OMC | ODISHA NEW OPPORTUNITIES

Letter No.2551/OMC/F&E/2021
14th February, 2021

To

The Divisional Forest Officer
Cuttack Forest Division

Sub: Diversion of balance forest land of 162.42 ha including 24.150 ha of forest land to be maintained safety zone (as per Sabik settlement record as on 25.10.1980 and after 25.10.1980) excluding the 104.79 ha forest land already diverted pertaining to total ML area of 382.709 ha of Sukurangi Chromite Mines of M/s Odisha Mining Corporation Ltd spread over village like Kamarda, Ostapal, Saruabil, Sukurangi, Tailangi and Forest Block No. 27 of Mahagiri DPF in Sukinda Tehsil of Jajpur District (Under Cuttack Forest Division), Odisha during extended period of mining lease up to 31.03.2020 as per MMDR Amendment Act, 2015.

Ref: (i) Letter No.8-22/2016-FC dt 14.09.2017 by AIG of Forests, MoEF & CC, Govt. of India.
(ii) Letter No.10F (Con) 195/2016 20247/F&E dt 03.10.2017 by Special Secretary to Govt.,F & E Dept., Govt. of Odisha.

Sir,

The point wise compliance to the observations raised by MoEF & CC, Govt. of India in the grant order of Stage-I Forest Clearance pertaining to Sukurangi Chromite Mines of OMC Ltd vide letter under reference (i) and the additional conditions stipulated by the State Government vide letter under reference (ii) is detailed in **Annexure-I** enclosed herewith.

It is requested to kindly examine the response and recommend the compliance to higher ups for grant of stage-II Forest Clearance over 162.42 ha of forest land.

Yours faithfully,

Encls. as above.

14/2/2022.
Advisor (F&E)
O.M.C.Ltd

C/c

ANNEXURE-I

Sl. No.	Condition No.	Particulars of the conditions stipulated by MoEF & CC, Govt. of India.	Compliance by OMC
1	(i)	Legal status of the diverted forest land shall remain unchanged;	OMC undertakes to pursue the matter with the State Govt. to keep the legal status of the forest land diverted under this approval unchanged. The undertaking by OMC in this regard is furnished at **Sl. No. 1** of **Annexure-UT.**
2	(ii)	Compensatory afforestation (CA) over the equivalent land of 156.711 ha shall be raised on the identified forest land within a period of three years with effect from the date of issue of Stage-II clearance and maintained thereafter in accordance with the approved Plan in consultation with the State Forest Department at the cost of the user agency;	State Forest Department shall raise Compensatory Afforestation over equivalent non-forest land of 156.711 ha allotted in villages Balangi (52.395 ha), Barakaudi (35.610 ha) and Khamarpadar (68.766 ha) under Thuamul Rampur Tahasil of Kalahandi (S) Forest Division within a period of three years from the date of issue of Stage-II Forest Clearance. The plantation shall be maintained for a period of ten years as per the scheme technically approved, utilizing the funds deposited by OMC.
3	(iii)	Regional Wildlife Management Plan and Site Specific Wildlife Plan duly approved by competent authority shall be submitted.	The approval [vide letter No.10F (Cons.)-127/ 05-22295/F&E dt 30.12.2005] and approved copy of the Regional Wildlife Management Plan (RWMP) for Bonai-Keonjhar is enclosed herewith as **Annexure-I Series**. This approved RWMP has been considered applicable for Sukurangi chromite mines for raising demand. The approval and approved copy of the Site Specific Wildlife Conservation plan by PCCF (WL) and CWLW, Odisha vide letter No. 8426/7WL-FD & WLC-159/2020 dt 16.10.2020 is enclosed as **Annexure-II Series**.
4	(iv)	CA shall be raised over the 156.771 ha on non-forest land.	The State Forest Department shall raise compensatory afforestation over 156.771 ha [Balangi (52.395 ha) + Barakaudi (35.610 ha) + Khamarpadar (68.766 ha)] of non-forest land by utilizing the funds (Rs 7, 35, 81,700/-) deposited by OMC.
5	(v)	Details of complete compensatory afforestation over non-forest land of 156.771 hectare along with the estimation of CA cost shall be submitted. The CA area requirement shall be calculated as per FCA guidelines 4.7 (ii) and 4.7 (iii). The revised shape file of CA land shall be submitted.	The copy of the CA scheme along with the details of cost towards CA, calculated as per FCA guidelines 4.7 (ii) and 4.7 (iii) and the cost estimate duly approved is enclosed herewith as **Annexure-III.** The revised shape file of CA land is submitted herewith in form of a CD.
6	(vi)	The land identified for the purpose of CA shall be clearly depicted on a Survey of India topo sheet of 1:50,000 scale;	Land identified for the purpose of CA has been shown on the Survey of India topo sheet No. E 44 E 15 on 1:50000 scale and enclosed as **Annexure-IV.**
7	(vii)	The non-forest land identified for raising	The non-forest Govt. land over 156.771 ha

<table>
<tr><td></td><td></td><td>compensatory afforestation shall be transferred and mutated in favour of the State Forest Department before issue of the Stage-II clearance;</td><td>identified for raising compensatory afforestation including Balangi (52.395ha), Barkaudi (35.61 ha) and Khamarpadar (68.766 ha) villages under Thuamul Rampur Tahasil of Kalahandi district for CA have been transferred and mutated in favour of the State Forest Department. The copy of the RoRs in support of mutation is enclosed as Annexure-V series.</td></tr>
<tr><td>8</td><td>(viii)</td><td>The non-forest land which is transferred and mutated in favor of the State Forest Department for the purpose of compensatory afforestation, shall be declared as Reserved Forest under Section-4 or Protected Forest under Section-29 of the Indian Forest Act, 1927 or under the relevant Section (s) of the local Forest Act. The Nodal Officer, Forest (conservation) Act, 1980, Government of Odisha must report compliance within a period of 6 months from the date of grant of final approval and send a copy of the original notification declaring the non-forest land under Section 4 or Section 29 of the Indian Forest Act, 1927, or under the relevant section of the local Forest Act local forest as the case may be, to this Ministry for information and record;</td><td>The non-forest land mutated in favour of State Forest Department for the purpose of CA has been declared by the State Forest Department as "BARKAUDI PROTECTED FOREST", "BALANGI PROTECTED FOREST" and "KHAMARPADAR PROTECTED FOREST" under Section 33 of Odisha Forest Act, 1972. The copy of the PF notifications is enclosed as Annexure-VI Series for information and record.</td></tr>
<tr><td>9</td><td>(ix)</td><td>The User Agency shall transfer the cost of raising and maintaining the compensatory afforestation at the current wage rate in consultation with State Forest Department in the account of Ad-hoc CAMPA of the concerned State through online portal. The scheme may include appropriate provision for anticipated cost increase for works scheduled for subsequent years;</td><td>OMC has transferred Rs 7, 98, 90,200/- in the accounts of Ad-hoc CAMPA, Odisha for raising CA (156.771 ha) at the current wage rate through online portal as per the demand raised by DFO, Cuttack. The scheme includes provision for anticipated cost increase for works scheduled for subsequent years. The details of payment and the differential cost made by OMC in phases is given as under:
<table>
<tr><th>Demand letter by DFO, Cuttack</th><th>Demand in Rs</th><th>Mode of payment made by OMC</th></tr>
<tr><td>173/SF (Misc.) 2017 dt 06.01. 2020</td><td>55547800/-</td><td>ANDBH 20020730430 dt 20.01.2020</td></tr>
<tr><td>8629/SF (Forest Diversion) 529/2018 dt 18. 09.2020</td><td>759700/-</td><td>ANDBR 5202009300044 237820020730430 dt 20.01.2020.</td></tr>
<tr><td>954/SF (Forest Diversion) 523/2018 dt 09.02.2022.</td><td>23582700/-</td><td>UBINJ 22045034748 dt 14.02.2022</td></tr>
<tr><td>Total</td><td>79890200</td><td></td></tr>
</table>
The documents in support of payment made by OMC are enclosed as Annexure-VII Series.</td></tr>
<tr><td>10</td><td>(x)</td><td>The User Agency shall transfer online, the Net Present Value (NPV) of the forest land being diverted under this</td><td>OMC has deposited Rs 17, 93, 45,000/- towards NPV over 267.21 ha of total forest land included within the ML. The details of NPV paid by OMC</td></tr>
</table>

		proposal, as per the orders of the Hon'ble Supreme Court of India dated 28.03.2008, 24.04.2008 and 09.05.2008 in Writ Petition (Civil) No. 202/1995 and the guidelines issued by this Ministry vide its letter No. 5-3/2007-FC dated 05.02.2009. The requisite funds shall be transferred through online portal into Ad-hoc CAMPA account of the State concerned;	in phases are given as under: Demand letter by DFO, Cuttack | Demand in Rs | Mode of payment by OMC No. 2850 (3) dt 28.07.2006 | 60778200/- | DD No. 717005 066 dt 08.08. 2006 No.3327/5F (Mis) dt 21.06.2010 | 68986600/- | DD No.649753 Dt 07.07.2010 No. 776/5F (Mis) dt 25.01.2016 | 49580000/- | ANDBH 16046319514 dt 15.02.2016 Total | 179344800/- Deposits were made by OMC through DD during 2006 and 2010 as per the instructions given by DFO, Cuttack. However, OMC deposited the balance amount online after new guideline came in to force. The copy of the documents in support of proof of the payment of NPV by OMC is enclosed as **Annexure-VIII Series.**
11	(xi)	At the time of payment of the Net Present Value (NPV) at the then prevailing rate, the User Agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;	An undertaking by OMC is furnished at **Sl.No.2** of **Annexure-UT** to pay additional amount of NPV if so determined by the final decision of the Hon'ble Supreme Court of India.
12	(xii)	Following activities shall be undertaken by the user agency at the project cost and appropriate cost of the plan/scheme shall be deposited in Adhoc CAMPA Account:	
		(a) Mitigative measures to minimize soil erosion and choking of stream shall be implemented within a period of three year with effect from the issue of Stage-II clearance in accordance with the approved Plan in consultation with the State Forest Department.	A scheme for mitigative measures to minimize soil erosion and choking of streams has been technically approved with a total financial outlay of Rs 12, 80,000/- to be executed by OMC. The approval and approved copy of the scheme is enclosed as **Annexure-IX.** An undertaking by OMC to implement the scheme within a period of three years with effect from the date of grant of stage-II clearance is furnished at **Sl. No. 3 of Annexure-UT.**
		(b) Planting of adequate drought hardy plant species and sowing of seeds; in the appropriate area within the mining lease to arrest soil erosion in accordance with the approved scheme;	A scheme for planting adequate drought hardy plant species and sowing of seeds in the appropriate area within the mining lease to arrest soil erosion has been approved with a total financial outlay of Rs 5,29,500/- to be executed by OMC. The approval and approved copy of the scheme is enclosed as **Annexure-X.** An undertaking by OMC to implement the scheme within ML is furnished at **Sl. No. 4 of Annexure-UT.**
		(c) Construction of check dams, retention/toe walls to arrest sliding down of the excavated material along the contour in accordance with the approved scheme;	A scheme for construction of check dams, retention/toe walls to arrest sliding down of the excavated material along the contour has been approved with a total financial outlay of Rs 41,33,200/- to be executed by OMC. The approval and approved copy of the scheme is

			enclosed as **Annexure-XI.** An undertaking by OMC to implement the scheme within ML is furnished at **Sl. No. 5 of Annexure-UT.**
		(d) Stabilize the overburden dumps by appropriate grading/ benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place is less than 28°; and	A scheme for stabilization of overburden dumps by appropriate grading/benching so as to ensure that angle of repose at any given place is less than 28° has been approved with a total financial outlay of Rs 2, 39, 72,000/- to be executed by OMC. The approval and approved copy of the scheme is enclosed as **Annexure-XII.** An undertaking by OMC to implement the scheme within ML is furnished at **Sl. No. 6 of Annexure-UT.**
		(e) No damage shall be caused to the top-soil and the user agency will follow the top soil management plan.	Top soil management plan has been approved with a total financial outlay of Rs. 3, 39, 86,500/- to be executed by OMC. The approval and approved copy of the scheme is enclosed as **Annexure-XIII.** An undertaking by OMC to implement the scheme within ML is furnished at **Sl. No. 7 of Annexure-UT.**
13	(xiii)	Fencing, protection and regeneration of the safety zone area [7.5 meters strip shall be kept within the mining lease boundary and area of the safety zone shall be part of the total area of mining lease as per the Ministry's guidelines dated 27.05.2015] shall be done within three year at the project cost from the issue of Stage-II Clearance. Besides this afforestation on degraded forest land to be selected elsewhere measuring one & a half times the area under safety zone shall also be done at the project cost; The degraded forest land (DFL) so selected will be informed to the MoEF & CC with shape files and afforestation will be done within three years from the date of Stage-II clearance and maintained thereafter in accordance with the approved Plan in consultation with the State Forest Department;	A scheme for Fencing, protection and regeneration of safety zone (SZ) area over 26.25 ha and one and half times the SZ over 33.30 ha has been technically approved. As per the demand raised by DFO, Cuttack vide letter No. 4816 dt 28.10.2009, OMC deposited Rs 31, 89,058/- (For SZ and 1.5 times SZ) vide UTR No. ANDBH 13116850310 dt 26.04.2013. An undertaking by OMC to implement the above schemes at the project cost within a period of three years from the date of issue of Stage-II Clearance and shall be maintained thereafter in accordance with the approved plan in consultation with the State Forest Department is furnished at **Sl. No. 8 of Annexure-UT.** The shape file of the degraded forest area is enclosed herewith in the form of a CD. The copy of the documents in support of proof of the deposit by OMC is enclosed herewith as **Annexure-XIV.**
14	(xiv)	Period of diversion of the said forest land under this approval shall be for a period co-terminus with the period of the mining lease proposed to be granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under;	An undertaking by OMC to maintain the validity period of forest diversion up to dt 19.09.2030 i.e. the validity of the supplementary mining lease executed on dt 31.03.2020 has been submitted at **Sl.No.9** of **Annexure-UT.** The copy of the supplementary lease deed is enclosed as **Annexure-XV** for reference.
15	(xv)	Any fund received from the user agency under the project and deposited in the	The detail of the funds deposited by OMC against this proposal in Ad-hoc CAMPA account

		State Forest Department account, except the funds realized for regeneration/ demarcation of safety zone, shall be transferred through online portal into Ad-hoc CAMPA account of the State Concerned.	is given in **Annexure-XVI.**
16	(xvi)	The User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required;	MoEF & CC, Govt. of India have accorded Environmental Clearance in favour of the project vide F. No. J/11015/348/2015-IA.II (M) dt 30.07. 2020 for production of 3.0 lakh MT of chromite per annum. The copy of the EC letter is submitted as **Annexure-XVII.**
17	(xvii)	No labour camp shall be established on the forest land;	An undertaking by OMC has been submitted to this effect at **Sl. No. 10 of Annexure-UT.**
18	(xviii)	The User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas;	OMC provides free electricity to labourers and staff working at the site. An undertaking by OMC to this effect is furnished at **Sl. No. 11 of Annexure-UT.**
19	(xix)	The boundary of the diverted forest land, mining lease and safety zone, as applicable, shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS co-ordinates;	Boundary of diverted forest land, mining lease and safety zone have been demarcated on ground with 4' high RCC pillars each leveled with its serial number, distance from pillar to pillar and GPS co-ordinates. Photographs in support of the above statement are enclosed as **Annexure-XVIII.**
20	(xx)	The User Agency shall undertake mining in a phased manner after taking due care for reclamation of the mined over area. The concurrent reclamation plan as per the approved mining plan shall be executed by the User Agency from the very first year, and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980, in the concerned State Government and the concerned Regional Office of the Ministry. If it is found from the annual report that the activities indicated in the concurrent reclamation plan are not being executed by the User Agency, the Nodal Officer or the Addl. Pr. Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities area satisfactorily executed.	Reclamation of the mined out areas shall be carried out as per the mining plan approved by IBM. An undertaking to this effect is furnished by OMC at **Sl. No. 12 of Annexure-UT.**
21	(xxi)	The layout plan of the mining plan/	An undertaking by OMC to this effect is

		proposal shall not be changed without the prior approval of the Central Government;	furnished at **Sl. No. 13 of Annexure-UT.**
22	(xxii)	The forest land shall not be used for any purpose other than that specified in the proposal;	An undertaking by OMC to this effect is furnished at **Sl. No. 14 of Annexure-UT.**
23	(xxiii)	The forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government;	An undertaking by OMC to this effect is furnished at **Sl. No. 15 of Annexure-UT.**
24	(xxiv)	No damage to the flora and fauna of the adjoining area shall be caused;	An undertaking by OMC to this effect is furnished at **Sl. No. 16 of Annexure-UT.**
25	(xxv)	Any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department;	An undertaking by OMC to this effect is furnished at **Sl. No. 17 of Annexure-UT.**
26	(xxvi)	The user agency will abide by the applicable recommendations of the State Government;	An undertaking by OMC to this effect is furnished at **Sl. No. 18 of Annexure-UT.**
27	(xxvii)	The State Government shall complete settlement of rights, in terms of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, if any, on the forest land to be diverted and submit the documentary evidence as prescribed by this Ministry in its letter No. 11-9/1998-FC (pt.) dated 03.08.2009 read with 05.07. 2013, in support thereof;	Settlements of rights under Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act 2006 have been completed over the total forest land included in the ML. The copy of the certificate issued by the Collector, Jajpur and the copy of the resolution of meetings are enclosed as **Annexure-XIX.**
28	(xxviii)	User agency either himself or through the State Forest Department shall undertake gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.40), if any, located in the area within 100 m. from outer perimeter of the mining lease. The plan for plantation and SMC activities will be prepared and submitted to MoEF & CC before Stage-II Clearance;	Sukurangi mining lease is surrounded by other mining leases on all sides except part of the southern boundary where the crown density is more than 0.4 along 100 mtr strip on outer periphery of the ML boundary. DFO, Cuttack examined the ground condition and concluded that no plantation activity is possible in this strip. Hence, no scheme for gap plantation is envisaged.
29	(xxix)	The User Agency shall prepare a list of existing village tanks and other water bodies with GPS co-ordinates located within five km. from the mine lease boundary. This list is to be duly verified by the concerned Divisional Forest Officer. The User Agency shall regularly undertake desilting of these village tanks and other water bodies so as to mitigate	A scheme for desilting of the existing village tanks and other water bodies within 5 km of the ML boundary has been approved by RCCF, Angul on dt 09.12.2021 with a total financial outlay of Rs 77, 26, 300/- for execution by OMC at the project cost. The copy of the approved scheme along with the list of water tanks and water bodies with GPS co-ordinates prepared by OMC and verified by DFO, Cuttack is furnished as

<table>
<tr><td></td><td></td><td>the impact of siltation of such tanks/water bodies. A detailed plan for desilting of identified ponds and water bodies to be prepared in consultation with forest department and shall be submitted to MoEF & CC before Stage-II approval;</td><td>Annexure-XX.

An undertaking by OMC to implement the scheme at the approved financial out lay is furnished at Sl. No. 19 of Annexure-UT.</td></tr>
<tr><td>30</td><td>(xxx)</td><td>Plantation up to 100 meters from the bank of river on either side, to be done and maintained as green belt.</td><td>A scheme for plantation up to 100 mtr on either side of the Damsal Nala has been approved by RCCF, Angul on dt 09.12.2021 with a total financial out lay of Rs 90, 53, 500/- (for plantation and barbed wire fencing). The approval and approved copy of the scheme of plantation is enlaced as Annexure-XXI. An undertaking by OMC to implement and maintain as green belt is furnished at Sl.No.20 of Annexure-UT.</td></tr>
<tr><td>31</td><td>(xxxi)</td><td>On analysis through DSS, it is found that moderately dense forest is present of southern boundary of the mining lease. State Government may demarcate that area and it shall be kept intact as an additional safety zone;</td><td>The area found to be moderately dense in the southern boundary has been demarcated by posting RCC pillars on ground. GPS reading of the pillars are given as below:
<table>
<tr><th>Pillar No.</th><th>Longitude</th><th>Latitude</th></tr>
<tr><td>1</td><td>85°49'16.09"</td><td>21°02'36.77"</td></tr>
<tr><td>2</td><td>85°49'09.71"</td><td>21°02'34.07"</td></tr>
<tr><td>3</td><td>85°49'00.89"</td><td>21°02'30.91"</td></tr>
<tr><td>4</td><td>85°48'59.09"</td><td>21°02'29.48"</td></tr>
<tr><td>5</td><td>85°48'57.87"</td><td>21°02'28.66"</td></tr>
<tr><td>6</td><td>85°48'56.54"</td><td>21°02'27.96"</td></tr>
<tr><td>7</td><td>85°48'55.87"</td><td>21°02'27.42"</td></tr>
<tr><td>8</td><td>85°48'54.76"</td><td>21°02'26.20"</td></tr>
<tr><td>9</td><td>85°48'55.18"</td><td>21°02'26.22"</td></tr>
<tr><td>10</td><td>85°48'53.84"</td><td>21°02'24.95"</td></tr>
<tr><td>11</td><td>85°48'52.94"</td><td>21°02'24.42"</td></tr>
<tr><td>12</td><td>85°48'52.56"</td><td>21°02'23.99"</td></tr>
<tr><td>13</td><td>85°49'21.29"</td><td>21°02'29.86"</td></tr>
</table>
An undertaking by OMC is furnished at Sl.No.21 of Annexure-UT to keep this area over 12.757 ha intact and maintain as an additional safety zone.</td></tr>
<tr><td>32</td><td>(xxxii)</td><td>The User Agency shall submit the annual self - compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year;</td><td>An undertaking by OMC in this regard is furnished at Sl. No. 22 of Annexure-UT.</td></tr>
<tr><td>33</td><td>(xxxiii)</td><td>Any other condition that the concerned Regional Office of this Ministry may stipulate, from time to time, in the interest of conservation, protection and development of forests & wildlife; and</td><td>An undertaking by OMC in this regard is furnished at Sl. No. 23 of Annexure-UT.</td></tr>
<tr><td>34</td><td>(xxxiv)</td><td>The user agency shall comply all the provisions of the all Acts, Rules,</td><td>An undertaking by OMC in this regard is furnished at Sl. No. 24 of Annexure-UT.</td></tr>
</table>

		Regulations, Guidelines, Hon'ble Court Order (s) and National Green Tribunal Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.	

Besides, compliance to the following additional conditions imposed by the State Govt., F & E Department vide letter no. 10F (Con) 195/2016/20247/F&E Dt 03.10.2017 is given as under:

Sl. No.	Condition No.	Details of the condition stipulated by the State Govt.	Compliance by OMC
1	Nil	Consequent to imposition of stipulation No. 2 (xxxi), the change of land use plan, if any, may also be clearly be depicted in the lease map duly authenticated by concerned Mining Officer and DFO, Cuttack and furnish.	The Moderately Dense Forest found near the southern ML boundary over 12.757 ha has been demarcated on ground and indicated on the proposed land use plan enclosed as **Plate No. V (A).** The land use break up has been revised and authenticated by concerned Mining Officer and DFO, Cuttack and enclosed herewith as **Annexure-XXII.**
2	A)	The Safety Zone area around the proposed mining and dumping area to be planted by the User Agency is to be maintained as green belt.	OMC has furnished an undertaking at **Sl.No.25** of **Annexure-UT** to plant trees around proposed mining and dumping area and maintain this area as green belt.
3	B)	The lessee shall deposit the differential cost of proportionate contribution towards Regional Wildlife Management Plan at revised rate of Rs.58, 000/- in Adhoc CAMPA Account.	OMC has deposited Rs.76, 54,180/- towards cost of Regional Wildlife Management Plan on dt 04.07.2009 as per the details given below: **Amount**: Rs7654180/- — **DD No & date**: (i) 495385 to 495392 dt 04.07.2009 (Rs 9.0lakhX 8) (ii) 495393 dt 04.07.2009 (Rs 454180/-) Since the entire amount as per the demand raised by DFO, Keonjhar has already been deposited, no differential amount is due as per the letter by the Special Secretary to Government vide No.10F (Cons) 108/2015-3572/F&E dt 15.02.2018. The copy of the letter by the State Govt., demand letter by DFO, Cuttack and payment details by OMC is enclosed as **Annexure-XXIII series**.
4	C)	Phased reclamation plan shall be approved by competent authority for execution at project cost.	The reclamation plan has been approved by IBM and enclosed herewith as **Annexure-XXIV.** An undertaking by OMC is furnished at **Sl.No.26** of **Annexure-UT** to execute the scheme at project cost.
5	D)	As recommended by RCCF, Angul, RCC wall shall be constructed by the User Agency along the Damsal nallah which is a tributary of Brahmani river to avoid water contamination and pollution.	A scheme to construct a RCC wall along the Damsal Nala has been approved by RCCF, Angul on dt 09.12.2021 with a total financial outlay of Rs 2,19,81,100/-. The copy of the approved scheme is enclosed as **Annexure-**

			XXV. An undertaking by OMC is furnished at **Sl.No.27** of **Annexure-UT** to execute the scheme at project cost.
6	E)	Detailed land use plan indicating forest land already diverted, forest land now applied for diversion and non-forest land as per record as on 25.10.1980 shall be furnished.	The revised land use plan as mentioned is enclosed herewith as **Plate No. V (A).**
7	F)	Lease profile of lessee shall be furnished.	Lease profile of OMC is furnished at **Annexure-XXIVI.**

Encls. as above.

14/02/2022

Advisor (F&E)
O.M.C.Ltd

ANNEXURE-UT

UNDERTAKINGS

[As per condition No. i, xi, xii (a, b, c, d & e), xiii, xiv, xvii, xviii, xx, xxi, xxii, xxiii, xxiv, xxv, xxvi, xxix, xxx, xxxi, xxxii, xxxiii, xxxiv of the stage-I grant order No.8-22/2016-FC dt 14.09.2017 issued by MoEF & CC, Govt. of India and additional conditions No. A, C, D, E & F of the letter No.10F (Con) 195/2016 20247/F&E, dt 03.10.2017 by the Special Secretary to Govt., F&E Dept., Govt. of Odisha pertaining to Sukurangi ML area over 382.709 ha]

I Dr. Suman Krishna Sit, General Manager (Geology), Authorized Signatory of The Odisha Mining Corporation Limited do hereby undertake the following for furtherance of the Forest Diversion Proposal for grant of 162.42 ha of balance forest land included within Sukurangi Chromite mining lease of OMC coming under Cuttack Forest Division of Jajpur district, Odisha:

Against conditions stipulated in the grant order of stage-I issued by MoEF & CC, Govt. of India vide Letter No.8-22/2016-FC dt 14.09.2017.

Sl. No.	Condition No.	Undertakings by OMC
1	(i)	OMC to pursue the matter with the State Govt. to keep the legal status of the forest land diverted under this approval unchanged.
2	(xi)	To pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;
3	(xii) (a)	To minimize soil erosion and choking of stream at the approved financial outlay of Rs 12,80,000/- within a period of three years with effect from the issue of Stage-II clearance in accordance with the approved Plan to be implemented in consultation with the State Forest Department.
4	(xii) (b)	To plant adequate drought hardy plant species and sowing of seeds in the appropriate area at the approved financial outlay of Rs 5, 29,500/- within the mining lease to arrest soil erosion in accordance with the approved scheme.
5	(xii) (c)	To construct check dams, retention/toe walls to arrest sliding down of the excavated material as per the approved financial outlay of Rs 41,33,200/- within the mining lease along the contour in accordance with the approved scheme.
6	(xii) (d)	To stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme at the total approved financial outlay of Rs.2,39,72,000/- so as to ensure that angles of repose at any given place is less than 28°.
7	(xii) (e)	No damage shall be caused to the top-soil and OMC will follow the top soil management plan designed at the total approved financial outlay of Rs 3,39,86,500/-.

Sl. No.	Condition No.	Undertakings by OMC
8	(xiii)	To undertake afforestation in safety zone area at the project cost and shall be maintained thereafter in accordance with the approved plan in consultation with the State Forest Department.
9	(xiv)	Period of diversion of the said forest land under this approval shall be co-terminus with the period of the mining lease proposed to be granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there under i.e. up to dt 19.09.2030.
10	(xvii)	To protect the forest and no labour camp shall be established therein.
11	(xviii)	To provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas.
12	(xx)	To execute the reclamation plan as per the mining plan approved by IBM and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980 of the State and Regional Office, Bhubaneswar.
13	(xxi)	To adhere to the approved layout plan of the mining plan/proposal and shall not be changed without prior approval of the Central Government.
14	(xxii)	To use the forest land for the purpose for which approval has been accorded.
15	(xxiii)	To keep the forest land under OMC use and shall in no circumstances be transferred to any other agency, department or person without prior approval of the Central Government.
16	(xxiv)	To improve the habitat and no damage to the flora and fauna of the adjoining area shall be caused.
17	(xxv)	To undertake tree felling only when it is unavoidable and that too under strict supervision of the State Forest Department.
18	(xxvi)	To abide by the applicable recommendations of the State Government.
19	(xxix)	To desilt regularly the village tanks and other water bodies within 5km radius of the ML area so as to mitigate the impact of siltation of such tanks/water bodies.
20	(xxx)	To carryout plantation up to 100 meters from the bank of river on either side and maintain by OMC as green belt.
21	(xxxi)	To keep the area over 12.757 ha intact and maintain as an additional safety zone
22	(xxxii)	To submit the annual self-compliance report in respect of the conditions stipulated in the grant order to the State Government, concerned Regional Office and to MoEF & CC by the end of March every year.
23	(xxxiii)	To abide by any other condition that the concerned Regional Office of MoEF & CC may stipulate, from time to time, in the interest of conservation, protection and development of forests & wildlife shall be executed by OMC.
24	(xxxiv)	To comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and National Green Tribunal Order(s) pertaining to this project, if any, for the time being in force, as applicable to the project.

Against additional conditions imposed by the State Govt., F & E Dept. vide letter no. 10F (Con) 195/2016/20247/F&E Dt 03.10.2017.

Sl. No.	Condition No.	Undertakings by OMC
25	A)	To undertake plantation in the Safety Zone area around the proposed mining and dumping area by OMC and shall maintain as green belt.
26	C)	To execute the Phased reclamation scheme prepared by OMC in line with the plan approved by IBM at project cost.
27	D)	To construct RCC wall by OMC on either side of the Damsal nallah. This is a tributary of Brahmani river to prevent water contamination and pollution.

Dr. Suman Krishna Sit
General Manager (Geology)
Authorised Signatory
Odisha Mining Corporation Limited

Suman Krishna Sit
General Manager(Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

ANNEXURE - I

GOVERNMENT OF ORISSA
FOREST & ENVIRONMENT DEPARTMENT

No. LDF(Cons)-127/05- 28295 / F&E, Dated : 30/12/05

From: Shri Vinod Kumar, IFS,
Special Secretary to Government

To

The Principal Chief Conservator of Forests (WL) & C.W.L.W., Orissa

Sub: Wildlife Management Plan for Keonjhar and Bonai Forest Divisions - Implementation at the cost of User Agencies of forests diverted for mining purposes.

Sir,

I am directed to inform you that Government have accorded permission for implementation of the Comprehensive Wildlife Management Plan prepared by Sri Arun Kumar Mishra, ACF, Keonjhar Forest Division for entire Keonjhar and Bonai Forest Divisions.

Simultaneously, your proposal of revised cost estimate and budget for 10 years for implementation of this wildlife plan for the mining affected area in Keonjhar and Bonai Forest Divisions for Rs.7387.50 lakhs vide your letter No.7766 dt.1.12.2005 is approved in revision of the Chapter-14 of the plan prepared by Sri Arun Kumar Mishra. Implementation of Wildlife Management Plan is to be funded at the cost of mining lease holders who have been allowed diversion of forests in their lease-hold areas with stipulations thereof by Government of India, MoEF. The list of mining leaseholders who would be financing Wildlife Management Plan implementation has been listed at page 212 to 246 of the Plan. The working mine lease-holders with forest diversion allowed during the previous mining lease period as well as in the current mining lease period have furnished undertakings to the DFO, Keonjhar and DFO, Bonai Divisions to deposit the fund for implementation of such plan. On such undertakings of the User Agencies and recommendation thereon from the State Government, MoEF, Government of India have allowed either Stage-I or Stage-II approval. The Management Plan has received vetting of the Wildlife Institute of India with their observations for effecting strategies planned therein. In addition thereof, it has recommended to include certain restoration strategies for adoption to improve quality of wildlife habitat in the lease-hold area for which Chief Wildlife Warden has been authorised to devise a guideline in consultation with the Nodal Officer for preparation and implementation of such specific conservation plan by the User Agency within the project area vide F&E Deptt. letter No.152145 dt.28.8.2005.

The User Agency shall bear the cost norm on following lines towards their undertakings for implementation from 2005-06 and shall deposit the amount with DFO concerned in the prescribed head of receipt 0406-Forestry and Wildlife-02 Environmental forestry and wildlife-800-Other receipts.

i) Rs.15000/- per hectare on the area basis by each mining lessee for implementation of the plan over 10 years, who have operated mines

upto 2005-06 or any period prior to 2005-06 and have given undertakings with D. DFO concerned.

(iii) Rs.11,000/- per hectare of ML area for the Wildlife Management Plan implementation for balance period after User Agencies have been allowed to operate mines for first time with Government of India approval (Stage-II) in 2006-07 and onwards.

CCF (Nodal) shall initiate realization from the User Agencies within February, 2006 who have furnished undertakings in this regard till 2005-06. Position of realizable and realization shall be intimated by him to the Chief Wildlife Warden and to the Department as well as to DFOs concerned.

You are, therefore, requested to prepare an action plan for 2006-07 to be implemented by DFO, Keonjhar and DFO, Bonai Forest Divisions under your supervision as well as your proposal for allotment under head of expenditure "2406-Forestry and Wildlife-110-Wildlife preservation vide F&E Deptt. letter No.15870 dated 12.9.2005.

Yours faithfully,

Special Secretary to Government

Memo No. 22286 /F&E, Dated 20/12/05

Copy forwarded to the CCF(Nodal), Office of the PCCF, Orissa, Bhubaneswar for information and necessary action. A copy of the proposal of CWLW in his letter No.7766 dt.01.12.2005 approved is enclosed.

End: As above.

Special Secretary to Government

Memo No. 22287 /F&E, Date: 20/12/05

Copy forwarded to the CF, Rourkela Circle/ DFO, Keonjhar/ DFO, Bonai Forest Division for information and necessary action.

Special Secretary to Government

OFFICE OF THE
PRINCIPAL-CHIEF CONSERVATOR OF FORESTS(WILDLIFE)
& CHIEF WILDLIFE WARDEN:ORISSA:BHUBANESWAR.

No. 160 /3WL.(Cons.)31/04.
Dated, Bhubaneswar the 10 th Jan.'05.

The Special Secretary to Govt.,
Forest & Environment Department,
Orissa, Bhubaneswar.

Sub:- Implementation of comprehensive Regional Wildlife Management Plan of Keonjhar and Bonai Forest Division.

Sir,

With reference to Forest & Environment Department letter No.18252/F&E dt. 7.12.04 on the subject cited above, I am directed to furnish herewith modalities for implementing Wildlife Management Plan inclusive of Wildlife Institution's views for entire Keonjhar and Bonai Forest Division with financial support of the User Agencies as under;

The Wildlife Management Plan formulated by Sri Arun Kumar Mishra in the year 2000 needs to be supplemented with the site specific treatment plans which will vary from the site to site. For mine ravaged areas of Keonjhar district and part of Sundargarh district following strategy may be adopted while allowing operations of mining activity;

1. For each mining lease area there will be a Wildlife Management Plan duly approved by the Chief Wildlife Warden, Orissa.
2. New sites will be allowed for mining only after restoration of old mined out areas as per the prescription of Wildlife Management Plan.
3. Active mining areas to be cordoned off with power fence to avoid accidents.
4. Lease holder shall have to pay the compassionate amount to the affected persons/families as prescribed under the rules for the cases arising out of the Man-wild animal interface in an area of 10 Kms. radious around the lease hold area.
5. Lease holder shall have to deposit money with Chief Wildlife Warden (Corpus Fund) for operation of anti-depredation Unit in and around lease hold area.
6. A study need to be conducted to ascertain the status of aquatic fauna in the water bodies of Keonjhar and Bonai forest division as presently we do not have any baseline data on this important aspects.

In addition to the above, the Regional Wildlife Management Plan sets the broad direction but specific treatment plans and restorative strategies have to be prepared on site to site basis. The Wildlife Management Plan for each proposed Mining Project will seek to address the

Contd.....2

(2-1)

the environmental and socio-economic issues likely to be thrown up by the project with the objective of mitigating the adverse impacts on the wildlife habitat.

Yours faithfully,

10/1/15

Conservator of Forests (Wildlife).

Memo No. /Dt.

Copy forwarded to the Chief Conservator of Forests (Nodal), O/O Pr.C.C.F., Orissa/Conservator of Forests, Rourkella Circle for information and necessary action with reference to Forest & Environment Deptt. Memo No. 18203/F&E dt. 7.12.04.

Conservator of Forests(Wildlife).

Barik/

Government of Orissa
Forest & Environment Department

No.10F(Cons)-81/2004 6495 /F&E., Dated- 23/3/08

From:
Sri P.N.Padhi, IFS
Special Secretary to Government

To
The Principal Chief Conservator of Forests Orissa.

Sub:- Implementation of Wildlife Management Plan in the mining areas at project cost.

Sir,

I am directed to refer to this Department letter No.22295/F&E dt.30.12.2005 in your address and to say that the mining lessees operating in Keonjhar and Bonai Forest Divisions are, at present, depositing Rs.15,000/- per hectare on ML area basis towards the cost of Wildlife Management Plan in their mining lease area of the region for its implementation as per approved plan. In the meantime the minimum wage rate has been upwardly revised from Rs.55/- to Rs.70/- necessitating the cost norm of the Wildlife Management Plan to be revised accordingly in order to implement the same in the changed scenario. Therefore it has been decided to revise the existing norm for implementation of Wildlife Management Plan from Rs.15,000/- to Rs.20,000/- per hectare of ML area, which shall be enforced with immediate effect. This revised norm, as mentioned above shall be made applicable uniformly for all mining lessees of the Keonjhar-Bonai region. Besides, this rate shall also be made applicable in case of the mining lessees of all other districts of the State, where occurrence of Wildlife is observed in the ML area.

Yours faithfully,

Special Secretary to Government

Memo No. 6496 /F&E., Date 23/4/08

Copy forwarded to Principal Chief Conservator of Forests (WL) and Chief Wildlife Warden, Orissa/Chief Conservator of Forests (Nodal), O/O PCCF(Orissa) for information and immediate necessary compliance.

Special Secretary to Government

Memo No. 6497 /F&E., Date 23/4/08

Copy forwarded to All Conservator of Forests (Territorial & Wildlife)/All Divisional Forest Officer (Territorial & Wildlife) for information and immediate necessary compliance.

Special Secretary to Government

Most urgent

Government of Odisha
Forest & Environment Department

No. 10F(Cons.)62/2013 [illegible], Bhubaneswar, dated the

From

Sri S.S.Srivastava, IFS
Special Secretary to Government

To

The Principal Chief Conservator of Forests, Odisha

Sub: Revision of wage rate for implementation of Wildlife Management Plan in the mining areas at project cost.

