

**SCHEME FOR
SITE SPECIFIC COMPENSATORY
AFFORESTATION**

OVER

**717.853 HA OF NON-FOREST GOVT. LAND
IDENTIFIED IN VILLAGE TEBHAKALAM**

UNDER THUAMUL RAMPUR TAHASIL

IN

KALAHANDI DISTRICT

AGAINST

**DAITARI IRON ORE MINING LEASE
LOCATED IN KEONJHAR & JAJPUR DISTRICT, ODISHA**

OF

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

**SCHEME FOR SITE SPECIFIC COMPENSATORY AFFORESTATION OVER 717.853 HA
OF NON-FOREST GOVT. LAND IDENTIFIED IN VILLAGE TEBHAKALAM UNDER
THUAMULRAMPUR TAHASIL IN KALAHANDI DISTRICT AGAINST DAITARI IRON
ORE MINING LEASE OF M/s ODISHA MINING CORPORATION LTD.**

INTRODUCTION:

Daitari Iron Ore Mines, over an area of 1812.99 ha was held by OMC Ltd under mining lease with effect from 27.01.1966 for a period of 30 years for extraction of Iron Ore. Application for renewal of Mining Lease after expiry of the lease period has been filed over a reduced area of 1018.3085 ha, which consists of 825.2795 ha of forest land and 193.029 ha of non-forest land. The total forest area broken prior to 25.10.1980 and approved by MoEF, Government of India under Section 2 of the F C Act 1980 vide letter No.8-164/1997-FC dt 27.01.2005 is 95.60 ha. OMC has submitted a revised proposal for diversion of balance forest land over 729.6795 ha (825.2795 ha -95.6 ha) including 11.8265 ha earmarked for safety zone. Hence the requirement of non-forest Govt. land for compensatory afforestation comes to 717.853 ha (Total Forest Area: 825.2795 -SZ area: 11.8265 ha – Broken up area: 95.60 ha). In accordance with the provision of F.C. Act 1980, compensatory afforestation scheme over 717.853 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 717.853 ha of non-forest land with suitable soil and water conservation measures for regeneration, rehabilitation and restocking of existing forest growth followed by gap 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 717.853 ha in a compact patch was not available in the district of Keonjhar and Jajpur 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 Tebhakalam under Thuamul Rampur R.I. circle of Thuamulrampur Tahasil in Kalahandi District. The details of plot wise land schedule are furnished below. The site is located on survey of India Topo Sheet Nos. E 44 E 14 and E 44 F 2 between Latitude: 19° 36' 51.344" - 19° 39' 9.937" N, Longitude: 82°59'23.898"- 83°01' 9.580" E (**Annexure-I**) and at a distance of 32 KM from Tahasil Headquarters. The area is located north of Bijaghathi RF and west of Arakhapedi RF. Sirmaska village is occurring to the south of the site. The proposed area is free from encroachment and encumbrances and suitable for plantation 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 proposed compensatory afforestation area

Tahasil	Village	Khata No.	Plot No.	Area of the plot (Acr)	Area considered (Acr)	Kissam	Khata No.	Plot No.	Area of the plot (Acr)	Area considered (Acr)	Kissam
THUAMULRAMPUR	TEBHAKALAM	79 Abada Ajogya Anabadi	1	33.95	33.95	Dangar	79 Abada Ajogya Anabadi	447	54.60	54.60	Dangar
			2	41.58	41.58	Dangar		448	28.70	28.70	Dangar
			19	33.20	33.20	Dangar		451	17.65	17.65	Dangar
			20	26.50	26.50	Dangar		452	10.00	10.00	Dangar
			21	22.00	22.00	Dangar		453	41.85	41.85	Dangar
			34	2.46	2.46	Dangar		454	22.38	22.38	Dangar
			41	1.89	1.89	Dangar		455	69.83	69.83	Dangar
			42	68.55	68.55	Dangar		456	74.13	74.13	Dangar
			46	15.30	15.30	Dangar		457	72.15	72.15	Dangar
			47	11.98	11.98	Dangar		458	72.55	72.55	Dangar
			48	49.20	49.20	Dangar		461	50.20	49.30	Dangar
			65	51.35	51.35	Dangar		498	23.68	23.18	Dangar
			67	2.45	2.45	Dangar		512	8.08	7.68	Dangar
			82	19.85	19.85	Dangar		513	28.13	28.13	Dangar
			83	31.23	31.23	Dangar		516	35.15	35.15	Dangar
			105	53.53	53.53	Dangar		555	63.20	63.20	Dangar
			146	94.25	94.25	Dangar		556	92.08	92.08	Dangar
			199	22.95	18.40	Dangar		557	75.63	75.63	Dangar
			200	41.93	41.93	Dangar		600	16.95	16.95	Dangar
			201	39.63	38.53	Dangar		601	32.58	32.58	Dangar
367	61.45	54.00	Dangar	604	33.68	33.68	Dangar				
373	39.80	37.90	Dangar	606	48.70	48.70	Dangar				
			374	28.28	24.80	Dangar		458/607	48.88	28.00	Dangar
Total Area: 1814.09 Acr Area Considered: 1773.850 Acr or 717.853 ha											

An area of 717.853 ha has been found suitable and is covered under the present scheme. The village map showing the above land details for the proposed compensatory afforestation is enclosed as **Plate No.IX**. The land details jointly verified by Forest and Revenue authorities are enclosed as **Annexure-VII**.

DESCRIPTION OF THE EXISTING VEGETATION:

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 mainly hilly with its lower slope fairly gentle in nature. Flat topped hills are aligned mostly in NNW-SSE direction. The only valley to the west coming within the area is narrow through which a perennial nala flows south easterly. Another perennial stream flows easterly and joins the above nala down stream and flows northerly taking the name of

Shagarha Nala outside the present area. These two perennial streams are 2nd order streams and receive seasonal water from dendritic to parallel pattern of drainage net work. The minimum elevation of the area is at 620 mRL occurring to South-East and maximum elevation is at 938 mRL triangulation point occurring centrally to the east of village Tebhakalam. The hill slope is completely devoid of any forest growth. The overall slope of the area is towards SE. The soil is eroded at the lowest slope of the mounds with formation of gullies and small ravines. However, good depth of soil (1ft to 3ft) of loam and sandy loam are found in blank areas at patches and on podu ravaged areas. Podu cultivation is very conspicuous. The effect of past "podu cultivation" is experienced due to presence of even aged crop at places. The drainage is dendritic type due to heavy soil erosion and lithologic variation.

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 717.853 ha shall be covered under ANR (Gap plantation) mode with 300 plant/ha. Some rocky patches inside the area are retained as such for smooth management point of view and providing shelter to the wild fauna in the caves, crevices, talus etc.

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**. In addition

Agave bulbils will be planted at a spacing of 2mt. along the boundary as a permanent feature of boundary.

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 717.853 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:

Amla	<i>Emblica officinalis</i>
Bamboo kanda	<i>Bambusa arundinacea</i>
Karanja	<i>Pongomia 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 for 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 717.853 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 5, 56, 66,000.00** 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.

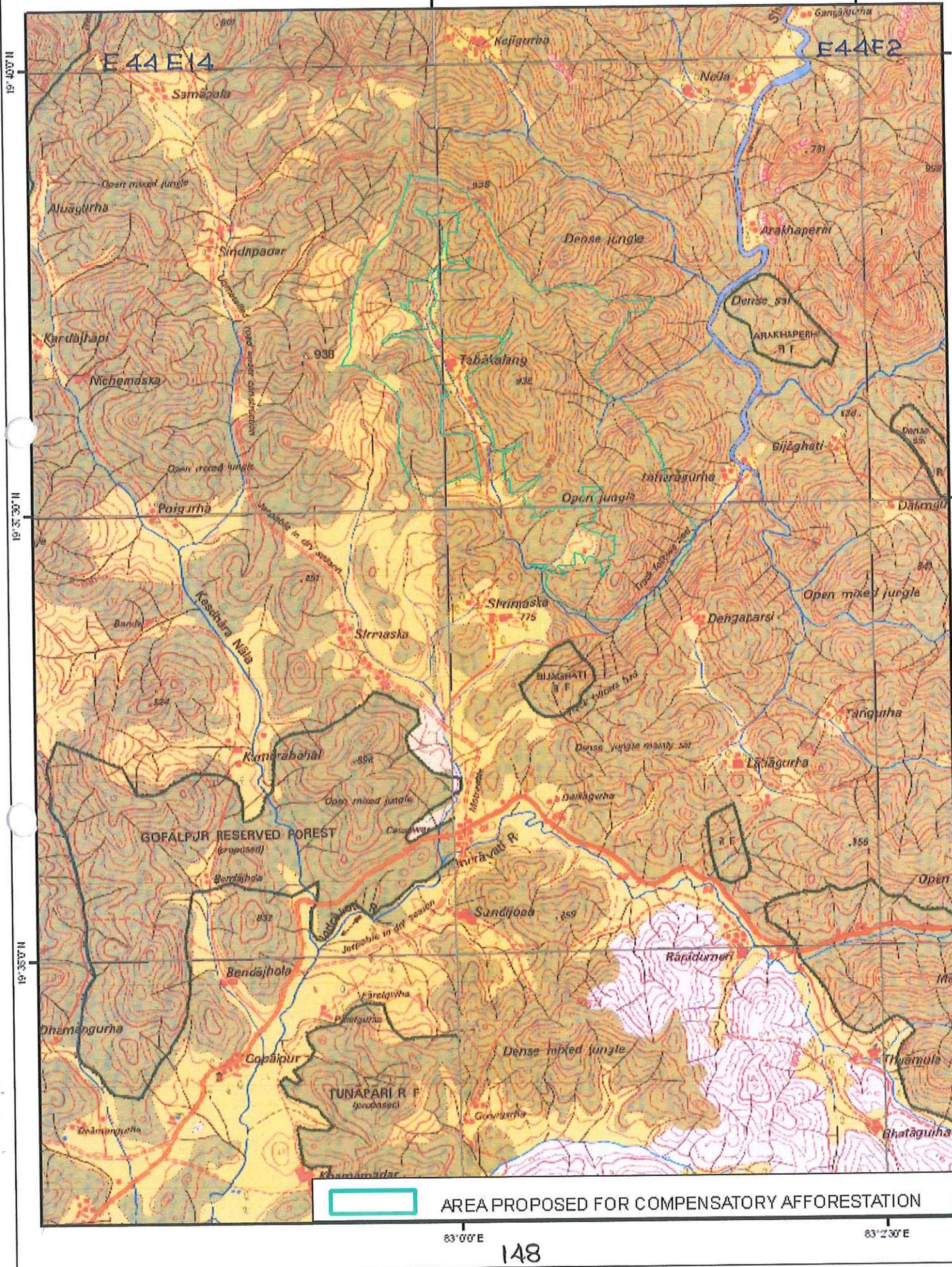

15/9/14
Divisional Forest Officer
Kalahandi (South) Division
Kalahandi South Division

KEYPLAN

ANNEXURE - I

SCALE: 1:50,000
83°00'E

83°230'E



AREA PROPOSED FOR COMPENSATORY AFFORESTATION

83°00'E

83°230'E

GPS READING OF THE AREA PROPOSED FOR COMPENSATORY AFFORESTATION

Station		Distance in mtr	Forward Bearing	Backward Bearing	Co-ordinates	
From	To				Longitude	Latitude
1	2	109.27	24°11'29.76"	204°11'29.76"	82° 59' 23.898" E	19° 38' 19.084" N
2	3	78.66	30°17'27.96"	210°17'27.96"	82° 59' 25.475" E	19° 38' 22.308" N
3	4	44.40	28°35'29.04"	208°35'29.04"	82° 59' 26.864" E	19° 38' 24.501" N
4	5	201.77	359°13'33.96"	179°13'33.96"	82° 59' 27.608" E	19° 38' 25.760" N
5	6	250.04	6°04'12.00"	186°04'12.00"	82° 59' 27.596" E	19° 38' 32.321" N
6	7	224.12	12°48'20.88"	192°48'20.88"	82° 59' 28.603" E	19° 38' 40.395" N
7	8	57.46	8°23'44.16"	188°23'44.16"	82° 59' 30.395" E	19° 38' 47.482" N
8	9	109.47	28°36'33.12"	208°36'33.12"	82° 59' 30.706" E	19° 38' 49.327" N
9	10	94.37	19°36'14.04"	199°36'14.04"	82° 59' 32.543" E	19° 38' 52.432" N
10	11	67.65	44°12'20.52"	224°12'20.52"	82° 59' 33.666" E	19° 38' 55.310" N
11	12	236.06	44°05'30.48"	224°05'30.48"	82° 59' 35.304" E	19° 38' 56.869" N
12	13	80.39	41°22'13.44"	221°22'13.44"	82° 59' 41.009" E	19° 39' 2.319" N
13	14	70.88	20°48'59.04"	200°48'59.04"	82° 59' 42.857" E	19° 39' 4.260" N
14	15	325.42	19°24'47.52"	199°24'47.52"	82° 59' 43.748" E	19° 39' 6.405" N
15	16	178.07	19°17'47.40"	199°17'47.40"	82° 59' 47.583" E	19° 39' 16.342" N
16	17	40.77	17°12'43.56"	197°12'43.56"	82° 59' 49.670" E	19° 39' 21.784" N
17	18	135.59	104°33'24.84"	284°33'24.84"	82° 59' 50.100" E	19° 39' 23.046" N
18	19	83.30	93°03'31.32"	273°03'31.32"	82° 59' 54.590" E	19° 39' 21.888" N
19	20	194.86	102°59'40.56"	282°59'40.56"	82° 59' 57.443" E	19° 39' 21.712" N
20	21	103.89	126°47'59.64"	306°47'59.64"	83° 00' 3.942" E	19° 39' 20.214" N
21	22	71.66	117°14'46.32"	297°14'46.32"	83° 00' 6.772" E	19° 39' 18.159" N
22	23	382.86	138°18'00.00"	318°18'00.00"	83° 00' 8.945" E	19° 39' 17.068" N
23	24	244.94	159°28'27.84"	339°28'27.84"	83° 00' 17.570" E	19° 39' 7.677" N
24	25	132.45	158°37'55.92"	338°37'55.92"	83° 00' 20.425" E	19° 39' 0.185" N
25	26	93.12	141°01'11.64"	321°01'11.64"	83° 00' 22.032" E	19° 38' 56.156" N
26	27	56.01	121°26'14.28"	301°26'14.28"	83° 00' 24.013" E	19° 38' 53.780" N
27	28	155.82	141°34'37.92"	321°34'37.92"	83° 00' 25.641" E	19° 38' 52.812" N
28	29	50.46	139°22'09.84"	319°22'09.84"	83° 00' 28.915" E	19° 38' 48.806" N
29	30	189.48	143°08'22.92"	323°08'22.92"	83° 00' 30.027" E	19° 38' 47.548" N
30	31	19.89	65°08'37.32"	245°08'37.32"	83° 00' 33.866" E	19° 38' 42.575" N
31	32	145.16	79°05'58.92"	259°05'58.92"	83° 00' 34.489" E	19° 38' 42.840" N
32	33	116.79	75°34'12.72"	255°34'12.72"	83° 00' 39.392" E	19° 38' 43.678" N
33	34	52.48	98°20'03.84"	278°20'03.84"	83° 00' 43.285" E	19° 38' 44.581" N
34	35	52.56	83°51'32.04"	263°51'32.04"	83° 00' 45.064" E	19° 38' 44.314" N
35	36	90.29	90°12'35.64"	270°12'35.64"	83° 00' 46.860" E	19° 38' 44.477" N
36	37	129.98	107°18'02.88"	287°18'02.88"	83° 00' 49.958" E	19° 38' 44.431" N
37	38	72.87	147°00'08.28"	327°00'08.28"	83° 00' 54.201" E	19° 38' 43.127" N
38	39	51.38	136°33'54.36"	316°33'54.36"	83° 00' 55.539" E	19° 38' 41.124" N
39	40	21.86	93°07'19.56"	273°07'19.56"	83° 00' 56.736" E	19° 38' 39.898" N
40	41	30.71	116°53'46.32"	296°53'46.32"	83° 00' 57.484" E	19° 38' 39.850" N
41	42	14.23	67°00'40.68"	247°00'40.68"	83° 00' 58.418" E	19° 38' 39.388" N

Station		Distance in mtr	Forward Bearing	Backward Bearing	Co-ordinates	
From	To				Longitude	Latitude
42	43	343.03	91°00'27.36"	271°00'27.36"	83° 00' 58.870" E	19° 38' 39.564" N
43	44	95.41	83°24'25.56"	263°24'25.56"	83° 01' 10.638" E	19° 38' 39.236" N
44	45	32.63	102°04'31.08"	282°04'31.08"	83° 01' 13.894" E	19° 38' 39.555" N
45	46	105.36	217°42'57.60"	37°42'57.60"	83° 01' 14.987" E	19° 38' 39.321" N
46	47	31.39	199°48'35.28"	19°48'35.28"	83° 01' 12.741" E	19° 38' 36.636" N
47	48	119.36	262°04'28.92"	82°04'28.92"	83° 01' 12.364" E	19° 38' 35.680" N
48	49	63.50	270°35'48.48"	90°35'48.48"	83° 01' 8.300" E	19° 38' 35.191" N
49	50	45.76	184°08'40.56"	4°08'40.56"	83° 01' 6.122" E	19° 38' 35.237" N
50	51	88.15	213°59'17.52"	33°59'17.52"	83° 01' 5.990" E	19° 38' 33.754" N
51	52	22.59	197°54'15.84"	17°54'15.84"	83° 01' 4.269" E	19° 38' 31.397" N
52	53	39.61	222°34'29.64"	42°34'29.64"	83° 01' 4.022" E	19° 38' 30.700" N
53	54	82.17	228°11'52.44"	48°11'52.44"	83° 01' 3.090" E	19° 38' 29.762" N
54	55	64.01	206°30'43.56"	26°30'43.56"	83° 01' 0.966" E	19° 38' 28.005" N
55	56	30.54	191°44'52.80"	11°44'52.80"	83° 00' 59.962" E	19° 38' 26.154" N
56	57	60.54	205°13'15.96"	25°13'15.96"	83° 00' 59.737" E	19° 38' 25.184" N
57	58	138.93	217°57'39.96"	37°57'39.96"	83° 00' 58.829" E	19° 38' 23.413" N
58	59	152.33	215°16'38.64"	35°16'38.64"	83° 00' 55.852" E	19° 38' 19.885" N
59	60	44.22	235°21'32.76"	55°21'32.76"	83° 00' 52.783" E	19° 38' 15.875" N
60	61	308.22	145°42'47.16"	325°42'47.16"	83° 00' 51.524" E	19° 38' 15.072" N
61	62	42.29	56°48'25.56"	236°48'25.56"	83° 00' 57.379" E	19° 38' 6.725" N
62	63	86.10	111°38'16.44"	291°38'16.44"	83° 00' 58.603" E	19° 38' 7.465" N
63	64	409.73	135°21'58.68"	315°21'58.68"	83° 01' 01.336" E	19° 38' 6.401" N
64	65	67.82	181°23'49.92"	1°23'49.92"	83° 01' 11.096" E	19° 37' 56.811" N
65	66	81.51	154°16'00.48"	334°16'00.48"	83° 01' 11.012" E	19° 37' 54.607" N
66	67	224.79	148°24'52.56"	328°24'52.56"	83° 01' 12.196" E	19° 37' 52.206" N
67	68	327.20	167°16'12.72"	347°16'12.72"	83° 01' 16.158" E	19° 37' 45.935" N
68	69	78.02	187°18'20.88"	7°18'20.88"	83° 01' 18.503" E	19° 37' 35.530" N
69	70	249.60	140°41'59.64"	320°41'59.64"	83° 01' 18.131" E	19° 37' 33.018" N
70	71	197.86	135°40'37.92"	315°40'37.92"	83° 01' 23.476" E	19° 37' 26.677" N
71	72	50.15	218°18'20.88"	38°18'20.88"	83° 01' 28.162" E	19° 37' 22.022" N
72	73	124.95	204°03'17.64"	24°03'17.64"	83° 01' 27.080" E	19° 37' 20.754" N
73	74	55.49	154°57'45.00"	334°57'45.00"	83° 01' 25.286" E	19° 37' 17.064" N
74	75	150.21	221°20'24.72"	41°20'24.72"	83° 01' 26.071" E	19° 37' 15.420" N
75	76	127.18	209°05'52.80"	29°05'52.80"	83° 01' 22.621" E	19° 37' 11.792" N
76	77	66.70	222°47'22.92"	42°47'22.92"	83° 01' 20.453" E	19° 37' 8.203" N
77	78	120.07	215°55'22.44"	35°55'22.44"	83° 01' 18.879" E	19° 37' 6.629" N
78	79	84.45	214°18'26.64"	34°18'26.64"	83° 01' 16.422" E	19° 37' 3.494" N
79	80	137.77	214°29'00.96"	34°29'00.96"	83° 01' 14.760" E	19° 37' 1.245" N
80	81	76.30	249°12'07.56"	69°12'07.56"	83° 01' 12.038" E	19° 36' 57.583" N
81	82	70.17	237°37'41.52"	57°37'41.52"	83° 01' 9.580" E	19° 36' 56.729" N
82	83	29.19	224°42'22.32"	44°42'22.32"	83° 01' 7.531" E	19° 36' 55.530" N
83	84	56.91	215°27'48.24"	35°27'48.24"	83° 01' 6.818" E	19° 36' 54.864" N
84	85	30.48	220°29'36.24"	40°29'36.24"	83° 01' 5.666" E	19° 36' 53.369" N
85	86	34.22	240°20'34.80"	60°20'34.80"	83° 01' 4.978" E	19° 36' 52.623" N

Station		Distance in mtr	Forward Bearing	Backward Bearing	Co-ordinates	
From	To				Longitude	Latitude
86	87	27.03	217°21'48.24"	37°21'48.24"	83° 01' 3.950" E	19° 36' 52.084" N
87	88	375.23	269°05'52.80"	89°05'52.80"	83° 01' 3.379" E	19° 36' 51.392" N
88	89	50.96	302°57'50.40"	122°57'50.40"	83° 00' 50.504" E	19° 36' 51.344" N
89	90	70.60	310°08'07.80"	130°08'07.80"	83° 00' 49.048" E	19° 36' 52.262" N
90	91	120.91	293°57'45.00"	113°57'45.00"	83° 00' 47.214" E	19° 36' 53.762" N
91	92	43.93	300°23'44.16"	120°23'44.16"	83° 00' 43.443" E	19° 36' 55.401" N
92	93	144.80	309°29'02.04"	129°29'02.04"	83° 00' 42.152" E	19° 36' 56.139" N
93	94	57.88	306°04'24.96"	126°04'24.96"	83° 00' 38.355" E	19° 36' 59.175" N
94	95	89.09	313°21'48.24"	133°21'48.24"	83° 00' 36.764" E	19° 37' 0.301" N
95	96	33.88	321°20'24.72"	141°20'24.72"	83° 00' 34.566" E	19° 37' 2.315" N
96	97	119.12	6°37'57.00"	186°37'57.00"	83° 00' 33.850" E	19° 37' 3.183" N
97	98	84.79	317°25'40.80"	137°25'40.80"	83° 00' 34.370" E	19° 37' 7.025" N
98	99	135.13	291°30'05.04"	111°30'05.04"	83° 00' 32.427" E	19° 37' 9.077" N
99	100	180.98	89°35'52.44"	269°35'52.44"	83° 00' 28.133" E	19° 37' 10.736" N
100	101	34.83	253°46'03.36"	73°46'03.36"	83° 00' 34.343" E	19° 37' 10.708" N
101	102	29.20	173°20'19.32"	353°20'19.32"	83° 00' 33.192" E	19° 37' 10.404" N
102	103	115.34	105°32'27.60"	285°32'27.60"	83° 00' 33.296" E	19° 37' 9.460" N
103	104	25.18	187°14'40.20"	7°14'40.20"	83° 00' 37.097" E	19° 37' 8.412" N
104	105	87.55	105°16'45.84"	285°16'45.84"	83° 00' 36.978" E	19° 37' 7.601" N
105	106	9.87	22°42'51.84"	202°42'51.84"	83° 00' 39.866" E	19° 37' 6.819" N
106	107	27.21	98°56'58.20"	278°56'58.20"	83° 00' 40.001" E	19° 37' 7.113" N
107	108	28.39	14°14'36.60"	194°14'36.60"	83° 00' 40.921" E	19° 37' 6.965" N
108	109	43.63	291°20'12.84"	111°20'12.84"	83° 00' 41.172" E	19° 37' 7.857" N
109	110	58.64	311°20'29.76"	131°20'29.76"	83° 00' 39.784" E	19° 37' 8.389" N
110	111	21.77	26°33'54.36"	206°33'54.36"	83° 00' 38.289" E	19° 37' 9.665" N
111	112	68.12	96°03'53.64"	276°03'53.64"	83° 00' 38.631" E	19° 37' 10.295" N
112	113	3.28	178°09'08.64"	358°09'08.64"	83° 00' 40.952" E	19° 37' 10.035" N
113	114	103.97	90°10'08.76"	270°10'08.76"	83° 00' 40.955" E	19° 37' 9.928" N
114	115	137.21	358°53'22.20"	178°53'22.20"	83° 00' 44.522" E	19° 37' 9.878" N
115	116	87.91	103°55'54.12"	283°55'54.12"	83° 00' 44.486" E	19° 37' 14.340" N
116	117	29.05	200°15'02.16"	20°15'02.16"	83° 00' 47.405" E	19° 37' 13.619" N
117	118	56.72	138°52'36.84"	318°52'36.84"	83° 00' 47.049" E	19° 37' 12.736" N
118	119	64.09	38°42'54.72"	218°42'54.72"	83° 00' 48.312" E	19° 37' 11.333" N
119	120	47.10	110°43'32.16"	290°43'32.16"	83° 00' 49.708" E	19° 37' 12.943" N
120	121	33.20	130°47'57.84"	310°47'57.84"	83° 00' 51.213" E	19° 37' 12.384" N
121	122	9.75	48°18'06.84"	228°18'06.84"	83° 00' 52.066" E	19° 37' 11.669" N
122	123	14.24	125°09'59.04"	305°09'59.04"	83° 00' 52.319" E	19° 37' 11.877" N
123	124	41.10	146°49'17.40"	326°49'17.40"	83° 00' 52.715" E	19° 37' 11.606" N
124	125	73.69	163°02'54.60"	343°02'54.60"	83° 00' 53.472" E	19° 37' 10.479" N
125	126	6.50	231°46'38.28"	51°46'38.28"	83° 00' 54.181" E	19° 37' 8.179" N
126	127	45.35	200°38'03.48"	20°38'03.48"	83° 00' 54.004" E	19° 37' 8.050" N
127	128	27.56	119°00'04.32"	299°00'04.32"	83° 00' 53.439" E	19° 37' 6.677" N
128	129	51.09	23°41'50.28"	203°41'50.28"	83° 00' 54.260" E	19° 37' 6.233" N
129	130	32.17	37°14'48.48"	217°14'48.48"	83° 00' 54.984" E	19° 37' 7.746" N

Station		Distance in mtr	Forward Bearing	Backward Bearing	Co-ordinates	
From	To				Longitude	Latitude
130	131	22.97	73°24'06.84"	253°24'06.84"	83° 00' 55.662" E	19° 37' 8.571" N
131	132	44.21	26°26'32.64"	206°26'32.64"	83° 00' 56.420" E	19° 37' 8.776" N
132	133	16.92	313°28'45.12"	133°28'45.12"	83° 00' 57.112" E	19° 37' 10.056" N
133	134	65.94	344°21'28.08"	164°21'28.08"	83° 00' 56.695" E	19° 37' 10.439" N
134	135	31.22	49°23'55.32"	229°23'55.32"	83° 00' 56.111" E	19° 37' 12.510" N
135	136	49.54	88°46'33.24"	268°46'33.24"	83° 00' 56.932" E	19° 37' 13.162" N
136	137	201.96	359°18'51.84"	179°18'51.84"	83° 00' 58.632" E	19° 37' 13.177" N
137	138	110.70	266°27'52.92"	86°27'52.92"	83° 00' 58.631" E	19° 37' 19.744" N
138	139	50.08	308°10'39.36"	128°10'39.36"	83° 00' 54.837" E	19° 37' 19.565" N
139	140	107.42	285°30'54.00"	105°30'54.00"	83° 00' 53.499" E	19° 37' 20.586" N
140	141	85.59	309°30'22.32"	129°30'22.32"	83° 00' 49.959" E	19° 37' 21.560" N
141	142	119.13	68°15'19.08"	248°15'19.08"	83° 00' 47.715" E	19° 37' 23.356" N
142	143	48.42	359°26'11.40"	179°26'11.40"	83° 00' 51.530" E	19° 37' 24.748" N
143	144	22.90	73°04'21.00"	253°04'21.00"	83° 00' 51.533" E	19° 37' 26.323" N
144	145	25.79	355°45'48.96"	175°45'48.96"	83° 00' 52.287" E	19° 37' 26.531" N
145	146	58.13	8°38'20.76"	188°38'20.76"	83° 00' 52.233" E	19° 37' 27.368" N
146	147	57.14	284°48'30.24"	104°48'30.24"	83° 00' 52.555" E	19° 37' 29.233" N
147	148	109.64	32°53'05.28"	212°53'05.28"	83° 00' 50.666" E	19° 37' 29.729" N
148	149	56.95	302°21'39.24"	122°21'39.24"	83° 00' 52.746" E	19° 37' 32.700" N
149	150	57.02	56°21'15.12"	236°21'15.12"	83° 00' 51.108" E	19° 37' 33.709" N
150	151	85.60	48°41'02.76"	228°41'02.76"	83° 00' 52.749" E	19° 37' 34.718" N
151	152	197.97	269°14'58.20"	89°14'58.20"	83° 00' 54.978" E	19° 37' 36.531" N
152	153	131.50	179°22'16.32"	359°22'16.32"	83° 00' 48.185" E	19° 37' 36.523" N
153	154	9.99	293°54'58.32"	113°54'58.32"	83° 00' 48.181" E	19° 37' 32.247" N
154	155	30.37	192°50'15.00"	12°50'15.00"	83° 00' 47.870" E	19° 37' 32.382" N
155	156	43.48	186°42'35.28"	6°42'35.28"	83° 00' 47.626" E	19° 37' 31.422" N
156	157	283.01	269°12'35.64"	89°12'35.64"	83° 00' 47.434" E	19° 37' 30.020" N
157	158	37.99	182°59'38.04"	2°59'38.04"	83° 00' 37.722" E	19° 37' 30.002" N
158	159	50.23	283°37'08.40"	103°37'08.40"	83° 00' 37.639" E	19° 37' 28.769" N
159	160	127.95	234°25'00.84"	54°25'00.84"	83° 00' 35.969" E	19° 37' 29.172" N
160	161	93.12	269°07'14.88"	89°07'14.88"	83° 00' 32.368" E	19° 37' 26.792" N
161	162	6.27	1°55'59.88"	181°55'59.88"	83° 00' 29.173" E	19° 37' 26.781" N
162	163	73.68	46°58'44.04"	226°58'44.04"	83° 00' 29.182" E	19° 37' 26.985" N
163	164	100.72	319°54'05.40"	139°54'05.40"	83° 00' 31.051" E	19° 37' 28.598" N
164	165	37.06	222°02'52.80"	42°02'52.80"	83° 00' 28.856" E	19° 37' 31.128" N
165	166	139.33	341°05'49.56"	161°05'49.56"	83° 00' 27.994" E	19° 37' 30.243" N
166	167	260.03	44°47'45.24"	224°47'45.24"	83° 00' 26.498" E	19° 37' 34.546" N
167	168	23.71	300°08'29.04"	120°08'29.04"	83° 00' 32.859" E	19° 37' 40.475" N
168	169	262.73	234°15'39.96"	54°15'39.96"	83° 00' 32.160" E	19° 37' 40.870" N
169	170	49.49	225°58'28.92"	45°58'28.92"	83° 00' 24.781" E	19° 37' 35.963" N
170	171	18.28	277°29'06.00"	97°29'06.00"	83° 00' 23.546" E	19° 37' 34.858" N
171	172	33.28	318°42'24.84"	138°42'24.84"	83° 00' 22.925" E	19° 37' 34.942" N
172	173	98.36	357°50'30.48"	177°50'30.48"	83° 00' 22.181" E	19° 37' 35.764" N
173	174	33.02	338°22'08.76"	158°22'08.76"	83° 00' 22.094" E	19° 37' 38.961" N

Station		Distance in mtr	Forward Bearing	Backward Bearing	Co-ordinates	
From	To				Longitude	Latitude
174	175	45.88	253°45'34.56"	73°45'34.56"	83° 00' 21.689" E	19° 37' 39.963" N
175	176	276.07	359°19'54.84"	179°19'54.84"	83° 00' 20.172" E	19° 37' 39.563" N
176	177	98.08	61°44'27.96"	241°44'27.96"	83° 00' 20.173" E	19° 37' 48.540" N
177	178	52.07	57°14'18.60"	237°14'18.60"	83° 00' 23.156" E	19° 37' 50.016" N
178	179	17.60	133°10'19.20"	313°10'19.20"	83° 00' 24.670" E	19° 37' 50.916" N
179	180	48.41	50°39'19.80"	230°39'19.80"	83° 0' 25.105" E	19° 37' 50.519" N
180	181	31.30	327°15'00.72"	147°15'00.72"	83° 00' 26.402" E	19° 37' 51.503" N
181	182	105.21	233°57'05.04"	53°57'05.04"	83° 00' 25.832" E	19° 37' 52.365" N
182	183	52.56	265°22'48.36"	85°22'48.36"	83° 00' 1.739" E	19° 38' 7.993" N
183	184	20.25	189°24'02.88"	9°24'02.88"	83° 00' 7.444" E	19° 37' 58.202" N
184	185	103.73	265°48'07.56"	85°48'07.56"	83° 00' 20.967" E	19° 37' 49.619" N
185	186	194.04	350°49'12.72"	170°49'12.72"	83° 00' 17.414" E	19° 37' 49.412" N
186	187	635.70	335°28'58.80"	155°28'58.80"	83° 00' 16.429" E	19° 37' 55.652" N
187	188	445.04	55°03'25.56"	235°03'25.56"	83° 00' 7.610" E	19° 38' 14.558" N
188	189	62.77	359°07'49.80"	179°07'49.80"	83° 00' 20.232" E	19° 38' 22.706" N
189	190	183.36	44°23'31.20"	224°23'31.20"	83° 00' 20.225" E	19° 38' 24.747" N
190	191	41.29	321°39'40.68"	141°39'40.68"	83° 00' 24.679" E	19° 38' 28.958" N
191	192	164.44	218°17'19.68"	38°17'19.68"	83° 00' 23.814" E	19° 38' 30.020" N
192	193	63.11	356°09'14.40"	176°09'14.40"	83° 00' 20.265" E	19° 38' 25.863" N
193	194	599.20	269°35'06.36"	89°35'06.36"	83° 00' 20.145" E	19° 38' 27.912" N
194	195	113.34	329°50'37.32"	149°50'37.32"	82° 59' 59.581" E	19° 38' 28.000" N
195	196	35.38	272°24'00.72"	92°24'00.72"	82° 59' 57.667" E	19° 38' 31.208" N
196	197	198.38	354°33'03.60"	174°33'03.60"	82° 59' 56.454" E	19° 38' 31.270" N
197	198	34.97	12°56'33.36"	192°56'33.36"	82° 59' 55.887" E	19° 38' 37.698" N
198	199	41.91	95°47'49.20"	275°47'49.20"	82° 59' 56.170" E	19° 38' 38.803" N
199	200	139.99	9°08'05.28"	189°08'05.28"	82° 59' 57.599" E	19° 38' 38.649" N
200	201	30.49	271°11'36.60"	91°11'36.60"	82° 59' 58.417" E	19° 38' 43.135" N
201	202	126.16	359°25'23.52"	179°25'23.52"	82° 59' 57.372" E	19° 38' 43.167" N
202	203	34.74	27°11'22.20"	207°11'22.20"	82° 59' 57.379" E	19° 38' 47.269" N
203	204	37.36	94°13'27.84"	274°13'27.84"	82° 59' 57.936" E	19° 38' 48.268" N
204	205	75.36	359°21'22.68"	179°21'22.68"	82° 59' 59.213" E	19° 38' 48.164" N
205	206	310.21	89°27'09.72"	269°27'09.72"	82° 59' 59.215" E	19° 38' 50.615" N
206	207	87.43	359°10'03.72"	179°10'03.72"	83° 00' 9.861" E	19° 38' 50.592" N
207	208	48.11	50°21'20.88"	230°21'20.88"	83° 00' 9.853" E	19° 38' 53.435" N
208	209	20.69	318°19'04.08"	138°19'04.08"	83° 00' 11.136" E	19° 38' 54.419" N
209	210	102.07	242°03'11.88"	62°03'11.88"	83° 00' 10.671" E	19° 38' 54.927" N
210	211	129.34	269°09'21.96"	89°09'21.96"	83° 00' 7.557" E	19° 38' 53.406" N
211	212	41.61	315°49'27.48"	135°49'27.48"	83° 00' 3.118" E	19° 38' 53.393" N
212	213	282.10	4°18'11.16"	184°18'11.16"	83° 00' 2.134" E	19° 38' 54.375" N
213	214	98.22	89°15'32.76"	269°15'32.76"	83° 00' 2.974" E	19° 39' 3.513" N
214	215	137.80	0°00'00.00"	180°00'00.00"	83° 00' 6.345" E	19° 39' 3.516" N
215	216	48.61	30°55'15.60"	210°55'15.60"	83° 00' 6.401" E	19° 39' 7.997" N
216	217	11.69	301°40'31.80"	121°40'31.80"	83° 00' 7.275" E	19° 39' 9.343" N
217	218	25.23	217°09'29.88"	37°09'29.88"	83° 00' 6.936" E	19° 39' 9.546" N

Station		Distance in mtr	Forward Bearing	Backward Bearing	Co-ordinates	
From	To				Longitude	Latitude
218	219	31.97	0°45'31.68"	180°45'31.68"	83° 00' 6.405" E	19° 39' 8.898" N
219	220	197.49	270°03'41.04"	90°03'41.04"	83° 00' 6.432" E	19° 39' 9.937" N
220	221	62.39	228°34'34.68"	48°34'34.68"	82° 59' 59.655" E	19° 39' 10.020" N
221	222	195.75	299°36'51.12"	119°36'51.12"	82° 59' 58.033" E	19° 39' 8.696" N
222	223	30.53	172°25'53.76"	352°25'53.76"	82° 59' 52.231" E	19° 39' 11.906" N
223	224	299.26	128°35'47.40"	308°35'47.40"	82° 59' 52.357" E	19° 39' 10.920" N
224	225	33.69	149°24'24.12"	329°24'24.12"	83° 00' 0.309" E	19° 39' 4.761" N
225	226	108.35	184°55'51.60"	4°55'51.60"	83° 00' 0.886" E	19° 39' 3.811" N
226	227	35.14	89°39'17.28"	269°39'17.28"	83° 00' 0.522" E	19° 39' 0.305" N
227	228	302.84	197°01'44.76"	17°01'44.76"	83° 00' 1.728" E	19° 39' 0.298" N
228	229	61.31	288°18'35.28"	108°18'35.28"	82° 59' 58.568" E	19° 38' 50.918" N
229	230	108.86	196°08'39.48"	16°08'39.48"	82° 59' 56.578" E	19° 38' 51.566" N
230	231	58.31	240°10'39.72"	60°10'39.72"	82° 59' 55.497" E	19° 38' 48.178" N
231	232	152.20	270°33'28.08"	90°33'28.08"	82° 59' 53.750" E	19° 38' 47.254" N
232	233	259.94	179°29'12.48"	359°29'12.48"	82° 59' 48.527" E	19° 38' 47.361" N
233	234	40.56	283°53'28.32"	103°53'28.32"	82° 59' 48.503" E	19° 38' 38.909" N
234	235	15.83	209°38'59.64"	29°38'59.64"	82° 59' 47.155" E	19° 38' 39.240" N
235	236	53.09	307°52'30.00"	127°52'30.00"	82° 59' 46.881" E	19° 38' 38.796" N
236	237	9.92	219°48'20.16"	39°48'20.16"	82° 59' 45.456" E	19° 38' 39.872" N
237	238	67.40	145°21'42.12"	325°21'42.12"	82° 59' 45.235" E	19° 38' 39.626" N
238	239	140.30	117°17'58.56"	297°17'58.56"	82° 59' 46.528" E	19° 38' 37.809" N
239	240	37.17	166°50'03.12"	346°50'03.12"	82° 59' 50.780" E	19° 38' 35.669" N
240	241	14.84	86°43'46.20"	266°43'46.20"	82° 59' 51.056" E	19° 38' 34.489" N
241	242	136.01	157°35'09.24"	337°35'09.24"	82° 59' 51.565" E	19° 38' 34.511" N
242	243	194.98	267°08'15.36"	87°08'15.36"	82° 59' 53.294" E	19° 38' 30.403" N
243	244	157.84	259°24'48.24"	79°24'48.24"	82° 59' 46.607" E	19° 38' 30.161" N
244	245	115.16	229°32'49.92"	49°32'49.92"	82° 59' 41.271" E	19° 38' 29.277" N
245	246	32.22	137°55'44.04"	317°55'44.04"	82° 59' 38.234" E	19° 38' 26.881" N
246	247	114.33	47°46'34.68"	227°46'34.68"	82° 59' 38.965" E	19° 38' 26.095" N
247	248	345.89	92°54'41.04"	272°54'41.04"	82° 59' 41.902" E	19° 38' 28.561" N
248	249	121.20	139°44'45.60"	319°44'45.60"	82° 59' 53.749" E	19° 38' 27.858" N
249	250	57.36	269°34'37.92"	89°34'37.92"	82° 59' 56.400" E	19° 38' 24.821" N
250	251	539.03	156°32'07.80"	336°32'07.80"	82° 59' 54.431" E	19° 38' 24.829" N
251	252	83.40	269°51'16.56"	89°51'16.56"	83° 0' 1.597" E	19° 38' 8.671" N
252	253	398.15	180°00'00.00"	0°00'00.00"	82° 59' 58.735" E	19° 38' 8.696" N
253	254	328.72	89°53'21.48"	269°53'21.48"	82° 59' 58.575" E	19° 37' 55.751" N
254	255	492.36	170°37'21.72"	350°37'21.72"	83° 00' 9.855" E	19° 37' 55.646" N
255	256	124.10	296°52'15.60"	116°52'15.60"	83° 00' 12.412" E	19° 37' 39.821" N
256	257	359.43	248°51'41.40"	68°51'41.40"	83° 00' 8.636" E	19° 37' 41.687" N
257	258	88.77	217°07'33.96"	37°07'33.96"	82° 59' 57.080" E	19° 37' 37.600" N
258	259	77.99	257°15'37.44"	77°15'37.44"	82° 59' 55.213" E	19° 37' 35.320" N
259	260	177.89	308°39'35.28"	128°39'35.28"	82° 59' 52.596" E	19° 37' 34.789" N
260	261	380.68	338°55'10.56"	158°55'10.56"	82° 59' 47.874" E	19° 37' 38.455" N
261	262	277.97	1°54'33.12"	181°54'33.12"	82° 59' 43.319" E	19° 37' 50.056" N

Station		Distance in mtr	Forward Bearing	Backward Bearing	Co-ordinates	
From	To				Longitude	Latitude
262	263	29.36	345°39'02.52"	165°39'02.52"	82° 59' 43.748" E	19° 37' 59.086" N
263	264	147.37	11°54'54.36"	191°54'54.36"	82° 59' 43.510" E	19° 38' 0.013" N
264	265	77.55	351°39'45.36"	171°39'45.36"	82° 59' 44.612" E	19° 38' 4.690" N
265	266	61.72	342°32'09.96"	162°32'09.96"	82° 59' 44.257" E	19° 38' 7.189" N
266	267	90.04	310°49'46.56"	130°49'46.56"	82° 59' 43.645" E	19° 38' 9.110" N
267	268	108.66	312°02'20.76"	132°02'20.76"	82° 59' 41.331" E	19° 38' 11.050" N
268	269	75.56	293°11'54.96"	113°11'54.96"	82° 59' 38.591" E	19° 38' 13.447" N
269	270	95.00	316°58'29.64"	136°58'29.64"	82° 59' 36.219" E	19° 38' 14.441" N
270	271	79.58	296°08'20.76"	116°08'20.76"	82° 59' 34.023" E	19° 38' 16.724" N
271	272	111.41	291°13'58.44"	111°13'58.44"	82° 59' 31.585" E	19° 38' 17.891" N
272	1	120.71	267°01'25.32"	87°01'25.32"	82° 59' 28.038" E	19° 38' 19.242" N
Perimeter: 29.594 km						

ANNEXURE - III

ESTIMATE FOR BARBED WIRE FENCING

Estimate for 1 Kilometer		
1	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 @ 25.00	Rs 49.00
	Total cost for fixing 1 pillar	Rs 1105.00
	Cost for 500 pillars	Rs 5,52,500.00
	Cost of barbed wire (1 Qntls) @ 8000.00. Cost of barbed wire (5+2) strand, 7500 mtrs or 24.75 Qntls @ 0.33kg/rmt.	Rs 1,98,000.00
	Total cost for 1 Km.	Rs 7,50,500.00
	Total cost for fencing: Perimeter of the area = 29.594 km Cost of fencing = 29.594 km X Rs 7,50,500.00	Rs 2,22,10,297.00
	Maintenance 5% of Rs. 11,10,514.85 per annum for 4 year	Rs 44,42,059.40
	Total barbed wire fencing of 29.594 Km	Rs 2,66,52,356.40

ANNEXURE-IV

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

1.	Type of the Plantation.	Block 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.	Size of pits.	30 cm x 30 cm x 30 cm
5.	Wage rate.	Rs 150.00 per manday.

Name of the mines	Name of the Village	Khata No.	Plot No.	Total area of the plot in Acr	Area recommended for Compensatory Afforestation in Acr	Kissam	Type of plantation in ha		
							Block 1600nosof plants/ha	ANR 300nos. of plants/ha	
Kurmitar	Melakundel	155 (Abada Ajogya Anabadi)	27	40.000	40.00	Dangar	Nil	40.00	
			60	41.630	36.73	Dangar	Nil	36.73	
			77	42.450	37.05	Dangar	Nil	37.05	
			313	22.500	22.50	Dangar	Nil	22.50	
			314	26.000	23.60	Dangar	Nil	23.60	
			356	61.330	57.83	Dangar	Nil	57.83	
			357	19.580	19.00	Dangar	Nil	19.00	
			358	40.530	40.00	Dangar	Nil	40.00	
			408	24.150	23.95	Dangar	Nil	23.95	
			612	14.880	14.00	Dangar	Nil	14.00	
			613	19.600	17.60	Dangar	Nil	17.60	
			Total in Acre	1302.890	1273.300				1273.300
			Total Area in Ha.	521.156	515.287		Nil	515.287	
			Roida-Sidhamatha	Badabundel	58 (Abada Ajogya Anabadi)	53	35.000	24.00	Dangar
62	39.530	39.33				Dangar			
104	29.830	29.83				Dangar			
337	16.120	16.12				Dangar			
349	14.000	14.00				Dangar			
353	43.280	40.36				Dangar			
Total area in Acre	177.760	163.640							
Total Area in Ha.	71.104	66.223					40.000	26.223	

Revenue Inspector Th. Rampur
 Forester Th. Rampur Section
 Revenue Inspector Th. Rampur
 Forest Range Officer Th. Rampur
 Tahasildar Th. Rampur
 Divisional Forest Officer Kalahandi (S) Division Bhawanipatna
 12-11-2013
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 12-11-2013

12-11-2013
 Asst. MANAGER (PERSONNEL)
 O.M.C. LTD. BHAWANIPATNA.