

**SCHEME FOR
SITE SPECIFIC COMPENSATORY
AFFORESTATION**

OVER

**11.912 HA OF NON-FOREST GOVT. LAND
IDENTIFIED IN VILLAGE BARKAUDI**

UNDER THUAMUL RAMPUR TAHSIL

IN

KALAHANDI DISTRICT

AGAINST

**INFRASTRUCTURE FOR MINING AT KURMITAR & RANTHA
IRON ORE MINES IN SUNDARGARH DISTRICT, ODISHA**

OF

**M/s ODISHA MINING CORPORATION LTD.
OMC HOUSE, POST BOX-34, BHUBANESWAR-1**

**SCHEME FOR SITE SPECIFIC COMPENSATORY AFFORESTATION OVER 11.912 HA
OF NON-FOREST GOVT. LAND IDENTIFIED IN VILLAGE BARKAUDI UNDER
THUAMUL RAMPUR TAHASIL IN KALAHANDI DISTRICT AGAINST
INFRASTRUCTURE FOR MINING AT KURMITAR & RANTHA IRON ORE MINES OF
M/s ODISHA MINING CORPORATION LTD.**

INTRODUCTION:

Ministry of Environment and Forests, Eastern Regional Office, Bhubaneswar conveyed its approval vide letter No.8-340/FCE/1157 dt 22.03.1999 for use of 11.912 ha of forest land for township purpose only for a period of one year subject to three conditions i.e. (1) 0.766 ha of forest land earmarked for magazine and road etc. shall be surrendered to the Forest Department, (2) submit renewal proposals, if so desired, for Rantha and Kurmitar mining leases and (3) no further permission can be granted for continuation of this Rantha township area in forest land unless forest areas of these two mining leases are cleared.

OMC, with the above background submitted a proposal for diversion of 11.912 ha of forest land under use for housing complex for the employees of Kurmitar Iron & Manganese ore Mines. The area proposed for diversion gives accommodation to 150 nos of staff, 200 workers and 350 persons engaged in Mining Operation. During expansion phase it is proposed to accommodate additional 500 staffs. The area is approachable by the only all weather black topped road (Barsuan-Sareikala Road) for a distance of 13 km from Barsuan, the rail head on SE Railways. This road passes through the infrastructure project area and is the only haulage route for access and regress to Kurmitar and Rantha Mines. The requirement of non-forest Govt. land for compensatory afforestation comes to 11.912 ha. In accordance with the provision of F.C. Act 1980, compensatory afforestation scheme over 11.912 ha of non-forest land has to be covered to compensate the loss of forest and environment in general against the forest land proposed to be utilized for non-forestry activity pertaining to Daitari iron ore mines.

So, the present scheme aim at preparation of site specific compensatory afforestation scheme over 11.912 ha of non-forest land with suitable soil and water conservation measures for regeneration, rehabilitation and restocking of existing forest growth followed by ~~new~~ plantation with suitable indigenous species to restore the biodiversity. The non-forest land will be rehabilitated through different silvicultural operations and plantations with the active participation and awareness of the local villagers and NGOs through entry point activities and JFM mode.

SELECTION OF SITE:

Non-forest Govt. land to the extent of 11.912 ha in a compact patch was not available in the district of Sundargarh in which the mine is located. Therefore, considering the urgency and request made by OMC equivalent non-forest Govt. land for the purpose of raising compensatory afforestation has been identified in the village Barkaudi under Thuamul Rampur Tahasil in Kalahandi District. The details of plot wise land schedule are furnished below. The site is located on survey of India Topo Sheet No. E 44 E 15 on 1:50000 scale between Latitude: 19° 29' 26.928" N - 19° 29' 44.548" N, Longitude: 82° 59' 44" E

9.344° E- 82°58' 59.017" E (Plate No.I) and at a distance of 20 KM from Tahasil Headquarters. The area is located east of Bisangiri, south of Talajhabi and west of Upper Jhabhi. The proposed area is free from encroachment and encumbrances and suitable for plantation and is outlined as below. Moreover, the local people most of whom are tribal are very much interested in rehabilitation of the degraded forest to reap the usufructs & to meet their social, cultural and economic needs.

Land schedule of the area proposed for compensatory afforestation

Tahasil	Village	Khata No.	Plot No.	Area of the plot (Acr)	Area considered (Acr)	Kissam
THUAMUL RAMPUR	Barkaudi	115	712	34.43	29.44	Dangar
Total Area: 34.43 Acr						
Area Considered: 29.44 Acr or 11.912 ha						

An area of 11.912 ha has been found suitable and is covered under the present scheme. The village map showing the above land details authenticated by Revenue and Forest personnel proposed for compensatory afforestation at one patch is enclosed as Plate No.VI. The copy of the allotment order by Collector, Kalahandi along with the land details jointly verified by Forest and Revenue authorities are enclosed as Annexure-I series.

DESCRIPTION OF THE EXISTING VEGITATION:

The site although categorized as non-forest land kissam in revenue record still comprises forest growth crops like Sal, Mahul, Kusum, Kendu, Bela, Kurei, Gambhari, Bamboo, Asana, Sisoo, Amba and Misc. species in pole condition in a degraded state having canopy density 0.1 to 0.4. The floor of the forest is devoid of under growth due to soil erosion, repeated annual fire and "podu cultivation".

SOIL & TOPOGRAPHY:

The topography of the area is fairly gentle in nature. One perennial stream flowing outside the area is towards SE. Bijaghati RF occurs to the south of the area. No seasonal stream is found in the area. The difference of elevation is about 14mtr. The slope is completely devoid of any forest growth. The overall slope of the area is towards NE. The soil is eroded at the lowest slope of the mounds without any gullies and ravines. However, good depth of soil (3ft) of loam and sandy loam are found in blank areas at patches and on podu ravaged areas.

RAINFALL & TEMPERATURE:

The annual rainfall varies from 1200 mm to 1500 mm. The maximum rainfall is received during the rainy season from July to September. The average temperature varies from 13.5°C minimum in December to 45° C maximum in May.

OBJECTIVE OF THE SCHEME:

The main objective of the present scheme is to (i) restock the degraded non-forest area by taking up plantation, (ii) tending the existing degraded crop where ever available with suitable silvicultural practices, (iii) clearly demarcating the area with posting up RCC pillars and (iv) providing strong barbed wire fencing to dispense with the biotic interferences, (v) enforcing protection measures by involving people around under JFM and (vi) above all checking soil erosion and run off which will go in combination for enrichment of the vegetation and soil and building up ecosystem. The total 11.912 ha shall be covered under ANR (Gap plantation) mode with 300 plant/ha.

ITEMS OF WORKS TO BE TAKEN UP:

To achieve the above objectives, the following items of work are mainly prescribed to be taken up with the full involvement and co-operation of local villagers.

- 1. Survey and demarcation of Boundary:** The identified non-forest land is very close to the agricultural fields. Hence the boundary should be surveyed clearly by the User Agency with reference to the village maps and demarcated by posting R.C.C. pillars of size 1.25 mtr x 20 cm x 20 cm which shall be embedded at every corner/turning points of boundary line. The RCC pillars shall be embedded 0.625mtr deep in to the ground with a foundation of 50 cm x 40 cm. in C.C. Top of the pillar shall have a slanting cut facing outside the area for numbering the pillars which will be done in the same sequence as done in the map. Numbering should start from North-Western Corner and proceed in a clock wise direction. The distance between the corner points, forward and back ward bearing of each point, its GPS reading and the perimeter of the area to be afforested is given in **Annexure-II**.
- 2. Fencing:** To protect the plantation and regeneration cleaning area from grazing and other biotic interferences, fencing shall be taken up around the entire compensatory afforestation site by using 5 stranded barbed wire (with two cross strands in each section) fencing with concrete posts. A model estimate for barbed wire fencing for 1 Km has been provided in **Annexure-III**.
- 3. Assisted Natural Regeneration (ANR) with Gap Plantation:** The identified site is subjected to podu cultivation in patches of one acre to two acre, mostly occurring in moderate hill slopes and plains. Such degraded areas will be covered by ANR practices followed by gap plantation at the rate of 300 saplings per hectare. The total allotted area of 11.912 ha shall be covered by ANR with gap planting in a staggered manner without any proper spacing as per site condition. The sites which are almost subjected to Podu Cultivation and occurring in patches. Plantation over the those areas shall be taken up at a spacing of 2.5m x 2.5m taking care of existing forest crops, if any.

Care should be taken to select only indigenous species as far as possible keeping in view of the existing natural vegetation in and around the area and also the climatic and edaphic factors. The choices of species are as follows:

Amila	<i>Embllica officinalis</i>
Bamboo kanta	<i>Bambusa arundinacea</i>
Karanja	<i>Pongamia pinnata</i>
Teak	<i>Tectona grandis</i>

Sisoo	<i>Dalbergia sisoo</i>
Neem	<i>Azadirachta indica</i>
Mahul	<i>Madhuca indica</i>
Bahada	<i>Terminalia belerica</i>

In the peripheral areas of the site, susceptible to grazing may be planted with non-browsable species like teak, karanja etc.

The soil being eroded and lack of humus, it is proposed to take up pitting with a pit size of 30cm x 30cm x 30 cm at a spacing of 2.5 m x 2.5 m during February/March for allowing weathering of

the soil. It is advisable to use an "A" frame for alignment of the pitting line along the contour. The planting should be taken up only with two year old seedlings having height more than one meter. The size of P. bags will be 12 inch x 9 inch with desired quantity of input. The seedlings will be graded and sorted at regular intervals to make those healthy and sound and to avoid root coiling.

While taking up the plantation in Podu ravaged areas species like Kusum, Mohul, Amla, Karanj, Neem, Asan, Teak, Jack fruit and specially Mango in more number shall only be planted which will help the tribal of Juang and Bhuyan to collect the NTFP items for their livelihood and socio-economic upliftment.

Staggered trenches of size 2 mt X 50 cm x 50 cm should be dug in between the planting rows at an interval of 2.0 mt along the contour, and the excavated earth are piled on the downhill side to form a bund. The staggered contour bunds should be stabilized with turf if necessary. The staggered contour trenches will not only arrest soil erosion but also conserve moisture and micronutrient for the planted saplings. It will retard the velocity of runoff and will be helpful in feeding ground water to the plants below it. If necessary, half moon trenches may be created at sloppy terrain for the same purpose on or before 2nd weeding.

3.2 Development of Nursery: A good nursery is the pre-requisite for a successful plantation. Therefore, all care should be taken to raise healthy and sound seedling of required sizes before they are put to the plantation site. The site being heavily eroded and subjected to other biotic interference, it is proposed to raise two year old seedlings for plantation. This should be particularly adopted in case of slow growing species like Mahul, Neem, Amla, Harida, Karanja, etc. In case of species like Sisoo & Gambhar, one year old seedling is good enough for plantation purpose. In case of Bamboo and Teak, pre-sprouted seedling from rhizomes and stumps should be raised for plantation purpose. Accordingly, the nursery programme can be planned out one year in advance. The two year seedling should be raised in poly-bags of 12 inch x 9 inch and one year old seedling can be raised in 10 inch x 6 inch poly bags. All care as per the guideline of the plantation manual should be taken up at all stages of nursery operation so that a good stock of healthy seedling can be raised. 10% extra seedlings should be raised to cover the short fall due to casualty in the nursery stage. In case of all the seedlings, shifting, grading of polythene bags should be done from time to time not to allow the tap roots to strike the ground. Nursery site should be selected, preferably near to the plantation site and in a well drained locality having perennial water sources.

3.3 Planting: The best time of planting of the potted seedling is soon after the onset of regular monsoon or after a good shower of rain. Before planting, the pits are to be prepared by putting mixture of half cubic feet, of alluvial soil and farmyard manure. Basal dose of 30 gram of NPK fertilizer and 5 gram of Aldrin dust or phorate pesticide are to be applied to the pits before planting as basal dose. The excavated earth from the pits already weathered and free from stones should be filled in the pits. Before removal of the plants from the Nursery the following precaution should be taken:

- (i) Roots escaping from the container should be trimmed.
- (ii) Posts containing the plant are watered, if necessary.

(iii) Maximum care should be taken at the time of transportation and handling of seedling so that the ball of earth of the poly pots does not get disturbed and the primary leading shoots are broken. Manual transportation should be given preference.

Planting should be taken up on rainy/cloudy days by adopting all standard techniques of plantation. As far as possible, Bamboo should be put as a fourth plant in the row and planting up other species should be mixed with poly culture design.

Casualty of seedlings occurs due to various causes like heavy rains, drought, fire, grazing etc. But in a well managed plantation, where the planting stock consists of healthy and stout seedlings, say, about 5% may die during the period between planting and 1st weeding. The operation of casualty replacement may be done in combination with weeding. Seedlings to be used for casualty replacement should be earmarked and kept reserved at the time of planting. Only healthy and stout seedlings slightly larger than those planted at the time of operation should be used. This is important because only such seedlings can catch up growth with those that have survived and are growing. Before planting for casualty replacement, the following operations are to be taken up:

- (a) The failure pit is to be dug again.
- (b) Another dose of fertilizer, and insecticide should be given to the pit.
- (c) If the casualties are due to white ant attack, little more quantity of phorate pesticide may be applied to the pit.
- (d) If the casualties are due to water logging and wilting, care should be taken to drain out the pits by making small channels to downhill side.
- (e) Watering is to be done generally directly after planting, if the planting is done on a dry day.