Sir,

I am directed to refer to F&E Department letter No. 6537/F&E dt. 23.8.2013 addressed to you on the subject mentioned above and to say that the mining lessees operating in Keonjhar-Bonai region as well as those undertaking mining activities in forest areas in other parts of the State where occurrence of wildlife is observed, are depositing Rs. 20,000/- per hectare on NL area basis towards cost of Wildlife Management Plan in their mining lease area of the region for implementation of Wildlife Management Plan as per approved Plan. This revision in the rate of Wildlife Management Plan was last made vide F&E Department letter referred to above, considering the revision of wage rate of Rs. 70/- per manday from Rs. 55/- per manday. In the meantime, the State Government in their Labour & Est Department Notification bearing No. 5536-Ll-Lab(C)-3/12/LESI dt. 6.10.2012, have revised the minimum rate to Rs. 150/- per manday. This has necessitated the upward revision of rate on NL area basis towards cost of Wildlife Management Plan for implementation of Wildlife Management Plans as per approved Plan.

Keeping in view the upwards revision of wage rate of Rs. 150/- per manday, the State Government in F&E Department have been pleased to revise the cost norm of Wildlife Management Plan from Rs. 20,000/- per hectare to Rs. 43,000/- per hectare on NL area basis with effect from 6.10.2012 for proper implementation of the Wildlife Management Plan in the area. The Mining lessees of Keonjhar-Bonai region as well as those operating elsewhere in the State having occurrence of wildlife, are required to deposit the cost as per revised norm fixed above.

Required follow up action in the matter may be taken with appropriate orders to Divisional Forest Officers (DFWLs).

Yours faithfully,

Special Secretary to Government

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Memo No. 2657 /F&E, Dated 05.10.13

Copy forwarded to the P.C.C.F.(WL), Odisha for information & necessary action with reference to his Letter No. 7156 dt. 29.2013.

Special Secretary to Government.

Memo No. 2658 /F&E, Dated 05.10.13

Copy forwarded to all DOCFs (WL) and Divisional Forest Officers (T&W/L) for information & immediate necessary action.

Special Secretary to Government.

Memo No. 2659 /F&E, Dated 05.10.13

Copy forwarded to the O.I.C, State Portal, N.I.C., IT Department, Odisha Secretariat, Bhubaneswar with the requirement to put this Sachiva, N.I.C., Nayapalli, Jayadev Vihar, Bhubaneswar the information and necessary action. This may kindly be hosted in the F&E department web-site for information of all concerned.

Special Secretary to Government.

7

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS, ODISHA;
BHUBANESWAR.

Memo No. 19233 (47) /PF(Misc)-89/2011
Dated, Bhubaneswar, the 14th October, 2013

Copy forwarded to all Divisional Forest Officers (T&W) Divisions for information and necessary action.

Additional Principal Chief Conservator of Forests
Forest Protection & Nodal Officer, P.C. Act

P/889(B)

Memo No. Dtd. 14.10.13

Copy forwarded to all Regional Chief Conservator of Forests for information and necessary action.

Additional Principal Chief Conservator of Forests
Forest Protection & Nodal Officer, P.C. Act

GOVERNEMNT OF ORISSA

COMPREHENSIVE WILDLIFE MANAGEMENT PLAN FOR ENTIRE KEONJHAR AND BONAI FOREST DIVISION. ORISSA



PREPARED BY,

ARUN KUMAR MISHRA, OFS,
ASST. CONSERVATOR OF FORESTS,
KEONJHAR FOREST DIVISION.

SUBMITTED BY

SRI VIKRAM SINGH, IFS,
DIVISIONAL FOREST OFFICER,
KEONJHAR FOREST DIVISION.

SRI A.O.F. BAKHLA, IFS,
DIVISIONAL FOREST OFFICER,
BONAI FOREST DIVISION

FOREWORD

Keonjhar and Bonai Forest Division together contain significant wildlife resources of Deccan peninsula Biogeographic zone. These two Forest Divisions are of great ecological interest in that they have one of the richest mineralised belt of the region coupled with a sizable population of elephants and other wildlife extravaganza. Since it was contemplated earlier by the Chief Wild Life Warden, Orissa and subsequently to meet the statutory requirements of Govt. of Orissa and Ministry of Environment and Forest, Govt. Of India this Comprehensive Wildlife Management Plan is for the entire mining belts of Bonai and Keonjhar forest division has been brought out. Moreover the importance of this significant wildlife resources of this region has never been reflected in any of the diversion proposals for mines submitted earlier. This Comprehensive Wildlife Management Plan would greatly serve to fill up that void. The plan will be implemented over a period of ten years and the budget provision as envisaged in the plan is to be met by different mining lessees operating within these two forests divisions in order to meet their working obligation and earlier commitment to conserve forest and wildlife and to have sustainable mining environment compatible with long term conservation of wildlife.

We have assigned this arduous exercise of writing this Comprehensive Wildlife Management plan for the entire mining belts of Bonai and Keonjhar forest divisions to SRI A. K. MISHRA, OFS, Asst. Conservator of Forests of Keonjhar Division who has undergone Diploma course in Wildlife Institute of India, Dehradun. Earlier he has brought out Management plan for Hadagarh wildlife Sanctuary of this Division. We are glad that he undertook the task of writing this Comprehensive Wildlife Management Plan for both the divisions for love of sharing his experience and ideas with all concerned. This plan critically addresses all wildlife conservation problems of this region and suggests pragmatic measures which would enhance the usefulness of this publication.

Sri A.O.F. BAKHLA, IFS
Divisional Forest Officer,
Bonai Forest Division.

Sri VIKRAM SINGH, IFS,
Divisional Forest Officer,
Keonjhar Forest Division.

PREFACE

Keeping in view of the statutory requirement , as directed by Govt. Of India as well as the state Govt. Of Orissa this Comprehensive Wildlife Management Plan has been prepared for the entire mining belt of Bonai and Keonjhar forest division. The project is to be implemented over a period of ten years . In order to carry out this ambitious project , Budget provision has been envisaged which would be borne by all mining lessees operating within Keonjhar and Bonai division.

Concerted effort has been made to bring out a clear picture on Biodiversity values of this mining rich region with a landscape conservation integrated approach on long term basis .Elephant as a flagship species has been projected and it has been suggested to conserve the entire ecosystem beyond the legal boundaries including the crucial corridor link ups identified by ORSAC .

This Comprehensive regional wildlife plan has addressed issues of avoidance of Man - Elephant conflict, reduction of loss of human life and damage to the crops, status of flora and fauna etc. Besides this the plan aims at having a planned compatible package of measures , which while achieving the strategies necessary for better protection of the area also addressed the need of the local people by providing best alternatives .

I have derived maximum inspiration in the field of wildlife conservation planning from Sri H.S. Panwar , Ex- Director Wildlife Institute of India. ,Sri V.B. Sawarkar and Sri B.C. Chowdhury , the faculty members of Wildlife Institute of India ,Dehiradun as a Diploma trainee. I owe my deep sense of gratitude to all those senior officers in Forest Department , Orissa for their constant encouragement in evolution of this tiny personality.

Many mistake , immature and arbitrary inferences mighty have infused in this plan resulting inappropriateness in many places . This might be due to little experience in this vast subject of wilderness management .Therefore healthy suggestions and criticisms which aim at enhancing the working value of this Regional Wildlife Management Plan are welcome.

Arun Kumar Mishra, O.F.S
Asst. Conservator of forests,
Keonjhar Forest Division,
Orissa.

ACKNOWLEDGEMENT

I express my deep sense of gratitude to Sri D.S. Pattnaik, IFS, Principal Chief Conservator of Forests (Wildlife) for giving this opportunity to prepare this comprehensive wildlife management plan for the entire belt of Bonai and Keonjhar Forest Division.

I express my heartfelt gratitude to Sri B.C. Mohapatra, IFS, Principal Chief Conservator of Forests, Orissa who had prepared the Revised Working Plan for the R>F.S. of Keonjhar Division for the period from 1984-85 to 1993-94 which is subsequently extended upto 2003-04 . I borrowed heavily for basic information those are relevant in preparation of this plan.

I am highly indebted to Sri S.C. Mishra, IFS, Conservator of Forests Anugul Circle and Sri S.C. Mishra, IFS, Conservator of forests, Sambalpur Circle for their valuable guidance to complete this project document within a short period.

I express my deep sense of gratitude to Sri Vikram Singh, IFS, Divisional Forest Officer, and Keonjhar Division for his constant inspiration and unflinching moral support to take up writing of this arduous exercise.

I am also highly grateful to Sri A.O.F Bakhla, IFS, Divisional Forest Officer Bonai Division for providing all basic informations with respect to Bonai Division and for his valuable suggestions in amending certain portions of the manuscript.

My heartfelt thanks are to Sri A.K. Prusty, OFS, Asst. Conservator of Foresis for his constant encouragement in preparation of this Plan for both the divisions combinedly.

My heartfelt thanks are to Sri L.D. Mohanty Sr. Clerck, and Sri Pitamber Mishra Sr. Clerck for their pain staking effort for uninterrupted feed back.

I do appreciate the unflinching moral support and constant encouragement of all office staff, colleges, field staff, friends and family members during course of my study and investigation in this project.

Last but not least I record my deep sense of gratitude to Sri. Amiya Kumar Pani, Computer Programmer and his Team for Computerisation of this Plan Manuscript.

"Jai Maa Tarini."

Keonjhar
Dated. 21.2.2000

Arun Kumar Mishra, O.F.S
Asst. Conservator of Forests,
Keonjhar Forest Division,
Orissa

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GLOSSARY OF VERNACULAR NAMES AND BOTANICAL NAMES OF TREES, SHRUBS, CLIMBERS ETC. FOUND IN KEONJHAR AND BONAI FOREST DIVISIONS.

Vernacular/ Local Name	Botanical Name	Family
TREES		
Achu	Morinda tinctoria	Rubiaceae
Acacia	Acacia auriculiformis	Mimoseae
Amba	Mangifera indica	Anacardiaceae
Anla (Amlo)	Emblica Officinalis	Euphorbiaceae
Ambada	Spondias pinnata / mangifera	Anacardiaceae
Ambanacia	Bauhinia racemosa	Caesalpiniaceae
Ankula	Alangium salvifolium / lamarkii	Cornaceae
Arujuri / Koha	Terminalia arjuna	Combretaceae
Asan / Sahaj	Terminalis tomentosa /alata	Combretaceae
Ashok	Saraca indica	Caesalpiniaceae
Ata	Anona squamosa	Annonaceae
Babul	Acacia nilotica	Mimosaceae
Baghai	Pallinidium binatum	
Bahada	Terminalis belerica	Combretaceae
Bandhan	Ougeinia oojeinensis	Papilionaceae
Barada	Laciobena returnum	
Barh	Ficus bengalensis	Moraceae
Bar Bakulia / Dhoban	Dalbergia paniculata	Papilionaceae
Barkoli / Bora	Zyzyphus mauritiana	Rhamnaceae
Baruna	Crateva religiosa	Capparidaceae
Batra	Melia cimposita	Meliaceae
Baula	Mimosops elengi Manilkera hexandra	Sapotaceae
Bel	Aegle marmelos	Rutaceae
Bhatajamu / Puijam /Pitajamu	Syzygium(/ Eugenia) operculata	Myrtaceae
Bhalia	Semicarpus anacardium	Anacardiaceae
Bhenta	Lemania acidissima	Rutaceae
Bheru	Chloroxylon swietenia	Meliaceae
Bija / Piasal	Pteracarpus marsupium	Papilionaceae
Chakunda	Cassia florido/sianea	Caesalpiniaceae
Champa	Michelia Champaca	Magnoliaceae
Chandan	Santalum album	Santalaceae
Char	Buchanania lanzan	Anacardiaceae
Chauli	Cassine glauca (Elaeodendron glaucum)	Verbenaceae
Chauldhua	Glycosmis pentaphylla	Rutaceae
Chhatian	Astonia scholaris	Apocynaceae
Chiklni / Kalchua	Glochidion lanceolarium	Euphorbiaceae
Chadelgudi	Vitex peduncularis	Verenaceae
Debadaru	Polyalthia longifolia	Anacardiaceae
Dhaman	Grewia tiliaefolia	Tiliaceae
Dhauranja /Konju/Charia	Holoptelia integrifolia	Ulmaceae
Dhaura	Anogeissus latifolia	Combretaceae

Dudukurum/ Sanchikuruchi	Wrightia tomentosa	Asclepiadaceae
Dumiri / Dumer	Ficus racemosa/glomerata	Moraceae
Gambhari	Gmelina arborea	Verbenaceae
Gangasioli / Kharkhari	Nyctanthus arbortristis	Oleaceae
Vernacular / Local Name	Botanical Name	Family
Gandhapalas	Miliusa velutina	Annonaceae
Ganiari / Gouduli	Cochlospermum religiosum /gossypium	Bixaceae
Garh Khair(Khadar)	Acacia ferruginea /lenticularis	Mimosaceae
Ghantol	Zyzyphus glaberima/Xylopyra	Rhamnaceae
Ghora lenjia	Albizzia chinensis/stipulata	Mimosaceae
Gila	Entada scandens	Papilionaceae
Giringa	Pterospermum heaneanum	Sterculiaceae
Giridhini (Genduli)	Sterculia urens	Sterculiaceae
Gohira	Acacia leucophloea	Mimosaceae
Halda	Diospyros montana	Ebenaceae
Haldu / Kurum /Koim	Adina cordifolia	Rubiaceae
Harida	Termunalia chebula	Combretaceae
Hinjal	Barington ia acutangula	Barringtoniaceae
Jamu	Syzygium cumini	Myrtaceae
Jari / Aswastha	Ficus religiosa	Moraceae
Jai Sandha	Litsea glutinosa/sebifera	Lauraceae
Jeanthja/Jautha	Artocarpus lacucha/lakoocha	Moraceae
Kadamba	Anthocephalus cadamba	Rubiaceae
Kaitha	Feronia elephantum	Rutaceae
Kainalagundi	Mallatus philippinensis	Euphorbiaceae
Kalasirish / Tinia	Albizzia odoratissima	Momosaceae
Kalicha	Diospyros sylvatica	Ebenaceae
Kanchan	Bauhinia purpuria	Caesalpiniaceae
Kangora / Kathasiali	Xylia xylocarpa	Mimosaceae
Kansa/Dhurkunda	Hymenodictyon excelsum	Rubiaceae
Kapasia	Kydia calycina	Malvaceae
Karada / Karia	Cleistanthus collinus	Euphorbiaceae
Karanja	Pongamia pinnata /glabra(Derris indica)	Papilionaceae
Kasi / Khasi	Bridelia retusa	Euphorbiaceae
Katakal	Strychnos potatorum	Loganiaceae
Kataranga / Damkuruda	Gardenia latifolia	Rubiaceae
Kendu	Diospyros melanoxylon	Ebenaceae
Kenkat/KantaKusum/Rajamai/Kenkar	Garuga Pinnata	Burseraceae
Khair	Acacia Catechu	Mimosaceae
Khakada	Casearia elliptica/lamentosa	Samydaceae
Kurudu	Gardenia turgida	Rubiaceae
Kadala/Udal	Sterculia vilosa	Sterculiaceae
Kachila	Strychnos nux-vomica	Loganiaceae
Kuler	Bauhinia variegata	Caesalpiniaceae
Kumbharchikini/	Canthium didymum	Rubiaceae

Dalsingha		
Kumbhi	Careya arborea	Myrtaceae/Barringtoniaceae
Kusum	Schleichera oleosa	Sapindaceae
Limba/Neem	Azadirachta indica	Meliaceae
Limburu	Protium serrtum	Burseraceae
Lodha	Symplocos racemosa	Styraceae
Mai(Jia)	Lannea coromandelica	Anacardiaceae
Mahalimba	Ailanthus excelsa	Simarubaceae
Mahula	Madhuca indica	Sapotaceae
Makarkendu/Mankada kendu	Diospyros malabarica/Peregrina	Ebenaceae
Maranga/ Tentra/Dhalasirish	Albizzia procera	Mimosaceae
Mundi/ Mitkinia/Gudikolm	Mitragyna parviflora.	Rubiaceae
Mukha/Eksira	Schrebera swieteniaides	Sapindaceae/Oleaceae
Muktamaja / Ritha	Sapindus emarginatus	Sapindaceae
Vernacular / Local Name	Botanical Name	Family
Mundica/Mandika	Walsura piscida	Meliaceae
Nageswar	Mesua ferrea	Guttiferae
Nimbrurmal	Bursera serrata	Burseraceae
Nunnunia	Embelia robusta	Myrsinaceae
Oau	Dillenia indica	Dilleniaceae
Palas	Butea monosperma	Papilionaceae
Paldhua	Erythrina variegata/indica	Papilionaceae
Panas	Artocarpus heterophyllus	Moraceae
Panigambhari	Trewia nudiflora	Euphorbiaceae
Panikodal/Paniudum	Firmiana(Sterculia) colorata	Sterculiaceae
Panikusum	Aphanomixis polystachya(Heynea trijuga)	Meliaceae
Patuli	Stereospermum chelonoidis/suaveolens	Bignoniaceae
Phanphana	Oroxylum indicum	Bignoniaceae
Phasi	Anogeissus acuminata	Combretaceae
Rai / Karengila	Dillenia pentagyna	Dilleniaceae
Rohini	Soymida febrifuga	Meliaceae
Saguan	Tectona grandis	Verbenaceae
Sahada	Streblus asper	Moraceae
Sal / Saragi / Rengal	Shorea robusta	Dipterocarpaceae
Salai	Boswellia serrata	Burseraceae
Salap / Sarap	Caryota urens	Palmae
Salara/Mahana	Randia dumetorum	Rubiaceae
Sidha / Senha	Lagerstroemia parviflora	Lythraceae
Semul	Bombax ceiba	Bombacaceae
Siris / Sersuan	Albizzia lebbek	Mimosaceae
Sissoo(Pahadi sissoo)	Dalbergia latifolia	Papilionaceae
Sissoo (Bali sissoo)	Dalbergia sissoo	Papilionaceae
Sunari	Cassia fistula	Caesalpiniaceae

Sijna/Sijhu	Euphorbia nivulia	Euphorbiaceae
Tal	Borassus flabellifer	Palmae
Telkuruan	Ixora arborea	Rubiaceae
Tentuli / Tetel	Tamarindus indica	Caesalpiniaceae
Thelca(Tilok)	Randia ulifinosa	Rubiaceae
Tilai	Wendlandia tinctoria	Rubiaceae
Tinia	Albizzia odoratissima	Mimosaceae
Trema	Trema orientalis	Ulmaceae
Toon	Toona ciliata	Meliaceae
	BAMBOOS	
Doba banus / Kantabanus	Bambusa arundinaceae	Gramineae
Salia banus	Dendrocalamus strictus	Gramineae
	GRASSES	
Bagai / Sabai/Panasi	Eulaliopsis binata	Gramineae
Kharo grass	Imperata cylindrica	Gramineae
Phulbadhani	Thysanolaena maxima	Graminéae
Sinkula grass	Hetropogon contortus	Gramineae
	SHRUBS/HERBS	
Agnijhal	Veronia aspera	Compositae
Agnijhal / Banajatangi	Clausena excavata	Rutaceae
Antia / Mararphali	Helecteris isora	Sterculiaceae
Ankula	Alangium lamarckii	Cornaceae
Anantamula	Hemidesmus indicus	Asclepidaceae
Vernacular / Local Name	Botanical Name	Family
Arkha	Calotropis gigantica	Asclepidaceae
Badichang / Badichand	Symphorema polyandrum	Verbenaceae
Baibidanga / Nunnunia	Embelia robusta	Myrsinaceae
Ban kapasi	Thespesia lampas	Malvaceae
Ban kulthia	Atylosia scraboides	Papilionaceae
Ban khajuri	Phoenix acaulis/sylvestris	Palmae
Ban sorish	Vernonia teres	Compositae
Basanga	Justicia adhatoda	Acanthaceae
Bhainshdara	Strobilanthes auriculatus	Acanthaceae
Bhuin-kuruwan (Telkuruan)	Ixora arborea/parviflora	Rubiaceae
Dhatki	Woodfordia fruticosa	Lythraceae
Girelphool	Indigofera cassioides	Papilionaceae
Gua Koli	Maba buxifolia	
Gurudu	Gardenia gummifera	Rubiaceae
Kamini/Hariankuli	Murraya exotica	
Kanteikoli	Zyzyphus oenoplia	Rhamnaceae
Kurei	Holarrhena antidysenterica	Apocynaceae
Nirgundi	Vitex negundo	Verbenaceae
Ranikathi	Flemingia chapper	Papilionaceae
Sijina	Euphorbia royleana	Euphorbiaceae
Tilai	Wendlandia exserta	Rubiaceae

CLIMBERS / LIANES		
Anantoinula	Hemidesmus indicus	Asclepidaceae
Atunidi	Combretum decandrum	Combretaceae
Baidanka	Mucuna pruriens	Papilionaceae
Bichhuati	Tragia plukenetii	Euphorbia-ceae
Dantari	Acacia sinuata	Mimorbia-ceae
Latapalash/Naipalasa	Butea superba(Spatholobus roxburghii)	Papilionaceae
Marda lai/Marad Nai	Milletia extensa/auriculata	Papilionaceae
Muter/Muturi	Smilax macrophylla	Liliaceae
Pita alu	Dioscorea bulbifera	Dioscoreaceae
Pengo	Celastrus paniculata	Celastraceae
Satabari	Asparagus racemosus	Liliaceae
Sisli	Bauhinia vahilii	Papilionaceae

GLOSSARY OF VERNACULAR AND ZOOLOGICAL NAMES OF ANIMALS AND BIRDS FOUND IN KENDUJHAR AND BONAI FOREST DIVISION.

LOCAL NAME	ENGLISH NAME	ZOOLOGICAL NAME	STATUS	WILD LIFE SCHEDULE
Badudi	Short nosed fruit bat	Cynopterus sphinx	Common	V
Bajrakapta	Pangolin	Manis crassicaudata	Rare	I
Bagha	Tiger	Panthera tigris	Rare	I
Bana bilei	Jungle Cat	Felius chaus affinis	Occasional	II
Baraha	Wild pig	Sus scrofa	Common	III
Bhalu	Sloth bear	Melursus ursinus	Very Common	I
Belari musa	Common giant Flying squirrel Malayan giant squirrel	Petaurista philippinesis/ petaurista Ratufa bicolour	Rare	II
Bilua /Kuliah	Jackal	Canis aureus	Very Common	II
Chita Bilei	Leopard cat	Fellis bengalensis	Very Rare	I
Dohala Kukura/Dhole	Wild dog	Cuon alpinus	Occasional	II
Harina/cheetal	Spotted deer	Axis axis	Sporadic	III
Gayal	Indian Bison/ Gaur	Bos gaurus	Extremely rare	I
Gada Bhalu	Ratel/Honey badger	Mellivora capensis	Rare	IV
Gunduchi musa	Common Squirrel	Funambulus pennanti/palmarum	Common	IV
Gurandi	Mouse deer	Tragulus meminna	Rare	I
Hati	Asiatic Elephant	Elephas maximus	Common	I
Heta (Gadhia)	Stripped Hyaena	Hyaena hyaena	Sporadic	III
Jhinka	Porcupine	Hystrix indica indica	Sporadic	IV
Lenkada/Kalaropa taria bagha	Leopard/Panther	Panthera pardus	Occasional	I
Katash	Toddy cat/Common palm civet	Paradoxurus hermaphroditus	Occasional	IV
Kattas	Large Indian civet	Viverra zibatha	Occasional	II
Kokisiali	Fox	Vulpes bengalensis	Common	II
Kutura	Barking deer	Muntiacus muntijack / muntiacus	Sporadic	III
Mankad (Hanu)	Monkey/ Hanuman langur	Presbytis entellus	Less common	II
Mankada (Pati)	Rhesus macaque	Macaca mulatta	Common	II
Musa	Rat	Rattus rattus	Common	V
Neula	Mongoose (common)	Herpestes eduardsii	Common	IV
Neula (Kuji)	Small Indian mongoose	Herpestes auropunctatus	Sporadic	IV
Nilagai	Blue bull	Boselaphus tragocamelus	Extremely Rare	III
Odha	Common otter	Lutra lutra	Rare	II

Salia patni	Small Indian civet	Vivericula indica	Occasional	II
Sambar	Sambar	Cervus unicolor	Rare	III
Thekua	Hare	Lepus nigricollis ruficaudatus	Common	IV
Ramasiala	Wolf	Canis lupus	Very rare	I

BIRDS

Bani	Indian Myna	Acridotheres tristis
Baya	Weaver bird	Ploceus philippinus
Baja pakhi	--	Astur badius
Bana kukuda	Jungle fowl (red)	Gallus gallus
Baga	Little egret	Ergetta garzetta
Bhada bhadalia	--	Coracas bengalensis
Bhaliakhai	Hornbill(grey)	Tokus biostrics
	Brahminy duck	Casarca ferruginea
Bhrugaraj	--	Dissemurus paradisens
Chataka	Pied crested cuckoo	Micropus affinis
		Clamator jacobinnus
Chilla	Common kite	Milvus migrans
Common grey bee eater	--	Merops orientalis
Common Iora	-- --	Aegithina tiphiahumani
Dahuka	Coucal	Amongonis phaenicurvus
		Centropus sinensis
Deulia para	--	Columba livia
Domara kau	Jungle crow	Corvus macro rhychos
Gendalia	Open billed stork	Anastomus oseitans
Gharchhatia	--	Passer domesticus
Gobra chadhei	--	Molpa setes cafer
Halidibasanta	--	Oriolus xanthornus
Harada chadhei	(Green pigeon)	Cracopus pheenicopterus
Hansa	--	Anas pocierhoncha
Kajalpati	Common drongo	Dicrurus macrocerus
Kapota/Kapta	Ring dove	Streptopelia decaocto
Katha hana chdhei	Pigmy wood pecker	Picoides nanus
Kau (pati)	Common crow	Corvus splendens
Kau (Domara)	--	Corvus macrorhynces
Kochilakhai	Grey hornbill	Anthroco ceros coronatus
Koili	Indian cuckoo	Eudynamis scolopaceus
Kumbhatua	Crow pheasant	Centropus sinensis
Mayura	Pea fowl	Pavo cristatus
Macharanka(King Fisher)	--	Ceryle rudis
Panikua	--	Pholacrocorax higer
Pecha	Spotted owl	Anthena brama
Sari	Hill myna	Gracula religiosa
Saguna	King vulture	Sacrcogyps calvus
Sankhachila	White bellied kite	Haliastur indus
Sua	Large Indian Parakeet	Psittacula eupatria
Teetri	Patridge	Francolinus pondicerianus
White browed bulbul	--	Pycnonotus luteolus
Whistling teal	--	Dendrochyna javanica

REPTILES & AMPHIBIANS

SNAKES

Ahiraj (King cobra)	--	Naja hannah
Ajagara	Python	Python molurus
Benga	Common Indian Toad	Bufo melanostictus
Boda	Common boa	Boa constrica
Russel's viper		Viper russell
Chiti (Common krait)	--	Bungarus careruleus
Dhamana	Rat snake	Ptyas mucosus
Dhanda	Piscator	Xenochrophis piscator
Domundia	--	Eryx conicus
Laudonkia	--	Dryophis nasutrus
Naga	Cobra	Naja naja
Rana	Banded krait	Bungarus fasciatus
Tampa	--	Naja naja kuothia
Teli sapa	--	Typhlops brahminus
Kainchha	--	Kachuga teclum tentoria
Kumbhira matia	--	Crocodilus palustris
Godhi	Monitor lizard	Varanus monitor/bengalensis
Jhitipiti	--	Homydactylus flavirudis
Pohala endua	--	Chammacleon zeylanicus

FISHES

Balla	--	Wallgoania attu
Baligarda	--	Glossogobius giuris
Bhakura	--	Catla catla
Chenga		Ophiocephalus gachua
Chitola	--	Notopterus chital
Dandakhirl	--	Esomus dandrica
Jalanga	--	Pangasius pangasius
Kantia	--	Myotus cavasius
Kerandi	--	Barbus ambassis
Kau	--	Anabas testudineus
Magura	--	Clarias batrachus
Mirkall	--	Cirrhina mrigala
Mohurali	--	Amblypharyngodon mola
Pohala	--	Cirrhina reba
Phali	--	Notopterus notopterus
Rohi	--	Labeo rohita
Serana	--	Barbus serana
Seula	--	Ophiocephalus striatus
Singi	--	Heterophneustes fossilis
Todi	--	Mastacembelus armatus.

CHAPTER - I

THE PROTECTED AREA, THE EXISTING SITUATION.

1.1: Introduction.

Keonjhar and Bonai division combinely contains significant wild life resources of Deccan Peninsula Biogeographic zone .This region as a single conservation unit is of ecological interest in that ,it is one of the richest mineralised belt of India coupled with a sizeable population of elephants .Situated on the buffer zone of the magnificent Similipal Biosphere Reserve and great Saranda forests of Bihar State these two forest divisions boast of a rich wild life splendor .This region perhaps serves as a Biological Refuge for wildlife with the vanishing wilderness in great Similipal Tiger Reserve and spectacular Sal forests of Saranda, Bihar in recent years.

Although mining belts of Keonjhar and Bonai Division hold a wide variety of wildlife yet its importance has not been reflected in any diversion proposals for mines submitted earlier. Both of these forest divisions still boast of a fragment of central elephant population and serve as crucial corrider link, for free mixing with that bigger population of elephants in Saranda forests of Bihar and Simlipal forests of Mayurbhanja district, Orissa. Due to various developmental activity including intensive mining activity, extension of farm lands, illicit felling, encroachments etc. the forests of these two divisions have dwindled over the years and the elephant populations are living in fragmented habitats. The population of carnivores is steadily decreasing due to loss of habitat and preybase. In order to conserve the existing biodiversity of this area some comprehensive conservation measures have to be taken. Hence, it

was contemplated to formulate a regional wildlife management plan for this mining rich belt to have a sustained resource use compatible with wildlife objectives. A perspective planning has been ingrained with land scape approach and flagship species conservation approach. In order to reduce the dependency of villagers on resources of R.Fs and DPFs, compatible eco-development measures have been suggested. There are two super rich mining belts within the mining zones of Keonjhar and Bonai divisions viz. Champua range and Koira Range respectively. In Keonjhar division there are 90 mining leases comprises of 30575.6593 Ha. area under working mines and 95 mining leases comprising of 14570.4498 Ha. area under non working mines at the time of preparation of this plan. Similarly in Bonai division there are 58 mining leases comprising of 9933.6855 Ha. area under working mines and 70 mining leases comprising of 13572.2269 Ha. area under non-working mines.

1.2 :Location and Status ; Approach & Area Statement.

Name and situation :-

Geographically, the entire Keonjhar district lies within 21°-10' and and 22°-10' N latitude and 85°-10' and 86°-22' longitude, East of Greenwich, bounded by Singhbhum district of Bihar and Mayurbhanja district of Orissa on the North, both Mayurbhanja and Balasore districts of Orissa on the East, Jajpur and Dhenkanal districts on the south and Dhenkanal and Sundargarh districts of Orissa on the West.

The area of Kendujhar district is 8328.43 Sq. Kilometres , The total reserved forest area is 1839.98 Sq. kilometres consisting of 84 Rf Blocks. There are 37 PRF Blocks covering an area of 197.39 Sq. Kms. So the total recorded forest area covered under this plan comes to be 2037.37 sq. Km. which constitute about 24.47% of the total geographicl area of this district.

The non-forest area having forest growth in Keonjhar division has been calculated to be 244.51 Sq. Km. as per the District Level Committee Report.

The headquarters of the Forest Division is also located at the district headquarters at Kendujhargarh ,situated on National Highway No.6 at a distance of about 120 kilometres from the Jajpur -Kendujhar Road Railway station on the south -Eastern Railways. Kendujhargarh is well connected by good roads with Ranchi, Jamshedpur , Rourkela , Cuttack and Bhubaneswar - the state Capital of Orissa .

The area dealt with in this plan comprises of all Reserved Forests and Demarcated Protected Forests (Proposed for reservation) and other forest areas of Bonai Forest Division in the Bonai Civil Sub- Division of Sundergarh District .This Forest Division is bounded on the north by Bihar State and Sundergarh Forest Division . On the east it is bounded by Keonjhar Forest Division and Deogarh Forest Division.On the west & south it is bounded by Bamra Forest Division and Deogarh Forest Division .Geogrphically the area covered under this plan is situated between 21° 39' & 22° 8' North latitude and 84° 30' & 85° 23' East longitude .

In the East Bonai ,Toda block is the largest and forms almost a compact and contiguous patch of forest along with its adjoining and nearby forest blocks of Karo R.F ,Rakshi R.F, Sarkunda R.F, Sarkunda P.R.F, Khajurdihi R F, Khajuridihi P.R.F ,Bhawanipahar R.F,Bhawanipahar P.R.F, Khandadhar R.F, Khandahar P.R.F, Amrudhi R.F, Amrudhi P.R.F and Nagaria P.R. F.

In the west Bonai also almost a compact and contiguous patch of forests is formed by RFblocks of Sirigida, Balai, Jada, Soluguda, Kantamunda, Kunjer, Majurdiwa, Rajpiri & Kelo and P.R.F blocks of Sirigida , Mohuldihi - I,

Mohuldihi - II, Bolai, Saluguda, Raipiri - I, Raipiri - II, Kelo, Majurdiuma 'A', Majurdima 'B', Kantamunda-I and Kantamunda - II. The remaining R.F. and P.R.F. blocks both in East Bonai and West Bonai are having scattered type of distribution.

The total area of Bonai division which is co-terminus with the area of Bonai Sub-division is 3,356.7 sq. K.m. As per the records of Bonai Division, the recorded area of 59 R.F. blocks and 52 P.R.F. blocks covered under this plan is 1162.29 sq. Km. and 335.90 sq. K.m. respectively. So, the total recorded forest area covered under this plan comes out to be 1498.19 sq. K.m. which constitute 44.63 % of total geographical area of Bonai Sub-division. The non forest area having forest growth Bonai Division has been calculated to be 265.01 Sq. Km.

The headquarters of this Forest Division is at Bonai which is encircled by river Brahamani on North and East directions and National Highway-23 on West direction. The river Brahamani divides this Division into almost two equal halves, i.e. East Bonai and West Bonai. The river Brahamani enters the Division at its Northern point near Tamra and leaves the division at Southern point near the boundary of R.F. block of Dandapat (East). Bonai is linked with the National Highway-23 through metalled road and its shortest distance from the National Highway-23 is about 7 Kms. The nearest Railway stations are Bimlagarh, Chandiposh and Rourkela at the distances of 30 Kms. , 40 Kms. & 60 Kms. respectively from Bonai. The nearest airports are located at Bhubaneswar and Calcutta. The nearest Seaport is Paradeep, which is at a distance of about 565 Kms.

1.3 : Statement of Significance.

The principles of world conservation strategy conveys that clear linkage of conservation with its development benefits is essential if protected areas are to gain wider and higher level support. As we know, mining in forest areas ensures man's utilisation of ecosystem which support a huge population of rural people as well as mining industry need to be sustainable in long run in view of Forest (conservation) Act, Wildlife (Protection) Act. etc. The forested tracts of keonjhar and Bonai division mainly falls in tropical deciduous forest biogeographical province of Indomalayan realm which is very susceptible to degradation and requires a manager who must be a generalist rather specialist. Moreover the effectiveness of management of wildlife habitat particularly in mining intensive forested tract like Champua and Koira ranges require flagship species or keystone species or indicator species conservation approach. In view of dwindling of most well known and evocative species like tiger in these ranges, the elephant becomes the key species for a broad wildlife habitat management strategy. Morevover the elephant is the most wildely acclaimed campaigner for eliciting public support for a greater conservation goal due to its attachment towards Hindu religion & ethos. Treating wildlife of these two divisions in isolation will create an effect of island biogeography which will lead to decrease in species diversity due to fragmentation of a complex ecological linkage. Elephant is a migrating species. While planning regional wildlife management plan, the migrating routes of this megaherbivore must be protected by establishing corridor links in contiguous adjacent forests. In brief the following Ratcliffe's criteria have been considered for a long term wildlife habitat conservation programme in Keonjhar-Bonai conservation unit.

(1) Size :

The conservation value of an area is a function of its size. In principle the area must be of size and forms sufficient to support entire ecological units or viable populations of flora and fauna. As a general rule the area's conservation importance increases with size. The mineralised forested tract of Keonjhar and Bonai divisions has been studied basing on 3 factors. First, is the intensive mining zone i. e. Core zone, second is the other forested areas around core zone i. e. buffer zone. Third is ecotone zone i.e. the agricultural land, wasteland, water bodies, riperian zone etc. which act a transition zone between mining zone and other forested zone. The region covers a vast tract of geographical area with varied wild flora and fauna extravaganza.

(2) Richness and diversity :

Richness and diversity of species is usually linked with diversity of habitat. Ecological gradients (Catenas, Ecotones, altitudinal transition zones) should be represented because of the important transitional communities they support. The present study region boasts of transitional communities of wildlife due to its proximity to great Saranda forests of Bihar, Similipal forests of Mayurbhanj district and Forest of Karanjia , Athagarh , Dhenkanal , Sundergarh and Bamra divisions.

3. Uniqueness:

Extensive mining activity within the vegetation splendour is an unique thing in this region which provides a different type of experience for a general person and vivid experience for academicians, wildlifers, naturalists etc.

4. Fragility:

Fragile habitats, species and communities have a high sensitivity to environmental changes. Mining rich belts inside forested tract of Keonjhar - Bonai Sector is inherently unstable and subject to sesmic effects in long run besides hydrological changes. Hence this region has of great future siginificance.

5. Indispensability:

This conservation unit deserves protection because it provides a vital watershed catchment of major river systems of Keonjhar and Sundergarh district Viz. Baitarani river, Brahmani river and Karo river etc. A lot of perennial streams and nalas exists in mining belts which are the lifeline of thousands of villagers. Besides this, the region represents a crucial seasonal habitat component of migratory species like elephants.

6. Intrinsic appeal:

This region provides unique opportunities for recreation due its wilderness associated with mines, magnificent water falls, spectacular scenic beauty, clean environment far from the madding crowds of bustling city life.

7. Modified landscapes augmenting biological values:

Mining provides a particular form of land use which have a significant influence on the regions biogeography and hence requires protection. The stratigraphy of the region has great influence on formation of different forest types. Application of National conservation strategy on sustainable resource

management of this mineralised zone in a better forested tract requires committed management approach which must be compatible with wildlife conservation principles.

CHAPTER - 2

BACKGROUND INFORMATION AND ATTRIBUTES

2.1: Configuration of the Ground

Keonjhar district can be divided into two distinct but dis-similar tracts i.e. Lower Kendujhar and Upper Kendujhar depending on its configuration. Lower Kendujhar consists of Kendujhar valley and low lands of the Anandapur Sub-Division while "Upper Kendujhar" embraces the mountaineous area of Sadar and Champua Sub-Divisions inhabited by Bhuyans and Juangs.

The district is flanked on its western and southern borders by a chain of mountains which form the watershed between the Baitarani river on the North and Brahamani on the South. The general altitude of these hill ranges varies from 600 m to 900 m (2000' to 3000') and some of the peaks are even higher than 900 m, the highest point of the Division being the Mankadanacha peak 1100 m (3664') which is situated on the western border over-looking the Koida valley of Bonai Forest Division.

Most of the Kendujhar plateau with the exception of the hill ranges is open, well populated and under stable agricultural practices. From Ghatagaon, 335 m (1117'), there is a steep descent into the low lying plains of Anandapur Sub-Division, the lowest elevation being 20.3 M. (67') only at Raghabpur village where the Baitarani river enters into the district of Jajpur. The remarkable feature that breaks the monotony of the Anandapur plain is the Baula area which consists of two masses of hills lying East and West of Salandi river. Presently, a dam has been constructed to store water in Hadgarh reservoir for irrigation purposes. The Baula hill ranges are an extension of the famous

" Similipal " hills of Mayurbhanja district and hold its head high like a monument over the low lying plains below.

The Bonai Division is more or less and isolated hilly tract with an average elevation of about 244 m. above the mean sea level. It is covered from all sides by forest clad hills which are intersected by a few passes or gorges connecting it with the surrounding areas. The only river Brahamani flowing from North to South direction divides the Bonai Division into two halves. It receives the tributaries from surrounding hills and passes through a gentle undulating valley. There is a belt of level ground varying in width from five to fifteen kilometers on either side of the river. The rest of the area of this Division is hilly and undulating. However, the physiography of Bonai Division can be best dealt with by describing the portions lying to the East and West of Bonai separately.

East Bonai:

Most of the terrain covered under East Bonai is of hilly and undulating type except the belt of cultivated plains of about 145 - 160 sq. kms. with elevations varying from 61 m. to 183 m. on the left bank of river Brahamani between Bonaigarh and K. Balang and the small level patches of land in Karo situated at an evlevation of about 610 m. Several of the hill Ranges are having altitudes more than 915 m. The cultivated area consists of loamy, sandy, laterite and black cotton types of soils. The hill Ranges covering forest blocks of Toda, Karo, Sarkunda, Sarkunda (PRF) and Nagaria (PRF) are bearing magnificant sal forests and are the extension and the continuity of the Karampada Mountatin Range of Singhbum. The principal mountain peaks lying within these hill Ranges are Mankarnach (1117 m.) and Badamgarh (1074 m.) both of which are located along Bonai - Keonjhar boundary. The other important peaks are Kummitar (1065 m.) Bichakhamari (903 m) and Khandadhar

(914 m.). This extension of Karampada mountain Ranges running from north - east direction to south-west direction is endowed with valuable deposits of high grade iron ore. The Rantha plateau (763 m. - 915 m.) from which descends Khandadhar waterfall presents a beautiful scenic view from a great distance. The average height of this waterfall is about 244 m. The slope of the terrain in general is gentle to moderately steep.

West Bonai :

Leaving aside the cultivated plains stretching from Bonaigarh in a South - Westernly direction towards Sarasara - Balang, the whole of the west Bonai is having mountainous terrain and is covered with rich forest growth. But, unlike the East Bonai, it is more rugged, especially in extreme west along the border of Kuchinda Sub-division where it has predominance of quartzite rocks. Besides, there are narrow plain strip of lands along both the banks of Bheden, Kharli and Saplata nallahs. The hill blocks in west Bonai form two distinct but separate masses - One mass consist of Rusimath, Gurundia, Ulsura, Budhpahar and Balia forest blocks, while the other hill mass consists of forest blocks of Raipiri, Kelo, Kunjar, Kantamunda, Majurdima, Balai, Soluguda and Jada. These two distinct hill masses are separated from each other by Kharla and Saplata valleys. The landscape features in the west Bonai are not as conspicuous as it is found in East Bonai. Here, the hills rise in a gradual manner from level plains and the average altitude of hills is about 300 m. lower than the hills of East Bonai. The principal hill peaks in West Bonai are Baghbindha (808 m) in Jada R.F. blocks, Raipiri (800 m. in Raipiri R.F. block, Kunjar (784 m) in Junjar R.F. block and baichabiringa (745 m) in Kantamunda R.F. block.

2.2: Drainage

More than three quarter of the district of Kendujhar is drained by the Baitarani river which pursues a tortuous course of some 250 kilometres

through the district . Its main tributaries are Kendra, Deo and Salandi on the left and Ardai, Biralika , Kanijori , Kukurkutia (Sita) , Mushal and Kusai on the right. The river originates from " Guptaganga " pahar near Gonashika in Juangpira and flows as a hill stream up to Chamakpur , then turns East towards Champua from where it abruptly turns to the South forming the boundary between Kendujhar and Mayurbhanja district for a certain distance and then enters into the territorial limits of kendujhar . It increases repidly in width and flows down South forming the boundary of Santospur and Atei R.Fs. into Anandapur Sub-Division and finally enters Jajpur district at Raghabpur village . Next in importance to river Baitarani is the Salandi river which originates from the Similipal hills of Mayurbhanja district and enters Kendujhar district at Satbedi . This river flows through the heart of Baula hills to the plains of Anandapur Sub-Division leaving Kendujhar district near Soso .The Salandi dam which has since been commissioned , presently irrigates the agricultural lands in plains of Anandapur Sub-Division and Bhadrak & Balasore District . Due to the completion of the dam a sizeable good forest area of Baula R.F. has already been sub-merged and patches of good forest have been cleared unauthorisedly by the displaced persons inside the Baula R.F. to develop new encroached settlement at various point, upsetting the management of the forests as well as the Hadagarh Sanctuary . The South-Western portion of the district consisting of Kaliahata and Charigarh plain is drained by the Ramial and the Samakoi rivers which are two important tributaries of the river Brahmani . The Ramial emerges from the hill ranges of Kalapat block situated on the North of Kaliahata while the Samakoi river orginates from the core of Kalapat forests and flowing West towards Telkoi takes a southernly turn at Dublapat village where it forms the boundary between Kendujhar and Pallahara Sub-Division of Dhenkanal district .A very small part of the district situated on the extreme North-West corner and constituting the Barbil valley is drained by Karo river . This river rises from

the hills of Koira range of Bonai Forest Division and flows in a Northernly direction past Gua (Bihar) to join river Koel which joins Sankha at Panposh to form the river Brahmani .Throughout its course within Kendujhar district, the river Karo runs almost parallel to the inter-state boundary between Bihar and Orissa .

The river Baitarani is perennial throughout its course but the flow of water during the summer months in its lower reaches becomes meagre . Most of the hill streams originating in the forests of Champua Range maintain a flow of water throughout the year owing to the presence of large laterite plateau and dense vegetal cover.The feeder streams which join the main river in Kendujhar, Ghatagaon and Anandapur Range get dried-up towards the end of the hot weather . The water courses of the Ramial and Samakoi also dry up completely in the month of April .

River System And Catchment of Bonai Division

The Brahamani is the major river running through the territory of Bonai Division. It flows from north to south direction and passes through the centre of the Division. It originates at Panposh from the confluence of two small rivers mainly - the Koel and the Sankh. After a course due south through the Panposh Sub-Division for about 22 Kms, it enters the Bonai Forest Division near Tamra and after a course of about 61 kms. within the Division flows away into the Deograh district. It has many tributaries in the forms of hill streams all along its -eastern and ewestern bank within the Division. The most important among these hill streams is the Kurandhi nallah which originates from Toda block near Tensa and from there, after a course due north - west, joins the river Brahamani at Barghat. Other smaller hill stream tributaries of the river Brahamani in East Bonai are Sarkunda nallah, the Aniudhi Nalah, the Samji nallah, the Rangan nallah and Karapani nallah. All these nallahs are

perennial in nature. The drainage of greater part of western Bonai is towards the river Brahamani. Along the west bank, the river Brahamani receives only few streams which are not perennial in nature. Among these Katangmurah nallah is formed by joining of Saplata nallah - flowing through the Kunjar and Sulguda blocks and Kendujhar nallah- flowing through Rusimath and Gurudia block. It passes through Dhenkiam blocks and then joins the Brahamani river. Rukara nallah flows through Balia, Dandapat and Ulsura blocks and joins the Brahamani near Jibka. There are quite a few small non-perennial nallahs which flow through Danapat, Sindhuria and Ulsura blocks and fall directly into the Brahamani river.

Kola and Korapani nallahs are also perennial and join the Brahamani river near Barkote and Jangla respectively. Kola nallah originates from Mahulpada block while Korapani originates from pauri area. Amrudhi nallah and Khandadhar nallah are other two important nallahs which originate from southern portions of Amrudhi blcok and Khandadhar block respectively. Both of these nallahs join together and fall into the Brahamani river near Poigaon.

2.3 Erosion :

Erosion and eroded lands are a common feature of Kendujhar District . This is due to extensive shifting cultivation in certain areas resulting in frequent flood and soil loss . The hill-sides, particularly in the Bhuyan and Juang pirhs , have in many cases been completely stripped of vegetation and present merely expanses of barren rock .Shifting cultivation goes right upto the hill top unconcerned regarding its effects down below .

Erosion is not confined to the Jhummed tract of the Bhuyan and Juang pirah only. It is noticed all over the district . Extensive eroded areas are met with in Rebna , Atei, Barbank and many 'B' Class reserved forests. The process of

erosion is progressive and each year fresh ground is broken up by this process to add to the vast area of unproductive land . Heavy encroachments into the reserved forests particularly in Palaspal and Rebna, contribute considerably to the process of soil erosion .

Large number of mining leases in the reserved forests adjoining Barbil, Daitari, Joda and Hadgarh as well as in the protected forests have posed a serious problem of soil erosion .Not only the forests have been seriously honey-combed but also the excavated earth after the mining operations is left dumped in heaps to be gradually eroded during rains every year. Unless the worked over mining areas are surrendered by the lesses and are again brought under afforestation , matters are likely to go from bad to worse and finally beyond control .

About 48% of the total geographical area of Bonai Division constitutes forest area A good proportion of this forest area is covered with adequate vegetative growth .Quite a large number of perennial and non-perennial streams are flowing through this division. Large scale soil erosion is not visible in Bonai division due to relatively thick forest cover barring degraded forest areas and areas where mining operation are under taken viz. Khandahar RF.,Sarkunda RF,Khajuridihi RF, Bhabanipahad RF, Kathamal RF, Toda RF ,Roxi I & II etc. Above all, the Khandadhar R.F. which has been ecologically sensitive needs to be managed from watershed point of view.

2.1 Geology , Rock & Soil :-

The Geology of Keonjhar district is very interesting due to its vast mineral potential. The geological formations and rock types met within the district as per the report prepared by the Geological Survey of India, Bhubaneswar are reproduced below :

Age	Formation
Recent to quarternary	Alluvium and soil laterite and reworked conge.
	Dolorite dykes
	Quartz veins.
Kalhans	Sandstone, shale and conglomerate .
1500-1600 my	
..... Unconformity	
Iron ore group	Ferruginous shale Banded hematite - Jasper with Iron Ore
1700-2000 my	Ferruginous banded shales with manganese ore, Tuffaceous Shale trap .
..... Unconformity	
Intrusives	Ultrabasics and basic intrusives
	Singhbhum-Kendujhar granite
2700 my	Ultrabasics with chromite .
..... Unconformity	
Older metamorphic (73200 my)	Schistose and gneissose rocks .
	Base not seen .

The rock of the older metamorphics comprising of schistose and gneissose rocks are confined to Champua area . These rocks were later intruded by ultrabasics and Singhbhum -Kendujhar granites . The iron ore group of rocks comprising of traps, tuffites, shales banded hamprising of traps, tuffites, shales banded hamatite jasper and quartzite emerged subsequently and gave rise to rich and extensive iron and manganese deposites of the district. Occurances of impure dolomite with stromotolite like impressions are associated in the iron ore group of rocks in Kasia- Barpada area . This period

was commenced from wide spread volcanic activities. The quartzite and traps situated to the West Kendujhargarh and on the Kendujhar-Dhenkanal district boundary on the South are suspected to be of Dhanhori stage . This group of rock may also represent the base of Iron ore group . In the last phase the conglomerate in shale and sandstone belonging to Kolhans are deposited by the side of Baitarani river in Joda-Banspani sector . Wide spread weathering and erosion continued and during quarternary period extensive lateritisation was marked on the high lands and soill and alluvium are deposited on the plain .

For the purpose of easy description , the district may be divided into six regions (1) The Mineralised Joda-Barbil region extending from Chamakpur to the border of Bonai on the West and Singhbhum of Bihar to the North . (2) The Bhuyan Juangpirah including Nayagarh reserved forest . (3) The Rebna-Kalapat region including Charigarh (4) The great central region from Champua to the foot hills of Kanto hill ranges including Santoshpur to the East of Baitarani river (5) Baula- Nuasahi hilly region . (6) The great alluvial plain of Anandapur

The first region is an extension of Iron ore group of Singhbhum district of Bihar . This group of rocks comprising trap, tuffites, shale quartzite, phyllite ,banded hematite jasper and banded hematite quartzite from high hill ranges with narrow deep valleys in between . The extensive valuable iron and manganese deposits are associted with B.H.J. and shales respectively. The iron ores are regarded marine chemical preciptate in the form of oxides , Carbonates, silicate and sulphides . Subsequently the enrichment is effected by leaching and replacement of silica. The iron ore (hematite) occures in the form of massive beds , pockets and large lensoil bodies. Usually four types of ores are seen in this area i.e. (a) hard massive (b) laminated (c) lateritoid (d)

Blue dust (powdery) Manganese is concentrated in the form of pockets and lenses in the shales of the iron ore group . In this area manganese also formed extensively as residual deposits .

The important iron ore deposits of the belt are found in Thakurani, Bolani, Kiriburu, Joda East, Banspani , Khandabanda, Sidhamath, Belkundi , Kasia-Barpada, Jajang , Jururi-Palsa and Jilling-longlo ta etc. which together accounts to over 2000 million tonnes of iron ores .

The important manganese ores are found in Guruda, Raida, Bhadrasahi, Chormalda, Sidhamath and other places .

The forests of Thakurani, Baitarani , Uliburu, Sidhamath and Karo are situated in this area .The soil of the area is usually reddish, yellowish to brownish and as such are ferruginous in nature. However soil derived from trap predominating areas are usually ferro-manganese.

The premoninately rock types of Bhuyan - Juangpirh are quartzites and lava . The quartzites are seen on the hill tops extending roughtly in a N-S direction to the West of Kendujhargarh . The quartzite is underlain by pyrophyllite which form economic deposits at places . This is in term underlain by weathered Kendujhar granite . On the top oif weathered granite some times china clay pockets are seen while to the further west trap and tuffites are seen . White to yellowish lithomarge is associted with traps. In Dholkata pahar at Kuanr pockets of Bauxites are seen which are derived from the traps. The Gondhamardan hill is also situated near Suakati in this belt with vast deposit of iron ore . Large numbers of dolerite dykes and basic intrusives are also seen in the area . Due to the predominence of quartz sericite schist sand amphibolites, good agricultural lands are found in Telkoi and Banspal .

The third region consists of extensive hill ranges which strertch along theDhenkanal border from near Bimala up to Anandapur plain., It consists of quartzite, quartz schist, B,H.J and phyllite rocks of iron ore group . Ultrabasic and basic intrusion also seen at the margin.Except for Daitari and Sindurmundi, iron ores are not seen else where . Besides iron ore, kyanite has been recorded near Kulang and gold mineralisation is found in some of the quartz veins asssociated in the iron are group of rocks. Due to hilly nature good agricultural lands are sparse.

The fourth region (central region) is predominantly covered by granites which stretch from south of Champua up to Anandapur . The granites vary greatly in texture . It is usually coarse and porphyritic, but medium to fine grained granite exposures are also seen . They are usually gneissic in structure and are felspathic . In some places China clay pockets are seen as in Tarinipokri . These rocks are traversed profusely by dolerite dykes mostly along the joint places of granite . The most cospicuous dyke is found near Palasponga extending for miles along NE - SW direction. They are also conspicuously exposed in several road cutting . Besides there are ultrabasic exposures at Gopalpur, Kuajharan and Ranki . In general the soil derived from granite are not fertile enough for agricultural land but near the basic intrusive good agricultural lands are available. The extensive forests of Atai, Santoshpur and Barabank are situated in this region on the gritty and unfertile soil derived from granite .

The Boula- Nuasahi region exhibits extensive occurances of quartzite and quart schist on both the sides of Salandi river . In this belt magnetite pockets and lenses are seen to the NW of Nuasahi in association of gabbro . The granite outcrops are commonly seen to the North of Sajanapal in the valley

and low lying hills . Around Boula and Nuasahi chromite deposits are found in association with ultrabsics (Peridotite and serpentinites). Even though good agricultural lands are available to the south of the region, this soil and debris covered on the hill base does not serve as good agricultural land . This zone however support miscellaneous plant growth with hardly any sal,

The sixth region is represented by the vast plain land of Anandapur.Due to thick soil cover, good agricultural land is available in this region, However quartzites are exposed around Barpada, Paharpur, Pandua and Panchara . The area adjacent to the quartzite of iron ore group are usually lateritised which are quite extensive. These are usually barren of any vegetation . The soap stone which is locally utilised for preparation of stone wares and statues is found in Dhakota in Ghatagon range.

The only rock of recent formation is the laterite whih is usually asociated with basic igneous rocks and iron ores at high elevatios., Laterite soils are extremely porous and permeable and give rise to a forest soil exceedingly favourable to sal, if found in sufficient depth. Detrital laterite has a beneficial effect on forest vegetation through their effect on the water supply of the localilty . They act as great store houses for water from numerous perenial springs alongs the base of the scraps. Perenial springs are therefore a feature of Karo, Sidhanath and Thakurani blocks which are capped by lateritic mantle above the iron ore deposits .

The rock formations found in Bonai Division belong mainly to Iron ore Supergroup of Precambrian age. The important rock types are, represented by Mica-Schists, Phyllites and Quartzites. Two groups of sedimentaries known as Dhanjori group and Kolhan series are recognised and are younger than the iron

ore series as well as the Bonai granites (Singhabhum granite). The stratigraphy of the area is represented by the following geological sequences.

RECENT TO SUB-RECENT			Aluvium and Soil
			Laterite Vein Qurtz
			Aplitic granite and Gneisses
PRECAMBRIAN	Iron Ore Group	Dhanjori Group	Aolarite Dykes, Carbonacous quartzite and phyllite.
			Quartzite and Quartz-sericite Schists
			Quartzite, Phyllite, Grit and Conglomerate
		UNCOPNFORMITY	
	Super Group	Bonai Group	Quartz reefs, Bonai granite
			Basic and Ultrabasic intrusives
			Purple and brown shale with Managenese ore
			Black shale, Banded haematite jasper & Iron ore Basic metavolconics
		Iron ore Group	Mica schists, Quartzite and Phyllites
		Older Metamorphis	Quartzites.

Alluvium and Soil :

Thick mantle or capping of yellow brown soil are observed over the area consisting of shales and granites. The river valleys and their flood plains are covered by alluvium.

Structure of Rock formation :

The general strike of the rocks in NNE-SSW to NE - SW. Dips are steep (about 70°) to the north - west in iron ore range while in the shales the dip is shallow (40°).

ECONOMIC MINERALS :

The most important minerals of economic significance available in Bonai Division are Iron Ore, Manganese Ore, Building stones and Asbestos. The deposits and occurance of the economic minerals are stated below :

Iron Ore :

The most significant Iron Ore deposits are found in the Bonai Range, viz. Khandadhar, Malangtoli, Dandrahapahar, Basada, Balia pahar, Badamgarh pahar, Mitukuda and Rakno. Other minor deposits of iron ore are available at Kalta, Daring Buru and Barsuan in the Koira Range.

Manganese Ore :

Manganese Ore deposits available in Bonai Division are restricted to the precambian rocks and are associated with shale and laterite. The important lateretoid deposits are found in the Koira valley near Daitmunda, Podadihi, Malda, Mahulsukha-Sarkunda, Orahuri, Nandidihi, Bhutura, Ranisal, Nuangaon etc. Almost all grades of these ores are available but ores containing less than 45% mangenese are more prevalent.

Building Stones :

The granite gneisses, quartzites, dolorites and epidiorites available in the areas of this Division find their applications as road metals and railway balasts. The granites gneisses are also used as building stones and in the manufacture of concrete.

Asbestos :

In the Bonai region, asbestos of tremolite type occur is the ultrabasic rocks near Renigra.

It may be concluded that this Division occupies an important position from geological formations point of view. Its main importance lies in the availability of large deposites of high grade iron and manganese ores belonging to Bonai group of rocks under iron ore subgroup.Iron ore formations are older than manganese ore formations. Manganese ore occurs along 60 km. belt (NNE - SSW trend) known as Bonai Keonjhar belt. The extent of thiis belt is about 500 sq. km. The other importance of this Division lies in the availability of intrusive rocks (granite, gneisses, dolorites and epidorites) which are used as building stones.

THE SOIL TYPES :

According to latest soil classification the soil of Keonjhar division belong to two major order viz Alfisol and Vertisol . Climate plays a vital role in soil formation but there are deviations in hilly country where the top soil is subjected to shift as they are immature and have formed no stable profile although the rocks from which they are deived may be exceedingly ancient ! However , in a limited area, possessing more or less uniform climate condition and consisting of hilly country with immature soils, the parent rock still has its influence on the soil and the soil in consequence, retain some of their original lithological characteristics . It is therefore, the soil can roughly be clasified under the rocks from which they are derived.

The granite prodces a moderately sandy or gritty soil in the hilly forest tracts, the clay fraction derived from the decomposition of felspar being

usually flashed down into t he lower ground toenrich the agricultural lands. Where the slopes are gentle or the ground is level, the clay fraction is not removed but is generaly carried down by percolating water to variable depth in the soil leaving a sandy layer on and near the surface . Such soils usually constitute loams or clay loams and are capable of carying good forest crops as may be seen in some of the class 'B' reserved forests . On the other hand, soils derived from granite in hilly country or from rocks with high percentage of quartz are at best capable of supporting inferior forest as in Santoshpur and Atai blocks . The top drying of sal trees is suually associated with gritty soil derived from granite rocks. In the valleys, some of best agricultural soils are derived from granite especially where the basic rock is also present as it is often in the granite area .

The dolerite dykes are inclined to weather the sharp ridges with a scree of rounded boulders. They support little forest except thorny, scrubs and a few Cleistanthus collinus on their slopes. The dolerite and epidiorites, however, weather to a stiff clay and produce very fertile agricultural soils in the valleys. Where a sufficient depth of soil forms on moderate or gentle slopes, it takes the form of a reddish or buff clay which is favoured by mixed forest of species like Dhaura, Asan, Kurum, Karada, etc. Where this red soil is of suficient depth sal may also be present. It is interesting to note that when the soils are formed from these basic rocks in hilly ground they are red and usually contain a high percentage of iron and magnesium while in the vallys they form black clays , rich in organic matter and often containing concentrations of lime in the form of nodules of calcium carbonate . These later soils are often mature and show a definite profile with clear columnar structure due to high proportions of clay .

The shales form a reddish or buff loamy clay soil .Due to the various depth of such soils and good sub-soil drainage with this scope, of availability of soil moisture, some of the good sal forests in the northeast of the district occurs on the soil derived from the shales, generally on the lower slopes of the hills and in valley bottoms . The shales yield good agricultural soil but generally not so good as the granites and basic rocks.Shales with quartz form one of the most inhospitable soil for sal (Karo ,compartment -20). At time, the shales tend to be calcareous and when this is the case sabai grass is maily seen in the area .

The phylities and schists generally give rise to good loamy forest soil in the valleys which usually support mixed forest where the rocks are basic in char acter .

The quartzites and schists are very impervious to weathering as can be seen in Kalapat hills and in the Juang-pirah . Hence their slopes are commonly devoid of soil and lack any vegetation . However, where the soil has been able to accumulate in the valleys, good looms or sandy looms which is favourable to sal is generally met with. Unfortunately such valleys are usually steep and narrow such that the area of good soil available for forest is limited. where sufifient moisture is not available as on slopes, these shallow quartzite soil stand to support dry mixed forest, often with Bheru as the common small tree.

The sand-stones are of very limited extent . They generally yield a very infertile sandy soil which suports a poor and open crop of sal together w itht a variety of dry type species including the grass- *Aristida setacea* . This formation is confined to Nayagarh block .

Calcareous soils are of common occurrence in the form of calcareous clays with kankar nodules. These are generally associated with the granites and give rise to Khaman or eroded ravine lands carrying lilttle vegetation except stunted growth of Bheru, Swam , Gohira, Khair and Palasi grass .

The soils in the ares of East Bonai are derived from the rocks of iron ore series and are mostly red ferrugenous soils. Here, the manganese ore deposits occuring in highly folded shales of iron ore series have been intensely weathered over the years resulting in the formation of lateritic, reddish ferruginous type of soils and chert. The soil cover is fairly deep in the valleys and suppots luxuriant growth of Sal. The depth of soil gradually diminishes along the slope and hill tops are usually covered with thin layer of soil. Accordingly, the quality of the sal deteriorates and mostly quality IV to V type of sal is found near the hill tops. Soil derived from mica schists and quartzite are dry and only suport a poor mixed deciduous forest. Quartzite contain some clay forming ingredient which on washing gets deposited in patches. The granite rocks occuring in the areas of this Division produce some of the best agricultural soil which is distributed over a considerable area of the Brahamani valley. Due to predominance of quartzites and quartz-schists types of rocks in the hill ranges of west Bonai, the soil deived is mostly dry and infertile. However, the valley portions in West Bonai is covered with adequate depth of soil and in such places where there is sufficient moisture, good stands of sal are found. In general, due to poor type of soil, the quality of sal is much poorer in the west Bonai than the areas of East Bonai.

2.5 Climate :

The climate of Kendujhar and Bonai forest division is of the monsoon type and is characterized by three main seasons in the year viz. the hot season from March to June , the rainy season from July to October and the cold season

from November to February . In March, the days warm up a good deal but the nights are usually cool . The monsoon generally arives about the middle of June .It continues upto the middle or end of September and some time up to October. A few light showers are usually experienced in January or early February while in hot weather there may be occasional thunder storms during late April and May. The cold weather is characterized by cool nights and heavy dews. Frost is of rare occurrence except perhaps in the vicinity of Bolani, Guali and Kuanr (Konjipani) and the adjacent forests situated in the valley of the Baitarani and in parts of Koira range or in Kunjar Hills. It is never serve and seldom of long duration and its effects on vegetation is practically negligible.

Rain Fall, Temperature and Humidity

Detailed data on rainfall and temperature in both the divisions have been shown in the Appendices . The mean annual rainfall in the Keonjhar district is 1529.4 mm. The annual rainfall varies from 1150 mm to 2020.5 mm within the district. The mean annual rainfall in the Bonai division is 1412.2 mm. The average no. of rainy days in a year is 83 days in Bonai Division. The humidity is high during Rainy season and low during summer season . The mean minimum temperature during December & January , is around 15° C and the mean maximum temperature during May & June is around 41° C . The detail is given in Appendices.

Monsoon Aberration and consequent climate change in Keonjhar and Bonai forest Division

The aberration in monsoon and drastic and unforeseen climate change has been obeserved through out South east Asia during last one decade. This is due to EL Nino effect. The lethal sun stroke coupled with prolonged dry spell during 1998 in Orissa and Super cyclone during 1999 are some of the great examples of this effect.

The El NINO ("little boy" in Spanish) that pounded the globe between the summers 1997 and 1998 was by some measures the most powerful -and devastating - of this century .Preliminary damage estimates exceed $33 billion worldwide-not to mention the human toll exacted by resulting sunstroke , draughts, floods and wildfires.

EL Nino and La Nina ("Little girl") are part of a seesawing of winds and currents in the equatorial pacific called ENSO (El Nino Southern Oscillation) that appears every two to eight years. Normally , westward blowing trade winds caused by the rotation of the earth and conditions in the Tropics push surface water across the Pacific towards Asia. The warm water piles up along the coasts of Indonesia, Australia and the Philippines, raising sea levels more than 30 centimeters above those on the South America side of the Pacific.

As El Nino builds, the normal east-to-west trade winds wane, like water sloshing in a giant bathtub, the elevated pool of warm water washes from Asian shores back towards South America.

During last seasons cycle surface temperature off the coast of South America soared from a normal high of 23 degrees C to 28 degrees .This vast area of tepid water,about five times the size of India , interacted with the atmosphere, c reating storms and displacing high-altitude winds.

El Nino brought rain that flooded the normally dry coastal areas of Ecuador, Chile and Peru, while droughts struck Australia snd Indonesia.Fires destroyed some two million hectares of forest.

CHAPTER - 3

THE FORESTS

3.1 Composition and condition of the crop :-

The general character of the vegetation of the Keonjhar Division is tropophilous but with a distinct tendency to xerophytic structure in many of its spescies. Sal is the main species in almost all the forest blocks and constitutes more than 80 percent of the growing stock. In certain blocks like Karo and Sidhamath the proportion of sal is still more and as per the enumeration figures it is well above 90 percent . Mixed forests of miscellaneous species containing no sal hardly occur in this Dilvision except in small pockets in blocks like Atai, Baula ,Rebna, Kalapat, Barabank and Santospur R.Fs.The extent of such area is quite negligible and comparatively of no importance., The sal forests vary conspicuously in qualilty depending on the edaphic conditions but it is quite an interesting phenomenon to observe that the forests are generally poor in comparision to the adjoining good quality sal forest in Saranda Division of Bihar, Bonai forests of Sundargarh district and Similipal forests of Mayurbhanja district .

The presence of proportionately high percentage of pole crop in most of the forest blocks of Kendujhor district is a most striking feature and one of the reasons attributed for this unusual condition is the indiscreminate felling of the past and repated interference by human agency as well as other biotic factors. From time immemorial, most of the hill slopes and valleys , of what now constitutes the R.F.,were subjected to the pernicious practiceof ~~siting~~ shifting cultivation, resulting in a colossal waste of timber and incalculable loss of forest litter including organic matter and considerable denudation of the surface soil.Most of the even aged stands of pole crops in the proximity of

Joda, Barbil, parts of Rebena and Kalapat blocks and those in the plain R.Fs. of Telkoi range owe their origin to the past padu . Prior to 1930 the forests of Kendujhar were subjected to most unsatisfactory working . It was leased out to Bengle Timber Treading Co. Ltd. for sleeper operations for a period of 20 years from 1910 . The cream of the forest was removed by the company and the position became worse due to over exploitation during the second World War . What is now left is therefore, a young pole crop intermingled with over matured unsound trees here and there .This resultant crop also suffered interference due to increased development activities, mining operations, heavy revenue marking in annual coupes, clear felling for construction of Irrigation projects and illicit fellings by unscrupulous timber smugglers to meet the increased demand of timber in the coastal districts of undivided Cutack and Balasore .

The main species found in association with sal are Terminalia tomentosa (alata), Terminalia chebula, Terminalia belerica , Terminalia arjuna (along streams),Diospyros melanoxylon, Anogeissus latifolia, Madhuca indica, Syzygium cumini , Pterocarpus marsupium, Schleichera oleosa, Careya arborea, Bridelia retusa, Emblica officinalis , Elaeodendron glaucum, Dillenia pentagyna , Bombax ceiba, Kydia calycina, Adina cordifolia , Mitragyna parvifolia, Lagerstroemia parviflora, Cleistanthus collinus, Ougeinia oojeinensis, Eugenia operculata, Bursera serrata, Lannea coromandelica , Garuga pinnata, Semi-carpus anacardium , Albizia procera (in damp localilties) ,Albizzia odoratissima, Buchanania lanzan and Randia species .

On the dried hills such species as Gardenia latifolia , G. turgida, G. gummifera, Sterculia urens and Cochlospermum gossypium are found while in typical of eroded land and especially indicative of calcarious soil are Soymida febrifuga,

Chloroxylon swietenia and Acacia catechu. In such area sal is stunted and rarely exceeds 10 metre in height .

In the South West of the district in Rebna block, Xylia xylocarpa is of frequent occurrence. Though found else where , it is a rare tree in Kendujhar forest .

The undergrowth consists largely of Wendlandia exserta, Holarrhena antidysenterica, Woodfordia fruitcosa, Indigofera and Desmodium. Flemingia chappar is found in the better sal areas and Nyctanthes arbortristis occurs on the drier hill sides .

The prevalent climbers are Bauhinia vahlii , Millettia auriculta, Spatholobus roxburghii, Butea superba and Combretum decandrum . The last mentioned is found in the moist areas of the Division . Acacia torta and Zizyphus oenoplia are also wide-spread, but not so prevalent as those mentioned above. Many other small vines and creepers are also found .

Common grasses are spear grass (Andropogon contortus) Sabai (Eulaleopsis binnata) and broom grass (Thysanolaena agrostris)

The miscellaneous forest is limited in eaxtent as has already been stated and the only areas worthy of mention being (1) the southern slopes of the hills along the southern boundary of Baula block between Kantipal and Baidakhia and along the Mayurbhanja boundary , (2) t he upper slopes of the hills in Kalapat reserve , (3) the South-Eastern corner of Atai between Sagarpatta and Kanto, the eastern part of Santoshpur and (4) the greater portion of Barabank block . Over 30 opercent of the latter forest consists of miscellaneous species scattered in patches here and there throughout the

reserve the extent of such miscellaneous patches is so small that it does not warrant any special treatment.

Bamboo occurs in small scattered localities occasionally in parts of Rebna and Kalapat R.Fs. and of very poor quality.

Bonai Division is mainly an isolated hilly tract and lies within the tropical zone.It is situated at a fairly good distance from sea and for that reason the vegetation is practically free from its direct influence .The altitude of the area varies from 152 m in plains to 903 m in Koira Plateau.The terrain is rugged and has continuous hill ranges intersparsed with small pockets of level lands and villages .As discussed earlier the climate is characterised by hot dry and prolonged summer season with short and mild winter season. The average rainfall of the area is about 150 cm and most of it is concentrated to monsoon months only .The occurance of frost is rare and is of of localised nature . Climatically, therefore, the entire area comes with in the Northern Tropical Moist Deciduous Zone .But due to the factors like poor moisture retaining capacity of soil ,regular incidence of annual fire and low depth of soil on the hills ,some of the localities like hill tops and exposed slopes contain a poor and dry type of vegetation.The main types of forest embracing the major parts of the Division are the moist peninsular sal, the dry peninsular Sal and the dry mixed deciduous forest .

The prevailing vegetation is of mixed type with Sal as the principal species. It occurs as a dominant species both in moist and dry region of this Division and is also economically most important species .At many places ,both in plain and hilly terrain ,it forms almost pure or nearly pure crop .Though on most of the hills ,it ascends to the top ,but it is at best in the valleys having deep loamy soil.The quality of sal and its associates varies from All India Q II to QV

depending upon type and depth of soil ,aspect ,moisture content of soil , altitude etc.

The forests of Bonai Division are well stocked with trees of varying girth classes except the areas maintained under coppice system which have already been degraded to a great extent and are bearing trees predominantly of smaller girth classes . Natural regeneration in most of the areas is satisfactory but the establishment of seedling is very poor mainly due to occurance of reapeated annual fire and heavy biotic pressure.

The Soil in east Bonai is derived mostly from phyllites shales (near Koira Plateau and Toda villages and from epidiorite and haematite in other areas whereas in west Bonai soil is primarily derived from parent rocks of quartzite and quartz-schist and is relatively dry and infertile in nature .Due to these factors and probably due to some differences in rainfall ,the sal forests of East Bonai and West Bonai are distinctly different from quality ,composition and forest types point of view. Considerable areas of forest in East Bonai especially, in the R.F blocks of Toda , Karo, Sarkunda contain a very fine quality Sal forests corresponding to that available in Saranda forests of Bihar .Here the quality II and quality III are found in the valleys and in the lower slopes of hills having rich and well drained soil while quality IV Sal is found towards the top of hills .Drier and poorer type of Sal forests ,generally of quality IV ,occurs in most of the areas of west Bonai except in some valleys and moist pockets of forest blocks of Kunjar ,Majurdima,Kantamunda and Raipari where Sal Forest conforms to quality III.

In the R. F. blocks of Champajharan,Jharbeda , Mohura ,Dhanghar. Silkuta & Rakshi of East Bonai and R.F. blocks of Rusimath,Gurundia and Dhenkiam of West Bonai ,the forest crop is much inferior in the northern half in

comparision to southern half as trees are not capable of growing to big sizes and unsoundness developed at an early age.

For a long time ,a sizable portion of P.R.F. blocks of Nagaria, Sarkunda, Khajurdihi, Toda, Mendhamaruni, Khandadhar etc. of east Bonai have been under shifting cultivation .This pernicious practice is still continuing and has already caused severe devastation of valuable forests of these areas .All such areas of above P.R.F blocks which were subjected to shifting cultivation in the distant and recent past are either covered with stunted pole size growth of coppice origin or are heavily infested with weeds and grasses.

Heavy felling of trees till recent and repeated annual fires are responsible for more dryness of the tract and for reducing the moisture retention capacity of the soil . These facts coupled with excessive pressure of the grazing, increasing demand of firewood and small timbers in the periphery of villages ,shifting cultivation etc. are the main adverse biotic factors contributing to degradation and depletation of the forest of this division . Due to these adverse factors ,the Sal , which is dominant species in most of the forests of this Division , is gradually losing ground in some of the places and is being slowly replaced by either inferior miscellaneous species or busy growth of weeds which are more Xerophytic in nature.

3.2 Classification of types of Forests :

As per the revised clasification of the forest types of India by Champion and Seth, the forests of Kendujhar division can be classified into the following two major forest types .

(1) Group 3C : Northern tropical Moist Deciduous Forests .

(2) Group 5B : Northern Tropical Dry Deciduous Forests .

Within these two main groups, several variations occur due to edaphic and biotic factors and as such , the forests are further divided into sub-groups as under .

(a) 3C/C2e (iii) Moist peninsular valley sal,

(b) 5B/C1c Dry peninsular sal forests .

(c) 5B/C2Northern dry mixed deciduous forests .

Apart from the above three main sub-group there are some small forest blocks containing Dry sal forests which can be clubbed under 5B/C2 type while some forest blocks can be taken as a separate sub-type like E-4 Lateritic semi-evergreen forests and DSI-Dry deciduous scrub forests. Most of the forest blocks in the plain areas of Champua and Kendujhar Range which are influenced by biotic factors and in the secondary seral stage are clubbed under the latter forest type , while a portion of Rebna forest neat Daitari having predominance of Xylia can be taken up in the former type .

The vast unsurvyed forest area of Bhuyanpira and Juangpira which ecxtends upto Telkoi Tahasil on the West of Kendujhargarh needs a special mention though the area does not include any reserved forest. This beautiful patch of forest has been continuously subjected to shifting cultivation and the aboriginal tribes of the area ruthlessly cut down the trees in the steep hill slopes for Pudu (Jhooming)cultivation every year. In this process most of the valuable species lilke Sal, Asan,, Bija, Sisco and Gambhar have been taken out of the forests and presently the main associates commonly met with the Terminalia tomentosa (alata) Hymenodictyon excelsum, Mitragyna parvifolia, Diospyros melanoxylon and profuse sal rooted waste. The middle storey consists of Cleistanthus collinus , Dalbergia paniculata,Syzygium cumini,

Dillenia pentagyna , Mallotus philippinensis , Careya arborea and Diospyros species. Sporadic bamboo clumps (D.strictus) are also seen with undergrowth of Clerodendron viscosum , Woodfordia fruticosa and climbers like Combretum decandrum Bauhinia vahlii and Butea species .

This extensive forest tract can be included in the 3C/C2e(ii) Moist peninsular low level sal of the classification of forest types of Indian by Champion and Seth .

The approximate area under various forest types are indicated in bracket along with a short description of the forest in the following paragraphs .

(a) 3C/C2e (iii) -Moist peninsular vallyey Sal

This type embraces all the good sal forests of the Division and extends over a large treact of the district. This type is met with mainly in Karo, Sidhamatha, Uliburu, Thakurani, Baitarani, parts of Rebna and Kalapat blocks and all the pain foress of Telkoi Range i.e. Bandhanjhari, Samakoi, Jharbeda, Krushnapur Kodbil, Benamunda and Ranibeda R.Fs.

The geological formation in Renba, Kalapat and Charigarh plains are quite suitable for the growth of sal which therefore is the dominating species in the region. It is generally more aggressive than any of its associates and constitutes 70 to 80% iof the top canopy . There is hardly any middle storey in the crop . The quality of sal varies from All India Quality-II to Quality -IV , the former being confined to valleys while quality -III occurs on the hill slopes of moderate gradient and Quality-IV on the ridges. Quality I sal is almost absent in the forest of Keonjhar Division .

The principal associates of Sal in this type of forest are Terminalia tomentosa (alata),T. belerica , Lagerstroemia parviflora, Anogeissus latifolia ,Syzygium cumini , Amngifera indica , Schleichera oleosa and the like . The most striking

feature in this type of forest is the presence of Ardisia solenacea (Bantala), Desmodium species , Milletia auriculata (climber) , Combretum decandrum and Profuse regenreration of sal , both coppice as well as of seedling origin. There are small patches of Dhaura (Anogeissus latifolia) with other xerophytic miscellaneous species seen in Thakurani and Baitarani blocks but the extent of such areas are so insignificant that they can hardly be carved out from the main type to be kept under a separate forest type .

The best sal forests of the Division are on the plateau arouond Barbil and Joda in Champua range which is an extension of the best sal forest of Singhbhum . The prevalence of pole to middle aged sal in the area indicates the incidence of shifting cultivation in the past and the crop can , therefore , be considered to be of secondary origin but the secondary moist deciduous forests replacing primary forests of the same type is not differentiated, as almost all the primary forests has been practically influenced by human interference .

(b) 5B/C1c-Dry peninsular Sal Forests

This sub-type of forest cover a large tract of the Division . Most part of Atai, Barabank, Santospur , parts of Sidhamath, Rebna and Baula and B -Class R.Fs of Ghatagaon, Pipilia , Poipani,Mashinabilla , Balipokhari, Palaspal,Nalpanga, Balabhadrapur , Basantpur, Kalimati, Sarupat, Patna , Naranapur , Raghunathpur ,Belda and Maidankela are included in this sub-type . Sal is predominent in this type of forests but of poor quality having associates like Terminalia tomentosa (alata), Anogeissus latifolia, Pterocarpus marsupium , Diospyros melanoxylon , Adina cordifolia, T. Chebula, T. belerica, Lagerstoemia parviflora, Buchanania lanzan, Lannea coromondelica and Dalbergia latifolia etc. The common plants are Wendlandia species, Emblica officinalis ,Cassia fistula, Morinda tinctoria, Antidesma species, Randia species, Symplocos

racemosa , Cleistanthus collinus . The common undergrowth In these forests are Flemingia chapper, Indigofera pulchela, Woodfordia fruitlcosa Desmodium species, Strobilanthes species, Ban khjuri (Phoenix acaulis) are frequently met with in parts of Atai, parts of Rebna and in Barbanka blocks . The common climbers in these forests are Bauhinia vahlii , Smilax species while Comretum decandrum occurs in valleys and ravines .

These forests are rarely having more than 20M height in avarage and the canopy is irregular with badly shaped sal trees where hollowness occurs even at a very young age .Though the percentage of sal in these forests is more than 50 with more common associates of Anogeissus latifolia and Buchanania lanzan, the site quality varies from IV to V . The hill slopes generally support a drier type of growth .

(c) 5B/C2- Northern dry mixed deciduous forests.

This type of forests is usually met with in parts of Boula, ,Santospur, Atai Barbanka , Pedipakhari, Naibuga,, Mankadchua, parts of Kalapat, R.F. on steeper hill slopes and southern aspects. These forests usually have poorer vegetation with upper canopy often broken and irregular . The t rees have a relatively short bole ,spreading crown, poor form and height rarely over 15 to 20m . The m ain reasons attributed for such type vegetation is topography , aspect and the shallowness of the soil coupled with hot weather condition and exposure of soil to varied climatic condition. The typical site quality of this type of forest is III / IV to IV and regeneration condition is fair but slow.

Dhaura (Anogeisus latifolia) is often seen in groups on the southern aspects on steep hills. Sal is almost absent in this type of forests while other species seen in common are Asan (Terminalia tomentosa) Bahada (T. belerica), Bija (Pterocarpus marsupium), Kurum (Adina cardifolia), Harida (T.. chebula) , Boswelia serrata, L. parviflora, E. suberosa .While the middle storey consists

of Cleistanthus collinus , Emblica officinalis, Cassia fistula, Gardenia latifiolia and sparingly Salia Bamboo (Dendrocalamus strictus) of very poor quality .

Nyctanthes arbor-tristis (Gangasiuli) however is seen in abundance . The undergrowth is usually rare and consists of shrubs like Phoenix species, Holarrhena with grasses of Aristida setacea, Cymbopogon martinii and climbers like Butea superba .

There is a small pocket in the Boula R.F. called "Pitanau" valley which contains mainly a dry deciduous type of crop. This valley is mostly sheltered and the soil is moist and deep than any where else in the block. Due to favourable site factors like soil texture, drainage and supply of moisture an edaphic climax has developed . The type of crop in the Pitanau valley is therefore, a post climax in the dry deciduous forest, but unfortunately most of the valley is presently under encroachment and the vegetation has since been completely removed to replace with agricultural field and new settlements. Hence there is no necessity of excluding such area from this sub-type to form another sub-type as part the clasification of foresets by Champion and Seth .

(d) E4. Lateritic semi-evergreen forests

This is an edaphic variation and can be classified as E4. Lateritic semi-evergreen forest as per Champion and Seth. The small portions of Rebna and Kalapat R.F. around Daitari along the border of Sukinda and Dhenkanal can be taken under this sub-type. The rainfall in these area is comparatively high and the forests have a moist tendancy because of proximity to sea. The soil is lateritic and the forest is characterized by the presence of Kangada (Xylia xylocarpa) which forms a sizable proportion in the crop composition. The other associates commonly seen in these area are Bridelia retusa, Mangifera indica, Trewia nudiflora, Bursera serrata, Macaranga peltata, Alstonia scholais, Oroxylum indicum, Artocarpus lacoocha, Diospyros montana, Anogeissus

latifolia and Terminalia species. The common undergrowths are Adhatoda vasica, Holarrhena antidysenterica, Murraya, Clerodendron, Broom grass and stray banboo clumps (B. aurundinacea) "Nai-palas" and Atundi are the common climbers.

(e) DIS -Dry deciduous scrub forests

This sub-type is commonly seen throughout the dry deciduous forest zone of India and is the result of various locality factors. The existence of this dry deciduous scrub or low forests is not because of adverse climatic condition but due to continuous mal-treatment to the original dry peninsular sal forests of 5B / C1c sub-type. The present stage of degradation is due to repeated fire, over grazing, irregular and over felling by the nearby villagers and unscrupulous timber smugglers. The soil condition in most of these forest blocks is rather quite good and very much suitable for tree growth. In fact, most of the good agricultural land in the district lie within the vicinity of these forest. Due to uncontrolled grazing, repeated tire, and illicit fellings these forests have been reduced into a scrub jungle with practically no regeneration and developed into ravines which accelerate erosion. In Kendujhar Forest Division, most of the "B' class R.Fs. like Kalikaprasad, Balibandha, Laximiposi, Jyotipur, Ukhanda, Jadipada, Raikella, Tangarani, Nelung, Baranga, Ostapura and new R.Fs like Sarasposi, Kadagotha, Tando, Laxmipost can be cluvbbed into this sub-type. Many of the scrubs are either distasteful to the cattle or thorny and they are usually Holorrhena anti-dysenterica, Dodonaea, Randia, Carissa with species like Karada, Asana, Mahula, Damaghuruda, Kendu and Ghantol etc. Climbers are not common in these forest blocks but in Baranga and Ostapura blocks Atundi is seen in most locality. Sal being the predominant species in these degraded scruby forests, existing in rooted-waste form, needs special protection and proper tending

which ultimately can develop into a beautiful stand of sal to qualify for inclusion under 5B. C1c sub-type.

In the Rebna block between Baripal and Sagadpata (South-East corner) a locally characteristic type of vegetation is usually met with in the eroded area cut by various ravines inside the R.F. The soil is mostly calcareous with lime nodules and easily susceptible to erosion .The most common vegetation seen in these area are Suam or Rohini (Soyamida febrifuga) .Damghurudu (Gardenia latifolia),Dhaura (Anogeissus latifolia),Kendu (Diospyrous melanoxylon) Dhatki (Woodfordia fruticosa) and Telkurum (Ixora parviflora) in addition to sal which is invariably of stunted growth .The ground flora is mostly of Sabaigrass (Ischaemum angustifolium) and Bankhajuri (Phoenix species).

The artificial raised sisoo and casuarina plantation in Hatibandha and Nuniapatna R.F need a special mention .These are the sand casted area on the banks of Baitarani and plantations were raised in the past to arrest the progress of the sand casting and to save the river bank and nearby agricultural land from erosion. The plantations were raised successfully as a primary coloniser and the purpose was served effectively and usefully .With the improvement of the soil ,species like Jamu,Casearia ,Phasi, Neem , Streblusasper and Saccharum naranga (Tandi grass) came up naturally and developed an under storey .Thus primary succession was developed an under storey .Thus primary succession was achieved but of late ,most of the Sisoo trees have been uprooted by cyclones and some of the promising stems have been illicitly removed by timber smugglers .Finding no other solution the rest of the available Sisoo trees were departmentally felled and sold .Both the forest blocks were subsequently been taken up for plantation by the afforesttation Division with species like Acasia, Eucalyptus, Sissoo, etc.

The Forests of Bonai Division can be classified under the following types and subtypes in the lines of classification adopted by Champion and Seth..

1. Sub - group 3C - North Indian Tropical Moist Deciduous Forests.

   Type :3C/C2- Moist peninsular Sal

   Subtype : 3C/C 2e (I) Moist peninsular High Level Sal .

   3C/C2e(ii) Moist peninsular Low level Sal .

   3C/C2e(iii) Moist Peninsular Valley Sal.

2. Sub -group 5 B - Northern Tropical Dry Deciduous Forests.

   (i) Type 5 B/ C1- Dry Sal Bearing Forests

   Subtype 5B/C1(e) Dry Peninsular Sal Forests .

   (ii) Type 5B/C2- Northern Dry Mixed Deciduous Forests.

   (iii) Type 5/E-9.- Dry Bamboo Brake.

3. Sub-group 2 B - Northern Tropical semi Evergreen Forests .

   Type 2B/C3 - Orissa Tropical Semi Evergreen Forests.

4. Terminalia tomentosa Forests 3/1 E.

   Tropical semi-evergreen type of forests corresponding to 2 B/C 3 is found along the banks of perennial streams in East Bonai .Pure patches of Terminalia tomentosa and Anogeissus latifolia are also found in small patches but their extent is very small .

The description of each type and sub-type and its distribution is given below:-

Moist Peninsular Sal - Type 3C/C2e

This type of sal forests occurs in the forest blocks of Toda ,Karo, Sarkunda, Khajuridihi, Kathmal and Lunga of East Bonai and in the Valleys and Pockets of Forest blocks of Raipiri , Kelo ,Kunjar,Majurdiha,Jada,Sulguda and Balai of west Bonai .Though it is at its best in the sheltered valleys having deep sandy loam type of soil with adequate moisture content but it also ascends upto the upper slopes ,ridges and flat top of hills provided soil is drained deep loam.The quality of Sal varies from quality II to Quality IV depending upon the type, depth and texture of soil and availability of moisture .The crop in the East Bonai is often well stocked with even aged pole crops of almost pure Sal.In the past ,a good proportion of present reserved forest area of East Bonai was subjected to shifting cultivation .The distinct features of this practice were the rotation of fields rather than the rotation of crops and slash and burn method .This practice was confined to portions of hill having moderate slope ,flat top of hill and valley portions .Gradually this pernicious practice was abandoned in the said R.F areas . The Secondary growth of even aged crop of almost pure Sal in most of the area of East Bonai is probably the cosequence of this practice.Only Shifting cultivation was however not being practiced extensively in west Bonai and for that reason ,occurance of even aged crop is rare .Under this broad type ,three subtypes ,i.e. the High level Sal ,Low level Sal and Valley Sal are found in the area and their floristics are described separately below.

High Level Sal -Sub type 3C/C2 e(i)

This sub-type is confined to the upper slopes ,ridges and flat tops of hills of the forest blocks of Toda,Lunga , and Khajurdihi.These areas are mostly having crystalline and laterite type of rocks.The quality of Sal is usually IV but the crop is some what open .In these areas ,the patches of mixed forests with predominance of Anogeissus latifolia are also found with in the Sal belts . Regeneration of Sal is fairly well but there is risk of annual repeated fire .The

area is free from frost. The common associates of Sal availbale in the top canopy are Terminalia tomentosa, Anogeissus latifolia, Syzygium cumini, Lagerstroemia parviflora,Pterocarpus marsupium.The middle story contains Careya arborea ,Bahunia purpurea, Bridelia retusa, Ougeinia oogeinensis and Wendlandia excerta. Helecteris isora and Indigofera pulchela are commonly found as undergrowth .The common Species of climber available in the area are Bauhinia vahlii and Smilax zeylanica. Themeda and Imperata are the common grasses. Dendrocalamus does not occur in this subtype.

Low Level Sal - Sub type 3C/C2 e(ii).

This sub type is fairly extensive in the lower and middle slopes of hills of all important forest blocks in the Koira plateau viz. Karo, Sarkunda ,Toda, Khajuridihi, Kathmal .It is also prevalent in the moist valleys lying in the southern portions of west Bonai .The underlying rocks are laterite or crystalline and soil is deep loam or alluvium and supports a magnificent crop of Sal.The quality is in general III .The canopy is usually full and regeneration is good but severe biotic pressure and annual repeated fires are the major constraints for the establishment of seedlings.At many places ,sal occurs almost as a pure crop constituting more than 90% of standing crop .The common associates of sal available in the top canopy are -Terminalia-tomentosa,Pterocarpus marsupium, Gmelina arborea ,Bombax ceiba, Mitragyna parviflora and Bridelia retusa.The middle storey comprises of species like Dillenia pentagyna, Syzygium cumini,Careya arborea and Diospyrus melanoxylon.The ground flora consist of Wood fordia fruiticosa,Flemingia Chappar , Helecteris isora, etc. The common climbers available are Combretum decandrum and Butea superba .Bamboos are absent in the East but West Bonia contains good quality Salia Bamboos.

Valley Sal-Sub type 3C/C2/e(iii)

This sub-type is confined to the moist valleys of forest blocks of Toda ,Sarkunda,Karo and Lunga of East Bonai only .The best Sal forests of this Division are found under this subtype .In some localities sound sal trees having height more than 30m. are also seen .The growth of sal is good attaining quality-II in general and even quality-I in few favourable localities .The density varies from 0.6 to 0.8. The stocking of crop is full and sal constitutes 75 to 90% of the standing crop. The trees are of magnificent height and timber is perfectly sound. Natural regeneration of sal is excellent but establishment of seedling is not satisfactory due to biotic interference and fire hazards .The common associates of sal in the top canopy are -Terminalia tomentosa, Adina cordifolia, Schleichera oleosa, Lagerstroemia parviflora, Alstonia scholaris etc. The lower storey comprises of Mallotus philipinensis Careya arbonea, Pterocarpus marsupium , Caeseria tomentosa and Ficus species. The under growth consist of Croton oblongifolius, Clausena excavata , Murray exotica , Clochidion laneeolarium and Litsea sebifera. The common climbers available are Bauhinea vahlii,Smilax Marcrophylla and Combretum decandrum. Bamboos are absent in the these areas.

Dry Peninsular Sal Forests - Subtype 5B/C1(e)

This sub-type covers the largest area of the Division and is found extensively in all forest blocks of west Bonai and in forest blocks lying in the northern portions of East Bonai, i.e. Rakshi,Dhanghar,Silkuta -I , Silkuta -II , Mohura, Champajharan, Kuradhi and Jharbeda. Forest under this subtype occurs on shallow soils derived usually from crystalline and metamorphic rocks .These types of soil are having poor moisture retention capacity and are not suitable for the development of moist sal forests. Forest of this sub-type occupies entire portions of hills excepting the ridges and steep slopes where there is predominance of mixed miscellaneous forests and the moist valleys and level

plains where forest type corresponds to moist sal (low level) forest. Though the area receives good rainfall which is adequate for the growth of moist sal but the factors like low moist retention capacity of soil ,occurance of repeated annual fires contributing to more and more drier conditions etc. have caused the establishment of this type forests .Sal is the dominant species forming 50 to 79 % of standing crop .The quality of Sal is poor varying from quality -IV to quality V .The quality of sal is generally V over a considerable area,especially on upper slopes and hill summits ,where the soil is quite shallow but in the valleys and lower slopes there are extensive areas of quality-IV.In the areas adjoining to perennial streams where soil is of good depth and water table is not low, small strips of quality -III sal is also available in the West Bonai along the Northern aspect of hills ,particularly in the areas where the ground is flat or having gentle slope .In the poorer localities and in the drier aspects and towards the top of hills,forest under this subtype merges into dry miscellaneous forests . Regeneration of sal is fairly well . Density of crop varies from 0.5 to 0.8.

The common associates of sal in the top canopy are Terminalia tomentosa,Anogeissus latifolia, Pterocarpous marsupium , Diospyrus melanoxylon, Adina cordifolia, Mitragyna parviflora, Madhuca. indica, Bombax ceiba and Sterculia upens. The second storey comprises of Emblica officinalis , Terminalia chebula, Ougenia Oojeinensis, Cleistanthus Collinus, Lannea coromandelica ,Semicarpus anacardium,Buchanania lanzan,Zizyphus xylopyra, Kydicalycina, Symplocus racemosa and Scherebera swietenioides . The under growth consist of Indigofera pulchela ,Flemingia chapper,Phoenix sylvastris and Desmodium species.Common climbers available in the area are - Bauhinia vahlil,Smilax macrophylla,Butea superba, Accasia pinnata and Combretum decandrum.Salia Bamboo (Dendrocalmus strictus) occurs in most of the blocks

of west Bonai .Dungi bamboo (Cephalostachyum pergracil) occurs along nallah banks in the Raipiri ,Kunjar and Majurdima blocks.

Northern Dry Mixed deciduous Forests 5b/C2.

The extent of this type of miscellaneous forest is small and confined to the exposed localities having sourthern aspect. Terrain under this type is having fairly steep slope with rocky out crops . Here , Sal is either absent or confined to pockets of deeper soil .The crop is open with poor and stunted growth of trees .The species predominant under this type are Boswellia serrata,Sterculia urens,Anogeissus latifolia , Diospyrus melanoxylon, Terminalia tomentosa, Adina cardifolia , Pterocarpus marspium, Terminalia Chebula, Dalbergia latifolia, Ougenia oojenensis; Buchanania Lanzan, Syzygium cumini, Cleistanthus collinus, Madhuca indica, Schleichera oleosa etc. The shrub growth consists of Gardenia turgida, Randia dumet, Holarrhena antidysenterica and Nyctanthes arbortrsists, Salia bamboo (Dendrocalmus strictus) occurs in abundance in this type of forest.

Dry Bamboo Breakes 5/E9

Salia Bamboo (Dendrocalamus strictus) is having its luxuriant growth in the upper slopes of hills of the forest blocks of West Bonai, Patches of these bamboos are also found with in the areas of mixed forestsd where soil is too shallow to allow the growth of tree species. In the R,F.block of Mahulpada, Salia bamboo has come up as pure crop, especifically in the past. But the quality of bamboo in these areas is not good as culms are thin and short and clumps are small. The scatterred tree species found are-Boswellia serrata, Stereculia urens, Anogeissus Latifolia, Cochlospermum gossypium, Euphor bia nivelia, Gardenia gummifera etc.

Orissa Tropical Semi-evergreen Forests-type 2B/C3.

The extent of this type of semi-ever green forests is limited and confined to small strips adjoining to the perennial streams in East/Bonai. This type is post climax to the moist deciduous forests and evergreen species have come up due to favourable conditions. Leaflessness in the upper canopy is for a very short period while undergrowth consists entirely of evergreen species. The charcterstic species available are -Terminalia arjuna, Diospyrus embry opteris, Mangifera indica,Alstonia scholaris , Eugenia- operculata , Ficus glomerata , Saraca indica and Messua- ferrea. Michelia champaka is also available but its distribution is rare. Wild banana and wild citrus also occur occasionally. Glochidion Lanceolarium, Litsea sebifera, Crotan oblngifius , Chlerodendron viscosum etc. Constitute as undergrowth. Tree ferns are also available in abundance.

Terminalia tomentosa Forests- type 3/E1.

In small pockets of deep soil and on clay alluvium patches in the forest blocks of Toda and Sarkunda, almost pure Terminalia tomentosa forests have come up. Sal is not able to come up here due to adverse edaphic factors. Other species available in association to Terminalia tomentosa are Terminalia arjuna, Bombax ceiba and Terminalia bellerica.

Anogeisus atifolia Forests.

Small and fairly pure patches of Anogeisus latifolia find their occurance within the areas of moist Sal forests in Toda and Karo forest blocks of East Bonai. Therefore, it is quite necessary to educate the people in this regard and to generate a strong public opinion for immediate protection of valuable forest resources from the hazards of forest fire. At the same time , departmental measures are to be intensified and strengthned by improving fire fighting infrastructure and by providing required man-power and funds.

3.3 Injuries to which the crop is liable :

Fire :

Fire is the greatest danger that the forest of Kendujhar and Bonai Divisions encounters from beginning of March up to the onset of monsoon. It causes irreparable damage to the young regeneration of seedling and coppice growth and affects adversely the saplings, and poles .The top forest soil is baked and all the available organic matter as well as the micro -fauna of the top soil get destroyed which ultimately effects the general health of the forest vegetation .The trees that withstand the fire hazard are normally defective and developed unsoundness at an early age. This is amply visible in the Atai forests. Fire in moist cases, is a result of intentional burning by the miscreants rather than accidental .The fact that grass grows vigorously after an area has been burnt , and the belief among the people that by burning on the hill slopes a considerable portion of the burnt material is carried down to the paddy fields by the first rain , induces them to set fire to the undulating forests on the hills. To facilitate easy collection of Mahua flowers , honey , various edible fruits and roots , Shikar and to get a new flush of good Kendu Leaf in abundance , the villagers encourage forest fire. The forests where mining operation is rampant one can see many huttings and unauthorized settlements and these people also help spreading fire in the best patches of forests.

Drought:

Forests on the higher hill slopes are subjected to drought during the months of April , May and early June. During this period the hills present a very desiccated appearance specially on their South-Easternly aspects. The upper slopes of Kalapat R.F. the hills of Ranibeda, Benamunda, Bandhanjhari and the eroded areas of Rebna R.F. suffer from drought during summer. It is perhaps

due to the shortage of soil moisture in these tracts, the sal trees develop stagheadedness and the general growth of the stand is rather stunted which develops fungal attack in the long run. Damage due to draught is not recorded but as the entire Bonai Division except Koida plateu is subject to extreme heat, so damage to forest vegetatioin may occur in the years of extreme drought, particularly in the west Bonai.

Frost:

Damage due to frost is neither severe nor extensive. Frost occurs near Guali, Kuanr and the upper reaches of Baitarani river occasionally during some year and due to its effect some patches of sal regeneration die but the incidence is neither serious nor alarming. Frost occurs in the Koida plateau and In Kunjar hills of Bonai division but its duration is limited to few days of winter season and it is not severe enough to cause any substantial damage to the forest crop.

Cyclone, Wind and Tornado:

Strong wind coupled with Tornado occurred in the recent past during 1978 and 1981 in the district near Barang R.F. (Deogaon Range) and patna R.F.(Ghatgaon Range) respectively. Damage by Tornado was very severe which not only adversely affected the tree growth and vegetation in the Locality, but destroyed the human habitation causing number of casualities of both human beings and domestic animals.

Normally wind, cyclone and Tornados are not severe nor common every year but it is generally experienced during the months of April, May and June in a mild way. Lots of matured, Semi-matured and over matured trees get uprooted due to such stormy wind and subsequently salvaged by the department. In this process almost all the Sissoo and casuarina plants in Nuniapatna and Hatibandha had been uprooted and disposed off. The effects

of strong wind are also experienced in Baula, Atai, plain forests of Telkoi Range and occasionally in the lower fringes of Rebna and Barbank R.F. Similarly forests of Bonai division suffers from drought particularly in Tamra Range.

The supercyclone during last part of Octo 1999 ravaged through a best part of Rebna R.F. in Daitary, R.Fs. of Telkoi range area, which resulted in uprooting of thousands of trees. Lands slide over extensive part of Boula R.F, Rebna R.F. were evident. There is no report of any severe cyclone or wind storm in Bonai division.

Flood :

Floods which are erratic occur in the Baitarani river as well as its tributaries. Although they hardly cause any serious damage to the forest vegetation, they are responsible for sol-erosion, leaching out of the top soil and bring down a lot of forest litter to the plains. During super cyclone of October 1999 Kusei river was over flooded causing extensive damage in Deogaon range. Many people were became homeless and thousands of trees in various plantations were dainaged/uprooted and subsequently looted away by cyclone affected pepole. Flood also came in all rivers and nalas of Keonjhar division during 1999.

Some times flood occurs in Brahmani river and its tributaries in Bonai division during peak off monsoon season but its intensity is not severe.

Climbers :

Climbers cause serious damage in the sal forests of Kolopat, Rebena and Boula R.Fs. and RFs of Bonai division.They are quite common in moist and damp localities. Most of the podu ravaged areas of past are infested with climbers. The commonly seen climbers in these forests are Bahunia vahlii, Butea

superba, Millettiaa auriculata and Combretum decandrum, the last named climber is very commonly seen in the South and South East of the district. Climbers are in abundance in all parts of Bonai division but their incidence is much heavier in the moist regions of East Bonai. Spatholobus roxburgii and Similax marcrophylla are found in moist valleys and cause severe damage to the Sal crop.

Fungi :

The fungi cause mortality in trees on a smaller scale throughout the district in almost all forest bolcks. The notoriously known fungi are Ganoderma lucidum, Polyporous shorea and Fomes tricolour. The Sisoo plantation which is practically no more now was said to have been attacked by Ganoderma lucidum as confirmed by the forest Mycologist F.R.I. Dehra Dun who had recommended the removal of diseased trees to arrest its spreading. The other two fungi which affect sal are saprophytic and cause rapid decay and dissolution of the fallen trees, branches and logs.

Dry rot is prevalent in the forests of East Bonai. However, in most cases the rot is confined to only a few feet from the ground and damage caused by it is limited.

Insects :

Detail information is not available regarding insect pests and there are no reports of serious damage due to insects in the forest of Kendujhar district. However the common sal heart wood borer (Hoplocerambyx spinicornis) is seen in the forests which mainly attacks the felled unbarked logs and sickly sal trees.

Defoliation of sal trees as a result of larvae of a moth is usually noticed during the summer months. Sal seeds are also often attacked by scolytid beetles.

As per the records of previous plan, wide spread mortality took place in the forests of Khajurdihi and Toda blocks of Bonai division in 1925 due to severe insect attack but the attack was successfully controlled through extensive control measures taken up during the successive years.

Wild animals :

Excepting Elephants, Bears, Wildboars and sparingly some deers and Sambers, Wild life in the forests of Kendujhar and Bonai divisions are quite rare. All most whole of Keonjhar and Bonai Division is within elephanta habitat zone II . Occasional grazing of the young regenerations by Bison was noticed in the Kalapat forests bordering Dhenkanal distrtict. In one part Elephants cause considerable damage in Rebena R.F. near Daitari, Kalapat R.F. on the border of Dhenkanal and in Karo and Sidhamath R.F. adjoining Bonai forests of Sundergarh and Saranda forests of Bihar. Elephants strip off the barks of many good Sal trees in Baula, Rebna, Kalapat and Karo R.Fs. The incidence of elephants in Atai R.F. is also quite common. Browsing animals like Samber, Deer and barking deer cause some amount of damage to the young regeneration in the hills and in coppice coupes. Recently a herd consisting of fifteen members of elephants have turned into crop raiders and house raiders to feed upon stored paddy grains within the Sadar range .They are mainly moving in and around Belda R.F., Maidankel R.F., Jadipada R.F., Naranpur R.F. , Raghunathpur R.F, Sidhamatha D.P.F. ,Sanaghagara D.P.F. ,Nayagarh RF , Sidhamatha RF , Baitarani RF etc. of Keonjhar and B.J.P. Range . Man and elephant conflict is at its all time high at present. All the mining leasees in Keonjhar Division are within elephant habitat zone.

Domestic animals:-

Severe damage is being caused to the forest crop due to grazing of domestic animals. Like human population, the population of the domestic animals has also increased over the years causing ever increasing pressure on the forests of this Division. It is observed that large herds of cattle, buffalow, goats and sheep are kept by the villagers for their various domestic requirements . The villagers spend negligible amount in the maintence of their domestic animals as these are let loose for grazing and browsing purpose mainly in the forest areas. This uncontrolled grazing and browsing in the forest areas is causing severe damage to the forest vegetation. Excessive grazing is also one of the factors affecting adversely the natural regeneration and establishment of seedlings of Sal and other species. In some of the forest areas adjacent to the human habitations, uncontrolled and excessive grazing has led to the replacement of mesophytic flora by relatively more xerophytic dry and thorny types of vegetation which can withstand continuous grazing. In some places, it has exposed forest floor and thus made prone to soil erosion. The incidence of heavy grazing is more in the forest areas of Banki, Bonai and Koira Range while it is somewhat less in other two Ranges. Sincere and vigorous efforts should be initiated at the departmental level for controling and regulating the grazing in accordance with the carrying capacity of forests and at the same time people are to be encouraged and educated for raising fodder in their agricultural fields and for replacing large unproductive herds by a few productive cattles. Efforts should be made to popularise the stall feeding of the cattle among the villagers.

CHAPTER-4

MINING VIS- A-VIS WILDLIFE

Mining is synonym with the industrial growth and prosperity of a nation. Mining and forest are inseparable as both are indispensable for the progress and clean environment of a nation. Keonjhar and Bonai division together represent one of the super rich mineralized region of India .Out of this Koira -Joda -Barbil sector boast of one of the most significant reserve of quality iron and manganese ore. It is a matter of strange coincidence that all most all the mineral concentrations are located in better quality forest areas. Hence exploitation of minerals compels us to distrub the pristine forests.

How ever mining activity is possible with compatible wilderness zone management by least disturbance of forest growth.

At the time of preparation of this comprehensive wild life management plan there are 90 working mines operating within Keonjhar division comprising of 30575.6593 ha lease hold area and 95 non working mines (including P.Ls) comprising of 14570.4498 ha lease hold area. Similarly in Bonai division there are 58 working mines comprising of 9933.6855 ha lease hold area and 70 non working mines (including PLs) Comprising of 13572.2269 ha lease hold area. Combining all MLs & PLs. And both working and non-working mines in Keonjhar and Bonai division the total number of mining leases (including PLs) comes to 68652.0215 ha lease hold area. Despite these large scales mining operations in this entire region still a significant wild life population thrives in this Deccan Peninsula Biogeographic zone. This region boast of a viable central elephant population in isolated fragmented habitat. Out of nine broad land use categories viz. Forest, Water bodies, River, Agriculture, Land with or without scrub, mines / mining related activities,

settlements, manganese / iron cores and industries identified; the forest becomes the most significant land use in Koira- Champua sector.

There are two rare plant species viz. Michelia champaca and Ixora undulata have been recorded from Kundi and Meghatbur area of the Soranda Division respectively, close to the interstate boundary between Bihar and Orissa on the border of Keonjhar Division. Despite the intensive mining activities especially in the contiguous tract of Champua range of Keonjhar Division and Koira range of Bonai division, not much significant adverse impact on the flora and fauna has been observed. Wild elephant are still roaming even in the active mining zone in this region due to the presence of better quality forests viz. Sidhamatha RF., Baitarani RF, Ulibur RF., Thakurani RF, Karo RF of Champua Range and Toda RF., Khajuridihi RF., Kathimal RF., Sarkunda RF. of Koira Range.

Due to strict enforcement of Forest (Conservation) Act, illicit felling around the buffer zone of active mines has been considerably reduced. Whenever some illicit felling is noticed the responsibility is fixed on the concerned mine owners for which the mine owners have started taking interest in conservation of forest and wildlife.

Endangered and threatened species of Keonjhar and Bonai Division:

Schedule I

Mammals : Indian Pangolin, Manis crassicaudata (Gray)

Wolf, Canis lupus Linnaeus Ratel, Mellivora capensis (Schreber)

Sloth Bear, Melursus ursinus (Shaw)

Leopard Cat, Felis benga lensis(Kerr) Tiger, Panthera tigris (Linnaeus)

Leopard Cat, Felis benga lensis(Kerr) Tiger, Panthera tigris (Linnaeus)

Elephant, Elephus maximus (Linnaeus)

Mouse-Deer, Tragulus meminna (Erxlben) Four-horned Antelope, Tetraceros quadricornis (Blainville) Gaur, bos gaurus (Smith).

Birds : Redheaded Marlin, Falco chicquera (Daudin) Shahin Falcon, Falco peregrinus (Sundeva) 11

Pea Fowl, Pavo cristatus Linneaeus Indian Pied Hornbill, Anthroceros malabaricus (Gmelin)

Reptile : Yellow Monitor, Varanus flavescens (Gray)

Indian Python, Python molurus (Linnaeus)

Schedul II

Mammals : Rhesus Macaque, Macaca mulatta (Zimmermann)

Hanuman Langur, Presbytis entellus (Dufresne)

Aslatic Jackal, Canis aureus Linnaeus

Bengal Fox, Vulpes bengalensis (Shaw) Indian Wild Dog, Cuon alpinus (Pallas)

Small Indian Civet, Viverricula indica (Desmarest)

Common Palm Civet, Paradoxurus hermaphroditus (Pallas)

Jungle Cat, Felis chaus Guldenstaedt

Common Giant Flying Squirrel, Petaurista petaurista (Pallas)

Indian Giant Squirrel, Ratufa indica (Erxleben).

Reptile : Common Indian Monitor, Varanus bengalensis(Dandin)

Indian Cobra, Naja naja (Linnaeus) King Cobra,Ophiophagus hannah (Cantor)

Russell's Viper, Vipera russelli (shaw)

Rat snake, Ptyas mucosus (Linnaeus)

Checkered Kell Back, Xenochrophis Discator (Schneider).

Endemic species

There is no endemic species of animals in the study area.

CHAPTER - 5

PAST SYSTEM OF MANAGEMENT

5.1 General History of the Forests :-

Prior to 1892 there appears to be no record of systematic forest conservation and management of any kind for the reserved forests included in this plan. During 1896, however, the than Maharaja of Kendujhar introduced certain rules to regulate the disposal of forest produce. These took effect from 1st April in lower Kendujhar and from a latter date in upper Kendujhar. Prior to this, it transpired that the tenants of Kendujhar used to get their requirements free from any part of the ex-state provided they exercise their rights within a radius of four miles from their homes in case of large villages and two miles in case of smaller hamlets. Permission was necessary for taking forest produce from forests situated at a greater distance.

The Bhuyans and Juangs are people of very primitive instinct, with crave for hunting and unfettered freedom. They used to "Jhum" (Shifting cultivation) as a traditional custom. They were however, not restricted in respect of the amount of land they might jhum, although some nominal restriction as to the area within the limits of which they were entitled to do so did exist.

The first agency Forest Officer Mr. A. N. Grive foresaw the evil effects of shifting cultivation and deforestation during 1911 and pleaded for creation of some reserved forests. According to his advice, reservation of a number of forest blocks was taken up. But in the hill tract, constituting the settlements of Bhuyan and Juang, no forest law or rules of the Ex-Darbar administration could be enforced with the result that no forest area in these pirhs could be brought under reservation even up till now. Attempts at various times to win

over the Bhuyans and Juangs and prevent them from the pernicious habit of shifting cultivation totally failed during all these years. Demarcation of some forest blocks to bring them under reservation also proved anfractuous and the tribes continue shifting cultivation on the hill slopes, destroying the valuable sal forests in the remote parts of the region.

The Baula forests in the Anandapur Sub-Division was worked under a "Ghati" system whereby a contractor purchased the right every year to sell forest produce from a certain area of the forest. Purchasers from out-side use to collect necessary permits from this contractor and then they cut and remove the timber from the forests without any let or hindrance. During 1893-98 there had been considerable development in the coastal tract and development of East Coast railway lines had been taken up. Most of the sleepers required for the purpose seam to have been removed from these forests and the Baula forests were very badly handled though no records are available.

Early History :

The history of the forest administration and management of Bonai Division prior to 1886 is obscure. During that time forests were considered as the abode of aboriginal tribes and wild animal. The aboriginal tribes consisting of Bhuyans, Kolhas etc. inhabiting the dense jungle tract were the sole monarch of the forest and were for all purposes dependant upon the forests. Their main profession was shifting cultivation locally known as podu cultivation. The main feature of this practice was rotation of fields rather than the rotation of crops. Under this practice, patches of forest on hills having moderate slopes used to be cleared by slash and burn method and afterwards without ploughing the ground seeds of pulses, maize, rice etc. used to be sown. After cultivating for two to three years, such cleared patches used to be abandoned by the tribals due to loss of fertility and afterwards they used to switch over

to new areas. Tribals used to return to old cleared patches after a gap of 20 to 30 years for re-cultivation purpose. The even aged crop in many of the reserved forest of East Bonai owe their origin to this old shifting cultivation practice. This pernicious practice is still in vogue among few tribals but confined to few D.P.Fs and R.Fs primarily of East Bonai.

Forest conservancy was started in Keonjhar District by 1892, certain rules were framed by 1896 and the staff were entertained in 1898. This provided them for systematic management. This princely state came under the direct management of the British Govt. in 1907 and the reservation of forest blocks was taken up with zeal and sincerity thereafter. The work started with Atai block, made slow progress up to 1911, when an Agency forest officer was appointed and the field work gained momentum to be completed by 1924.

The selection and demarcation of forest blocks was taken up at the close of the settlement operation in 1915 and completed not long afterwards. Little work seems to have been done in these forests prior to opening of the sleeper operations by the Bengal Timber Trading Co. in 1910. This lease was primarily taken up by B. Baroooh in 1906 but lessee does not appear to have done any work and delegated his rights to the B.T.T. Co. The lease did not contain any clause relating to the proper management of the forests or economic conversion of timber. The exploitable girth was 5' but there was no limit set to the number or trees to be felled in any one year or during the period of the contract for 20 years. The work went on in full swing with little regard to the capacity of the forests to sustain that level of felling. The result of these uncontrolled felling. The result of these uncontrolled felling was that the forests were stripped of their large sized trees resulting in pole crops in many places. The deficit of mature trees noticed now is mainly due to revenue fellings during the time of the B.T.T. Co. In certain cases where sal trees

without any subsequent tending operation to favour regeneration of sal over other species has reduced the sal forests into more or less a pure miscellaneous forest in pockets of Rebna blocks.

The first systematic working plan which was written by Dr. Mooney, came into force from 1st April 1930 on the expiry of the lease of the B.T.T. Co. Prior to this plan there had been practically no attempt for systematic management of these forests nor any control over the fellings in the reserved forests, although the protected forests had been worked under a system of coppice with standard since 1915.

First attempt of forest conservancy :

During the period 1890-92, first effort for forest management was initiated by Raja Indra Dev Dayanidhi. During that time, the construction work for Calcutta-Nagpur Railway line was in progress and heavy felling was required.

5.2 Review of the past systems of management and their result :-

Dr. Mooney's plan :-

The Reserved forests of Keonjhar Division were allotted to three working circles namely (1) High Forests Working Circle (2) The Coppice Working Circle (3) The Miscellaneous Working Circle which was operative from 1930 - 1960 but was actually followed till Lal's plan came into force during 1945-46.

Mr. Lal's Plan :-

Since 1940 extra fellings were made to meet the urgent demand of the Defence Department and the cream of the forest was removed from the accessible area of Karo, Sidhamatha, Thakurani and Uliburu blocks owing to their proximity to the Jamda Railway Station. The post war period witnessed a

remarkable change in the forest policy of the Ex-state. Steps were taken to take up Afforestation projects in Hatibandha and Nuniapatna blocks of Anandpur Range, after the devastating flood in the river Baitarani during 1927. The forests of the ex-state were visited by Sri G. H. Howard, the then Inspector General of Forests to the Government of India for the first time during 1941, who gave some interesting and valuable suggestions for the better management of the forests in his inspection note to introduce Conversion to Uniform System in the better quality sal forests having easy accessibility and profuse regeneration. He also pleaded for gradual abolition of the practical of shifting cultivation.

The revised working plans by Mr. A. B. Lal which came in force form 1945-46 contained the following seven working Circles.

1) Sal Conversion Working Circle.
2) Selection Working Circle.
3) Selection Coppice Working Circle.
4) Coppice Working Circle.
5) Protection Working Circle.
6) Nistar Working Circle and
7) Plantation Working Circle.

Mr. Prasad' Plan :-

The plan prepared by Mr. A. B. Lal for the period of 1945-46 to 1964-65 was taken up for revision during 1964 by Mr. G.G. Das and subsequently taken up by Mr. P.K. Pani, who would have completed the revision but for this deputation to United Kingdom for training in Forestry during September, 1967. Mr. Pani, however, completed the part-I of the revised plan and formulated prescriptions under various working circles. Mr. U. N. Sarangi, I.F.S.

succeeded Mr. Pant and took up the assignment. Mr. Sarangi made some major changes while drafting the part-II of the revised plan which was prepared for the period 1969-70 to 1988-89.

The salient features of Mr. Sarangi's plan are as below :-

(1) Under Sal Conversion Working Circle he suggested three felling series with the object of managing the best sal area, capable of producing high grade, large sized timber. A uniform system was prescribed as sal grows best under this system.

(2) Six felling series were carved out on the Selection Working Circle comprising of whole of Kalapat and part of Rebna with provisions for enrichment plantations in miscellaneous areas.

(3) Improvement Working Circle was suggested to work out the unworked areas in Telkoi Range which was under protection working circle in Mr. Lal's plan. The main objective of this working circle is to boost up the hygienic condition of the forest and removal of matured trees.

(4) The Selection Coppices Working Circle of the last plan was dropped. All the forests within easy reach from the railheads and favourable markets were included under coppice working circle to meet the increasing demands for small timber, poles and fuel wood.

(5) The Soil Conservation Working Circle was suggested by Mr. Sarangi to tackle the active soil erosion problem in Rebna block. In addition, provisions were made in all working circle to rehabilitate the eroded patches.

(6) A new working circle named as Nistar working circle was created comprising of all "S" class reserved forests to cater to the needs of cess paying tenants with the provision to improve the stocking on these depleted forests by artificial regeneration and enrichment planting.

(7) A Plantation Working Circle was formed to exploit and replant the areas in Hatibandha and Nuniapatna blocks, Plantation on forest blocks like Salapada and Jotipur etc. was advocated.

(8) Because of various mining activities within the reserved forest areas a separate Mining Working Circle was formed covering large mining lease-hold areas with special treatment.

(9) A separate chapter on the development of Bhuyan Pirh and Juanga Pirh which is subjected to intense shifting cultivation was written with definite suggestions for reservation and improvement of socio-economic condition of Bhuyans and Juangs.

(10) A chapter on Wild Life Management and Preservation was drafted with suggestions and prescriptions for improvement of Wild Life population and preservation of games which had reached the state of virtual extinction in the division.

(11) A chapter on Watershed Management was also included and a separate chapter dealing with the requirement of cess paying tenants was also included.

Although, Mr. Sarangi's plan was implemented from 1969-70 the same was subsequently redrafted by Mr. Prasad, who made certain changes in Selection and Coppices Working Circle. As such Mr. Sarangi's plan has not been approved and printed. Mr. Prasad was entrusted with rewriting the plan vide C.C. F.'s memo No. 15829 dt. 03.08.1970. In Prasad's plan eight working circles were constituted, namely :-

(1) Sal Conservation Working Circle.
(2) The Selection Working Circle.
(3) The Improvement Working Circle.
(4) The Coppice Working Circle.

(5) The Nistar Working Circle.

(6) The Plantation Working Circle.

(7) The Mining Working Circle.

(8) The Soil Conservation Working Circle.

B.C. Mohapatra 's Plan: 1984-85 to 1993-94

The revised working plans for Reserved forest of Keonjhar Division was prepared by Sri B.C. Mohapatra I.F.S. for the duration 1984-85 to 1993-94 which was subsequently extended from time to time upto 2003-2004 vide no. 13-RCMP/05 dt.1-11-93 of C.C.F.(Central) Govt. India. He had recommended for constitution of the following five working circles.

1) Sal Conversation working circle
2) Selection working circle
3) Coppice working circle
4) Plantation working circle
5) Rehabilitation working circle

Sri Mohapatra had proposed specific recommendation for management of wildlife and their habitat in scientific manner as detailed below.

Proposed Management of Wildlife habitat of Keonjhar Division:

In wild life management normally habitat and the population are managed together as integral parts of single management plan but in practice it is impossible to separate the two. Animals ultimately depend on habitat. Learning habitat requirement for each species of animals is considered the most important type of wild life research today. It is an equally important pre- requisite for all forms of utilization, or to save a species. In general, habitat degradation results form overgrazing by wild or domestic animals, excess openings, burning or misguided provisions of water points.

Where habitat has been badly depleted, management measures may seek to reconstitute it. However, the ease with which this can be done will depend mainly on the primary productivity of the area and the stage of depletion and reconstitution can take many forms and proceed at vastly varying rates. Most of the areas in the division have higher dependable rainfall resulting in higher primary productivity. It can concluded that where primary productivity is high and the habitat not too badly altered, simple protection can quickly restore the original environment and multiply animal population. Conversely where the habitat gas been badly altered and where primary productivity is low, simple protection is not enough to make an appreciable or rapid improvement.

While framing the silvicultural prescriptions under various working circles due regard has been given to the requirement of proper habitat, cover forage etc. For the wild life. However, following are a few suggestions, which may help, in quick multiplication and enrichment of the fauna in the division.

(a) Large-scale plantations inside the remote parts of the forests should be avoided but plantation on regarded areas and on the periphery of the R.Fs. can be taken up. Ploughing of open eroded and low lands inside the R.F. and sowing of palatable grass seeds may be encouraged which will attract the herbivorous. Least possible interference in the habitat, which affords food, Water and shelter to the wild life, should be done. No fellings should be carried out around waterholes and perennial nala banks, which provide protection to various carnivorous animals.

(b) Uncontrolled grazing by domestic animals and camping by herds of buffaloes inside the R.Fs. for more than 6 months interferes in the habitats and habitats of the wild animals. Due to rights and concessions provided under various Government orders and the prevailing Ex-state

rules, which are still operative in the division, the grazing of domestic cattle inside the reserved forests cannot be stopped altogether. It needs to be regulated in such a way that the known wild life habitats are excluded. If need arises, the rules in force should be modified for achieving the aim. However grazing of cattle particularly Goats & Sheep inside the sanctuary area should be strictly prohiblted.

(c) In the Boula R.F., which has been included in the Hadgarh sanctuary, it is necessary to plan out planting of succulent grasses in valleys low lands and suitable sites at regular intervals. The encroachments of Ratanmara, Dalki, Jhunposi, Sakatpalia and new Sajanapal should be evicted to avoid interference with the wild life of the sanctuary and all the encroached area should be stocked up with succulent grass after thorough ploughing of land and proper soil working. There should be rigid protection against grazing by domestic cattle and steps should be taken to reduce the incidence of unwanted grasses in the area. A minimum of 20 hectare of land in a particular compartment of Baula R.F. should be taken up for plantation of succulent grasses every year so that all compartments can be covered up with plantation of small grass lands by the end of the plan period.

(d) Salt licks should be provided near the perennial water sources on the periphery of the Salandi reservoir and in the vicinity of the grasslands. Four to five such salt licks should be located in each fodder grass patch. Though there is enough water in the Hadagarh reservoir, it is necessary to create artificial reservoirs and bunds on river Pitanau, Badanala and other streamlets flowing within Baula R.F. to store water for use by the wild animals during the hottest months. Excavation of game ponds and renovation of ponds and waterholes inside the R.F. should be taken up on a phased manner. Bird houses and seed boxes should be hung on trees along water courses to attract bird population

in Baula R.F. particularly on the small hillocks and uplands within the reservoir and in the peripheral forests.

(e) There should be no complete burning of grasses in the forest but controlled burning in strips before February should be allowed to boost-up the regeneration of grass. The fire lines should be cleared and dumped in such a way so that it can facilitate the jungle foul and other birds to build their nests for safe breeding.

(f) Disturbance due to various forestry operation, movement of heavy vehicles, interference by human being causing fire, explosion and blasting for mining, netting and trapping, grazing by domestic animals and various developmental projects also causes serious dislocation in smooth management of the wild life and improvement of the habitats. It is necessary that all the above acts should be meticulously restricted in the Baula R.F. in the best interest of the wild life of the division.

(g) To prevent poaching, adequately staffed check gates should be erected at the following places with VHF set and firearms.

(h) Kathakata on Kathakata - Pitanau, Dalki forest road.

(i) Hadagarh to watch over the reservoir and portions up to Pitanau-Dalki & Jhanposi.

(j) Dalki to watch over the reservoir and boarders of Mayurbhanja district.

(k) Syadmulia new settlement near FACOR establishment to guard against poaching. In any case, only providing adequate protection to the wild life may not be enough to enrich the area.

In fact there are two main aspects of the fauna resources and the wild life administration, one is concerned with conservation and the other with control. Conservation implies the preservation in perpetuity of reasonable quantity animals on account of the economic, educational, scientific recreational and

aesthetic value. Control implies the need to keep the population of fauna within the reasonable bunds. Thus species whose occurrence has become low, deserve protection, even by introduction form breeding centres established for this purpose and to restock the area during a short span of time. On the other hand animals found in excessive number be cropped. Possibility may be explored to enrich the wild life by introducing new but indigenous species, rare species and species which are deficient in certain areas.

Past System of Management and their Results :

Prior to the year 1911, the forest of Bonai State was not subjected to any systematic form of management. Timber Trading Companies were given long term lease with no stipulation for systematic felling or regulation of the yield. Felling, extraction and conversion operations for railway sleepers etc. used to be carried out in very unsystematic and haphazard manner. Also, no steps were taken for safeguarding the yield and for the improvement of forests. However, with the visit of Agency Forest Officer in 1911 and as per his suggestions, some sort of regulatory control in the working of forests was introduced. The Agency Forest Officer inspected the forests either annually or at periodical intervals and suggested measures to improve the forest management and administration and the same were gradually implemented. The management of forest in a systematic direction began with the preparation of first working plan in 1935.

Babu J. N. Ghosh plan (1935 - 36 to 1952-53)

This was the first working plan and was of preliminary nature and simple as to its prescription. Under this plan following four working circles were constituted.

1. The High Forest Working Circle.

2. The Dandapat Working Circle.
3. The Coppice Working Circle.
4. The Bamboo Working Circle.

S. N. Das plan (1953 - 54 to 1972 - 73)

Revised working plan for the duration of 1953 - 54 to 1972 - 73 was prepared by Sri S. N. Das, IFS and was brought into force from the year 1953 -54. Under this working plan following six working circles were constituted: -

1. Conversion Working Circle.
2. Selection Working Circle.
3. Selection Coppice Working Circle.
4. Coppice Working Circle.
5. Bamboo Working Circle.
6. Protection Working Circle.

G.G. Das plan (1973-74 to 1992 - 93)

Sri G. G. Das, IFS, prepared-74 to 1992 - 93 the revised working plan for the duration of 1973 -. This plan was further extended up to 1995-96 vide Govt. letter No. 24786/F & E dated 26.11.93. It has been further extended up to 30.06.98 vide No. 18-F C-W P-OS-Bonai dated 13.12.97 of the C. C. F (Central) Bhubaneswar. Also, some of the prescriptions of the plan were amended as per the provisions of the Forest Conservation Act 1980 vide PCCF of Orissa memo No. 26961 (4) dated, 28.12.90. Under this plan following six working circles were constituted :-

1. The Sal Conservation Working Circle.
2. The Selection Working Circle.
3. The Coppice Working Circle.

4. The Plantations Working Circle.

5. The Bamboo Working Circle.

6. The Protection Working Circle.

S.Panth's Plan 1997-98 to 2016-17

Revised working plan for RF and PRF of Bonai Forest Division has been prepared by Sri Suresh Panth IFS .This plan has been prepared for the duration 1997-98 to 2016-17.He has discussed some relevant point with respect to migration of elephants besides giving prescription on different working circles. He has prescribed the following working circles

1. Selection working circle
2. Rehabilitation cum plantation working Circle
3. Bamboo (Overlapping) working circle
4. Protection working circle
5. Wild life (overlapping) working circle
6. NTFP (Overlapping) working circle
7. Miscellaneous (Overlapping) working circle

In wildlife (overlapping) working circle he has prescribed some scintific management suggestions, which are also relevant in the prescriptions of comprehensive wildlife management plan for mining belts of Keonjhar and Bonai divisions.The same are described below :

HABITATS OF IMPORTANT WILD SPECIES.

Tiger :

It prefers closely wooded habitat free from biotic disturbance and having fair prey density with plenty of water. Such sheltered pockets where adequate protection is available are concentrated in the R.F. blocks - Lunga, Silkufa-I, Silkufa-II, Raipirl, Sarkunda, and Khandadhar. The adult tigeris solitary and

strongly territorial when inhabiting better habitat with fair prey density. The territory of male in such situation encompasses smaller territory of two or more females.

Leopard :

Though, the leopard prefers closely wooded habitat near human habitation, however, due to better adaptability, its habitat varies from dense forests and open jungle to scrubby jungle. Such pockets where adequate protection is available are concentrated in the R.F. blocks of Lunga, Champajhar north, Champajharan South, Silkuta-I, Silkuta-II, Dhanghar, Raipiri, Balai, Kunjar, Kantamunda, Kelo, Majurdima, Jarda, Suluguda, Balai, Sirigida, Toda, Khajurdihi, Sarkunda, Kusumdihi, Dhenkiam, Rusimath & Gurundia.

Elephant :

It prefers moist deciduous forests having food growth of bamboos with perennial source of water. It feeds on a variety of gorage like grasses, reeds, bamboo, leaf, twing, bark, softwood and fruits. During the dry season elephant prefers dense forests, but they come out during the rains. It moves in herds and its habitat is primarily confined to the R.F. blocks - Lunga, Silkuta-I, Silkuta-II, Raipiri, Kunjar, Kantamunda, Kelo, Majurdima, Jarda, Suluguda, Balai, Sirigida, Toda, Sarkunda, Kusumdihi, Dhenkiam & Rusimath.

Bison :

It prefers hilly areas and higher slopes having good under growth. Though its food mainly comprises of grass and browse, however, it also prefers the bark of certain trees. During the early mansoon, it moves around the valley and

feeds on the new flush of grasses. In summer when the leaf fodder is scarce, it readily feeds on coarse and dry grasses. It is gregarious and sociable animal and moves in large herds. It is highly susceptible to rinder post and food and mouth disease. In this division it is only confined to a few forest block adjoining to Soranda forest of Bihar like Silkuta -I R.F. , Silikuta -II R.F. and Toda R.F.

Nilgai :

It occurs in the dry deciduous open forests. It avoids dense forests and prefers thin jungle giving undulating terrain with growth of grass. It grazes as well as browses, feeding on the leaves, flowers and fruits. It will adopt the dry conditions and can withstand long interval between visit to water points. It is mainly found in the R.F. blocks - Gurundia, Rusimath, and Kusumdihi.

Deer :

Deer including Sambar, Cheetal, Barking deer are found through out the division in almost all the forest blocks except small forest blocks around Bonaigarh. The Sambar and Barking deer are solitary while the Cheetal are found in groups. The Sambar favours forest area and is often associated with Barking deer while the Cheetal favours open forests of deciduous nature and open grassy areas, Deer prefers fruits of Anla, Harida, Bahada, Kanteikoli, Rai, Kumbhi, Bhalia etc. which are adequately available in the Division. The barking deer are significant in number while Sambar and Cheetal are very less in population.

The following wild fauna, which are enlisted as endangered as per the Schedule - I of the Wild Life (Protection) Act 1972 find their presence in this division.

ENDANGERED SPECIES		
TYPE	ENGLISH NAME	ZOOLIGICAL NAME
Herbivores	Indian elephant	Elephant Maximus
	Indian bison	Bos Gaurus
Insectivores	Pangolin	Manis Crassicaudata
Carnivores	Tiger	Panthera tigris
	Leopard	Panthera pardus
	Sloth Bear	Melursus urcinus
	Indian Wolf	Canis lupus
	Wild Dog	Cuon alpinus
Birds	Horn Bill	Anthracoceros malabaricus
	Peafowl	Pavo cristatus
	Red Spurfowl	Galeoperdix spadicea
Reptiles	Indian Python	Python molurus

Disturbance and Shrinkage of Wildlife habitat :

In the Banai Forest Division over the years there has been rapid shrinkage of wilderness. Unabateted poaching of wild animals, Pernicious practices of shifting cultivation and Akhand Shikar, intentional setting of fire, diversion of forest land for agriculture and settlement purpose, encroachments, over grazing by domestic animals, over exploitation through commercial forestry operations, collection of N.T.F.P. in unscientific manner, mining activities, illicit

feeling etc, have been the adverse factors responsible for the destruction of wildlife and shrinkage of wilderness.

In the Koira Range, the shifting cultivation was widely prevalent in good number of forest blocks in the past. The uniform crop of many R.F. blocks of this Range is a consequence of this practice only. This practice is still in vogue in some PRF blocks like Sarkunda, Khajuridihi, Nagaria, Bhawanipahad, Gonua, Mendhamaruni etc. The mining activities have been undergoing since last so many years in the Toda R.F. Sarkunda R.F. Karo R.F., Kathmal R.F., Bhawanipahad R.F., Khandadhar R.F., Mendhamaruni R. F., Khajuridihi R.F. and a few other PRF blocks of this Range.

The detrimental factors responsible for the disturbance and shrinkage of wilderness in the forest areas of Banki Range are mainly poaching of wild animals for consumption and trade purpose and illicit feeling. The R.F. blocks of Dhanghar, Kuradihi, Mahura, Champajharan North, Champajharan South and Kucheita of this Range have been subjected to severe biotic interference over the years due to rapidly raising population and accessibility to the urban centre like Panposh and Rourkela and better road and rail network.

Tamra Range is having largest proportion of the tribal people. Here the population of cattle per household is maximum. The local inhabitants living in the area of this Range are very poor and are dependent on forest produce for their various needs and requirements.

Keeping these facts in view, following measures are prescribed for the future management of wildlife of this division.

Habitat Improvement

Food, water, cover and space are the most important components of any wildlife habitat. Before implementing any scheme furthering the cause of wildlife it is very much essential to have an advance evaluation of the concerned wildlife habitat. While evaluating the wildlife habitat, various physical & biological parameters are to be considered. The physical parameters which are important for the evaluation of a habitat are climate, topography, edaphic features, incidence of fire, spatiotemporal availability of water. Likewise, the biological parameters include availability of cover and fodder in respect to wild fauna, species diversity with their distribution and number, feeding activities and reproduction. During evaluation of habitat all these parameters are to be integrated for getting an overall index of habitat suitability. The habitats to be evaluated should be clearly delineated on the map. For the improvement and development of wildlife habitat of this division, following measures are to be initiated.

(A) Measures for Improving Food Availability: -

Food is an essential pre-requisite for any living organism. Food availability in a habitat changes with the season. Herbivores depend on plant materials for their sustenance and are normally selective feeders as their food preferences are related to palatability. The carnivores survive on the availability of prey animals. Many plant materials are eaten by herbivores as forge or browse.

Herbivores prefer the leaves, barks, twigs, flowers, fruits and seeds of species like Mallotus Philipinensis, Dendrocalamus strictus, Adina cordifolia, Albezzia lebbiek, A. Procera, Aegle marmelos, Ageratum

conzyoides, Bauhinia, Ficus bengalensis, F. religiosa, Garuga Pinnate, Kydia calycina, Ogeinia oojeinensis, Lannea coromandelica, Shorea robusta, Syzygium cumini, Terminalia alata, Terminalia bellerica, Zizyphus mauritiana, Atylosia Spp, Cynodon dactylon, Heteropogan contortus etc.

Wild elephants feed on barks and leaves of species like Ficus bengalensis, F. religiosa, Mallotus philipinensis, Dendrocalamus strictus, Ogeinis oojeinensis, Bombox ceiba, Kydia calycina, and Shorea robusta etc.

Deer, Monkey, Langur, Rats and Hares feed on wildfruits of plants like Ficus spp. Terminalia bellerica, Buchanania lanzan, Aegle marmelos, Syzygium cumini, Schleichera oleosa, Emblica officinalis, Lantana camara, Grewia hirsuta, Diospyros melanoxylon and Zizyphus mauritiana and help in dispersal of fruits and seeds of these species in the forest.

Among the plant materials, grass constitutes a major portion of the herbivores food. Grasses which are highly prefered and consumed by herbivores have been furnished in the following table, As far as possible efforts are to be made to raise these grass species in the forest area.

Grass species	Name of the Herbivores Which consume prefer
Agrostis brachiata	Gaur and smaller herbivores
Anthistiria gigantea	Elephant & Gaur
Axonopus Compressus	All grazing Herbivores
Brachiaria Ramosa	Smaller herbivores

Grass species	Name of the Herbivores which consume prefer
Capillipedium Assimile	Gour, Deer and Smaller herbivores
Centotheca lappacea	Deer
Chrysopogon aciculatus (syn. Andropogon aciculatus)	Seedlings are grazed by medium size herbivores
Cymbopogon pendulens	Gaur and Deer
Digitaria Biformis	Gaur and smaller herbivores
Digitaria Longiflora	Smaller herbivores
Digitaria Sanguinalis	Gour and smaller herbivores
Eragrostis pilosa	All grazing small herbivores
Ischaemum angustifolium	All smaller herbivores
Ischaemum Aristatum	Elephant and Gaur
Oryza granulata	Deer
Panicum flavescens	All the wild herbivores
Panicum repens	All smaller herbivores
Paspalum orbiculare	Deer
Rottbolia compressa	Small herbivores
Rottboelia Exaltata	All large
Rottboelia protensa	Smaller herbivores
Saccharum arundinaceum	All herbivores
Saccharum Bengalense	Elephant, Bour and Deer
Saccharum spontaneum	All larger herbivores
Setaria glauca	All smaller herbivores
Setaria palmifolia	All herbivores

B. Measures for improving water availability :

The presence of adequate water resources in the form of water holes, rivers, streams etc. is of utmost importance in the wildlife habitat. All the existing water holes within the Division are to be identified and delineated on the map.

C. Measures for Improving the cover :

Providing adequate cover to different wild animals is an important element of habitat improvement programme. The cover within a habitat is essentially a variation which provides shelter as well as protection to wild animals from weather; predators or enemies by offering a better vantagepoint and it can be vegetal and non-vegetal in nature. To improve the availability of shelter to different animals very selective removal of nature trees without creating a lasting gap in canopy in the areas under selection working circle has been prescribed. The measures like improving the density of forest and its composition, loose piling up of debris, no felling of trees within radius of 50 meters along nalla, water holes, wallows saltlicks and core habitat of wild animals etc. have also been prescribed for improving the cover for different wild species. Measures should also be taken for improving the proportion of Sal and other semi-ever-green species. The pure plantations are to be avoided and in the mixed plantation, ground flora a middle storey is to be developed and maintained.

D. Measures for Improving Wilderness :

The forested areas subjected to regular biotic interference in the form of grazing, felling, encroachments, etc. Gradually lose the element of wilderness, so vital for the thriving of wildlife.

E. Measures for Protection and Development of Salt Licks :

For the Wild herbivores even if the food is available in plenty, it is not sufficient to meet their salt requirement. For that reason the wild herbivores depend on the naturally available salt licks. The natural slat licks are basically the areas having high salt concentration. Such areas are usually available along the nala site and in foothills portions of this Division.

Silvicultural measures :

The forest and wildlife are inextricably linked to each other as forest meets almost all requirements of wild fauna in the form of food, water, cover, space, etc. So the forest and wildlife management are to be integrated in one frame only. The wildlife management does not demand fundamental change in the silvicultural operations. Some small modification in the forest management can serve the cause of wildlife also. Keeping the cause of wildlife in view, following measures is to be taken while carrying out silvicultural operations.

1. No felling of dead and green disensed trees is to be done in the areas covering the key habitats of wildlife.
2. No felling is to be carried out in the areas having crown density 0.4 and less than that.
3. Hollow trees and the trees supporting nesting dense of wild animals and birds are not to be felled.
4. A portion of the left over lops he tops and other debris after main felling are to be piled up so as to provide shelter to Civet Cat, Lepus, Porcupine and other small wild animals.

5. No making and felling of trees is to be carried out within the 50 m. radius around the key habitat of wild animals such as den, slat lick, wallows, water holes etc.
6. No fruit bearing trees like Harida, Bahada, Anla, Zyzyphus, Kendu, Mahul etc. and Ficus species are to be felled.
7. Emphasis is to be given on improvement of flora composition and density.
8. Planting of grasses and trees favourable to wildlife is to be taken up in the blanks and in the patches sparsely vegetated.
9. In the plantation areas, ground flora and middle story is to be encouraged.

Corridor Routes :

Elephants do not have permanent abode in this division and they are the main migrant animals. They are migrating primarily from the neighbouring Bamra forest division and from the Saranda forests of Bihar. Comparatively the Division is having well-stocked forest with quite a few compact patches of quite large extent. However, once existing contiguity of forests in this region has been disrupted due to settlement of human being at various points. This has adversely affected the habitats of the elephants, which require very large forested tract due to their migrating nature. Following are the three main tract routes of the elephant movements within the Division.

i. From Saranda : Silkuta (I) R.F. → Jharbeda R.F. → Mahura R.F. → Dhanghar R.F. → Cross River Brahamani at Deodhar → Dhenkiam R.F. → Kusumdihi R.F. → Rusimath R.F. → Kunjar R.F.

ii. From Saranda : Toda R.F. → Sarakunda R.F. → Sarkunda PRF.

iii. From Bamra : Sirigida R.F. → Balai R.F. → Jada R.F. → Sulliguda R.F. → Kunjar R.F. → Raipiri R.F. → Majurdiha R.F. → Kelo R.F.

The forest and existing corridor routes along these tract routes of elephants are to be protected and conserved. The corridor routes, which are devoid of vegetation or subjected to intense biotic interference are to be improved upon by taking rehabilitation measures. The elephant menace, i.e. reading of agricultural crops in this division is primarily due to the loss of once existing corridor routes along these tracts. Sri Panth has given a detail picture on availability of different wild animals in different RFs. For example Koira Range.

Koira	Rakshi - I RF.	Bear, Wild Boar, Fox, Barking Deer, Lepus, Mongoose, Jungle Fowl, and Peafowl.
	Rakshi - II RF.	Bear, Wild Boar, Fox, Lepus, Mongoose, Jungle Fowl & Peafowl.
	Toda RF.	Elephant, Leopard, Tiger, Bear, Wild Boar, Fox, Hyena, Jungle Cat, Barking Deer, Languor, Rh. Monkey, Porcupine, Lepus, Mongoose, Jungle Fowl, Pea Fowl, Spur Fowl, Myna, Horn Bill, Cuckoo, Wood Pecker.
	Mendhamaruni RF.	Bear, Wild Boar, Fox, Jungle Cat, Barking Deer, Lepus, Porcupine, PeaFowl, and Jungle Fowl.
	Khajurdihi RF.	Bear, Wild Boar, Fox, Hyena, Wild dog, Jungle Cat, Barking Deer, Porcupine, Lepus, Jungle Fowl, PeaFowl, Spur Fowl.
	Sarkunda RF.	Leopard, Elephant, wild Boar, Bear, Jungle Cat, Hyena, Fox, Barking Deer, Monkey, Lepus, PeaFowl, Jungle Fowl, Mongoose, and Porcupine.
	Kathmal RF.	Jungle Cat, Lepus, Myna, Cuckoo.
	Bhawanipahad - RF.	- do -
	Khandadhar RF.	Tiger, Bear, Wild Boar, Jungle Cat, Barking Deer, Lepus, Mongoose, Rh. Monkey, Pea Fowl, Jungle Fowl, Python.

5.3 Past management of Wild life

During the Durbar administration of the Kendujhar Ex-state , adequate protective measures were being taken by the rulers to save the wild animals from irregular killing expect for organised "shikars by the members of the royal family or their distinguished guests. Due to rigid enforcement of rules and keen interest by the ruler in protecting and preserving the wild life, one could see any sort of wild animal in almost all the wooded area and in the near vicinity of the villagers. After the merger of Ex-state there was a sudden reversal of the trend and poaching of wild animals in the forests of Kendujhar Division was rather rampant. Killing of wild animals in the name of crop protection, for sale of meat, trophy, tusks, hides and skins and organised "Akhanda Shikar" by the tribals practically bagged quite a number of wild animals from these forests. The organised tribal gangs normally comb-up the forests during April every year following " Pana Sankranti" in the name of "Akhanda Shikar" in batches consisting of 20 to 200 marksmen with bow and arrows and kill any wild life that comes on their way. Inspite of various rules and protective measures this pernicious practice is not fully controlled and required continued vigilance.

In the distant past (pre-merger period) under the patronage of the rules, the Bonai State was quite rich in wild life both in variety and number. During that time hunting of wild life animals was the proud privilege of only the ruler and his guests but the same was strictly restricted for others.

Though, during that time no particular meosures furthering the cause of wild animals were taken by the rules but even then due to Factors like large tracts of forest, low human population, restrictions enforced by upon the subjects in regards of Shikar etc. had prevented the depletion of population of wild life.

At later stage, same rules were framed and enforced upon by the rulers in regards of conservation and development of wild animals. Few such important rules are detailed below:-

1. No female or Matured male of Bison, Deer, Samber, Chital and barking deer shall be killed.
2. No person shall hunt and shoot within the Reserved forest expect with the written permission of Dewan of Bonai State.
3. Special permission of the Dewan shall be necessary for hunting Bison.

However, after the merger situation changed radically and there was wanton destruction of wild life both lawful and unlawful. There was rapid destruction of habitat of wildlife due to large-scale reclamation of prime forest area for re-settlement of revenue villages inside the forests.

With the increasing timber operations and mining activities, the human interference in the forest was rapidly increased. Settlement of new villages inside the prime forest areas and opening of the roads gave ample opportunity for encroachment, illicit felling and poaching. All these adverse factors have been responsible for the rapid decline of wild life population in the post merger period.

At present, population of wild life within this Division had already vastly diminished and for most of the important wild fauna species it has gone below threshold level.

CHAPTER - 6

STATUS OF WILDLIFE AND PROPOSED CONSERVATION APPROACH

6.1: Significance of Ecological boundary with respect to wildlife of Keonjhar and Bonai Conservation Unit.

A multitude of faunal profusion includes a variety of mammals, birds, reptiles and insects in forest tracts of Keonjhar and Bonai forest division. Considering the ecological requirements of these wildlife and due to proximity of the great Saranda forests of Bihar and Similipal forests of Mayurbhanj district as a contiguous forested tract compels a wildlifer to study the floristic and faunal richness as a single unit. It is relevant in the context that animals of both the divisions seasonally tend to disperse to contiguous forest blocks near by. However for the purpose of writing this regional wildlife management plan administrative boundary of both the divisions will be strictly followed from financial forecast point of view. Over the years tigers have disappeared from most of the Ranges, but elephants are still pervading in this super rich mineralised zone. Ideally a few years-back tiger as a major predator and elephant as a major herbivore were considered typical examples of flagship species of these Ranges. Conservation of this wildlife splendour especially the long ranging animal likes elephant need deep understanding of sound ecological principles, conservation biology etc. Keonjhar - Bonai forests tracts sizeable boasts of a fraction of the central population of elephants. With loss of prime forested habitat to cultivation, mining and other developmental activities the tiger populations has gradually dwindled and elephant corridors were threatened due to rapid urbanisation.

The ecology and behavior of animals clearly reveals that they do not recognise the legal boundary. We can never be able to contain wild animals inside administrative boundaries of these two forest divisions. They will not oblige the legal boundary because they have scope to migrate to surrounding forests which equally meet the ecological requirements viz. forests of Deogarh division, Bonai forest division and Sukinda Range of Forest Division, forests of Dhenkanal of Bonai Division and Thakurmunda Range of Karanjia Division, Kiriburu Range of Saranda Forest division of Bihar and other forests of Singhbhum district of Bihar. Ecological boundary can not be delineated in natural practice. Like this assignment in most of the cases legal boundary is delineated keeping in view the administrative suitability. Normally the legal boundary falls short in meeting all ecological functions of the species diversity of the protected area. While contemplating for writing a regional wildlife management plan for Keonjhar and Bonai division, especially with a view to evolve a compatible wildlife management plan with that of extensive mining activity in forested areas, the concept of ecological boundary finds a far-reaching significance.

The elephants and bigcats of this vast wild tract range can not be studied in isolation since they are the part of the bigger population whose range of distribution span from Similipal Tiger Reserve to R.Fs of Karanjia, Dhenkanal ,Athgarh ,Banpra Divisions up to great Saranda forests of Singhbhum district of Bihar state in a longer contiguous wilderness area well beyond the legal boundary of the present study. Although tigers of Keonjhar division have dwindled yet the sub-adult tigers must be dispersing out of grate Saranda forest divisions of Bihar and Bonai /Forest Division of Sundargarh district to establish their new territories in this division. The Seasonal migration of elephants from Keonjhar range of Keonjhar division and Kolda range of Bonai Division to Champua range is common. Hence, the present study highlights the

rational of ecological boundary as an eye-opener and suggests management strategies for the whole conservation unit.

In regional wildlife management plan of Keonjhar- Bonai division a thought have been given in to its buffer zone to preclude future use of areas which could pose a threat to the existence of wildlife. Hence, while doing regional planning in buffer zone it is desirable to suggest an alternative use of land that would be most compatible with the wildlife management objectives.

At present the study area is an isolated fragment of the once contiguous habitat. The Champion dispensers like elephants which disperse widely and frequently incontiguous habitat will be severely affected if the whole range of distribution is not protected Similarly due to their territorial behaviour, the older and younger tigers are forced to disperse into adjacent wilderness areas. In a nutshell large animals need larger area for survival. Thus the implication of minimum area for conservation of large animals is debatable. Sometimes, for administrative reasons, those ecological processes and bio-diversity can only be protected in small areas, which should not be scorned; small, can be beautiful in fulfilling the goals of conservation too. For wildlife management in Keonjhar -Bonai forest continum, there is no harm if we have a farsighted perspective planning for conservation of species biodiversity by defining ecological boundaries.

For the persistence of an animal over some relatively long periods without any genetic erosion and without succumbing to demographic or genetic stochasticity a minimum viable population is a must. Despite the fact that large, iteroparous organisms can persist at low population levels for generations, because of longevity and because they are physiologically buffered from the short term environmental changes still strong conservation

measures should be taken to be on safer-side. With increasing habitat fragmentation the problem of attrition of species is felt. Due to increasing edge habit, home range and territories are being lost. Due to decay of ecosystem secondary extinction will be faster. In an undisturbed contiguous forest patch initial species composition has a "founder effect" which is in equilibrium with the environmental condition. This "founder effect" is lost due to fragmentation. So long as the daring and dashing bull elephants continue to migrate and wander around for mating far beyond the administrative boundaries of Keonjhar and Bonai divisions, the greater variability of the gene can be maintained. Similarly the Saranda and Similipal tigers need to be dispersed out in sub-adult stage to establish territories of Champua range and Koida range and there should be a mixing of genes between tigers of these areas.

6.2 :Food Requirements by predators

Tiger, Panther and wild dogs are the main predator of herbivores. From the available studies on the food and feeding habits of the tigers, Kurups (1978) has worked out the food demand and supply for the tigers. His calculations were based mainly on the studies of Schallar (1967) in Kanha National Park (M.P). According to his estimate out of 34.5 unit of ungulates required by an adult tiger, Chital formed 25, Barasingha 4, Sambar - 5, & Gaur - 5. This Chital seems to be hunted more frequently than the other ungulates, but in the case of Kalakad-Mundanthurai Tiger reserve, Various prey demands by the tiger would be a different one. Here in the habitat of tiger there are no Barasingha and Chital . Therefore ,the supply from these species has to be compensated by other prey species ,such as Sambar ,Gaur,Wild boar etc.available there .It is revealed from this reserves .The annual food demand for a tiger has been expressed in different way.Total removal of prey animals from the biotic pyramid of one tiger works out to 150 Nos. (Doraiswamy, 1989). According to

Israel and Sinclair (1987) an average size tiger kills up to 80 average size prey every year. Where as, Kurup (1978) estimated that a tiger would require about 35 ungulate kills in a year. According to Schallar (1967) 93 percent of tiger diet is composed of deer species In the case of Kalakad- Mundanthurai reserve, Sambar is the major deer species available as a prey to the tiger. It is reasonable to assume the sambar may constitute about 85% of the tiger food. If we take the total annual biomass requirement of a tiger as 3200 Kg. (Kurup, 1978) number of Samber harvested annually by a tiger would be as follows :-

Annual biomass - requirement - 3200 Kg.

85% of biomass - 2720 Kg.

Average Sambar adult weight - 180 Kg.

Equivalent No. of heads - 15.

If we take the annual requirement of food for panther as 2200 Kg. the required biomass of the prey species would be 3143 Kg. (Assuming only 70% weight of prey species is consumed). Similarly on average, a Dhole (Wilddog) would require about 730 Kg. of food annually which amounts to 1040 Kg. biomass.

Competition among co-predators for space and food is very essential in nature to stabilise their population. They sometimes co-inhabit a particular geographical area also showing sympatric conditions i.e. preying on same /similar prey. Based on annual production potential, fawn mortality and adult mortality the net annual increment is calculated with respect to a prey species. Any exploitation of prey species in the same habitat beyond the annual increment would lead to depleting capital stock.

From lions and tigers up to leopard, Jungle cat, Fishing cat and house cat all are members of one family, the Felidae. The foremost of all the carnivores or beasts of prey among carnivores, cats stand supreme in equipment of tooth and claw and exhibit excellent fitness for a predatory life with a balanced combination of grace, strength and agility.

Tigers need undisturbed dense forests for their shelter and water to quench its insistent thirst. Forests again make possible the assemblage of large herbivore animals, which the tiger must have for food and within forests it finds ample, cover for its secretive methods of hunting and its seclusive habits of life.

As per the panther, its physical make-up, its habit and inclinations gave it an even wider choice of territory. The panther thrives in a parched and tree less terrain of rock and scrub, or in rain-swept forests, under extremes of heat and cold of dryness and humidity. It can find shelter and concealment under scantiest cover.

Once the prey base of these carnivores are met with it would be presumed that our forest habitat is fast improving.

6.3 :Status and significance of mineralised zones of Keonjhar - Bonai Forest Division.

Together Keonjhar and Bonai forest division boasts of one of the richest a rich mineralised zone in India. It has provided bread & butter for thousands of poor men in way of employment opportunities in large-scale mining activities. Mining is second only to agriculture as the worlds oldest and most important industry. From the soil is born the men but civilization from minerals. Minerals have attracted and fascinated human beings from time

immemorial. These are the vital force, the drive force behind the secrets of prosperity of a nation. Mining after assuming the status of industry may be designated as "Earning machine" of a nation. They earn and absorb the shock of employment front. While rich mining zones has say in shaping the industrial growth of a nation, the dark side is its presence invariably in virgin well stocked forests. Intensive mining activities in well-forested zones is a potential threat to environmental degradation. This is also true to mining belts of Keonjhar - Bonai section which are mostly found in reserve forests DRFs & KFs.

Mining activities create air, water and noise pollution besides accelerating erosion problems in hilly areas. Most of big mines of this range can be seen from a distance on forested hill slopes as "environmental scars". The extent of land degradation due to mining is very high. It causes landscape damage, deforestation, ground water depletion, seismic risks etc. Mining is a land specific industry. The irony with mines is that it is invariably tagged with forestland for which now Forest "Conservation" Act, Environment "protection" Act is binding on it. For this diversion of forest land for mining lease becomes major hurdle for the lessees. Though the Forest (Conservation) Act, 1980, amended do not ban mining in forest land, the rules and regulations are so much stringent and critical that it has become very difficult to get mining lease/Renewal granted.

When we will allow mining activities to continue in the forestland in the interest of natural economic growth the significance of forestry and wildlife in shaping the regional environment should not be ignored. A succinct account on the concept of constitutions provision, National Forest Policy and World Conservation Strategy emphasizing on conservation of forestry & wild life above all is pertinent to mention here.

Article 48 A indicates "protection and improvement of environment and safe guarding of forest and wild life". Article 51A(g) - It is the fundamental duties of the citizens and Govt. to protect and improve the natural environment, forest, lakes, rivers and wildlife and to have compassion for living creatures.

The world conservation strategy, 1980 deals with the framework and guidelines for natural resource conservation for sustainable development. It argues that in natural resource exploitation activities, judicious attention be paid to parlay with the reality of resource limitations and carrying capacity of the ecosystem and keep sufficient provisions for the future generation.

Keeping a strong view on our constitutional obligations and the themes of the world conservation policy, 1980 the basic objectives of the New Forest policy, 1988 envisage (1) preservation (2) Maintenance (3) Sustainability (4) Restoration and (5) Enhancement of natural environment. It even defines any land not recorded as forest but having tree growth as forest.

In Forest (conservation) Act, 1980 amended from time to time, diversion of forestland for non-forest use has been enunciated in details. For diversion of forestland for mining purpose, diversion proposal has to be submitted with provision for compensatory afforestation. Diversion is denied to forest land that is (1) wildlife sanctuaries (2) National park (3) Preservation plots (4) Sample plots (5) Habitat of any endangered species of flora and fauna (6) corridor in migratory routes of wild animals (7) Important hydrological system, perennial water courses, severely eroded catchment. Since all most all mines in Champua range are operating prior to 1980 they can not be closed although they violate to some extent point No.5,6,7,. To compensate this and to manage the mining zone compatible with wild life interest, this regional wild

life management plan for Champua range has been contemplated. The funds so generated will be utilised for overall wildlife & environmental conservation of this region. In this fragile mining zone the mine owners have to look in to maintenance of occupational health at the highest level.

6.4: An approach for sustaining Bio-diversity in Keonjhar and Bonai forest Continuous

The biodiversity that provided man with food, fodder, medicine, shelter and clothing is rapidly eroding throughout out the globe. The present study area is thus no exception. If we are deeply committed to conserve the biodiversity in a small scale i.e. in and around these two aforementioned divisions that will be a positive endeavour in the line of sustainable development of this mining rich region. Concern for nature conservation is deeply embedded in our past culture, which we are still practicing. Modern biodiversity conservation has a humble beginning by establishment of National parks, Sanctuaries, Reserved Forests, Protected forests to preservation plots.

Bio-diversity is the totality of genes, species and ecosystems in the region. It can be divided in to three hiearchial categories - genes, species and ecosystems. In simple words Biodiversity could be defined as the great variety that exists in living organisms i.e. plants, animals and microbes on earth reflect biodiversity Jain,1994. It has been lately realised that biological resources are likely to be basis of all future welfare and security of nations. An implementation of action plan for conservation of Biodiversity requires knowledge of resources, documentation, and legal framework and above all will for implementation.

Bio-diversity is taken to be the integration of biological variability across all scales ,from the genetic,through species and eco-systems to landscapes.

Decline in bio diversity includes all those changes that have to do with reducing or simplifying biological heterogeneity from individuals to regions.

Ecologically , all species are not created equal. At one extreme some are determinants or 'divers' of the eco-system of which they form a part .At the other extreme are those that are "passengers".Removing the former causes a cascade effect, but loss of the passengers leads to little change in the rest of the eco-system .This gives rise to the concept of "keystone" species, "Flagship" species and "indicator" species conservation approach .Elephants the Mega-herbivore and Tigers the Mega-carnivore are the best example of flagship species and keystone species which need to be conserved to main the ecological balance in future.

There is a vast range of legal framework to support biodiversity conservation including Orissa Forest Act,1972. The wild life (protection) Act 1972, amended. The Forest (Conservation) Act, 1980 amended, the Environmental (protection) Act 1986, National Conservation Strategy 1992, etc. Besides this we need some basic information on (1) Extensive knowledge of our ecosystem (2) Inventorization of floristic and faunistic wealth (3) Knowledge and documentation of traditional use mainly by the indigenous people (4) Diver within species (5) Methods / procedures for conservation and (6) Management of protected areas. Above all mobilization and participation of NGOS., Local communities / people and others in implementation procedure is a dire need of today.

6.5 :Census Report of Keonjhar and Bonai Division.

6.5.1:(a) 1989 Tiger Census (17th May - 21 May 89)

Ghatagaon Range - Atei R.F.- 2 Telkoi Range - Kalapat R.F. - 1	No tiger was found in ranges like Champua, Keonjhar, BJP, Anandapur, Deogaon & Sukinda.

6.5.1:(b) 1993 Tiger Census (9th to 15th May)

	Tiger			Leopard			
	Male	Female	Total	Male	Female	Total	G. Total
Anandapur	1	-	1	4	1	5	6
Deogaon	-	-	-	2	1	3	3
Ghatagaon	-	-	-	3	1	4	4
	1	-	1	9	3	12	13

N.B. No tiger or Leopard was found in Champua, BJP, Keonjhar & Telkoi ranges during 1993 Tiger Census.

6.5.1:(c) 1998 Tiger Census (9th to 15th May)

Name of Range	Tiger				Leopard				Total	Grand Total
	M	F	Cub.	Total	M	F	Cub.	Sex unidentified		
Keonjhar	-	-	-	-	1	-	-	-	1	1
Telkoi	-	-	-	-	1	-	-	-	1	1
Deogaon	-	1	-	1	1	1	1	-	3	4
Ghatagaon	-	-	-	-	-	1	-	-	1	1
Anandapur	-	-	-	-	1	1	1	-	3	3
Champua	-	-	-	-	-	1	1	-	2	2
Bhuyan & Juang Pirh	-	-	-	-	-	-	-	1	1	1
Total	-	1	-	1	4	4	3	1	12	13

N.B. :One female leopard cub, was rescued from Karo R.F of Champua Range during Ist week of May, 1998 and was sent to Nandankanan. During census plaster cast of leopard and cub was obtained in Bolani beat of Champua range.

6.5.2(a) Elephant Census, 1995 (6.6.95 to 8.6.95)

Range	Beat	Forest	Unit	M	F	C	Total
Keonjhar	Gopalpur	Tulasichaura DPF	1	2	5	1	8
Ghatagaon	Ghatagaon	Atei R.F	1	1	1	1	3
	Kadabahali	Atei R.F.	1	1	3	1	5
	Mellan	Atei R.F.	1	1	1	1	3
	Baiganpal	Atei R.F.	1	1	-	-	1
	Harichandanpur	Atei R.F.	1	1	1	-	2
	Palaspal	Rebena	2	2	6	4	12
	Gargadbahal	Rebena	1	1	3	2	6
	Bhagamunda	Atei R.F.	1	-	1	1	2
	Pipilia	Pipilia R.F	1	-	1	-	4
	Tando	Atei R.F.	1	1	3	-	4
		Total	11	9	20	10	39

Range	Beat	Forest	Unit	M	F	C	Total
Deogaon	Talpada	Rebena R.F. Damsite	1	1	-	-	1
	Daitary	Rebena R.F. Belt line	1	-	4	2	6
		Total	2	1	4	2	7
Champua	Dubuna	Mahaparbat DPF (Kalimati)	1	1	1	1	3
		Sardaponkhudi	1	1	-	-	1
		Nadigota	1	1	1	-	2
	Jurudi	Baitarani RF	1	1	-	-	1

		(Gudubeda)					
		Dalpahar	1	-	3	1	4
		Malda	1	1	5	1	7
	Purusotampur	Jurulidhar	1	1	2	-	3
	Kiriburu	Karo RF	1	1	1	1	3
	Harmatha	Kajalpani	1	1	-	-	1
	Bolani	Nimutem	1	1	-	-	1
	Karo	Thakurani RF	1	1	-	-	1
		Thakurani Basti (Sayabali)	1	2	6	4	12
	Uliburu	Uliburu RF (Hayarpur)	1	1	-	-	1
	Jhargaon	Sidhamatha R.F.	2	1	1	1	3
	Lindidoja	Sidhamatha RF	1	1	-	-	1
		Karo RF	1	1	-	-	1
	Chamakpur	Chamakpur DPF	1	1	-	-	1
		Gurutuan hudi(KF)	1	1	1	-	2
		Total	19	18	21	9	48

Elephant Census - 1995

Bhuyan & Juanga Pirh - Nil.

N.B. Forest Guard has reported that during paddy ripening stage some loners come to his beat area from Kalapat R.F. of Telkoi Range.

Forest Guard, Nayakote

Forest Guard Kanjipani has reported that during paddy ripening herds of elephant visit his beat area from Bonai forests. F.G. Suakati reported that

elephant come from Barabank R.F. during paddy ripening stage F.G. Anjar has reported that loners come from Keonjhar Range during paddy harvest season.

Range	Beat	Forest	Unit	M	F	C	Total
Anandapur	Balipal	Boula R.F		1	1	1	3
	Boula,R.F	Boula R.F		1	1	1	3
	Kantipal	Boula R.F		1	2	-	3
	Kathakata	Boula R.F		3	5	2	11
	Raighati	Boula R.F		1	1	-	2
	Hadgarh	Boula R.F		2	2	2	6
				9	13	6	28
Telkoi		Nil					
Grand Total for Keonjhar Division				39	63	28	130

N.B.The elephant population of Serenda forests (Singhbhum area of Bihar is approximately 100.

The elephant population of Similipal biosphere reserve is 432 (1994 Census).

6.5.2(b) Estimation of Elephant in Keonjhar Division - 1998.

Keonjhar Range	2 lone tuskers rooming in Barabank, Pithagola, Badkhaman, Talapada i.e. in between Keonjhar and Telkoi Range. Gopalpur, Naranpur, Palashponga, Jadipada, Uklunda up to Ghatagaon - 2 tuskers, 9 female, 2 calves. Handibhanga-Bhulda - 2 lone tuskers.	Total-17 Nos

Champua Range	Bubuna - Jodi, Khandabandha - 2 tuskers, 4 females, 1 Calf Chormalda, Bichhakundi - Migrating up to Bonai Division - 2 tuskers, 7 females, 4 calves. Katashahi-Thakurani R.F. - Murga - 10 - 13 Kiriburu-Harmatha 5-7	Total 35 - 40
Bhuyan & Juang Pirh Range	Benidihi, Chatidihi, Erida-Migrating up to (Malyagiri of Deogarh Division) 4 tuskers, 4 calves, 13 females.	Total- 21
Telkoi Range	Kaliahata Section - Purujoda beat 5-8	Total-5-8
Anandapur Range	Budhikud Section - Taneipal beat, Santoshpur R.F - 2 lone tuskers, Hadagarh beat - Sajanapal - Pitanau - 10-12, Kathakata, Balipal, Kantipal - 5-7, raighati - 2	Total -19-23
Ghatgaon Range	Bhimkund-Tando 3-5, Kanto - Melan 5-8	Total-8-13
Deogaon Range	Talpada - Rebena 10-12 (Rebena R.F.) Baliparbat - Mahabirapasi Daitary 3-5 Kanheigola-Gargadbahali - 1 tusker, 9 female, 2 calves	Total-25-29

N.B. Total Elephant population estimated in Keonjhar Division including migrating population during paddy ripening, harvesting and post harvesting season = 130 - 151 (Maximum).

6.5.3 : Abundance of Wild animal with respect to different beats of Keonjhar Division.

Information on other animals: Census 1998

Area availability shown as Percentage With Respect to No. of Beat

Sl. No	Species	Un-available	Available	If available	
				Rare	Common
1	Wolves	39	61	61	0
2	Wild dog	78	22	22	0
3	Bear	8	92	54	38
4	Wild pig	39	61	43	18
5	Wild buffalo	100	0	0	0
6	Samber	86	14	14	
7	Spotted deer	54	46	46	0
8	Mouse deer	82	18	18	0
9	Barking deer	39	61	49	12
10	Chowsingha	100	0	0	0
11	Nilgai	100	0	0	0
12	Black buck	100	0	0	0
13	H. Langur	53	47	47	0
14	Rh. Macaque	53	47	45	2
15	Porcupine	38	62	48	104
16	Pangolin	74	26	26	
17	Mongoose	31	69	68	0
18	Otter	66	34	34	0
19	G. Squirrel	64	36	36	0
20	F. Squirrel	68	32	32	0
21	G. Hornbill	93	7	7	0
22	P. Hornbill	100	0	0	0
23	Pea fowl	53	47	47	0
24	Elephant	58	42	36	6
25	Bison	100	0	0	0

6.5.4:Estimation of wild animal's populations of Keonjhar Forest Division(Census 9.5.98 – 15.5.98).

The following estimation of wild animal population has been done during, 1998 Tiger census in Keonjhar division..

Sl. No	Name of the wild animal	Approximate population	Status
1	Wolves	400 - 600	Rare
2	Wild dog	120 -160	Rare
3	Bear	2500 -3000	Common
4	Wild pig	2300 -3000	Common
5	Elephant	100 -150	Common
6	Sambar	100 -150	Rare
7	Spotted deer	400 -600	Rare
8	Mouse deer	150 -250	Rare
9	Barking deer	1200 -1500	Common
10	Hanuman langur	1500 -2000	Rare
11	Rhesus macaque	1800 -2000	Common
12	Porcupine	1000 1500	Common
13	Pangolin	250 - 350	Rare
14	Mongoose	1500 -2000	Common
15	Flying squirrel	1200 -1600	Rare
16	Pea fowl	1200 -1500	Rare
17	Hornbill	50 -100	Rare
18	Jackal	2000 -2500	Common

6.5.5 : Regional Elephant Census For Eastern States,1999 And All Orissa Tiger Leopard Census -1999

Waterhole Summer Elephant Census Data For Keonjhar Division

Name of the Range	Adult Above 7'			Sub -Adult 5' -7'			Juvenile 4' -5'			Calf < 4'			Total
	M	F	UI	M	F	UI	M	F	UI	M	F	UI	
Anandpur	2	3	0	1	5	2	0	1	0	0	0	4	18
Deogaon	4	1	0	0	2	0	0	0	2	0	0	0	9
Kendujhar	1	0	0	1	1	0	0	0	0	1	0	0	4
BJP	2	4	0	2	10	0	0	0	0	0	0	3	21
Ghatagaon	2	1	0	0	0	0	0	0	0	0	0	1	4
Champua	8	3	0	0	5	0	0	0	0	0	0	3	19
Telkoi	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	19	12	0	4	23	2	0	1	2	1	0	11	75

6.5.6: ESTIMATION OF WILD ANIMAL POPULATIONS IN BONAI DIVISION CENSUS 1998

SL. NO.	Name of other animals	Total Numbers.
1.	Wolves	380
2.	Wild Dog	57
3.	Bear	277
4.	Wild Boar	433
5.	Elephant	53
6.	Bison	-
7.	Wild Buffalo	-
8.	Sambar	2
9.	Spotted Deer	19
10.	Mouse Deer	17
11.	Barking Deer	303
12.	Chowsingha	-
13.	Nilgai	-

14.	Black-Buck	11
15.	H.Langur	136
16.	Rh. Macaque	89
17.	Porcupine -	140
18.	Pangolin	5
19.	Mongoose	161
20.	Otter	1
21.	G. Squirrel	24
22.	F. Squirrel	395
23.	G. Hornbill	40
24.	P. Hornbill	6
25.	Owl	833
26.	Pea cock	128
27.	Monkey	266
	Total: -	3875

6.5.7 :CONSOLIDATED ELEPHANT CENSUS REPORT'1999 IN RESPECT OF BONAI FOREST DIVISION.

Name of Ranges:-		JARADA	TAMRA	KOIRA	BANKI	BONAI	TOTAL
Upto 4'	M-						
	F-						12
	?-	5	6	1	-	-	
4' to 5'	M-						
	F-						1
	?-	1	-	-	-	-	
5' to 7'	M-		1				1
	F-	-	3	1	-	-	4
	?-	3	-	-	-	-	3
7' & above.	M-	6	1	1	-	-	8
	F-	14	7	-	-	-	21
	?-						
Extra:-		1	-	2	-	-	3

M- Unattached:- F- ? TOTAL:-	- 30	- 18	- 5	- -	 -	- 53

*M-Male, F-Female, ?-Sex unknown.

6.5.8 Census Report on tiger Bonal Division Range Wise

Year	Bonai	Bankl	Koira	Tamra	Jarda	Total
1989	----	1	2	---	6	9
1993	4	----	3	----	5	12
1998	1	1	1	----	3	6

6.5.9 : CITES AND TRAFFIC INDIA

A major factor responsible for the decline of wildlife all over the world is trade and commerce. International trade in wild life and products thereof is indeed a big business. In the late 1960s and the early 1970s,the size of the trade grew to unprecedented proportions. This aroused such concern that an international treaty was drawn up in 1973 to protect wildlife against such overexploitation and to prevent international trade of threatening species with extinction.

Known as CITES, the Convention on International Trade in Endangered Species of wild Fauna and Flora came into force on Ist July, 1975, and now has 132 countries as Parties. In addition EEC has also joined as a member to the convention.

CITES covers both wild animals and plants and the member countries act by banning commercial trade in an agreed list of currently endangered species and by regulating and monitoring trade in others that might become endangered. In a

sense, CITES is a protectionist treaty in as much as international trade in species threatened with extinction is severely restricted. It is also a trading treaty in the sense that specimens of species, whose survival is less threatened, can and do enter international trade legally.

The provisions of CITES apply to species included in Appendix-I, Appendix-II or Appendix-III to the Convention, which need to be understood.

Appendix-1 is expected to include "all species threatened with extinction which are, or may be affected by trade. The criteria for adding species to Appendix-I, adapted by the Parties, specify that if the status of a species is seriously declining it should be listed even if there is only a probability of trade. In addition, whole genera should be listed " if most of their species are threatened with extinction and if individual species within the genus is difficult." The objective of this requirement is to control trade in species, even if they are widespread and common, which look alike and could be confused with a threatened species. So as not to endanger them further, no permits are issued for international trade in these species unless there are very exceptional circumstances.

Appendix-II is intended to regulate international trade in species which are not sufficiently endangered to warrant inclusion in Appendix-I, but which could become endangered unless trade in them is controlled. Its purpose is also to control trade in species, which are similar in appearance to and could be confused with those listed in Appendix-I. International trade in these species is permitted with proper documentation issued by the Government of the exporting country.

Appendix-III is meant to provide a mechanism whereby a party, which regulates trade in a species not listed in Appendix-I, or it can seek international help in

enforcing that regulation. Any Party can list a species in Appendix-III for this purpose. For instance, India has invoked this provision of CITES for seeking international help in controlling smuggling of reptile skins by listening four species of snakes in Appendix-III.

India has been in the forefront of CITES almost since the beginning. The Government of India deposited the instrument of ratification on 20th July, 1976, and become Party to the Convention from 18 October, 1976.

Number of families, genera and species(of India) affected by CITES:

		Family	Genera
Appendix-I	Mammalia	21	62
	Aves	12	26
	Reptilia	08	21
	Amphibia	01	01
	Flora	04	06
Appendix-II	mammalia	14	41
	Aves	15	38
	Reptilia	06	15
	Amphibia	01	02
	Insecta	01	06
	Mollusca	01	02
	Hydeozoa	02	02
	Alcyonaria	01	01
	Flora	11	12

This includes cultivated plants of ARALICARIAACEAE Spp. CACTACEAE Spp. In india and all group of ORCHIDACEAE, CYCADACEAE and CYATHEACEAE Spp. Expecting those which are included in Appendix-I.

Appendix-III	Mammalia	05	26
	Reptilia	02	04

TRAFFIC NETWORK.

In order for the convention to be effectively implemented worldwide, the international trade and pattern is closely monitored To meet this challenge Species Survival Commission of IUCN established TRAFFIC INTERNATIONAL (TRADE RECORDS ANALYSIS OF FLORA AND FAUNA IN COMMERCE) in 1975 to collect and analyse data on the wildlife trade, assess its impact on the status of species in wild, and to track individual shipments which violate the requirements of CITES or other national wildlife protection laws. Unlike most of the other SSC Groups, which are run on an entirely voluntary basis, TRAFFIC has full time staff as well as a worldwide network of informants.

Today, the TRAFFIC Network has grown to include - TRAFFIC INTERNATIONAL with its Headquarters the Wildlife Trade Monitoring Unit (WTMU) in Cambridge (UK). The other TRAFFIC offices around the world are in U.S.A, Germany, Japan, Australia, The Nether lands, Belgium, South America (Uruguay), Austria, Italy, France and now most recently on 1st January, 1992 TRAFFIC office has been established at a new Delhi at the WWF-India Secretariat, 172-B, Lodi Estate, New Delhi.

TRAFFIC INDIA is required to monitor wildlife trade in the Indian region. Apparently, the volume of legal trade looks very small but there are reports of very high trade volume particularly on products, parts and derivatives of wild plants and animals which is required to be controlled.

All the endangered flora and fauna mentioned in this regional wildlife management plan are covered under CITIES and TRAFFIC INDIA viz. Elephants (Trade of tusk), Tiger (Skin) , Leopard (Skin) , Snakes etc.

CHAPTER - 7

7.1 ECOLOGY, BIOLOGY AND CONSERVATION PROBLEMS OF ASIATIC ELEPHANTS IN AND AROUND KEONJHAR - BONAI CONSERVATION UNIT

Elephant is one of the celebrated, most powerful and cleverest creatures to walk the planet. Its richly detailed exploration of the natural history unfolds its troubled fate in recent years throughout the globe. The small isolated population of elephants of Keonjhar and Bonai forest division living in a fragmented and degraded habitat manifests its doomed future. Authors have illustrated the pivotal role the elephant plays in shaping and balancing not only the ecosystems it calls home, but also the livelihood of a wide array of people. The elephants have been adored as playful, intelligent being, full of surprises and ready to smash the narrow confines from which we traditionally view animals. The biology of elephants clearly shows us how similar elephants are to humans - they travel in closely knit families, learn from each other, look after their ill and elderly, mourn their dead and communicate through a vocabulary of audible and subsonic sounds that add up to a surprisingly nuance and expressive language there by leading us to rethink our definition of and approach to conservation. The life of elephants are intimately connected with a varied personalities viz. mahouts, researchers, loggers, royal white elephant metaphysicians, veterinarians, poachers, tribals and some of the worlds most talented ivory carvers. The life of elephants enlighten us as how they are integral to the history and mythology of the people with whom they have lived and show us why despite that bond, elephants and humans have come into inevitable conflict as they vie for the same crucial tracts of land.

The combination of factors that have pushed the elephant to the brink of extinction - the drastic loss of habitat, the ruthless pursuit of ivory, the unstable societies in crowded nations all show us why the fate of the elephant is a potent metaphor for our own fate, and makes a compelling case for acting immediately to save the elephant from oblivion,lest we destroy a creature we are only beginning to understand.

As a matter of fact all the wild habitats not only within Keonjhar and Bonai conservation unit but also throughout the state are at risk of being swamped by people .Equally troubling,neither the remaining elephant herds nor the ranges they currently inhabit are contiguous. Fragmentation of wild habitat makes prospects for the long term survival of Elephas maximus even slimmer .But the hopeful part is that it is some thing of a miracle that our country given its current human population close to 1000 million, should have room to support a single elephant much less 15,000 to 20,000 in the wild plus close to 2500 to 4000 domestic ones. The existence of elephants amidst these odds reveals some thing miraculous about how to co-exist with these giants in an over crowded world.

Some of the facts on biology of the Asian elephant are worth mentioning. One of them is the mother - young bond that is as intimate as that of humans. However calves are also seen spending a fair amount of their time in the company of sisters & aunts or grandmother. Male elephants when excited invariably secrete from their temporal glands while female rarely exhibits so. The elephants live in herds. The larger groups that appear to involve related families-bond groups and even larger clans in contiguous well-stocked wild tracts. During get-togethers Matriarchs (the herd is normally led by a older female greet one another with clasped trunks and generally avoid overt conflict. While young males can not wait to begin jousting and sparring. One has to intimately familiar with each nuance of expression and the

meaning of each sound in order to interpret an elephants intention. Wild elephants hardly tolerate any human being at his close range.

Biologists say elephants process their food at only about 50 percent efficiency. It is one of the things that make them particularly good seed dispersers. They not only spread them around but enhance their chance of germination by passing them through with only minor processing and dropping them in fertilizer that makes a good, rich mulch without being too concentrated in nitrogenous chemicals. It is found that 80 percent of seeds spreading in elephant dung is viable. Wild boars, mongooses, hornbills and jungle fowls scavenge seeds from elephant manure, becoming secondary dispersers. Elephants consume enormous quantity of forage to keep them going. To keep in good condition, they must constantly seekout the highest quality foods. For creatures so huge, they are actually fairly picky eaters. Unfortunately they are not efficient digesters of forage. This has important implications for their range and movements. They can not live in inferior habitat as they are already eating 16 to 20-hours a day in good habitat. They normally retire in to deep forest during mid-day for taking rest under some shady place. At present there is hardly any true pristine core area for retreat of elephant herds in the study area.

The rip-snorting elephant chase sagas seen now-a-days reveals a great deal about the forces currently affecting them and their ultimate chances for survival. The strongest force is the relentless expansion of the human population around the reserve. Acre by acre, the buffer zones of forest once lightly used by people are being converted in to intensively used pasture and cropland to feed the exploding populace. Elephants frequent paddy fields abandoning scrub forest in search of more palatable fare. In keeping with their strategy of exploiting the most nutritious, high-energy food resource available in any given seasons, elephants can hardly do better than to move on into the nearest cultivated fields to get at the growing grains during

monsoon & winter time. And it is never that far a march from mountains to the field in any season for an elephant that remembers dining on the sort of plants or crop that flourish year round near villages viz. paddy, jackfruit, mango, banana, badi bamboos etc.

Elephant crop raids nearly always take place at night. Females and other family members tend to linger by the forest edge when they come in to fields and are fairly easily spooked off by approaching people. Mothers with young babies almost never raid by themselves. Bulls are more likely than cows stomp right out into the open and remain there despite disturbances, though the younger bulls often wait until they come and join with other males before venturing in to the fields. It is a fact that one experienced male gorge itself steadily in between evening to next early morning by which time it had removed between 440 and 660 pounds of millet in Nilgiri Biosphere Reserve. Twice the weight of females when fully grown, Asian males consume twice as much during a typical raid. They also raid much more often and are much more dangerous to deal with. Elephants are more likely to wait until a grain field is tall and golden and almost ready to cut, then come in and break farmers hearts. Some times notorious bulls rummage through crop fields intimidating those on guard and go on to feast.

During paddy harvesting season in Keonjhar and Bonai forest division , one can see men squatting over small fires near their paddy fields at night. Almost every one has a ladder along a stout tree trunk leading up to a watch hut or platform in the branches. From the trees, from the ground huts, from campfires glowing, the farmers send a grouping chorus of hoots and clangs out against the night for driving away the marauding elephants. People also use firecrackers which some bulls ignore. Enormous bulls trumpeting like doom are not uncommon even in the study area. Unless enough men are gathered with torches, flashlights, flames and firecrackers screaming and hurling stones they will not give way.

Elephants are out there in and around all most all ranges at the same time stomping around on fields, huts and people. The elephants after paddy harvest season resort to house raids for grains. They also have a knack for smashing illegal steals in the forest, where the grain is being fermented in to liquor, wallowing and swallowing in piles of mash. Recently two bulls were found in Bhuyan Juanga Pirh range adjacent to Champua range sucking two barrels of Handia (country liquor made from fermented rice) and then proceeded to act about like one would expect a megaton drunk to act. They together tore up and smashed and trampled the village and quite possibly enjoyed the hell out of themselves. They also broke in to storage houses of paddy and lifted pudugas (Paddy grain kept in side buckets made of straw bundles) just like power lifters. Despite all, the poor tribals had to bear the heavy loss as they have special reverence towards elephants. People still has compassion for elephants and considers them as manifestations of the divine.

Given that the object is not to destroy these animals, farmers quickly run short of ways to contend with crop-raiding giants beyond driven away with stones and flames. Elephant proof trenches are too costly. An equally serious shortcoming of trenches is the sheer amount of labour required to dig them and then maintain the steep sides against monsoon thunderbursts and general erosion leading to slumping. Elephants can soon also learn to overcome electric fences as well using the thickly padded, insulating soles of the feet to depress the wires. Moreover electric fencing are very costly.

During last three years a few cases of ivory poaching have been noticed in Champua range. Only the male Asian elephants bear tusks. Since the Asian elephant females lack tusks, therefore the breeding segment of the population has been left more or less intact. A number of calves take birth every year throughout Keonjhar and Bonai forest Divisions. But the killing of tuskers if will be pervasive it will definitely

threaten the genetic and behavioral make up of the species over the long term, together with its very survival.

The isolated non-viable elephant population in these two divisions is only a small fragment of a larger central Indian elephant population consisting of great Similipal biosphere reserve and Saranda of Bihar forest . At present these isolated population have been greatly affected due to accelerated habitat transformation i.e. conversion of wild lands in to non-forest purpose. The traditional migration corridors have been whittled down to a scattered sequence of microhabitats, swells and thickets, stringers and brushy bottoms-that are just barely usable any more. Forest link the ecosystems from great Saranda forests of Bihar to great Similipal massif which are two prime elephant ranges are already in the next stage-transformation in to a belt of cultivated land (encroachment) and hamlets. The forests in super rich mineralised belt, viz. Champua Range of the Keonjhar and Koira Range of Bonai division have been honeycombed with mines.

Within Champua range and Koira it self, heavy mining activities, uncontrolled grazing, and firewood gathering together with illicit fellings and encroachments have already removed a certain amount of forage from the elephants. Of greater concern are the anthropogenic fires that repeatedly sweep through the deciduous forests of Keonjhar and Bonai Forest Divisions during the dry season every year. Natural bamboo is conspicuously absent in most of the forest of Keonjhar Division as a whole. Actually bamboo serves as a favoured and nutritious food source for elephants and other herbivores and also as a refuge when dense groves develop. Lack of natural bamboo sufficiently in the wild thus deprives the elephant herds one of the most favoured forage for them.

Because of human activities, the elephants of Keonjhar and Bonai Divisions are becoming increasingly cut off from other herds and habitats and the habitats within

the reserve that they are supposed to able to count on are subjected to some degree of degradation. The combination of fire, over grazing by livestock, the excessive firewood cutting, encroachments for cultivation and hamlets adjoining buffer zones of forests is most intensely felt now days. All these factors have set a sign of retrogression in successional trend of vegetation there by shrinking the habitat of elephants and other wild animals.

Scientists believe that the smallest number of breeding individual required to maintain a healthy viable genepool is about 500 for most species. Keonjhar district boosts of only 100 to 120 resident elephants excluding migratory population from Sundargarh, Karanjia Similipal & Saranda (Bihar). This includes immature, infertile and very old animals that do not come under definition of breeding population. That means Keonjhar elephant population is well short of what is required for maintaining viability. Champua elephants ranging from 25 to 30 individual forms only 1/4th. of elephant population of Keonjhar Division.During waterhole summer census only 53 elephants were found within Bonai Forest Division.Out of these 30 were found in Jonda Range,18 in Tamra Range,5 in Koira Range.During 1995 elephant census 22 elephants were located in Koira and 8 in adjoining Banki Range.

A lot of poaching of tusker is going on in and around Similipal forest. Similarly one tusker died due to in fighting in Anandapur (Hadagarh wild life sanctuary) and two tuskers were poached for ivory in Jada section of Champua range within last three years.

The hunt for ivory is fast pervading through out the globe from which Keonjhar and Bonai Conservation Unit is no exception. In his illuminating research for ivory trade-Esmond Bradley Martin revealed that modern India probably had far and away more ivory carvers than in other nations. Douglas H. Chadwick in his epoch making book "The fate of the elephant" has enunciated in details regarding ivory-trade and

elephant conservation problems. He had rightly mentioned that in a vicious cycle poaching probably increased crop-raiding and the likelihood of raiders killing villagers, which has increased villagers resentment of the animals and led them to believe that there are too many around. It is difficult to ascertain whether the aggressiveness of elephants in and around study area is genetic or learned. Almost all the elephant groups are harassed by exploding human population primarily by way of loss their natural habitat .Researchers say that groups free from direct harm are more tolerant of humans and extreme in tolerance is learned.

With its huge ,convoluted brain and prolonged period of dependency , the Elephant designed to learn from experience , it is prepared to absorb ,process and store information about the migratory route it has to follow, where to get nutritious food during pinch period may be by house raid or crops, the status of members in a neighbouring herd, where it must be wary, where it may relax a bit, and so on. This is part of what its much - discussed memory is all about; part of the reason those in captivity can be trained to respond to more than sixty different commands.

In the present context it can be inferred that the habitat of the elephants in and around the study area has been so altered that they have rearranged disturbances and whose population structure is gradually breaking up. An increase in number of adult solitary bull indicates drastic disruption of family bond may be due to consequent habitat degradation & fragmentation and ivory poaching all around. We are still able to see plenty of elephants in and around Keonjhar and Bonai division in particular and whole of India in general despite rampant killing of elephants world wide for ivory poaching. If there were ever a place to pursue the subject of species sharing our moral realm, it would be India, where elephants real and sacred, are inextricably linked to the efforts and aspiration to human culture and where the potent concept 'ahimsa' (means non-violence, the avoidance of harm or simply as compassion) is part of everyday life. This is also true for man and elephants in and

around of Keonjhar and Bonai forest division. May be tusklessness offers the best chance for survival of the elephants in todays ivory binge .'Makhna' i.e. a term for tuskless male has the great chance of survival.

All most all-male elephants are subjected to peculiar periodical paroxysms of excitement called "musth" on attaining maturity. This is a condition probably analogous to the 'rut' in deer. During musth period, the bull shows signs of restlessness while its temporal gland is fully engorged and leaking fluid. In a natural setting, this might spur a male to Herculean feats of travel and battle and vastly increase his chances of finding and mating a receptive female. A healthy male elephant should be in musth at least once every year between ages of 15 & 18 and age 50 for a period of 2 to 3 months mostly during winter. Individual elephants can be identified by its shape & curling of ear tip, tusk etc. Similarly, the height at the shoulders of an elephant can be calculated by doubling the circumference of its front foot. The age can be determined as described below.

The ear edge begins to fold at age 15 to 20. By age 20 to 25, it has a one-inch fold, by age 40 to 45, a two-inch fold and over age 50, the top of the ear shows the type of wide, loose curl with a markedly sunken temples. The elephant has a long gestation period of 20 months and the main breeding season is during the hot weather and at the commencement of the rains.

The heaviest bulls weigh about 5 tons and consuming 200 - 250 Kgs. forage every day. For getting at this enormous quantity of food per day the elephants must have to travel a lot through the woodlands which is the only survival strategy that nature has endowed with them. This is why an elephant country has to be maintained with good stock of vegetation, water etc. The problem is not just that elephant habitat is constantly shrinking in terms of absolute size; it is being fragmented at the same time, shattered into discontinuous shards. Conservation biologists use the term fault

lines or fault zones, for area where development cuts off one portion of habitat from another. For example, when cleaning for cultivation creates fault zones that divide a solid expanse of elephant range in to several separate chunks, the actual habitat available might only be reduced. Yet if none of the resulting chunks is large enough in and of itself to sustain an elephant population year-round the population could eventually be lost completely. This is essence of island biogeography.

The main lesson of island biogeography is thus: we can not tuck species away in little preserves as if we were storing pieces in a museum, then come back a century later and expect to find them all still there. The essence of life is change. Organisms are constantly growing, interacting, adapting, and evolving. Their numbers and distribution across the landscape fluctuate in cycles linked to climatic patterns and to others, less understood rhythms. They are defined as much by their place in food webs and nutrient flows as by their own physical traits or any current geographic location. Many alter their range and behaviour under different conditions. Some assume entirely new behaviours through learning. In short, an ecosystem is not a collection of plants and animals. It is a seamless swirl of communities and processes. If we do not save the processes, we would not save the parts. Hence, for survival of elephant population require big reserves and contiguous forested tracts. All forests have the problem of fragmentation of habitat. They are too small and isolated to guarantee the long-term survival of many of our wild lives. Except Similipal & Saranda, other reserves can not meet even the home range requirement of the elephant. Most of the better forested tract of Champua range viz. Sidhamatha R.F. Karo R.F, Baitarani R.F., Thakurani R.F., Uliburu R.F. and Kathmal R.F, Toda R.F.,Sarkunda R.F. ,Karo R.F. ,Khajuridihi R.F.,Khandadhar R.F. of Koira Range etc. are highly fragmented due to intensive mining activities. Elephant being a keystone animal its conservation is urgently warranted since they strongly shape the community they inhabit. Once such giants cease to ploy their ecological role, the loss

of species diversity that occurs over time in small isolated islands of habitat can be all the more profound.

One can plainly visualise the end of self-sufficient nature in and around us. It heralds the fate of Africa, whose human population is surging while in tact wild life communities become ever smaller and farther apart. The old vitalizing flow of wilderness from one area to the next is being choked off. Game - proof fencing completely around, wildlife reserves unlike Namibia, Tanzania South Africa, and Kenya is not possible here. Although there is plenty of reasons to be discouraged about the prospects for conserving our wild heritage yet we must learn to evolve possible solution.

Some of the strategies offered by conservation biologists to counter fragmentation are 1) Where ever possible protect areas of landscape dimensions - huge expanses on the order of an entire plateau, or all the lands drained by a particular river system from high elevation to low bottom land i.e. watershed approach. Examiple of well planned reserves include the vast Serengeti plains, with portions in both Kenya and Tanzania and the Nilagiri ecosystem involving Kerala ,Tamilnadu and Karnataka State in India. The Saranda reserves in Bihar and Similipal Biosphere Reserves in Orissa are two other be wild life reserves which are linked by Forested tracts of Champua, Ghatagaon, Sadar Anandapur Ranges of Keonjhar Division and Koira Range of Bonai and Thakurmunda Range of Karanjia Division serving as potential corridor buffer zones. 2) Design reserves so that a fully protected core area is surrounded by buffer zones in which the needs of wild life can be integrated with increasing level of human activities. This is the model favoured for biosphere reserves, established under United Nations Man and biosphere programme for which Saranda and Similipal can again serve as example. 3) Build in connectivity i.e. corridor linking by also setting aside lands that lead from one protected, buffered landscape to the next, thereby minimising the island effect. Fragmentation of habitat has its counter

part in fragmentation of resource management. Responsibilities are divided among a welter of agencies and organisations some times in different states and Nations with competing sets of goals. Building linkages between wild tract of land is going to require better linkages between groups of people, Governments and lines of various departments. The goal is positive, potential and tremendous. But the practicality of it all is doubtful. At present the apathy of State Governments towards forest and wild life conservation is startling. There is no such political patronage for better management of wildland. In fact much of the threat posed to wild life by our exploding population has to do with the political instability and lack of concerted effort by the politicians. A fiery instant of upheaval within a State/Nation can unravel all the carefully laid schemes for long-term protection of nature within no time.

One of the serious failures of conservation in the past has been its tendency to exclude local human communities and their aspirations from schemes to protect wildlife. As long as people feel conservation is being imposed upon them from above a country's preserves may last no longer that the current Govt.'s power. If by contrast, those people have a direct interest in saving natural habitat perhaps for tourist revenue, but may be just to ensure a reliable source of water for irrigation and fuel wood for cooking fuel - the resources within a reserve have a far better chance of weathering political flux. Any way to save species in the coming years is going to require an exceptional effort from public and political will. Ecodevelopment measures in and around reserves and a deeply held moral conviction at all stages of public life are perhaps the possible solution. During the preparation of this plan what ever time I have spent among the elephants in Keonjhar division while driving them away from crop raiding or house raiding, I have felt the warmth of their family bond their capacity for delight, their ability to learn and understand things which are continuing revelations for me and my staff. In this back drop, we should believe that

we would ultimately save elephants that we will do it because we acknowledge and accept their commonality with us.

7.2 MAN AND ELEPHANT CONFLICT IN KEONJHAR AND BONAI FOREST DIVISIONS.

Elephant menace in Keonjhar division has created havoc in different villages during the past 2-3 years. Due to depletion of the forest cover the habitat of elephant has shrunk for which they are resorting to crop raiding which is the easiest way for their survival. They are accustomed to human presence and have lost fear of human as every day hundreds of villagers are guarding their crop field and driving the elephant herds by using flames, crackers, beating drums etc. In recent years they have increasingly turned in to crop-raiders. After the paddy crop is harvested they transform themselves in to house-raiders and human casualty tends to rise in the succeeding months. During harvest season normally herds of elephants decent down from forest to crop fields for feeding crops which are more nutritious and palatable-thus creating an impression on the minds of people as if suddenly the elephant population has increased. More over elephants from adjacent divisions land up to this district, viz. Bonai division, Saranda(Bihar), Similipal etc. Herds consisting of 15-25 are constantly roaming around Jadipada, Belda, Handibhanga area of sadar range. Another herd of 10-15 elephants are now creating havoc in Dhenkiote, Ghatagon area. Large no of houses have been damaged in sadar range alone during last 2 years. Compensation for crop damage and house damage is meager and no allotment is given. The detailed demand for crop and house damage and human kill is furnished below. Unless compensation for crop, house damage and death and injury is not given immediately, people would turn violent as they are expressing their resentment over this issue. There is dearth of fund to meet the huge

expenses towards purchase of crackers, kerosine,POL for vehicles engaged in elephant drive.

Keonjhar Division is taking maximum efforts to drive away these elephants with the meager sources of infrastructure, inadequacy of staff [about 40 posts of forest guards are lying vacant] and funds available at the disposal of DFO. Night patrolling for elephant drive is being undertaken almost every day by deploying a special elephant drive squad organised by Range officer, Sadar provided with a vehicle, search lights, crackers and D.B.B.L. gun. Besides a special drive has already been organised during 22nd to 24th of December 99 involving volunteers, 80-90 departmental staff, A.P.R force, etc. after which the elephant herd remained silent completely for one month after wards. The collector, Keonjhar has provided Rs. 30,000/- towards this elephant drive programme. Message is being collected and communicated by field staff regarding movement of these elephants every day through V.H.F. net work.

The collector , Keonjhar has also provided Rs. 5000.00 to meet expenses for purchase of crackers prior to the special elephant drive. During the elephant census of 1995 (6.7.95 to 8.6.95) the elephant population of Keonjhar division was 130. Estimation of elephant during 1998 including migratory population at the time of paddy ripening, harvesting and post harvesting season came to 130 to 140. During the summer elephant census of 1999 (Direct sighting near waterhole only) only 75 were sighted.

The detailed information of man and elephant conflict with respect to fact and figures are give below with respect to both the divisions.

1. Human Injury & Human killed by wild elephant, Range wise In BONAI DIVISION.

Year.	Bonai.	Banki.	Tamara.	Jarada.	Kolra.
	Injury/Killed	Injury/Killed		Injury/Killed	Injury/Killed
1990-91 to 1992-93.	-	-	-	-	-
1993-94.	-	1(Adult)	1(Adult)	-	1(Child)
1994-95.	-	-	-	-	1(Adult)(w)
1995-1996.	-	-	-	-	-
1996-1997.	-	-	1(Minor)	-	-
1997-1998 to 1999-2000.	-	-	-	-	-

2. Death of Elephants within lasts 10 years Rangewise in BONAI DIVISION.

Name of the Range.	Place of Death	Date of Death	Cause of death.
Bonai.	Kasada PF.	12.11.94(Calf)	Natural.
	Tendra.PF.	18.11.94. -do-	-do-
	Kasada.PF.	02.12.94(Female)	-do-
Tamra.	Rusimath RF	Prior to2.6.94. (Adult)	Poaching .
	Dhenkiam RF.	March 96.-do-	-do-
	Benuam.	19.1.97(Female)	Natural.
Jarda.	Balia RF	6.5.96 (Male)	Poaching

3. Compensation paid and compensation demanded. (Crop damaged) in BONAI DIVISION

Year.	Compensation demanded	Compensation paid
1991-92	12,745.00	12,745.00
1992-93	1,475.00	1,475.00

1993-94	15,400.00	15,400.00
1994-95	2,870.00	2,840.00
1995-96	64,360.00	64,360.00
1996-97	250.00	-
1997-98	-	-
1998-99	985.00	-
1999-2000	33,735.00	-

4. Compensation demanded & compensation paid. (house damaged.) in Bonai Division.

Year.	No. of house damaged	Compensation demanded.	Compensation paid
1991-92	16 Nos.	25,000.00	25,000.00
1992-93	22 Nos.	48,000.00	48,000.00
1993-94	08 Nos.	20,000.00	20,000.00
1994-95	29 Nos.	77,000.00	77,000.00
1995-96	02 Nos.	6,000.00	6,000.00
1996-97	01 Nos.	1,000.00	-
1997-98	-	-	-
1998-99	-	-	-
1999-2000	-	-	-

1. Human killed by wild elephant in Keonjhar Division

Year	No. of persons killed	Compensation assessed
1991-92	2	13,500/-
1992-93	2	20,000/-
1993-94	3	30,000/-
1994-95	5	43,500/-
1995-96	15	1,13,500/-
1996-97	8	33,500/-
1997-98	11	70,000/-
1998-99	12	57,000/-
1999-2000 Up to 2/2000)	10	10,000/-
TOTAL	68	3,91,000/-

* No compensation assessed during 1999-2000 in case of 9 cases due to want of death report, legal heirs etc. from the competent authority.

* Compensation has been paid up to 1997-98.

2. Human injury by wild elephant in Keonjhar Division :

Year	No. of persons injured	Compensation assessed
1992-93	1	1,000/-
1993-94	1	1,000/-
1994-95	2	2,000/-
1995-96	21	11,000/-
1996-97	-	-
1997-98	7	7,000/-
1998-99	3	3,000/-
1999-2000 Up to 2/2000)	-	-
TOTAL	35	25,000/-

* Compensation has been paid up to 1997-98.

3. Crop damaged by wild elephant in Keonjhar Division :

Year	Area damaged (in acres)	Compensation assessed
1991-92	15.51	9,030/-
1992-93	34.70	16,950/-
1993-94	288.20	1,43,289/-
1994-95	5.12	2,520/-
1995-96	179.82	61,457/-
1996-97	62.23	29,290/-
1997-98	-	-
1998-99	96.58	47,340/-
1999-2000 Up to 2/2000)	7.40	3,700/-
TOTAL	689.56	3,13,576

* Compensation has been paid up to 1996-97.

4. House damaged by wild elephant in Keonjhar Division :

Year	No. of house damaged	Compensation assessed
1991-92	21	21,000/-
1992-93	5	2,600/-
1993-94	32	29,465/-

1994-95	70	52,950/-
1995-96	646	1,62,550/-
1996-97	182	74,250/-
1997-98	49	43,300/-
1998-99	109	90,150/-
1999-2000 Up to 2/2000)	155	86,000/-
TOTAL	1269	5,61,265/-

- Compensation has been paid up to 1996-97.

5) Death of elephant in Keonjhar Division :

Year	Natural death	By poaching
1992-93	1	2
1993-94	6	-
1994-95	3	1
1995-96	3	-
1996-97	3	-
1997-98	1	1
1998-99	-	2
1999-2000 Up to 2/2000)	4	3
TOTAL	21	9

N.B. All the poachers have been arrested and forwarded to the court in all cases.

CHAPTER- 8

RELEVANT EXTRACTS FROM THE STUDY OF REMOTE SENSING APPLICATIONS FOR CHARCTERISATION OF ELEPHANT HABITATS AND CORRIDORS WITH RESPECT TO KEONJHAR AND BONAI FOREST DIVISION.

INTRODUCTION :

Any animal species needs four basic things such as food, Water, shelter and mates for its long-term survival. The availability of food, water, ideal topography and slope with gregarious vegetation cover creates a suitable environment for the elephants inside the forest. The survival of the elephants in addition to being dependent on large forest tracts, is also intimately linked with diversity of vegetation types and consequently the health of natural forest. The maintenance of diverse tracts of forestlands is thus essential. Over exploitation of forest resources and agricultural encroachment in and around the Reserve Forests, wild life sanctuaries and National Parks severely limit the ability of elephant herds to move between their traditional feeding grounds. Habitat loss through logging, unsuitable agricultural practices and mining activities are most significant threat to the elephant habitat to day. Significant threats include human induced land scape transformation of habitats and corridors coupled with encroachment, poaching for ivory and anthropogenic activities such as fire wood extraction, cattle grazing, and development of infrastructure such as roads, dams and reservoirs. Elephant human conflicts are another serious threat which results in loss of cultivated crops and loss of humans as well as killing of elephants.

Elephants do not confine themselves to a particular habitat for a long time, rather they migrate from one habitat to another habitat through the natural corridors. Th

migration of elephants occurring from one habitat to another habitat is mainly because of shrinkage of habitats, non-availability of food and water, increase in human-elephant conflicts and exchange of gene pool with other elephant communities. Initially there were several natural corridors available, which were linked with different habitats. But many of the corridors have ceased now. Some of the corridors are fragmented or completely.

There are two interstate corridors available today joining Orissa to Bihar through the Keonjhar district border and another joining through Mayurbhanj district boarder. The characteristics of habitats and corridors almost remain identical to each other. When the corridors are fragmented and delinked to the habitats, the elephants get away from their original path and enter to the croplands. Crop depredation by elephants is common in practically all the forest divisions, both in cultivated enclaves and along the outer boundary of forest and settlements.

The survival of elephants is interlined with the conservation as well as preservation of forest eco-system. Forest conservation must first of all be viewed holistically. Forest is one of the magnificent expressions of nature of earth. The dependence of human beings on forest resources has been on increase despite their departure from forest, for their dwellings. The present situation of over-exploitation of forest resources have brought about irrevocable, deleterious effects like change in climatic conditions, flash floods, soil erosion, desertification and loss of genetic resources. The forests are not only source of wealth but also useful for maintaining microclimate, as well as ecological balance. Hence, the National Forest Policy's decision to conserve 33% of our geographical area as natural forests must be given first priority. Demarcated notified forest lands (fig. 2) with crown density less than 0.4 & above 0.1 are ecologically sensitive forests, which need to be protected properly and improved. Inspite of intense over exploitation and biotic interference, the regeneration potential of plant communities remains unhampered, as far as

coppice regeneration from existing stumps is concerned. Even forests with less crown density have potential for regeneration. Thus care should be taken for natural regengration of forest ecosystem.

SCOPE OF REMOTE SENSING IN IDENTIFICATION AND CHARACTERISATION OF ELEPHANT HABITATS AND CORRIDORS.

Remote sensing is a process of sensing, identification and segregation of various earth features from a distance without being physically coming in contact with target. It is concerned with Electro-magnetic energy from the sun and interaction with earth features. Remote sensing data represents a mixture or information pertaining to land surface features.

The present study highlights the important role played by remote sensing for characterisation of elephant habitats and corridors through the forest cover mapping and for over all understanding of the performance of the different forest types under different environmental condition. This would be very important in order to optimise the limited available land resources for wild life management. No doubt, the technology is the quickest, the cheapest and the best means to obtain reliable up-to-date information on forest resources.

The data from IRS/IC LISS (Digital Data) of February ,March and May 1997 has been used .

Characterisation of Elephant Habitats:

Availability of food, perennial streams, moderately sloping (5-10%) to moderately steep to very steep sloping (15-35%) topography with presence of gregarious broad vegetation creates a suitable habitat for wild elephants. The improvement of habitat is done through promotion of regeneration and afforestation, minimising elephant

human conflicts through setting up of a barrier , population management and control of ivory poaching. Herds of elephant consisting of bull elephants, cow elephants and infants remain together in a habitat. The minimum viable population for any given species in any given habitat is the smallest isolated population having a 99% chance of remaining extant for 1000 years despite the foreseeable effect of demographic environmental and natural catastrophes. Franklin (1980) has suggested that,simply to maintain short-term fitness the minimum effective population size should be 50. He further recommended that to maintain sufficient genetic variability for adaptation to changing environmental conditions the minimum effective population size is roughly the number of elephants within the population that are breeding and passing on genes to the succeeding generation.

In the present study (Fig. 1) 16 number of elephant habitats have been identified in the study area. Out of which 15 number of habitats are distributed in Orissa whereas only one elephant habitat is identified in south Bihar covering 3 forest division in Singhbhum Districts.Although the extent of the habitats cover mostly of agricultural land, the actual habitat of elephants is confined within the forested area only. All the existing 16 number of habitats are grouped together and 16 elephant habitat zones have been suggested for better management of wild elephants. Fig. 4

Name of habitat zones	Elephant habitats
Zone 1	* Similipal and adjoining area. Kuldiha and adjoining area. Hadagarh and adjoining area.
Zone 2	* North Keonjhar and adjoining area. * South Keonjhar and adjoining area
Zone 3	* Bamra hills and adjoining area.
Zone 4	* Kapilas and adjoining area. * Chandaka and adjoining area.

Zone 5	*	Satkosia-Baisipalli and adjoining area.
Zone 6	*	Bhanjanagar and adjoining area.
Zone 7	*	Kotagarh and adjoining area.
	*	Chandrapur and adjoining area.
Zone 8	*	Karlapat and adjoining area.
Zone 9	*	Lakhari valley and adjoining area.
Zone 10	*	Singhbhuin and adjoining area.

Only relevant zones, which are found pertinent, have been discussed in preparation of this comprehensive wild life management plan for mining belts of Keonjhar and Bonai Forest Divisions.

Elephant habitat zone -1

The elephant habitat zone -1 is formed in combination with three elephant habitat viz. Similipal, Hadagarh and Kuldiha and adjoining areas (Fig. 3). Similipal and adjoining area is situated between 21° - 23' to 22°-19' N latitude and 86°- 02' to 86°-36'E longitude. It comprises (I) Similipal hill ranges 2750 sq.k.m. (ii) Nato hills and (iii) Gorumahisiani hills. All these three hill ranges lie within the administrative jurisdiction of Mayurbhanja district and the forests are administrated by field Director, Similipal Tiger Reserve, Baripada Forest Division and Karanjia Forest Division. The Similipal hills rising from the plains of Baripada in the south and southeast extend as far as Jasipur of Karanjia Division in the north, Bisoi in the east and Thakurmunda in the west. The Nato hills lie in continuity with the south Similipal hills. A chain of hills extending from Similipal hills and its northeastern corner near Rangiripasi extends out forming Gorumahisiani complex. Budhabalanga, Gangahara, Sono, East Deo,Sanjo, Palpala, Khairi, Bandhan, West Deo and Salandi are the principal river streams. Besides there are a number of streams and springs. Barehipani (400m) and Joranda (153m) are the two

prominent waterfalls come within the Similipal range. Hadagarh and adjoining area is situated in between 21^0-10'--21° 21' N latitude and 86^0 10' to 86^0 20' E longitude .It comprises of Hadagarh wildlife sanctuary .The area falls under Keonjhar Forest Division within the administrative jurisdiction of Keonjhar district. Kuldiha and adjoining area is situated in between 21° 20' to 21° 30' N latitude and 86° 25' to 86° 45' E longitude .It comprises of mainly Kuldiha wildlife sanctuary cosisting of Kuldiha Reserve Forest , Devagiri Reserve Forest and Tenda Reserve Forest and very small area of adjoining Sarisua Protected Forest .The area falls under Baripada Forest Division and is under adininistrative jurisdiction of Balasore district.

Different types of forest such as dense sal forest ,open sal forest ,dense mixed forest ,degraded /scrub forest are commonly distributed in the habitat zone .The major slope percentage of this region varies from moderately sloping.(5-10%) to very steep sloping (>35%) with a maximum elevation of 1165 meter at Meghasini (Table 1B).

Dense sal forest, open sal forest and degraded /Scrub forest occupy 2470993.25, 35647.85 hacters of land which is 37.50% ,5.41% and 16.02% respectively to the total geographical area of the elephant habitat zone-I .The presence of settlements and agricultural land are 15794.53 hacters and 196926.02 hacters respectively against 2.04% and 29.88% to the total geographical area of the habitat zone (Table 1A).

Table : 1A

AREA STATISTICS OF LANDUSE / LAND COVER CLASSES OF ELEPHANT HABITAT ZONE 1

(SIMILIPAL , HADAGARH , KULADIHA AND ADJOINING AREA)

SL. NO.	CLASS	AREA IN HECTARE	% TO THE TOTAL HABITAT ZONE
1	SETTLEMENT WITH VEGETATION COVER	15794.53	2.40
2	AGRICULTURAL LAND	196926.02	29.88
3	EGUALYPTUS PLANTATION	2411.73	0.37
4	CASHEW PLANTATION	713.40	0.11
5	TEAK	830.25	0.13
6	BAMBOO	3483.97	0.53
7	DENSE SAL FOREST	247093.25	37.50
8	OPEN SAL FOREST	35647.85	5.41
9	DENSE MIXED FOREST	8658.67	1.31
10	OPEN MIXED FOREST	13838.94	2.10
11	DEGRADED /SCRUB FOREST	105581.25	16.02
12	BARREN ROCKY / STONY WASTE AREA	13467.22	2.04
13	STEEP SLOPING AREA	4547.23	0.69
14	SAND	5897.31	0.89
15	MINING AREA	252.93	0.04
16	WATER BODY	3812.57	0.58
	TOTAL	658957.12	100.00

Table -1B

CHARACTERISATION OF ELEPHANT HABITAT ZONE-1

SL. NO	PARAMETERS	DESCRIPTION
1	Elephant Habitat	i. Similipal and adjoining area ii. Hadagarh and adjoining area iii. Kuldiha and adjoining area
2.	Forest division	Baripada, Keonjhar, Karanjia, Similipal N.P
3	District	Mayurbhanja, Keonjhar
4.	Location	Latitude 21° 10' - 22° 19' N Longitude 86° 02' - 86° 45' E
5	Sanctuary	i. Similipal wild life sanctuary. ii. Hadagarh wild life sanctuary iii. Kuldiha wild life sanctuary

6	National park	Similipal National Park (Similipal Tiger reserve)
7	Forest	Dense sal forest Open sal forest Dense mixed forest Degraded / scrub forest
8	Species	Fauna- Tiger,Leopard, Chowsingha, Hyena, Wolf , Sambar, Bision, Elephant, Giant Squirrel , Hill Myna, Wild Pig, Peacock etc. Flora : Sal , Piasal, Sisoo, Bija, Asan, Dhaura, and Champa, Tree ferns , Orchads,
9	Water source	Khairi Nadi , Deo nadi, etc. Hadagarh reservoir
10	Maximum elevation	1165 m. (Meghasini), 682 m (Baman Hill)
11	Slope	Moderately sloping (5 - 10 %) to very steep sloping (> 35 %)
12	Agricultural Land	29.28% to habitat zone- 1
13	Settlement	2.4 % to habitat zone-1

Table :2A

AREA STATISTICS OF LANDUSE/LAND COVER CLASSES OF ELEPHANT HABIT ZONE 2

(NORTH KEONJHAR AND SOUTH KEONJHAR AND ADJOINING AREA)

SL. NO	CLASS	AREA HECTARE	% TO THE TOTAL HABITAT ZONE
1.	SETTLEMENT WITH VEGETATION COVER	47506.88	3.93
2.	AGRICULTURAL LAND	419525.32	34.71
3.	EUCALYPTUS PLANTATION	6421.45	0.53
4.	CASHEW PLANTATION	4728.64	0.39
5.	TEAK	6.24	0.00
6	BAMBOO	1753.51	0.15
7	DENSE SAL FOREST	266598.41	22.06
8	OPEN SAL FOREST	50035.73	4.14
9	DENSE MIXED FOREST	17442.32	1.44
10	OPEN MIXED FOREST	33075.63	2.74
11	DEGRADED/SCRUB FOREST	266011.69	22.01
12	BARREN ROCKY/STONY WASTE AREA	67104.49	5.55
13	STEEP SLOPING AREA	6691.46	0.55
14	SAND	9479.31	0.78
15	MINING AREA	3790.26	0.31
16	WATERBODY	8446.94	0.70

	TOTAL	1208617.29	100.00

TABLE-2B

CHARACTERISATION OF ELEPHANT HABITAT ZONE - 2

SL No	PARAMETERS	DESCRIPTION
1.	Elephant	i. North Keonjhar and adjoining area ii. South Keonjhar and adjoining area
2.	Forest division	Keonjhar, Banai, Deogarh
3.	District	Keonjhar, Sundargarh, Deogarh
4.	Location	Latitude 20° 50' - 22° 10' N Longitude 84° 45' - 86° 10' E
5.	Sanctuary	
6.	National Park	
7.	Forest	Dense sal forest Open Sal Forest Dense mixed forest Degraded / scrub forest
8.	Species	Fauna :- Tiger, Leopard, Wolf, Sambar, Bison, Elephant, Giant squirrel, Hill myna, Wild pig, Peacock Flora :- Sal,Piasal,Sisoo,Bija,Asana, Dhaura,Bamboo
9.	Water source	Baitarani River and other perennial streams Remala Reservoir
10.	Maximum elevation	1055 m (Meghanad Parbat),929 m (Khandadhar)
11.	Slope	Gentle sloping (3.5%) to very steep sloping (>35%)
12.	Agricultural Land	34.71% to habitat zone-2
13.	Settlement	3.93% to habitat zone-2

Elephant habitat zone-2

The elephant habitat zone-2 comprises of two elephants viz. North Keonjhar and adjoining area and South Keonjhar and adjoining area .The north

Keonjhar is situated in between 21° 30' to 22° 10' N latitude and 84° 45' to 85° 40' E longitude .It comprises the forest blocks of Mahaparbat ,Baitarani ,Kara,Thakurani,Uliburu,Sidhamata,Chamakpur of Champua Range in Keonjhar Forest Division . Toda of Koira range ,Dandapat, Amrudihi and Sindiria of Bonai range ,South Champa Jharan and Kuradihi of Banki range and Rushimath and Kusumdihi of Tamara range of Bonai Division .Thus it extends to three Forest Divisions e.g. Keonjhar ,Bonai and Deogarh within the administrative jurisdiction of Keonjhar ,Sundargarh and Deogarh district respectively.

The south Keonjhar lies in between 20° 50' to 21° 30' N latitude and 85° 15' to 86° 10' E longitude .It consists of forest blocks of Naranpur ,Raghunathpur of Keonjhar range , Rebana of Deogaon range ,Atai and Pipilia of Ghatagaon range in Keonjhar Division and Daitari of Sukinda range of Athagarh forest division .Thus, the area falls within two Forest Division e.g. Keonjhar & Athagarh.The administrative jurisdiction of this area comes under the district of Keonjhar and Jajpur districts respectively.

The important forest types of this zone are dense sal forest ,open sal forest ,dense mixed forest ,degraded /scrub forest etc. The slope condition of this region are broadly gentle sloping (3-5 %) very steep sloping (>35%) with a maximum elevation of 1055 meter , (Megahnad Parbat) .The details of the characteristics of the elephant habitat zone -2 are given in Table-2B.The distribution of dense sal forest is maximum i.e. 266598.41 Ha. followed by the degraded/scrub forest, which is 266011.69 hacters. Besides the settlement with vegetation and agricultural land occupy 47506.88 hactres and 419525.32 hacters respectively .Bamboo forest are grown naturally in this region covering 11753.51 hacters which is 0.15 percent to the total geographical area of the elephant habitat zone-2 (Table-2A).

Elephant habitat zone - 10

Singhbhum and adjoining area comes under the elephant habitat zone 10.The areas lays in between latitude 22° 00' to 22° 59' N and longitude 85° 00' to 85° 59' E.Singhbhum and adjoining area extends in the southern Bihar comprising of 3 forest divisions namely Saranda ,Porhat and Kolhan of the Singhbhum district.

TABLE :10B

CHARACTERISATION OF ELEPHANT HABITAT ZONE - 10

Sl No.	Parameters	Description
1	Elephant habitat	Singhbhum and adjoining area
2.	Forest division	Saranda , Porhat , Kolhan
3.	District	Singhbhum
4.	Location	Latitude 22^0 50' - 22^0 59' N Longitude 85^0 00' - 85^0 59' E
5.	Sanctuary	--------
6.	National Park	--------
7.	Forest	Dense Sal forest Open sal forest Dense Mixed Forest Open Mixed Forest Degraded / Scrub Forest
8.	Species	Fauna :- Tiger, Leopard, Bear, Wolf, Bison , Sambar , Cheetal Elephant , Barking deer etc. Flora : Sal , Piasal , Sisoo ,Asan, Bija, Dhaura etc.
9.	Water source	Karo river,south Koel river
10.	Maximum elevation	862 m (Ghatapuri R.F.)
11.	Slope	Moderately sloping (5 -10%) to very steep sloping (>35%)
12.	Agricultural land	35.36% to habitat zone - 10
13.	Settlement	3.05% to habitat zone - 10

CHARACTERISATION OF ELEPHANT CORRIDORS

Elephants do not always remain confined to a particular habitat for a longer time. Herds compising of bull elephants, cow elephants and infants migrate from one habitat to another habitat through corridors .As we have already discussed the migration is mainly caused because of non-availability of food, water source and the elephant -human conflicts arising inside the forest region .The elephants migrates in a definite corridor linking one habitat to another .Now-a-days it is seen that a number of natural corridors have been ceased partially or fully .As a result the elephant herds have ignored these corridors for migration .This has occurred because of shrinkage of habitats and corridors due to degradation of vegetation cover as well as other developmental activities which have taken place on the forest lands .Therefore many of the corridors are fragmented and do not link different forest patches.

In the present study five important corridors have been identified in the study area along with the interstate corridors linking Orissa to Bihar . Although the actual migration route has not been demarcated ,tentative corridor boundaries have been depicted on the map.

The five important corridors are (Fig. 5) :

1. Simlipal - Hadagarh - Kuldiha
2. Satkosia - Khalasuni
3. Athmallik - Chhendipada - Kamakshayanagar - South Keonjhar
4. South Keonjhar- Kapilas - Satkosia
5. Kotagarh - Lakhari valley - Mahendragiri

Similipal - Hadagarh - Kuldiha:

Similipal is linked with Hadagarh through Satakosia and Noto reserve forests. The density of forest growth is better in this corridor than the Hadagarh - Kuldiha migrational route , still then the process of degradation due to human encroachment has already started and this requires protection very urgently. Initially Kuldiha wild life sanctuary , Hadagarh wild life sanctuary and Similipal wild life sanctuary were part of a large continuous stretch of forest area but now Kuldiha has been disjointed from Similipal completely .Even the forested area between Kuldiha and Hadgarh has been denuded . The main reason behind the degradation is the presence of Boula chromite mines . Kuldiha is connected to Hadagarh through small hillocks like Garasahi,Sishuapala,Balipal and Boula hills. The forest of this region are mainly dense and open sal. Besides very selective patches of dense mixed forest are seen along with the degraded / scrub forest. The slope ranges from moderately sloping (5 - 10 %) to moderately steep to steep sloping (15- 35 %) with a maximum elevation of 697 Mt. In Noto Reserve forest (Annexure 1)

Athmallik - Chhendipada - Kamakshayanagar - South Keonjhar

The migration route of Athmallik - Chhendipada - Kamakshayanagar - South Keonjhar route lay within Keonjhar , Dhenkanal and Angul districts. The elephant migrate from Satkosia wildlife sanctuary through Taleipathar Reserve Forest and then Ghosar Reserve Forest via Himltira and finally reach Kalapat Reserve Forest of Keonjhar district through Anantapur Reserve Forest of Dhenkanal . The migration route of this region is mainly composed of different forests like dense sal forest ,open salforest , dense mixed forest ,open mixed forest ,degraded/scrub forest Bamboo etc. The slope of this region varies from gentle sloping (3-5%) to strongly sloping (10-15%). (Annexure-I)

South Keonjhar- Kapilas - Satkosia

This was the earlier migrational route between two largest elephant habitats of Orissa i.e. Similipal and Satkosia .In course of time this has been fragmented and does not exist at present .The migrational route covers the districts like Angul ,Dhenkanal ,Cuttack and Keonjhar districts. The elephants of south Keonjhar use to migrate to Kapilas via Sukinda forests by crossing over the river Brahmani .Earlier the elephants from Kapilas used to migrate to Chandaka and Satakosia through the forests Athagarh Division.Elephants from Chandaka used to cross river Mahanadi near the hillock Sukhasan to move to the forests of Athagarh Division and then migrate to either Kapilas or Satkosia .Such migration has perhaps ceased since long .The forest of this route are mainly dense sal forest ,open sal forest ,dense mixed forest and degraded /scrub forest .The percentage of this route varies from gentle slopping (3-5%) to strongly slopping (10-15%) with the maximum elevation of 750mt. At Raighar Reserve Forest . (Annexure-I).

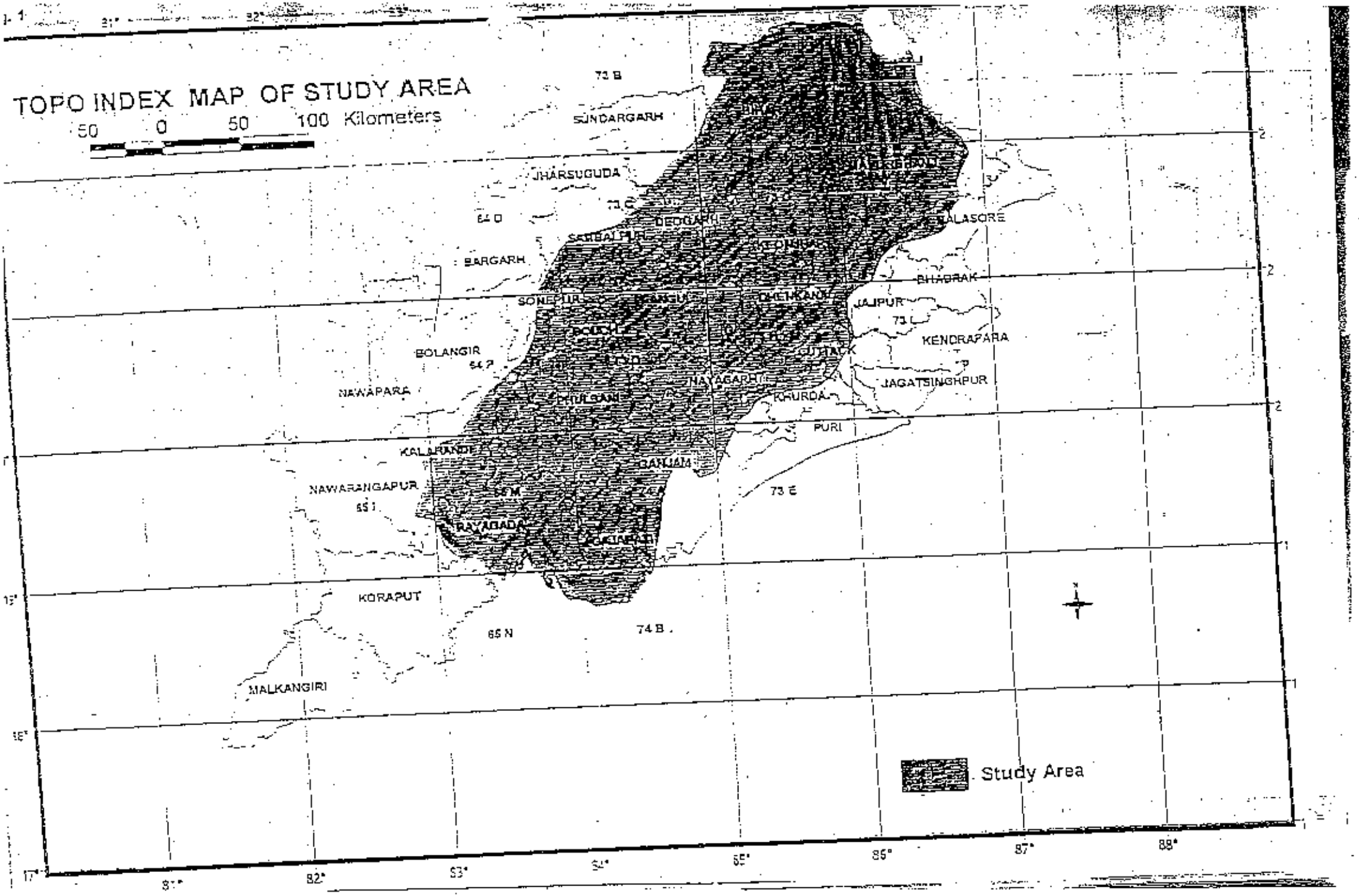
INTERSTATE MIGRATION OF ELEPHANTS

The elephant population in the eastern India is confined to Orissa and Bihar states. There is continuous migration of elephants from Orissa to Bihar and vice versa particularly between elephant population of North Keonjhar and adjoining area of Bonai Forest Division of Orissa and Saranda Forest Division of Bihar .The Tholkabad forest block of Saranda Division is connected with the Toda forest block of Bonai Division .Therefore it is obvious that migration of elephants takes place between these forests and adjoining area. Likewise , Karampada forests of Saranda Division is connected with Uliburu and Siddhamatha forests of Keonjhar Division facilitating interstate migration of elephants . Roam -Musabani forest area of Bihar which is situated south of the river Subarna rekha has an isolated elephant population .This elephant population migrates to Keonjhar and Mayurbhanja border areas of Orissa as well as Dalli forest near Orissa- West Bengal border.

CONCLUSION:

It has been felt that there is shrinkage of elephant habitat and corridors because of natural as well as anthropogenic pressure on forest resources .The corridors are fragmented continuously and delinked the habitats .Thus if the fragmentation of habitats is continued and if no migration of elephants from one habitat to another habitat is allowed the elephants from Orissa stand to become extinct in the next one hundred years or so. Therefore , it is imperative that corridors among different habitats are re-established and maintained so that migration of elephants from one habitat to other is possible as to maintain sufficient genetic variability to counter inbreeding depression .Conservation priorities of this region include maintaining habitat continuity through protection , acquisition and creation of corridors , consolidation of habitat through translocation of some settlements, habitat improvement through promotion of regeneration and afforestation, minimising elephants -human conflicts through setting up of barriers, awareness among people and population management and control of ivory poaching.

All the mines of Keonjhar and Bonai division comes under elephant habitat zone 1-zone 2. This region covers one sanctuary i.e. Hadagarh Sanctuary in Anadapur Subdivision of Keonjhar Division. The maps prepared by ORSAC showing elephant habitat and corridors are appended here with. The elephant habitat also covers the habitat of other Schedule I species viz. Tiger etc. and endangered flora . Hence taking all these factors into consideration the prescriptions in this comprehensive wildlife mangement plan has been drawn , which are also in confirmity with the wildlife compatible prescriptions laid down in the working plans prepared for Bonai and Keonjhar forest divisions.


TOPO INDEX MAP OF STUDY AREA
50 0 50 100 Kilometers
SUNDARGARH
JHARSUGUDA
DEOGARH
SAMBALPUR
BARGARH
BOLANGIR
NAWAPARA
SONEPUR
BOUDH
NAYAGARH
PURI
KHURDA
JAJPUR
BHADRAK
BALASORE
KENDRAPARA
JAGATSINGHPUR
KALAHANDI
NAWARANGAPUR
RAYAGADA
KORAPUT
MALKANGIRI
Study Area

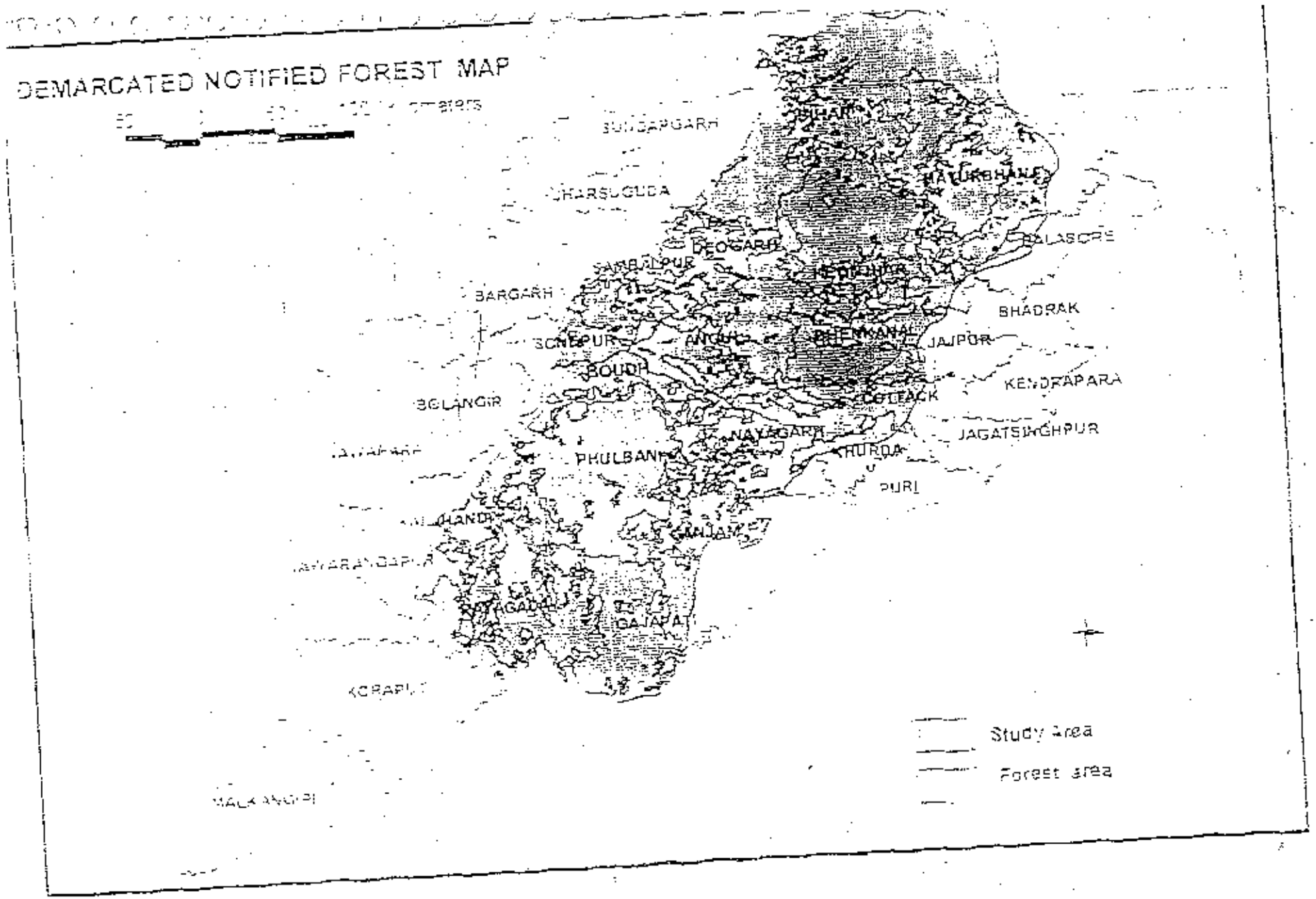
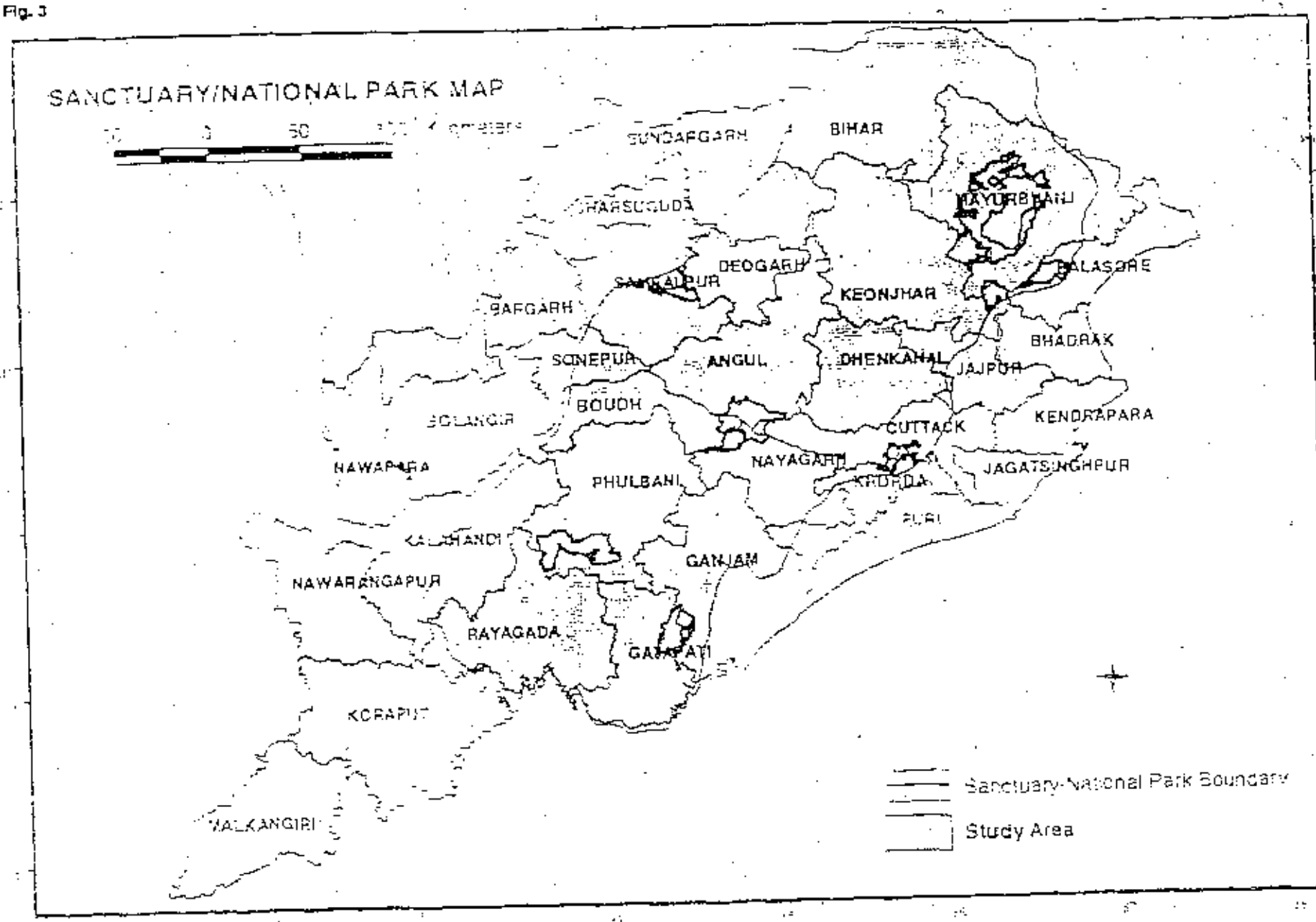
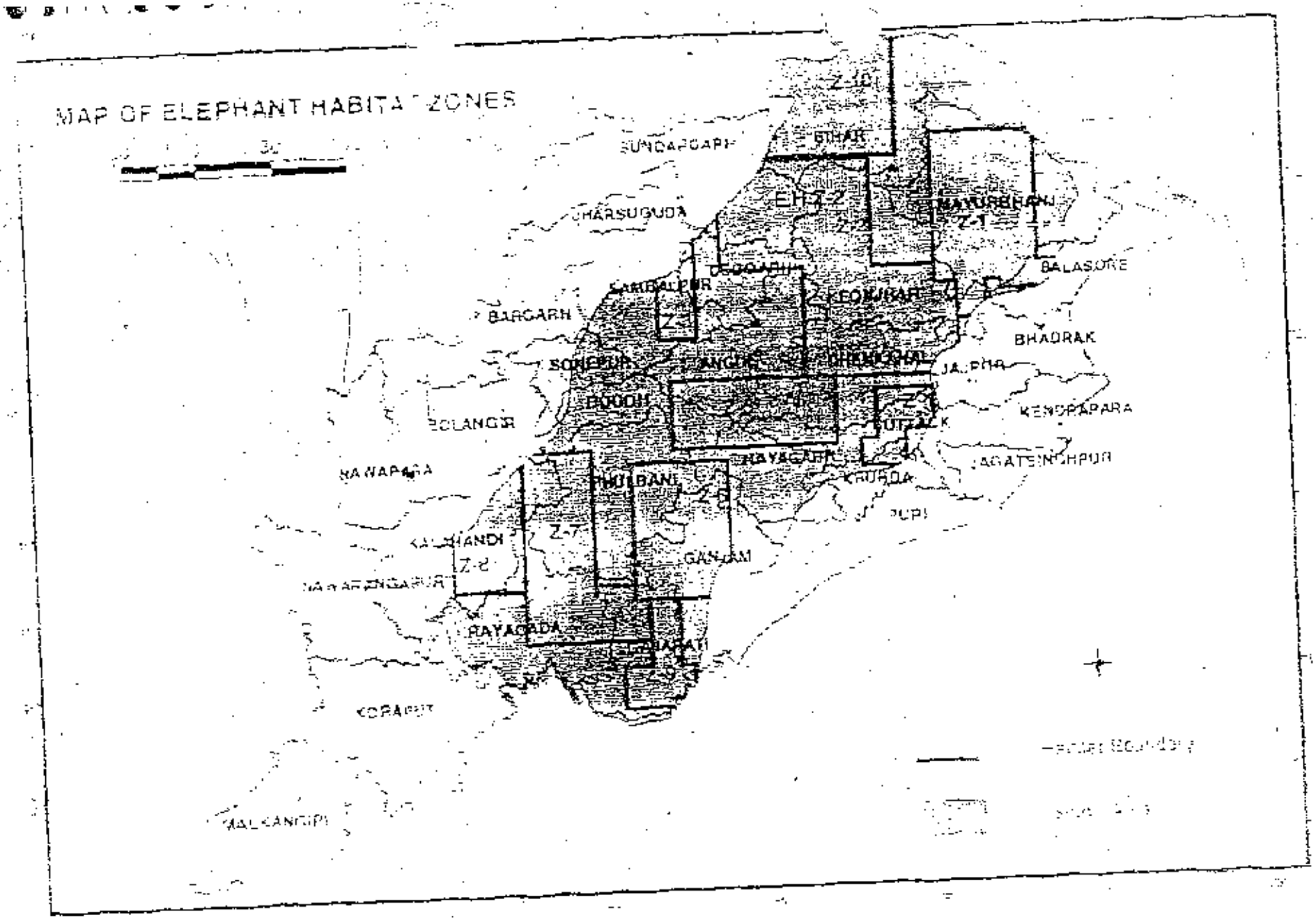
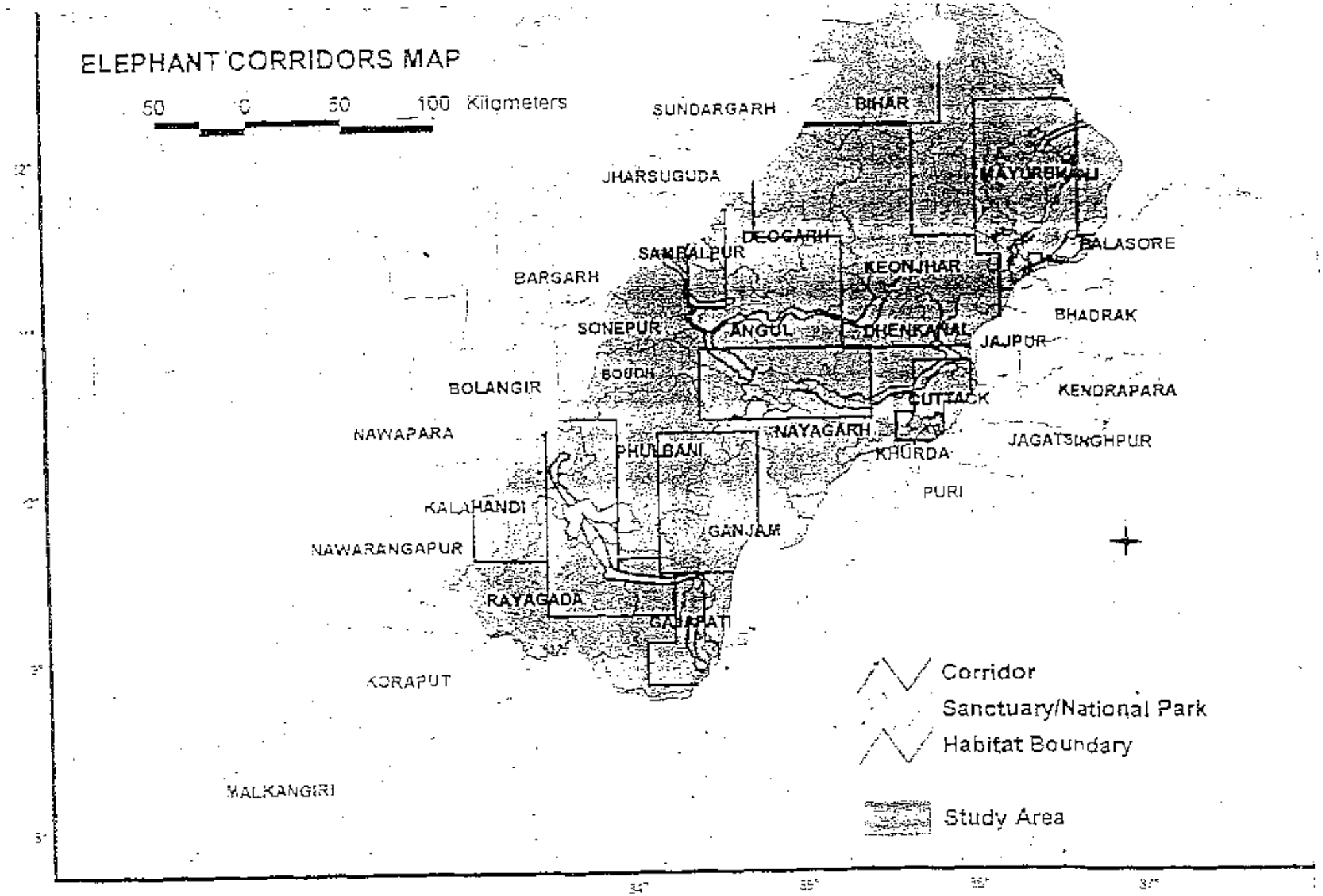
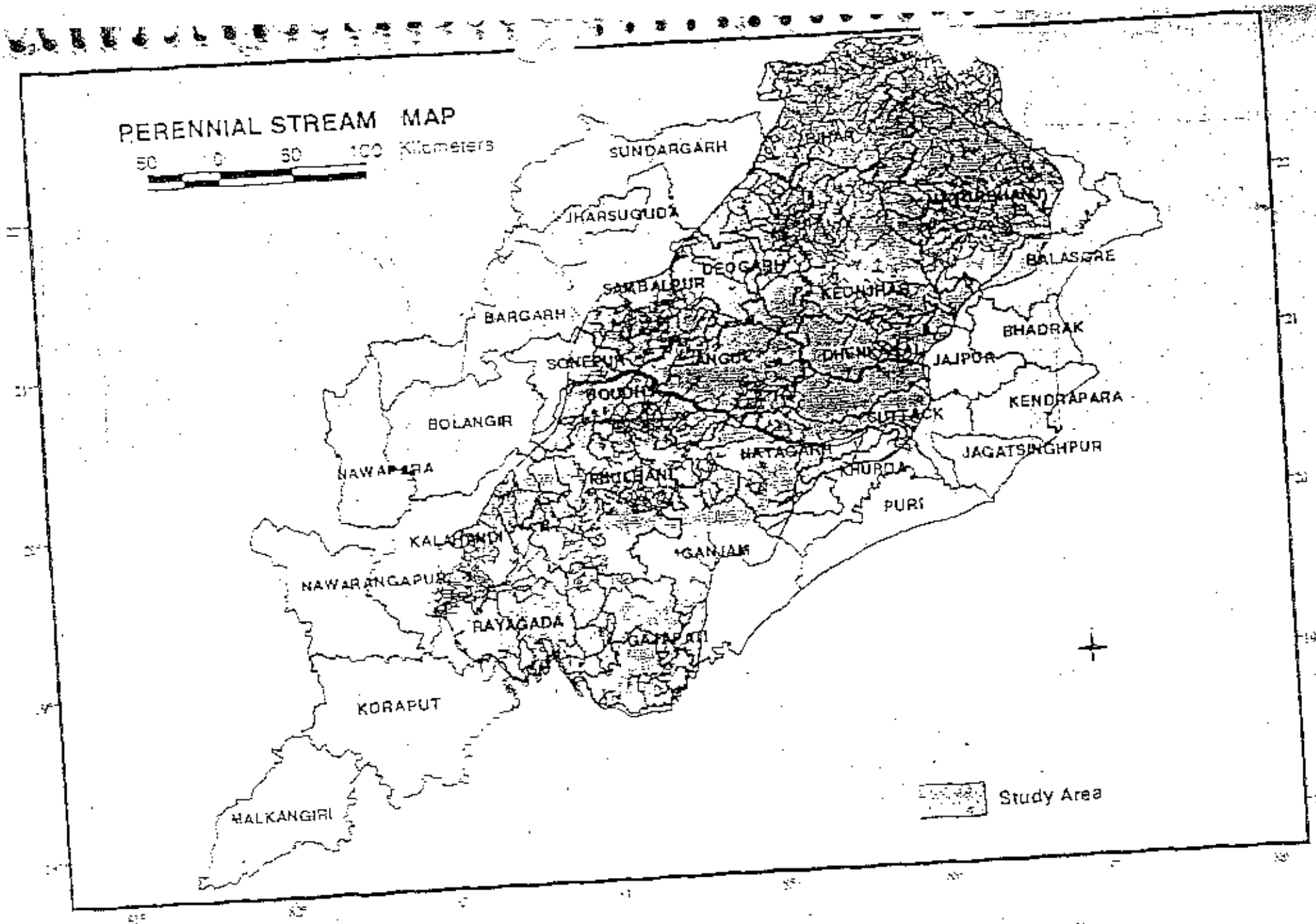

DEMARCATED NOTIFIED FOREST MAP
SUNDARGARH
DEOGARH
SAMBALPUR
BARGARH
BOUDH
BOLANGIR
PHULBANI
NAYAGARH
KHURDA
PURI
GANJAM
GAJAPA
MAYURBHANJ
BALASORE
BHADRAK
JAJPUR
KENDRAPARA
JAGATSINGHPUR
Study Area
Forest area

Fig. 3


SANCTUARY/NATIONAL PARK MAP
SUNDARGARH
BIHAR
MAYURBHANJ
BALASORE
DEOGARH
SAMBALPUR
KEONJHAR
BARGARH
BHADRAK
SONEPUR
ANGUL
DHENKANAL
JAJPUR
BOUDH
KENDRAPARA
CUTTACK
NAWAPARA
NAYAGARH
JAGATSINGHPUR
PHULBANI
KHORDA
PURI
GANJAM
NAWARANGAPUR
RAYAGADA
KORAPUT
MALKANGIRI
Sanctuary-National Park Boundary
Study Area


MAP OF ELEPHANT HABITAT ZONES
SUNDARGARH
BIHAR
Z-10
EHZ-2
MAYURBHANJ
Z-1
HARSUGUDA
BALASORE
BARGARH
KEONJHAR
BHADRAK
SONEPUR
ANGUL
JAJPUR
BOLANGIR
KENDRAPARA
NAYAGARH
KHURDA
NUAPADA
PURI
KALAHANDI
Z-7
Z-8
GANJAM
RAYAGADA
KORAPUT
MALKANGIRI

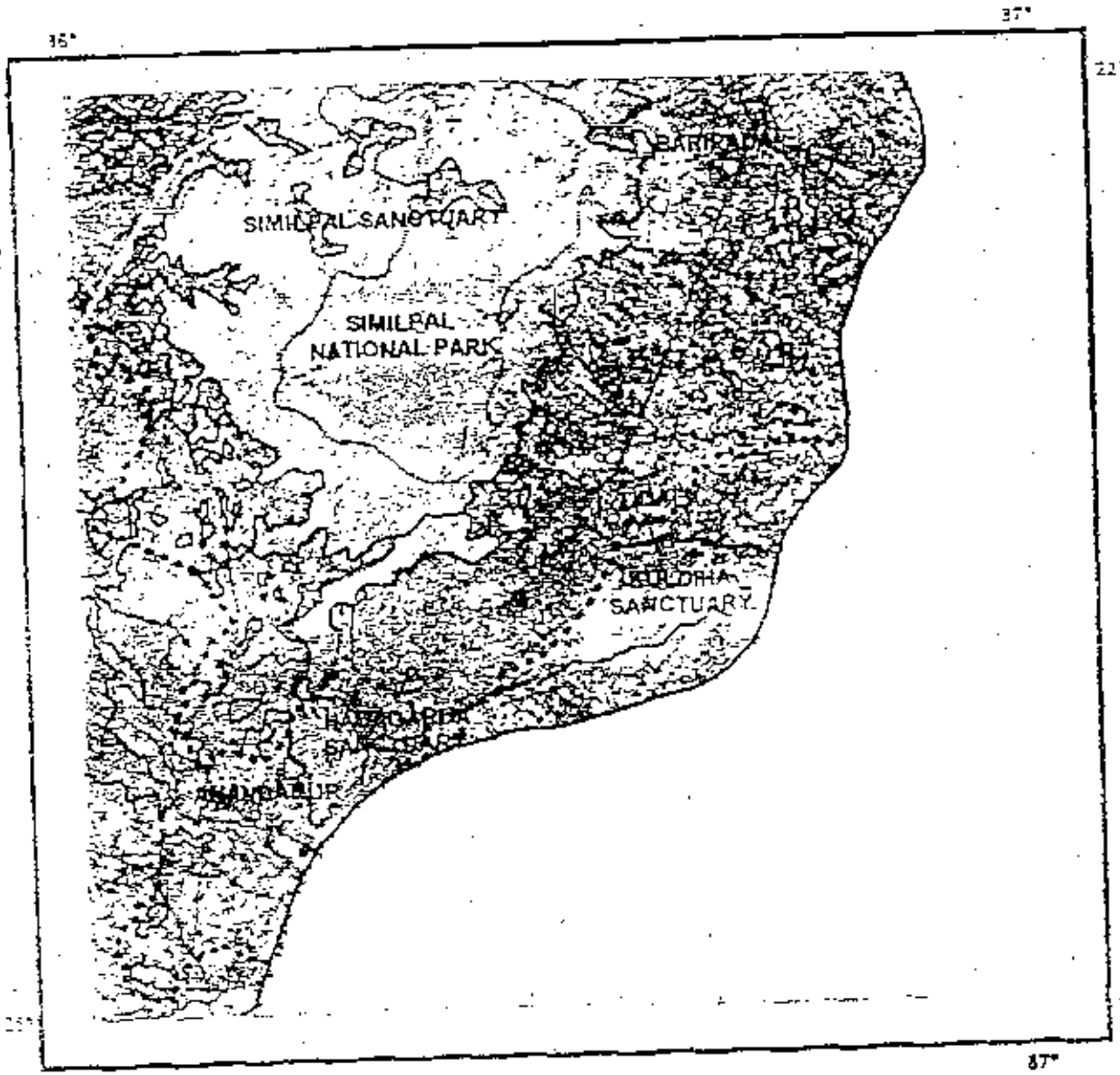

ELEPHANT CORRIDORS MAP
50 0 50 100 Kilometers
SUNDARGARH
BIHAR
JHARSUGUDA
MAYURBHANJ
DEOGARH
SAMBALPUR
BALASORE
KEONJHAR
BARGARH
BHADRAK
SONEPUR
ANGUL
DHENKANAL
JAJPUR
BOUDH
BOLANGIR
CUTTACK
KENDRAPARA
NAWAPARA
NAYAGARH
JAGATSINGHPUR
PHULBANI
KHURDA
PURI
KALAHANDI
GANJAM
NAWARANGAPUR
RAYAGADA
GAJAPATI
KORAPUT
MALKANGIRI
Corridor
Sanctuary/National Park
Habitat Boundary
Study Area


PERENNIAL STREAM MAP
50 0 50 100 Kilometers
SUNDARGARH
JHARSUGUDA
SAMBALPUR
DEOGARH
KEONJHAR
BALASORE
BHADRAK
BARGARH
SONEPUR
BOUDH
JAJPUR
KENDRAPARA
BOLANGIR
NAWAPARA
JAGATSINGHPUR
KHURDA
PURI
KALAHANDI
NAWARANGPUR
RAYAGADA
KORAPUT
MALKANGIRI
Study Area

CHARACTERISATION OF ELEPHANT HABITATS AND CORRIDORS
(ORISSA & PART OF BIHAR)

(Topo Sheet No. - 73-K)

10 0 10 20 Kilometers



- SETTLEMENT WITH VEGETATION
- AGRICULTURAL LAND
- EUCALYPTUS PLANTATION
- CASHEW PLANTATION
- BAMBOO
- TEAK
- DENSE SAL FOREST
- OPEN SAL FOREST
- DENSE MIXED FOREST
- OPEN MIXED FOREST
- DEGRADED / SCRUB FOREST
- BARREN ROCKY / STONY WASTE
- STEEP SLOPING AREA
- SAND
- MINING AREA
- WATERBODY
- PERENIAL STREAM
- HIGH TRANSMISSION LINE
- ROADS
- RAILWAY
- FOREST BOUNDARY
- SANCTUARY BOUNDARY
- CORRIDOR BOUNDARY
- DISTRICT BOUNDARY

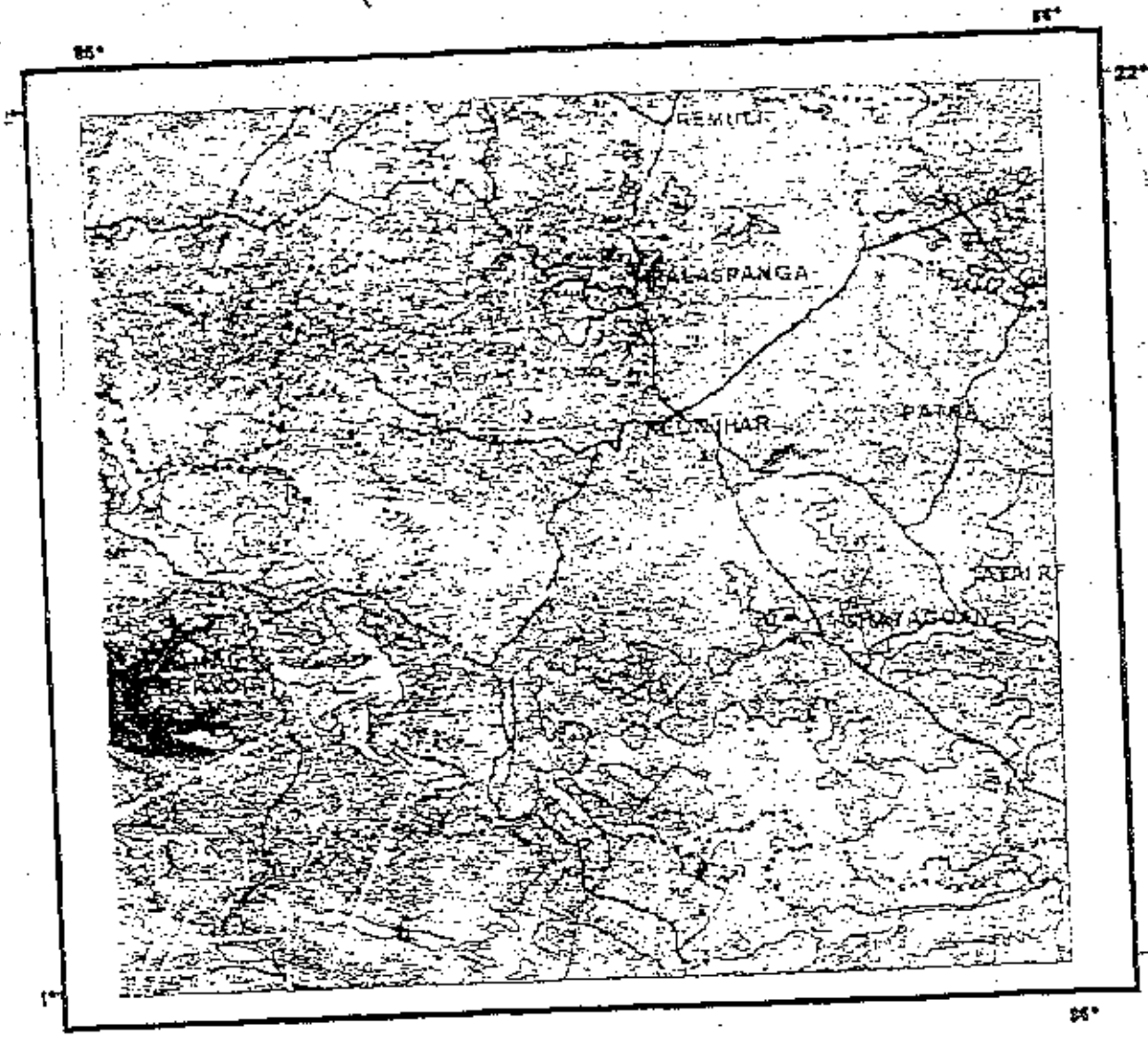
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CHARACTERISATION OF ELEPHANT HABITATS AND CORRIDORS (ORISSA & PART OF BIHAR)

(Topo Sheet No. - 73 G)

10 0 10 20 Kilometers



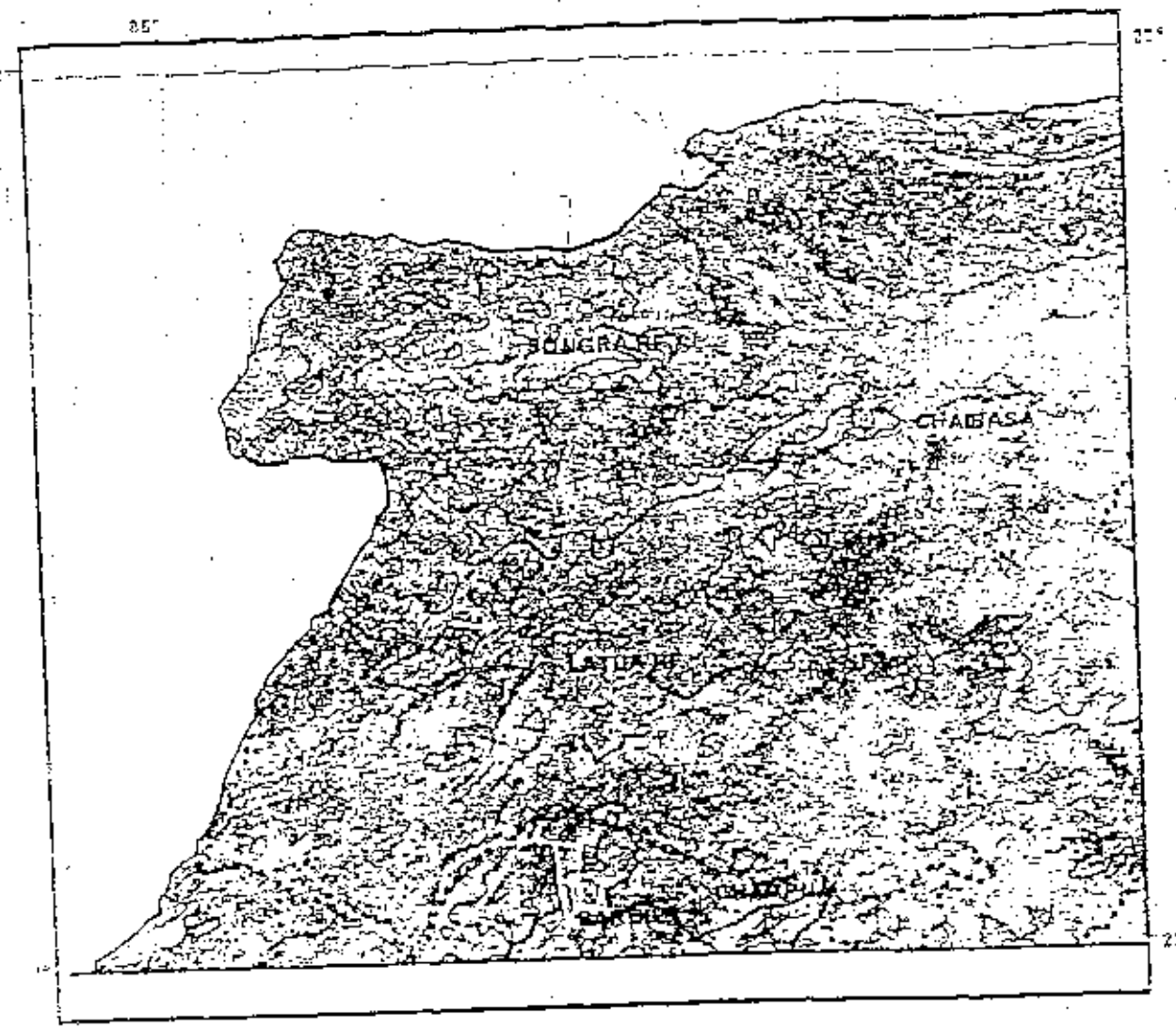
- SETTLEMENT WITH VEGETATION
- AGRICULTURAL LAND
- EUCALYPTUS PLANTATION
- CASHEW PLANTATION
- BAMBOO
- TEAK
- DENSE SAL FOREST
- OPEN SAL FOREST
- DENSE MIXED FOREST
- OPEN MIXED FOREST
- DEGRADED / SCRUB FOREST
- BARREN ROCKY / STONY WASTE
- STEEP SLOPING AREA
- SAND
- MINING AREA
- WATERBODY
- PERENIAL STREAM
- HIGH TRANSMISSION LINE
- ROADS
- RAILWAY
- FOREST BOUNDARY
- SANCTUARY BOUNDARY
- CORRIDOR BOUNDARY
- DISTRICT BOUNDARY

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Fig. 8 (10)

CHARACTERISATION OF ELEPHANT HABITATS AND CORRIDORS
(ORISSA & PART OF BIHAR)

(Topo Sheet No. - 73B & 73F)



10 0 10 20 Kilometers

- SETTLEMENT WITH VEGETATION
- AGRICULTURAL LAND
- EUCALYPTUS PLANTATION
- CASHEW PLANTATION
- BAMBOO
- TEAK
- DENSE SAL FOREST
- OPEN SAL FOREST
- DENSE MIXED FOREST
- OPEN MIXED FOREST
- DEGRADED / SCRUB FOREST
- BARREN ROCKY / STONY WASTE
- STEEP SLOPING AREA
- SAND
- MINING AREA
- WATERBODY
- PERENIAL STREAM
- HIGH TRANSMISSION LINE
- ROADS
- RAILWAY
- FOREST BOUNDARY
- SANCTUARY BOUNDARY
- CORRIDOR BOUNDARY
- DISTRICT BOUNDARY

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PART-II

CHAPTER - 9

PLAN OBJECTIVES AND PROBLEMS

9.1 :Objectives of Management.

1. To conserve a viable population of wild life in general and elephant in particular in their natural habitat with flagship species conservation approach.
2. To conserve the natural biological diversity, aesthetic and Geo-morphological values of the protected area through appropriate management of sites, habitats and landscapes including the zone of influence.
3. To conserve the catchment of rivers and stream system for maintaining attachment capability and functions.
4. To reduce the dependency of local people on protected area resources within the zone of influence through culturally, socially, economically acceptable and ecologically sustainable viable alternatives by taking up compatible wild life conservation oriented eco-development programmes.
5. To provide enlightened wilderness experience to visitors and to promote conservation awareness among the local communities through conservation education packages in order to secure their support for conservation of the protected areas through appropriate eco-tourism approach.
6. To identify and define the significant research and monitoring activities and the modalities of their implementations to support the other objectives of management.

7. To enhance and maintain the management capability of line and staff personnel at all levels through appropriate training programmes, infrastructure facilities and welfare support.

8. To reduce man - animal conflict by ensuring contiguity of the habitats inside and out side Keonjhar and Bonai Division by developing corridor link up improvement of habitat developmental activities on a regional basis and on a long-term basis.

9.2:Problems in achieving the objectives.

Objective 1

To conserve a viable population of wildlife in general and elephant in parti in their natural habitat with flagship species conservation approach.

Shrinakage and degradation of original habitat over the decades.

Once upon a time forests of Keonjhar and Bonai Division were in contiguous with vast Saranda Forests of Bihar, Forests of Deogarh, Dhenkanal and Athagarh Divisions up to great Similipal massif. Cradled between two great Wildlife reserves i.e. Saranda and Similipal, Keonjhar and Bonai forests served as a potential buffer as well as corridor link for resident as well as migrating megaherbivores like elephants and carnivores like tigers. A remnant elep t population of the larger Central Indian Elephant population still pervades within the fragmented-forested lands of those forest ranges at present Their long-term conservation is at perils. Over the years the original habitat has been degraded due to over exploitation of mineral resources which can be found mostly in better forests of super rich mining zones of Champua range and Koira range of Keonjhar and Bonai divisions respectively. Thus, the honey combing of the pristine forests started with the mineral exploitation during early twentieth century in this region. Population explosion together with developmental activities i.e. construction of railway line, mushrooming of

huttings in mineral belt, expansion of agriculture by cutting forests appropriated a large chunk of productive valley areas of this region. Encroachment, illicit felling etc became rampant. To add this the scrub cattle number increased by leaps and bounds contributing to over grazing and denudation of forests. Soil erosion in mining area became serious. All these factors are responsible for shrinkage of forest cover there by depriving the wildlife their basic ecological requirements i.e. food, water, refuge etc. The palatable fodder became scarce for wildlife inside forest for which they resorted to crop raids resulting in escalated man-animal conflict. All sorts of biotic interference i.e. fire, overgrazing, encroachment, illicit felling etc. in forested area resulted in retrogression. This has created food scarcity for herbivores. It also indirectly affected the carnivore population due to substantial reduction in prey-base.

Shrinakage of wild land over the years has affected particularly megaherbivores i.e. elephant which requires tons of green fodder everyday to keep it going. The inadequacy of their basic needs has forced the elephants to come out of their original forested habitat to villages on forest fringes for frequent crop raids & house raids.

Rise in man-animal conflicts in recent years is due to these factors. Hunting of wildlife for trophy and trade has been noticed recently wherein a definite network of organised smugglers has been traced out. The tribal hunt particularly during summer season is posing a serious threat for existence of wildlife. Moreover, presence of both human and cattle population deprives wildlife from using the available limited waterholes during pinch summer months. Both humans heavily use the critical riparian vegetation and cattle for which wildlife are seriously imperiled. Since the wild life use these riparian zones disproportionately, the presence of settlements and cattle camps close

to these critical zones deprive the wild life of their best habitat. These cattle and goats not only cause heavy trampling of the surrounding areas but also pollute the clear water by defecating, urinating and wallowing.

Over the years the number of carnivores have decreased significantly. This is due to loss of adequate forest cover and decline in prey-base. Although a lot of good reserve forests are within Keonjhar and Bonai Forest Divisions yet, these are mostly fragmented due to intense mining activities and establishment of camps and huttings. Movement of a lot of vehicles is creating environmental pollution & noise pollution. Blasting is also creating a great threat to existence of wild life. Thousands of hect. of accasia and Eucalyptus plantations around villages has given rise to monoculture thereby reducing bio-diversity. These are virtually biological deserts and wildlife hardly used these artificial plantation of exotic ,Even most of the mine owners in their green belts and safety zones have hardly used any indigenous fodders and fruit bearing trees large scale plantation of exotics have even appropriated sizeable amount of fertile lands .These plantations hardly contain any ground flora and thus it can not serve the purpose of cover to wild life. More ever these exotics are highly susceptible to fire.

There is no concerted effort made for wild life management in the forests (R.F., DPF, PF) of these two forest divisions except that villagers are mostly protecting their plantations & Khesera forests. There is no attempt to improve the quality forest cover for the carnivores as well as to improve the availability of fodder trees, shrubs and palatable grasses for herbivores. Planting of fodder and fruit bearing trees which is essential for wild life has not been done in a significant way. However, during ex-estate period, the Kendujhar Maharaja had undertaken planting of Mango, Neem, Syzigium, Tamarind, Ficus all along the road from Remuli to Ghatagaon, which serves as

the excellent migratory route for domestic elephants those descend down from Bihar-U.P. to Keonjhar district every year with their Mahouts. