR THE FY 2022-23**


AFFORESTATION SCHEMES AT GODMAR PR...								
Sl No	CA-Code	Core Plantation	Watering	Fencing	SMC	Total Cost per Ha	Total CA Area in Ha	Grand Total Cost
			Diesel Pumpset with manual	Bamboo Twigs				
CA 500+WATERING+FENCING			CA (ANR) 500					
1	ANR500 + DP+ BT+ SMC	1,42,904	5,02,209	1,04,966	37,415	7,87,494	140	11,02,49,160
Grand Total								11,02,49,160

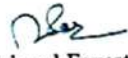

 Asst. Conservator of Forests
 Koraput Forest Division
 Koraput Forest Division
K O R A P U T


 Divisional Forest Officer
 Koraput Forest Division
 Koraput Forest Division

**TOTAL PROJECT COST OF THE ADDITIONAL
COMPENSATORY AFFORESTATION
PLANTATION SCHEME**


Sl. No	Plantation Type	Extent area in Ha/Rmt etc	Cost Norm per Ha (Rs)	Total Cost (Rs)	Remarks
1	ANR With Gap Plantation @500 Plants/Ha including cost of Plantation+ Diesel Pump & Manual Watering + Bamboo Twig Fencing + Soil Moisture Conservation (SMC)	140 Ha	7,87,494/-	11,02,49,160	To be Deposited s per the direction of the authority.
	Sub Total (1)	140 Ha	--	11,02,49,160	
2	Additional Soil Moisture Conservation of the MDF area over 139 Ha as per DSS Reorts @37,415/- Ha			52,00,685	
	Sub Total (1+2)			11,54,49,845	
3	10 % of the total Plantation cost towards Strengthening of the VSS of the adjoining CA sites with provision of EPA activities/ Incentive etc			1,15,44,985	
	Grand Total			12,69,94,830	
(Rupees Twelve Crore Sixty Nine Lakh Ninety Four Thousand Eight Hundred Thirty) only.					


 Asst. Conservator of Forests
 Koraput Forest Division
 Koraput Forest Division
KORAPUT


 Divisional Forest Officer
 Koraput Forest Division
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 Koraput Forest Division

Financial out let for Additional Compensatory Afforestation Scheme over 140 Ha. at Godmark PRF of Laxmipur Range of Koraput Forest Division as per Matrix of CA Plantation for 2022-23

Sl. No.	Description	Amount in Rs.
1	Cost of ANR plantation @500 Planta/ha with 18 month old seedlings over 140 ha. @ 142904/- per ha. with 10 years maintenance.	2,00,06,560.00
2	Cost of Fencing with Bamboo Twig over 140 ha. @ 104966/- per ha.	1,46,95,240.00
3	Soil Moisture Consevation work over 140 ha @ Rs. 37415/- per ha .	52,38,100.00
4	Watering provision to Plantation	
	Water provision to CA Plantation through Diesel Pumpset fitted with Borewell. over 140 ha. @ Rs. 502209/-	7,03,09,260.00
	Sub Total	11,02,49,160.00
		52,00,685.00
5	Additional Soil Moisture Consevation work @ Rs. 37415/- per ha over 139 ha. (MDF Area)	
	Total	11,54,49,845.00
		1,15,44,984.50
6	10% of the total plantation cost towards EPA/ incentive to VSS including Monitoring & Evaluation	
	Grand Total	12,69,94,829.50
	Or say	12,69,94,830.00
Rupees Twelve Crore Sixty Nine Lakhs Ninety Four Tousand Eight Hundred Thirty Only.		


Asst. Conservator of Forest
Koraput Forest Division
KORAPUT


Divisional Forest Officer
Koraput Forest Division.
Divisional Forest Officer
Koraput Forest Division

COST NORM FOR RAISING 1000 SEEDLINGS (18 Month)
WAGE RATE Rs.326/- PER DAY

Sl. No	Items of work	Preferable Period of Execution	Unit	Unit Cost	No./ Quantity	Labour cost @ Rs.315/- per day	Material cost (Rs)	Total cost (Rs.)
1	2	3	4	5	6	7	8	9
A. 1st Financial Year (Seedling Cost for 3 Months)								
1	Cost of Polythene (9"×5"×200)300 Nos/Kg =3.33 Kg@ 208/- per Kg (Including GST)	Nov-Dec	Kg	208	3.33	-	693.00	693.00
2	Procurement of raw & crude Polypot Mixture (Soil, Sand & CDM in ratio (2:1:1))							
	(i)Soil	Nov-Dec	Cft	10	22	-	220.00	220.00
	(ii)Sand	Nov-Dec	Cft	16	11	-	176.00	176.00
	(iii)CDM	Nov-Dec	Cft	25	11	-	275.00	275.00
	(iv)Insecticides/ Bio-Pesticide	Nov-Dec	Kg	150	2	-	300.00	300.00
3	Preparation of Soil Mixture Includes Pulverisation and straining & Mixing ingredients in proper ratio (2:1:1)	Nov-Dec	MD	326	2	652.00	-	652.00
4	Filling of Polypot Bags & Setting in the beds	Nov-Dec	MD	326	3	978.00	-	978.00
5	Collection of seeds grading & Treatment	Dec	MD	326	2	652.00	-	652.00
6	Preparation of germination Bed & Sowing of Seeds	Jan	MD	326	0.5	163.00	-	163.00
7	Dibbling of Seeds/ Pricking out the seedlings from germination beds and Transplanting in the poly bags and Providing sheds.	Jan	MD	326	2	652.00	500.00	1,152.00
8	Watering (Jan to March)	Jan-Mar	MD	326	9	2,934.00	-	2,934.00
9	Maintenance of Nursery including Fencing	Jan-Mar	MD	326	4	1,304.00	500.00	1,804.00
10	Contigencies (Watercan, Buckets, Nursery Shed, Electric Charges/ Desel Charges/ Maint. of Pump Set/ Maint. of Nursery, etc.)		-	-	-	-	460.50	460.50
	Total				22.5	7,335.00	3,124.50	10,459.50
B. 2nd Financial Year (Shifting of Seedlings to larger Polythene bags to avoid root coilling & better growth)Apr to March)								
1	Waering for 3 Months (April to June)	April-June	MD	326	9	2,934.00	-	2,934.00
2	Cost of Insecticides/Bio pesticides	May-June	Kg/Lts	326	0	-	400.00	400.00
3	Application of insecticides/Bio Pesticides	May-June	MD	326	1	326.00	-	326.00
4	Cost of Polypot (12"×10"×300)60 Nos/Kg =17 Kg@ 208/- per Kg (Including GST)	May-June	Kg	208	17	-	3,536.00	3,536.00
5	Procurement of raw & crude Polypot Mixture (Soil, Sand & CDM in ratio (2:1:1))							
	(i)Soil	Apr/May	Cft	10	100	-	1,000.00	1,000.00
	(ii)Sand	Apr/May	Cft	16	50	-	800.00	800.00
	(iii)CDM	Apr/May	Cft	25	50	-	1,250.00	1,250.00
	(iv)Insecticides/ Bio-Pesticide	Apr/May	Kg	150	3	-	450.00	450.00

6	Preparation of Potting Mixture includes Pulverisation and straining	Oct-Nov	MD	326	6	1,956.00	-	1,956.00
7	Filling of Polypot Bags including re-potting and setting	Oct-Nov	MD	326	35	11,410.00	-	11,410.00
8	Watering (Oct to March)	Oct-Mar	MD	326	19	6,194.00	-	6,194.00
9	Sorting, weeding, grading and re-setting over one year period	Apr-Mar	MD	326	15	4,890.00	-	4,890.00
10	Contingencies (Watercan, Buckets, Nursery Shed, Electric Charges/ Desel Charges/ Maint. of Pump Set/ Maint. of Nursery, etc.)	-	-	-	-	-	400.00	400.00
Total					85	27,710.00	7,836.00	35,546.00

C. 3rd Financial Year (Maintenance upto Planting) April-June

1	Watering (Apr to June)	Apr-June	MD	326	12	3,912.00	-	3,912.00
2	Weeding, shifting and grading	Apr-June	MD	326	4	1,304.00	-	1,304.00
3	Cost of Insecticides/Bio pesticides	Apr-June			0	-	400.00	400.00
4	Application of insecticides/Bio Pesticides	Apr-June	MD	326	1	326.00	-	326.00
5	Contingencies		-	-	-	-	230.00	230.00
Grand Total					17	5,542.00	630.00	6,172.00

ABSTRACT

Item of Works		MD	Labour cost @ Rs.326/- per day	Material Cost in Rs.	Total Cost in Rs.
A	1st Financial Year (3 Months)	22.5	7,335.00	3,124.50	10,459.50
B	2nd Financial Year (12 Months)	85	27,710.00	7,836.00	35,546.00
C	3rd Financial Year (3 Months)	17	5,542.00	630.00	6,172.00
Total		124.5	40587.00	11590.50	52,177.50

Cost per 18 Months old Seedlings= 52177.50/1000=52.17

COST NORM FOR AIDED NATURAL REGENERATION (ANR) @ 500 PLANTS PER HECTARE (18 Months old Seedlings) WAGE RATE Rs.326/- PER DAY

Sl. No	Items of work	Preferable Period of Execution	No of Mandays	Labour cost @ Rs.326/- per day	Material cost (Rs)	Total cost (Rs.)
1	2	3	4	5	6	7
0th year (Advance work) Pre-Planting Operation						
1	Survey, demarcation and pillar posting	Nov/Dec	2	652	0	652
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	326	100	426
3	Site preparation	Nov/Dec	2	652	0	652
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	4890	0	4890
5	Alignment and stacking for digging of pits	Feb/Mar	1	326	0	326
6	Digging of pits (45 cm x 45 cm x 45 cm) in hard and gravelly soil	Feb/Mar	20	6520	0	6520
	Total		41	13366	100	13466
1ST YEAR/PLANTING YEAR						
1	Refilling of pits by altering the dugout soil of the pits, application of Organic compounds/ CDM/FYM and Mixing the same perfectly.	June/July	4	1304	2500	3804
2	Transportation of 18 Month old poly pot seedlings in Hired Truck/ Tractor from the Permanent/Megha Nursery to Planting Site including loading and unloading (Average Lead of 10 RKM) & Stacing the seedlings @ Rs.6/- per seedlings (550 Nos)	July/Aug	0	0	3300	3300
3	Watering the Polypot Seedlings at Planting site of plantation	July/Aug	1	326	0	326
4	Convenne of Polythene bag seedlings on Headload from the stacking site to indivisual dugut pits within the Planting site, applying insecticides, Fertilizers and Planting after scooping the soil with other applied materials and pressing the soil prperly around the planted seedlings	July/Aug	11	3586	0	3586
5	Cost of insecticide and fertilizer					
	(a) NPK/ Bio Fertilizer @ 50 gms per plant as basal dose = 25Kg @ Rs.30/- per kg = Rs. 750.00	July/Aug	0	0	1500	1500
	(b) Urea/Vermicompost/ Mo Khata/ any other Fertilizes @ Rs.375.00					
	(c) Insecticides/ Bio pesticides @ 5 gms/plant =2.5 Kg @Rs.150/- per kg= Rs 375.00					
6	Casualty replacement@ 10% (50 Nos)	July/Aug	1.5	489	0	489
7	1st weeding & Manuaring	Aug/Sept	5	1630	0	1630
8	2nd weeding, Soil Working (1 Mtr diameter around the plant) & Manuring	Oct/Nov	8	2608	0	2608
9	Fire line tracing & inspection path	Feb/Mar	3	978	0	978
10	Watch & Ward including watering as per requirment	Aug-Mar	8	2608	0	2608

2ND YEAR MAINTENANCE

1	Transportation of 50 Nos. of seedlings from Nursery to Planting Site including loading and unloading & Conveyance by tractor @ Rs.6/- per seedlings (50 Nos)	July	0	0	300	300
2	Casualty replacement@ 10% (50 Nos)	July	1.5	489	0	489
3	Cost of insecticide and fertilizer	July/Aug	0	0	1437.5	1437.5
	(a) cost of insecticides/ Bio Pesticides (Themet/Forate) @ 5 Gms/Plant = 0.25 Kg @Rs.150/- Per Kg = Rs.37.50					
	(b) Urea/NPK/Bio Fertilizer/Vermicompost/ Mo Khata/ any other Fertilizes @ Rs. 1400/-					
4	Weeding (complete weeding), Manuaring and Soil Working (1 Mtr diameter around the plant)	Sept/Oct	8	2608	0	2608
5	Fire line tracing (2 Mtr Wide Fireline) and inspection path	Feb/Mar	3	978	0	978
6	Watch & Ward including watering as per requirment	Apr-Mar	12	3912	0	3912
	Total		24.5	7987	1737.5	9724.5

3RD YEAR MAINTENANCE

1	Cost of Fertilizers Urea/NPK/Bio Fertilizer/Vermicompost/ Mo Khata/ any other Fertilizes= @ Rs. 1400.00	July/Aug	0	0	1400	1400
2	Weeding (complete weeding), Manuaring and Soil Working (1 Mtr diameter around the plant)	Sept/Oct	8	2608	0	2608
3	Fire line tracing (2 Mtr Wide Fireline) & inspection path	Feb/Mar	3	978	0	978
4	Watch & Ward including watering as per requirment	Apr-Mar	12	3912	0	3912
	Total		23	7498	1400	8898

4TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline) & inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3780	0	3780
	Total		15	4725	0	4725

5TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	978	0	978
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3912	0	3912
	Total		15	4890	0	4890

6TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	978	0	978
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3912	0	3912
	Total		15	4890	0	4890

7TH YEAR MAINTENANCE

1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	978	0	978
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3912	0	3912
	Total		15	4890	0	4890

8 TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	978	0	978
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3912	0	3912
Total			15	4890	0	4890

9 TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	978	0	978
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3912	0	3912
Total			15	4890	0	4890

10 TH YEAR MAINTENANCE						
1	Fire line tracing (2 Mtr Wide Fireline over 400 M length) including Maint. of inspection path	Feb/Mar	3	978	0	978
2	Watch & Ward including watering as per requirment	Apr-Mar	12	3912	0	3912
Total			15	4890	0	4890

YEAR WISE ABSTRACT OF COST NORM (SHOWING SEEDLING COST SEPARATELY)

Sl. No	Year	No. Person Day	Labour Cost @Rs.326/- per day	Material Cost in Rs.	MELD & Other Contingency 5 % of (4+5)	Cost of Seedlings @ Rs. 52.17 per seedlings	Total Cost in Rs.
1	2	3	4	5	6	7	8
1	0th Year	41	13,366.00	100.00	673.00	0	14,139
2	1st Year	41.5	13,529.00	7,300.00	1,041.00	28,694.00	50,564
3	2nd Year	24.5	7,987.00	1,737.50	486.00	2,609.00	12,820
4	3rd Year	23	7,498.00	1,400.00	445.00	0	9,343
5	4th Year	15	4,890.00	-	245.00	0	5,135
6	5th Year	15	4,890.00	-	245.00	0	5,135
7	6th Year	15	4,890.00	-	245.00	0	5,135
8	7th Year	15	4,890.00	-	245.00	0	5,135
9	8th Year	15	4,890.00	-	245.00	0	5,135
10	9th Year	15	4,890.00	-	245.00	0	5,135
11	10th Year	15	4,890.00	-	245.00	0	5,135
Total		235	76,610.00	10,537.50	4360.00	31,303.00	1,22,811