Casualty replacement can also be taken up in the 2nd year formation and this time should not exceed 20%.

3.4 Weeding, Manuring & Soil working: To improve and enhance the growth of plants, it is necessary to see that the plants get as much nutrients as far as possible and that no other wild plants are contesting for space, light and nutrients. Therefore, weeding and soil working must be undertaken in a newly established plantation. Weeding consist of loosening soil around the plant with a hoe or even with a pick-axe and pulling out all unwanted growth along with their roots, rhizomes, stools etc. While doing so, care should be taken to see that the root system of the planted seedling is not damaged. Weeds within a radius of 0.5 meters around the plant should be removed. Under the prevailing conditions, two weeding are considered sufficient, the first to take place a few weeks after the main plantation is over, say, in August and the second weeding in early winter, i.e., in October or November. Strip weeding which involves cutting of weeds flush to the ground may be confined to the place in between the planted lines. The cut material may be placed along the contour between two rows of plantation, which will ultimately help in conservation of soil and moisture. Soil working is equally an important operation and it should be carried out at the time of each weeding. While loosening the soil, it is important to see that the soil is not pulverized but left in clods. This not only helps in improving soil erosion but also helps in moisture conservation by breaking soil capacity.

The best time for application of fertilizer is at the time of soil working and weeding. In organic fertilizer like NPK @ 50gm/plant shall be applied at the time of soil working. Chemical fertilizer should not be placed too close to the plants as it may burn the roots and kill the plants. A small dose of urea @ 20gm/plant may be applied by crow bar hole method before 1st weeding, if possible for root penetration and growth of seedlings.

It is advisable to apply fertilizer on a rainy day soon after the weeding has been completed.

3.5 Mulching: Mulching is an operation where cut vegetative materials are placed around planted seedling covering the soil around it. This helps soil climate to considerable extent from desiccation. Mulching affects soil temperature, helps condensation, and prevents soil erosion and loss of soil moisture through evaporation. Further, it is to be carried out at the time of 2nd weeding. Weeds which have not lowered may be pulled out from around the planted seedlings and may be used as mulches around the seedlings.

Pruning of lower branches of the seedlings planted should be done in the third and subsequent years. This operation is beneficial for the following reasons.

- (a) They allow the plants to be healthy and stout and have knot free stems.
- (b) It reduces fire hazards by lessening the chance of ground fire.
- (c) The plants will be straight with clear bole.

The detailed cost estimate of various operations to be taken up in ANR plantation (300 seedlings) mode has been furnished in Annexure – IV.

4. **Silvicultural operation through ANR practices:** The natural vegetation existing over 16,649 ha. is in a degraded stage as rooted wastes, bushes and poles will be tended by silvicultural practices viz. coppicing, cleaning, thinning shoot manipulation, singling, climber cutting etc. to enable the degraded vegetation to establish as trees. The permanent small gaps will be restocked by planting indigenous seedlings @ 300/ha according to planting operation narrated above. Considering the site condition germinated seeds of the natural grown trees may be dibbled by minor hoeing without any spacing during 1st week of July. It can also enrich the vegetative cover to some extent. Germinated mango carnal, bamboo rhizome and jackfruit carnal will be more appreciated by the tribal.
5. **Soil Conservation Measures:** The slope of the identified area varies from gentle to moderate slopes and therefore, soil conservation measures are indispensable and are to be appropriately addressed. The following measures are proposed to be taken up inside the plantation area and regeneration cleaning area.
 - i) In the slopes, staggered trenches of 2m x 50Cm x 50Cm should be dug in between the planting line along the contours at an interval of 2.0m, and the excavated earth be piled on the downhill side to form a bund. The staggered contour bunds should be stabilized with

plantation on it. The staggered contour trenches will act as place of deposit of eroded soil and will check soil erosion. It will retard the velocity of run-off and will be helpful in feeding ground water to the plants planted below it.

- ii) Check dams are proposed to be constructed with dry rubble stone across in small nallahs specially to be given on the upper reaches of the nallahs.

The detailed cost estimate of soil conservation measures has been furnished in Annexure - V.

6. **People's Participation:** In the recent times, no scheme shall be effective if the local villagers are not involved in the implementation of the scheme itself. The villagers who are having a right on the NTFP items in the adjoining forest area are to be associated with the implementation of the scheme at all different levels. For that, Van Samrakhyana Samittee (VSS) is proposed to be constituted in all the villages around the compensatory afforestation site. In accordance with the guidelines of the Government of Odisha issued on 3rd July 1993, the villagers are to be motivated and inspired and above all, explained the benefits they will be getting if plantation is protected by them.

To protect the plantation, extra care shall be taken to develop the living standard of the local tribes who were making the podu cultivation in the proponent compensatory afforestation site. To develop their living standard, through eco development programmes like land development programme of their tenanted area, plantation of fruit bearing trees in their home stead land and farm house, providing them with high breed vegetable seeds and providing goat, sheep and chicks for rearing shall be taken up as a part of income generation programme offer conducting PRA through resourceful agencies. Moreover, their culture and religious sentiments are also be taken care of and to keep them in good humor, incentives on developmental/cultural activities shall be given which will have a long benefit on the success of plantation programme. All forest conservation events shall be celebrated in their village for creating awareness among them for protection of the plantation.

7. **Monitoring & Execution: Establishment & Infrastructure:** The scheme will be executed by the Forest Department and shall be monitored from time to time by responsible officers including DFO. Nursery, plantation journal and other relevant documents shall be maintained as per the provision of the Plantation Manual. A plantation shed with drinking water facilities may be constructed at the site for execution of different works and from future protection point of view.
8. **Total cost of the project:** The total cost of the project will be Rs 18, 86,800.00 as detailed in Annexure-VI, which will be deposited in an account as per the direction of the DFO in favour of State specific CAMPA.

02-04-11/15
Divisional Forest Officer
Kalahandi (South) Division
Divisional Forest Officer
Kalahandi : South Division

OFFICE OF THE COLLECTOR & DISTRICT MAGISTRATE: KALAHANDI

No. 1464 /Rev- Date: 19.12.2014

To,

Divisional Forest Officer (South)
Kalahandi, Bhawanipatna

Sub: Allotment of Govt. land for Compensatory Aforestation.

Ref: Your letter No.5081 dated 11.12.2014.

Sir,

I am to say that the enclosed schedule of non-forest Government land measuring Ac. 70.59, equivalent to 28.561 Ha under Th.Rampur Tahasil has been identified and allotted for raising compensatory aforestation in lieu of the forest land coming within the lease hold area of the granted mining leases of Daitari Iron Ore Mines and Infrastructure mining for Kurumtar and Rantha Mines in favour of O.M.C Ltd., Bhubaneswar.

You are requested to please file necessary requisition in Form No. 1 before the Tahasildar, Th.Rampur for processing alienation proposal for sanction of the land in favour of Forest Department immediately.

Enc: as above.

Yours faithfully,

W.H. Jha
Collector,
Kalahandi

Memo No. 1465 /Rev. Date: 19.12.2014

Copy alongwith copies of Joint verification report and sketch map forwarded to Tahasildar, Th.Rampur for information. He is requested to process the alienation proposal in favour of the Forest Department on obtaining the requisition from the Divisional Forest Officer (South), Kalahandi.

W.H. Jha
Collector,
Kalahandi

Memo No. 1466 /Rev. Date: 19.12.2014

Copy to Sub-Collector, Bhawanipatna for information and necessary action.

W.H. Jha
Collector,
Kalahandi

Memo No. 1467 /Rev. Date: 19.12.2014

Copy to Chairman-cum-Managing Director, Odisha Mining Corporation Ltd, Bhubaneswar with reference to his letter No. 15505/OMC dated 25.10.2014 for information and necessary action.

W.H. Jha
Collector,
Kalahandi

279

OFFICE OF THE DIVISIONAL FOREST OFFICER, KALAHANDI SOUTH DIVISION

Memo No 5064 /3F DU 11-12-2014

To,

The Collector,
Kalahandi.

Sub:-

Submission of Joint verification report.

Ref:-

Letter No.7826 Dt.06.12.2014 of Tahasildar Th. Rampur.

Sir,

In inviting a kind reference to the above cited letters and captioned subject, I would like to inform you that, the joint verification report has been made both the Revenue and Forest Department in connection with allotment of non-forest Govt. land identified for Compensatory Afforestation against Daitari Iron Ore over an area of 16.649 Ha. and over an area of 11.912 Ha. against Infrastructure for mining at Rantha and Kurmitar mines of M/s OMC Ltd. located in the District of Keonjhar, Jajpur and Sundargarh under Th. Rampur Tahasil of Kalahandi District. The copy of joint verification report is enclosed herewith.

Therefore, I would request you to kindly allocate the non-forest Govt. land in favour of Forest Department for Compensatory Afforestation purpose as described above.

Enc:- 1. Joint Verification report
2. Maps

Yours Faithfully,

Ch. Mohapatra
Divisional Forest Officer,
Kalahandi South Division

Memo No. 5064 Dt.

Copy forwarded to Tahasildar, Th. Rampur for information with reference to his memo
No. 7826 Dt. 06.12.2014.

Divisional Forest Officer,
Kalahandi South Division



272

**JOINT VERIFICATION REPORT OF NON – FOREST GOVT. LAND IN BARAKAUDI VILLAGE UNDER
TH.RAMPUR TAHSIL OF KALAHANDI DISTRICT FOR RAISING COMPENSATORY AFFORESTATION
AGAINST MINING PROJECTS OF M/S OMC LTD LOCATED IN THE DISTRICT OF KEONJHAR, JAIPUR AND
SUNDARGARH DISTRICT OF ODISHA.**

Certified that on joint verification of Non- Forest Govt. Land (Kissam Dangar) in Barakaudi village it is found that the scheduled wise land mentioned as given under is suitable for ANR and are free from encroachment and encumbrances.

Name of the Mine / Project	Name of the village	Khata No	Plot No	Total area of the plot in Acre.	Area recommended for CA	Kissam	Types of plantation in ha	
							Block	ANR
Daitari Iron Ore Mines	Barakaudi	115 Abada Ajogya Anabadi	687	49.03	41.15	Dangar	Nil	ANR
			Total	49.03	41.15 Acr or 15.649 ha	Dangar	Nil	ANR
Infrastructure mining for Kurumitar and Rantha mines	Barakaudi	115 Abada Ajogya Anabadi	712	34.43	29.44	Dangar	Nil	ANR
			Total	34.43	29.44 Acr or 11.912 ha	Dangar	Nil	ANR

Revenue Inspector
Bedchhatrang

Forest Officer,
Th.Rampur
#PRESER
#-Xampus Section

Forest Range Officer,
Th.Rampur.
Asst. Conservator of Forest
VC Th.Rampur (S) Range

TAHSILDAR
Talashiling
Tbhauamul Rampur
Th.Rampur.

D.P.O, South,
Kalahandi.

273

ANNEXURE-II

GPS READING OF THE AREA PROPOSED FOR COMPENSATORY AFFORESTATION
(Village: Barkaudi)

Station		Distance in mtr	Forward Bearing	Backward Bearing	Co-ordinates	
From	To				Longitude	Latitude
1	2	300.672	91°30'46"	271°30'46"	19° 29' 37.354" N	82° 59' 9.318" E
2	3	399.707	181°44'42"	1°44'42"	19° 29' 37.324" N	82° 59' 19.610" E
3	4	274.863	272°19'02"	92°19'02"	19° 29' 24.349" N	82° 59' 19.514" E
4	5	30.532	295°40'36"	115°40'36"	19° 29' 24.501" N	82° 59' 10.106" E
5	6	52.63	15°09'15"	195°09'15"	19° 29' 24.909" N	82° 59' 9.154" E
6	7	12.067	285°15'18"	105°15'18"	19° 29' 26.569" N	82° 59' 9.584" E
7	1	329.348	2°01'33"	182°01'33"	19° 29' 26.663" N	82° 59' 9.183" E
Perimeter: 1399.82 mtr-329.35mtr=1070.47 mtr						

ANNEXURE - III

ESTIMATE FOR BARBED WIRE FENCE AROUND 11.912 HECTARE NON-FOREST GOVT. LAND IN VILLAGE BARKAUDI FOR COMPENSATORY AFFORESTATION AGAINST DIVERSION OF FORESTLAND FOR INFRASTRUCTURE AT KURMITAR & RANTHA IRON ORE MINES OF O.M.C LTD.

Estimate for 1 Kilometer	
No. of pillars required	500 nos.
Cost of 1 pillar	Rs. 568.00
Transportation charges	Rs. 244.00
Cost of base fixing	Rs. 244.00
Cost of fixing barbed wire	Rs.49.00
Total cost of fixing 1 pillar	Rs.1105.00
Cost for 500 pillars	Rs. 552500.00
Cost of barbed wire (1 Quintal) @ Rs.8000.00. Cost of barbed wire (5+2) strands 7500 mtrs or 24.75 quintals @ 0.33 kg/rmt	Rs. 198000.00
Total cost per 1 km	Rs. 750500.00
Total cost for fencing: Perimeter of the area= 1070.45 mtr (1399.82 mtr - 329.35 mtr)	Rs. 803035.00
Cost of fencing = 1.07 km X Rs. 750500.00	
Maintenance 5% Rs. 40151.75 oer annum for 4 years	Rs. 160607.00
Total barbed wire fencing of 1.07 km	Rs. 963642.00

ANNEXURE-IV

COST ESTIMATE FOR ANR WITH GAP PLANTATION OF 300 SEEDLINGS PER HECTARE

1	Type of the plantation	ANR plantation
2	No. Of seedlings to be planted	300 nos. per hectare
3	Spacing to be adopted	2.5 m x 2.5 m
4	Minimum wage for unskilled labourer	Rs.200.00 per manday

Sl No	Item of work	Person days	Labour (Rs)	Material (Rs.)	Total (Rs.)
0th Year (Advance work) pre-planting operation					
1	Survey, Demarcation	2	400	0	400
2	Site preparation	2	400	0	400
3	Silvicultural operation including clearance of weed, climber cutting, high stump cutting, singling of shoots	5	1000	0	1000
4	Raising nursery @ 330 seedlings/ha. (including 10% for casualty replacement) and watch & ward (part)	12	1800	600	2400
5	Contingency & unforeseen expenditure	1	0	200	200
	Sub-total	22	3600	800	4400
1st year planting					
1	Maintenance of nursery (Balance)	6	1200	0	1200
2	Digging of pits 300 nos. of 30 cm x 30 cm x 30 cm size	10.5	2100	0	2100
3	Carriage & planting including casualty replacement	6.5	1300	0	1300
4	Complete weeding, soil working, manuring	8.5	1700	0	1700
5	Cost of vermin-compost and insecticide for plantation	0	0	600	600
6	Cost of chemical fertilizer	0	0	200	200
7	Fire-line tracing and inspection path	3	600	0	600
8	Silvicultural operation including clearance of weeds, cutting of climbers, singling of shoot etc.	15	3000	0	3000
9	Soil conservation measures	20	4000	0	4000
10	Watch & ward	8	1600	0	1600
11	Contingency & unforeseen expenditure	0	0	400	400
	Sub-total	77.5	15500	1200	16700
2nd Year maintenance					
1	Casualty replacement including cost of seedling, carriage and planting	3	600	0	600
2	Complete weeding and pruning	3	600	0	600
3	Soil working and manuring	3	600	0	600
4	Cost of fertilizers and Insecticides	1	0	200	200
5	Fire line tracing and inspection path	1	200	0	200
6	Soil conservation measures	8	1600	0	1600
7	Watch & Ward (Whole Year)	8	1600	0	1600
8	Contingency and unforeseen expenditure	1	0	200	200
	Sub-total	28	5200	400	5600

3rd Year Maintenance				
1	Compete weeding and pruning	1.5	300	0
2	Soil working	1.5	300	0
3	Fire line tracing and inspection path	1	200	0
4	Watch & Ward (Whole Year)	8	1600	0
	Sub-total	12	2400	0
4th Year Maintenance				
1	Fire line tracing and inspection path	1	200	0
2	Watch, Ward & Pruning	2	400	0
	Sub-total	3	600	0
5th Year Maintenance				
1	Fire line tracing and inspection path	1	200	0
2	Watch, Ward & Pruning	2	400	0
	Sub-total	3	600	0
6th year maintenance				
1	Fire line tracing and inspection path	1	200	0
2	Watch, Ward & Pruning	2	400	0
	Sub-total	3	600	0
7th year maintenance				
1	Fire line tracing and inspection path	1	200	0
2	Watch, Ward & Pruning	2	400	0
	Sub-total	3	600	0
8th year maintenance				
1	Fire line tracing and inspection path	1	200	0
2	Watch, Ward & Pruning	2	400	0
	Sub-total	3	600	0
9th year maintenance				
1	Fire line tracing and inspection path	1	200	0
2	Watch, Ward & Pruning	2	400	0
	Sub-total	3	600	0
10th year maintenance				
1	Fire line tracing and inspection path	1	200	0
2	Watch, Ward & Pruning	2	400	0
	Sub-total	3	600	0

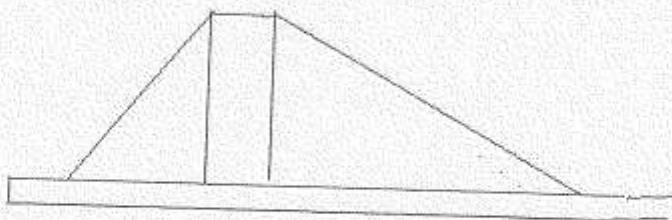
ABSTRACT OF COST OF PLANTATION FOR @ 300 SEEDLINGS PER HECTARE

Year	Person Days	Labour (Rs)	Material (Rs.)	Total Cost (Rs)
0th year	22	3600	800	4400
1st year	77.5	15500	1200	16700
2nd year	28	5200	400	5600
3rd year	12	2400	0	2400
4th year	3	600	0	600
5th year	3	600	0	600
6th year	3	600	0	600
7th year	3	600	0	600
8th year	3	600	0	600
9th year	3	600	0	600
10th year	3	600	0	600
Total	160.5	30900	2400	33300
Additional incentive (3%) for VSS/Fr/FG proposed for more than 80% survival and very good growth during 4th year of maintenance as per recommendation of DFO and RCCF.				
Additional EPA expenses if implemented through VSS at rate Rs 1200/- in 0th Year, Rs 2400/- in 1st Year, Rs 1800/- in 2nd Year, Rs 600/- per year from 3rd Year to 10th year.				
Total Norm per ha. in JFM mode with incentives.				

Cost for 11.912 Ha (ANR) plantation in JFM mode = Rs.44499.00 X 11.912= Rs 530072.00

ANNEXURE-V

Loose Boulder Check Dams for Soil Conservation Measure



Loose boulder checkdam should be constructed at the narrowest point of stream/gully susceptible to erosion. Banks should be reasonably stable. Height of LBCD structure should never exceed the height of bank. Generally a height of 1 mtr will be sufficient. Level of base of uphill side LBCD and top of downhill side LBCD should be same. Minimum 30 cm of the LBCD should be dovetailed into firm bank on each side.

Generally the LBCD should have 0.6m top-width, 1m height, uphill side slope 1:1, downhill side slope 1:2, uphill side apron 0.5 mtr, downhill side apron 1 mtr, foundation 0.3m.

Detailed estimate per running metre of Loose Boulder Check Dams

Sl.	Particulars of work	Quantity	Rate	Amount
1	Site preparation and layout of the structure	1 manday	Rs200.00	Rs200.00
2	Excavation of foundation in hard soil. Base with apron 3.6m long x 1.3m wide x 0.3m deep =	1.728 cum	Rs92.45 per cum	Rs159.45
3	Rough stone dry packing Base & apron 1 x 6.6m x 1m x 0.3 m = 1.98 cum Superstructure 1no x 1m length x (3.6m+0.6m)/2 average width x 1m height = 2.1 cum	4.08 cum	Rs1201.80 per cum	Rs4903.35
	Total cost per running metre of Loose Boulder Check Dam			Rs5262.80

For 40 running metres, the cost is Rs 5262.80 x 50 = Rs 210512.00

Staggered trenches of size 2m x 0.5m x 0.5m with Agave plantation

1	Earth work in hard soil including rough dressing, levelling and heaping the dugout soil at downhill side of trench. 2m x 0.5m x 0.5m = 0.5 cum @ Rs 110.94 per cum	Rs 55.47
2	3 nos of Agave plant per trench including all costs @ Rs 18.00 each	Rs 54.00
	Total cost per staggered trench with Agave plantation	Rs 109.47 or say Rs 110.00
	For 100 staggered trenches over 11.912 ha	Rs 11000.00

ANNEXURE-VI

TOTAL COST OF THE COMPENSATORY AFFORESTATION SCHEME

Sl. No.	Item of Work	Estimated cost in Rs
1	Barbed wire fencing over 1.07 km around plantation site @ Rs 750500 per km	963642.00
2	ANR (300 seedlings per ha.) plantation over 11.912 ha of non-forest land	530072.00
3	Special soil conservation measures	
	Loose Boulder Check Dams 50 running metre x	210512.00
	100 staggered trenches with Agave plantation	11000.00
4	Escalation 10%	171523.00
	Grand Total	1886749.00

Or say Rs 1886800.00 (Rupees Eighteen lakh Eighty-six thousand Eight hundred) only

04/12/15
Divisional Forest Officer,
Kalahandi South Division,
Divisional Forest Officer
Kalahandi South Division