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COMPENSATORY
AFFORESTATION SCHEME
OVER
47.385 HA OF REVENUE FOREST LAND
IN VILLAGE KARNAPUR IN GOBRA R.I CIRCLE UNDER
TALCHER TAHASIL
IN
IN TALCHER RANGE
UNDER
ANGUL FOREST DIVISION

(23692 Seedlings)
AGAINST DIVERSION OF FOREST LAND 20.383 Ha.
FOR BHUBANESWARI COAL MINES
IN ANGUL DISTRICT, ODISHA
(AS PER ONE TIME COST NORM BASIS)

Prepared by


Divisional Forest Officer
Angul Forest Division
Angul, Division

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Detailed scheme for Compensatory Afforestation to be carried out over 47.385 ha in village Karnapur under Talcher Tahasil of Angul District in lieu of forest land to be diverted for Bhubaneswari Coal Mines, by Mahanadi Coal Field, Ltd.

An area of 132.904 Ha of forest land inside the Bhubaneswari Coal Mines Mine Lease area is required for the mining operation. Out of 132.88 ha. forest land involved in Bhubaneswari OCP 28 MTY, 112.521 ha. Forest land has already been diverted vide F.No.8-18/2002-FC, dated 6th December 2004. User Agency has now applied for remaining 20.383 ha. forest land for forest clearance by the GOI, MoEF & CC. As per the Guideline by MoEF & CC, equal extent.

The Compensatory Afforestation land has been identified over revenue forest land in Karnapur Village of Gobra RI Circle Under Talcher Tahasil under Talcher Range in Angul Forest Division.

According to the para-2 of the guideline No. 1109/9F-(Misc.)-387/2021 dt. 08.11.2021 by PCCF (N), Compensatory Afforestation has been prepared on "one time cost norm basis" by delinking the CA scheme to wage rate revision and material cost escalation for ease of doing business.

The joint verification conducted by Forest Officials and Revenue Officials, suggested 500 plants per ha. Hence, the base cost norm for Compensatory Afforestation (ANR Plantation) @ 500 plants per hectare (18 months old seedlings) as per the Guideline issued by PCCF, Odisha vide letter dt. 08.11.2021 and letter dt. 01.12.2021 has been considered. Soil & moisture conservation activities have been provided separately as per the approved cost Norm by PCCF, Odisha. Also, water provision aided by solar system with bore well (1 system for 5 ha plantation) fitted with Drip system has also been provided. As area is outside Notified Forest land and can be prone to encroachment and other biotic pressures, chain link fencing has been suggested as per the actual requirement.

1. Details of degraded forest land

District: Angul;

R.I : Gobra

Tahasil: Talcher;

Village: Karnapur

@ 500 Nos. seedlings per Ha.

Sl. No.	Tahasil	R.I Circle	Village	Khata No.	Plot No.	Kissam	Area available	Remarks
1	Talcher	Gobra	Karnapur	498	1	Jungle-II	28.328 ha	Suitable for
2			Karnapur	498	2	Jungle-II	19.424 Ha	ANR Plantation
							47.385 Ha	

The village maps showing the land details for the proposed compensatory afforestation are enclosed as Annexure - I. DGPS Surveyed Map for CA area at Mouza Karnapur Sheet No. 1 under Angul Forest Division in respect to Bhubneswari OCP authenticated by ORSAC and G.P.S co-ordinates of survey stations of Compensatory Afforestation area are enclosed as Annexure 1. Forest Cover Density, Toposheet and satellite maps are enclosed as Annexure-II, Annexure - III and Annexure - IV.

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Area selected for compensatory afforestation is higher than twice the area of forest land proposed to be diverted as required by the existing guidelines.

In addition, as per the condition mentioned in stage-I clearance File No. 8-07/2020-FC Dated 12th March, 2021 (Sub: Proposal seeking prior approval of the Central Government under Section-2 of the Forest (conservation) Act, 1980 for non-forestry use of 169.1779 Ha of the forest land in favour of M/s NALCO for UTKAL E opencast Coal Mining project in Angul District (Odisha) - reg.)

A. 1. Compensatory Afforestation:

- (i) **However, given the fact that Talcher Coal mining area involves very large forest area and same would need to be properly compensated, future diversion proposals in the area will be accepted with CA on degraded notified forest area on the following conditions:**
- (a) State Government issues a certificate that degraded forest land outside notified forests is not available for CA purpose, and
- (b)

Revenue Forest Land with minimum twice the area of the diverted forest land is selected for the purpose of Compensatory Afforestation.

2. Description of Area

I. Whether the site selected for Compensatory Afforestation is a land bank or not: This identified revenue forest area is under the control of Revenue Department and classified as 'Gramya Jungle and Jungle-II'. It is not a land bank.

II. If the CA site is other than the land bank, reasons be given: No land bank has been established yet for this purpose.

III. In case of non forest area identified for CA, then what is the distance of CA site from the adjoining forest boundary: C.A site is situated at Talcher Range under Angul Forest Division. Distance from Notified FB is 0 KM from Kuio RF.

IV. Soil type: Top soil is sandy loam having good retention capacity of water. Besides, adequate rooted waste of Sal and associates like Asan, Kuruma, Bija, Kasi, Moi, Dhaura etc. is visible. [Soil Map]

V. Topography:

- a) Hilly/Undulating/Plain: The Compensatory Afforestation sites are hilly and undulating.
- b) Slope: Steep/Medium/Gentle: The sites selected for Compensatory Afforestation have medium to gentle slope. [Slope Map]

VI. Whether the area is bearing any root stock of vegetation: The sites selected for Compensatory Afforestation are either barren or with weed growth like *Lantana*, *Eupatorium*, *Woodfordia fruticosa*, *Combretum decandrum*. Root stock of any principal species like Sal is not available.

3. Plantation Model: -

Since the area in Karnapur village is suitable for ANR plantation, 500 plants per hectare will be raised over 47.385 ha. with Maintenance of plantation for 10 years.

4. Technical details: Technical details of Compensatory Afforestation Scheme are as follows:

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a) **General Details:**

Survey & Demarcation of boundary:

The identified area has been surveyed by DGPS (map attached) and the area will be demarcated with RCC pillars of size 1.75 mtr x 30 cm x 30 cm. This work will be done by the Forest Department at Project cost.

Fencing:

To protect the plantation from grazing and other biotic interference, it will be provided with Chain Link wire mesh fence, the cost for which will be deposited by the User Agency. Chain Link wire mesh fencing will be done around the entire patch as per the cost norm provided by the PCCF, Odisha vide Guideline dt. 08.11.2021 and dt. 01.12.2021. A total of 2800 meter of chain link fencing will be required.

Planting and post-planting:

ANR plantation shall be taken up with 500 plants per hectares (18 months old seedlings) at spacing of 2.5 m x 2.5 m. Alignment and pit marking should be done carefully in slopes so that the horizontal distance between plants in a row remains 2.5 mtrs and not the distance measured along the slope. Size of pits will be 45 cm X 45 cm X 45 cm.. All post planting measures like casualty replacement, soil working, manuring, fire protection etc. will be undertaken. The plantation area should be divided into 4 ha plots. These plots should be demarcated in the field before digging of pits so that the demarcating line does not cross a plantation row.

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

- Care to be taken to raise healthy seedlings of minimum 60 cm height. 10% extra seedlings are to be raised for replacement of casualty.
- Pitting shall invariably be done during November-February i.e., before onset of monsoon. If possible, the soil of upper portion and lower portion of pit should be placed separately in specific direction so that while planting the pits will be filled with top-soil first.
- Planting shall be done on the onset of monsoon to get full benefit of monsoon rain and planting should never be delayed.
- Basal dose of NPK and Chlorpyrifos dust per plant should be applied at the time of planting carefully by mixing with top-soil so that the roots of seedlings do not come in direct contact with fertilizer.
- In case of any mortality of planted seedlings, it should be replaced with good seedlings as soon as possible for better success rate.
- Complete weeding in proper time will be done. Strip weeding will not be permitted.
- Soil-working and application of 2nd dose fertilizer of NPK should be done in time.
- Since the area is provided with chain link fence, watch & ward will be easier and the watchers may be engaged in weeding in problematic areas alongwith watch & ward.

b) **Species:** Although indigenous species are to be preferred in the plantation, considering adverse soil & moisture conditions we may go for hardy exotic species where required so that the plants are able to survive. Plantation of fruit and NTFP species plays a great role since economic species have a little value for local people. Considering the topography, soil and moisture availability of the plantation area, the following species will be planted.

Sl.No.	Name of species	Common name
1	<i>Azadirachta indica</i>	Neem
2	<i>Lannea coromandelica</i>	Mai
3	<i>Dalbergiasissoo</i>	Sissoo
4	<i>Artocarpus heterophyllus</i>	Jack fruit
5	<i>Cassia siamea</i>	Chakunda
6	<i>Derris indica</i>	Karanjia
7	<i>Albizia lebbek</i>	Sirisha
8	<i>Pterocarpus marsupium</i>	Bija
9	<i>Terminalia tomentosa</i>	Asan
10	<i>Anogeissus latifolia</i>	Dhaura
11	<i>Adina cordifolia</i>	Kurum
12	<i>Dendrocalamus strictus</i>	Bamboo
13	<i>Terminalia chebula</i>	Harida
14	<i>Emblica officinalis</i>	Amla
15	<i>Terminalia bellerica</i>	Bahada
16	<i>Gmelina arborea</i>	Gambhari
17	<i>Mangifera indica</i>	Mango
18	<i>Acacia catechu</i>	Khair

D) Soil and Moisture Conservation Works: -

Since most of the areas are hilly and undulating, soil conservation measure structures like staggered trench, percolation pit, contour trench, graded earthen bund, LBCD, wire mesh, LBCD, Sub surface Dyke and Water Harvesting structures will be constructed.

As noticed during field visits, area is highly degraded and erosion prone. A number of small streams and gullies require intensive SMC measures in the form of Check Dams, Contour Trenches, Earthen Bunds, Mulching, grassing etc. Therefore, Additional SMC with 25% of the cost has been proposed in the schemes including the maintenance in subsequent years.

d) Protection of the plantation: Chain link mesh fence will be provided all along the periphery of the plantation in two patches. Few watchers will also be engaged for protection of the plantation.

e) Watering provision of CA plantation: Watering of the plantation will be carried out aided by solar Borewell fitted with drip system (1 system for 1 ha plantation) fitted with Drip system.

5. Proposed Monitoring Mechanism: The scheme shall be executed by the Divisional Forest Officer, Angul Division with his staff and all prescribed records are to be maintained. In addition to

internal monitoring by Forest Officers of State Government, a Monitoring Committee under item no. 3.4 (iii) of consolidated guidelines under F.C Act 1980 issued by MoEF, shall be established with a nominee of the Central Government to oversee that the stipulations, including those pertaining to Compensatory Afforestation are carried out.

6. **Entry Point Activities:** To ensure support of local communities, 15% of the plantation cost will be utilized for entry point activities such as solar light, renovation of ponds, skill development, alternate livelihood promotion, drinking water facilities etc. among other activities.

7. **Total cost of the project:** The total cost of the project is **Rs. 3,85,58,500/- (Rupees Three Crore Eighty-Five Lakh Fifty-Eight Thousand Five Hundred)** only which shall be payable by the user agency as per demand of the D.F.O, Angul Division.

Signature
Divisional Forest Officer
Angul Division

Compensatory Afforestation Scheme for plantation of 23692 Nos. seedling over an area of 47.385 Ha. of Revenue Forest Land in Plote No. 01 and 02 of Khata No. 498 of Karnapur Village in Gobra R.I Circle of Talcher Tahasil.

PERFORMA (Norm for 1.00 ha.)

Sl. No.	Component	Unit	Base rate for commencement year 2023-24
1	ANR @ 500 Plant per ha.	Hectare	150051
2	Watering, Solar Borewell fitted with Drip System	Hectare	245476
3	SMC	Hectare	39284
4	Fencing (Iron angle with Chain link wire mesh)	per 250 meters	462316
5	Additional SMC	25% of [(1) +(2) + (3) +(4)]	
6	Entry point activity	15% of [(1) + (2) + (3) + (4) + (5)]	
7	Monitoring evaluation learning documentation and other contingency (Except component (1) in which MELD and contingency is included in unit cost)	5% of [(2) + (3) + (4) + (5) + (6)]	

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**Matrix for Compensatory Afforestation Scheme for plantation of 500 Nos. seedling
over an area of one Ha. - Year Wise (commencement year 2023-24)**

Year	Financial Year	ANR @ 500 Plant per ha.	Watering, Solar Borewell fitted with Drip System	SMC	Fencing (Iron angle with Chain link wire mesh) (250 meter per hectare)	Total
1	2	3	4	5	6	9
0th year	2023-24	14774	180243	0	314886	509903
1st year	2024-25	56575	0	23401	0	79976
2nd year	2025-26	14969	9935	3684	13369	41957
3rd year	2026-27	11359	10433	3870	14040	39702
4th year	2027-28	6432	10954	4062	14741	36189
5th year	2029-30	6754	33911	4267	15478	60410
6th year	2030-31	7092			16251	23343
7th year	2031-32	7447			17065	24512
8th year	2032-33	7819			17918	25737
9th year	2033-34	8209			18813	27022
10th year	2034-35	8621			19755	28376
GRAND TOTAL		150051	245476	39284	462316	897127

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Calendar of Operation for Compensatory Afforestation Scheme for plantation of 23692 Nos. seedling over an area of 47.385 Ha. - Year wise

Year	Financial Year	ANR @ 500 Plant per ha.	Watering, Solar Borewell fitted with Drip System	SMC	Fencing (Iron angle with Chain link wire mesh) (2800 meter along the perimeter = 11.2 times of 250 meter)	Additional SMC 25% of [(3) + (4) + (5) + (6)]	Entry point activity 15% of [(3) + (4) + (5) + (6) + (7)]	Monitoring evaluation learning documentation and other contingency 5% of [(4) + (5) + (6) + (7)]	Total
1	2	3	4	5	6	7	8	9	10
0th year	2023-24	700066	8540815	0	3526723	3191901	2393926	882668	19236099
1st year	2024-25	2680806	0	1108856	0	947416	710562	138342	5585982
2nd year	2025-26	709306	470770	174566	149733	376094	282070	72662	2235201
3rd year	2026-27	538246	494368	183380	157248	343311	257483	71790	2045826
4th year	2027-28	304780	519055	192478	165099	295353	221515	69675	1767955
5th year	2029-30	320038	1606873	202192	173354	575614	431711	149487	3459269
6th year	2030-31	336054	0	0	182011	129516	97137	20433	765151
7th year	2031-32	352876	0	0	191128	136001	102001	21457	803463
8th year	2032-33	370503	0	0	200682	142796	107097	22529	843607
9th year	2033-34	388983	0	0	210706	149922	112442	23654	885707
10th year	2034-35	408506	0	0	221256	157441	118080	24839	930122
GRAND TOTAL		7110164	11631881	1861472	5177940	6445365	4834023	1497534	38558379

Grand Total Rs. 3,85,58,379/- or 3,85,58,500/- (Three Crore Eighty-Five Lakhs Fifty Eight Thousand Five Hundred) Only


 Divisional Forest Officer
 Angul Division

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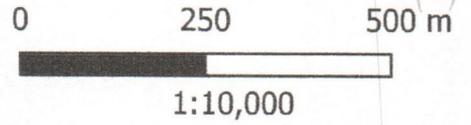
Abstract					
SN	Component	Norm	Unit	Rate	Total
1	ANR @ 500 Plant per ha.	150051	ha	47.385	7110167
2	Watering, Solar Borewell fitted with Drip System	245476	ha	47.385	11631880
3	SMC	39284	ha	47.385	1861472
4	Fencing (Iron angle with Chain link wire mesh) (2800 meter along the perimeter = 11.2 times of 250 meter)	462316	250 meters	2800 meter	5177939
5	Additional SMC	25% of [(3) + (4) + (5) + (6)]			6445365
6	Entry point activity	15% of [(3) + (4) + (5) + (6) + (7)]			4834023
7	Monitoring evaluation learning documentation and other contingency	5% of [(4) + (5) + (6) + (7)]			1497534
	Total				38558380

Grand Total Rs. 3,85,58,380/- or 3,85,58,500/- (Three Crore Eighty-Five Lakhs Fifty Eight Thousand Five Hundred) Only

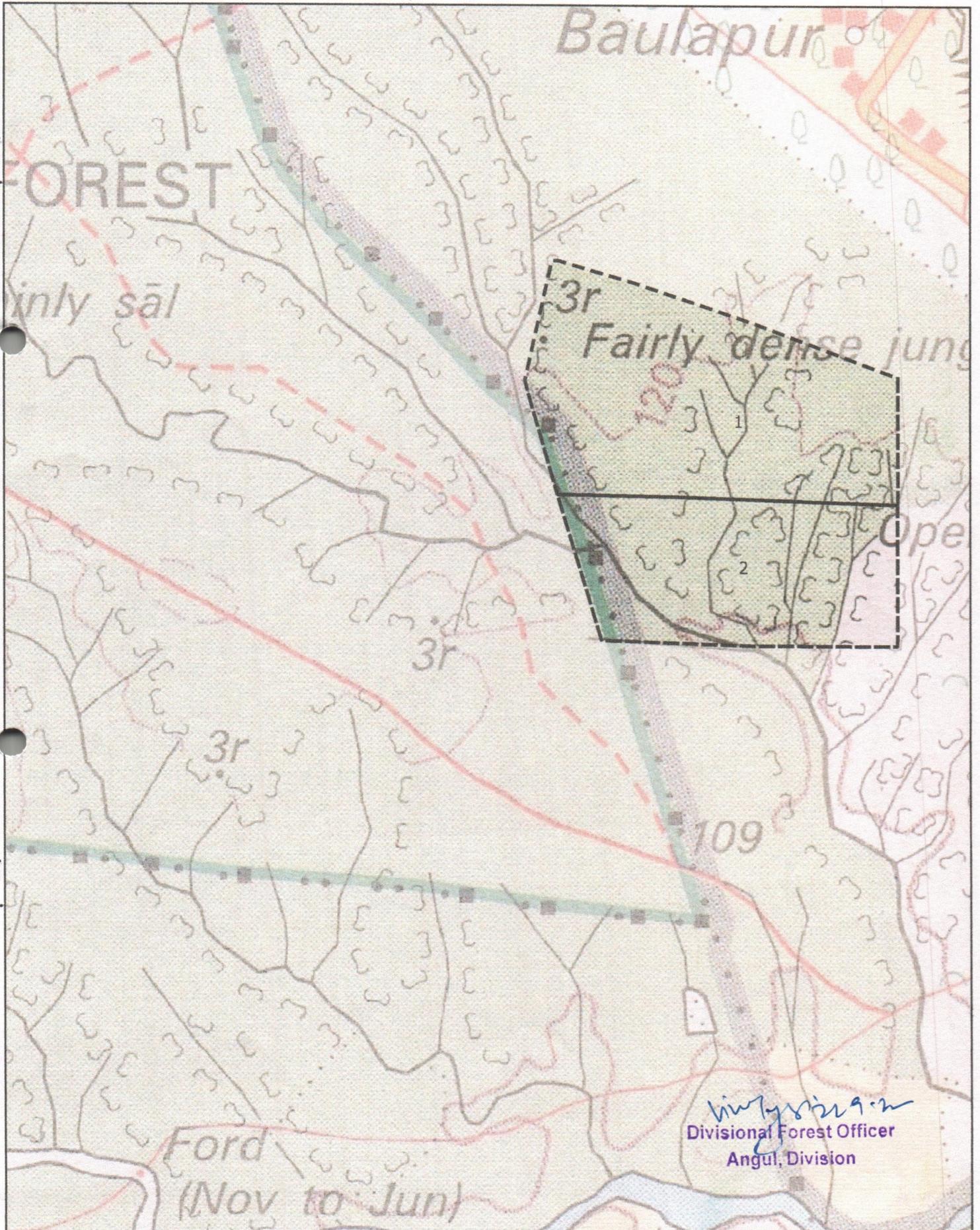
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 Divisional Forest Officer
 Angul, Division

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Karnapur Revenue Forest Topo



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Karnapur Revenue Forest Satellite Map

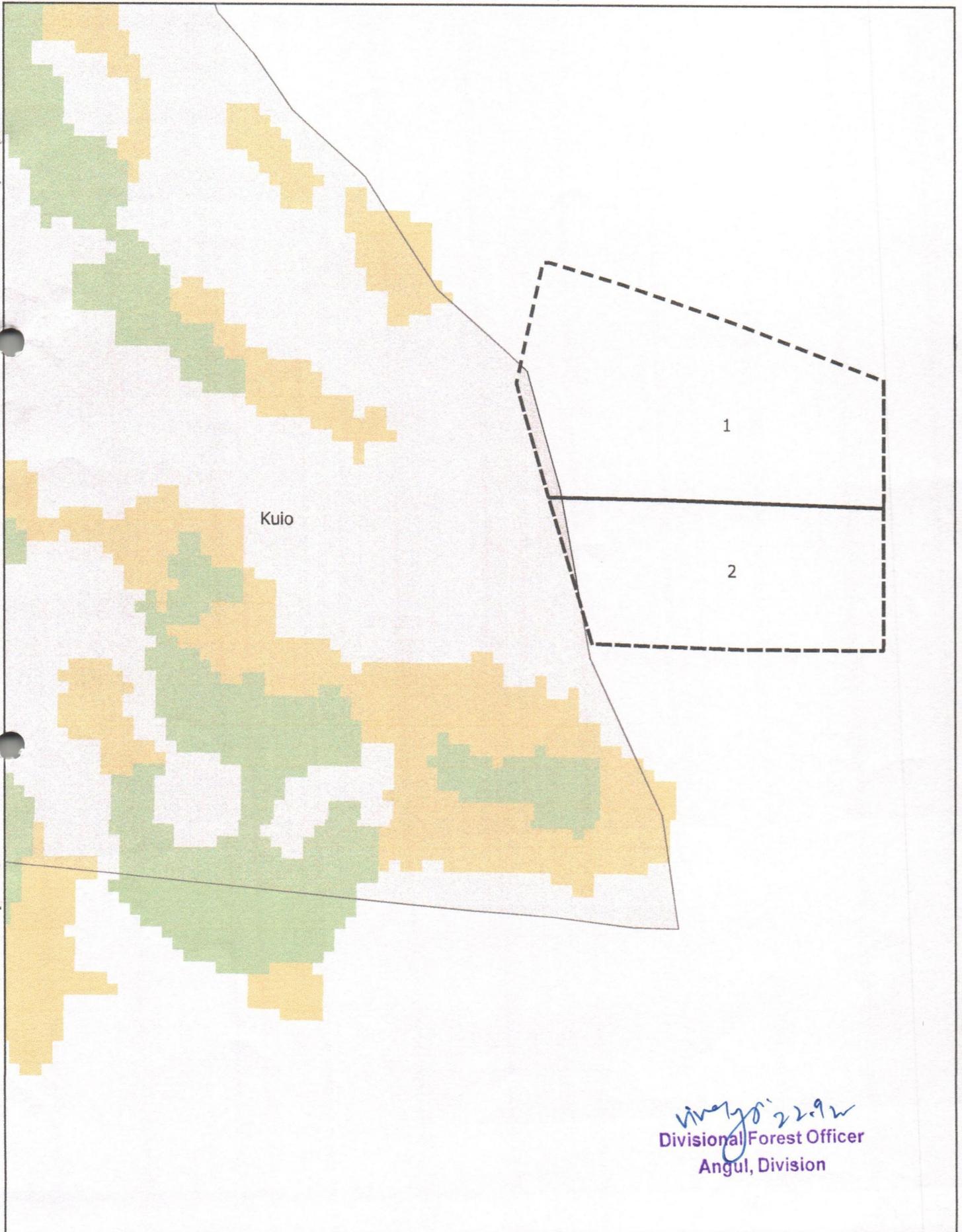
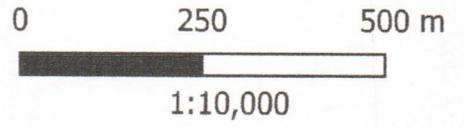
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Karnapur Revenue Forest FCM



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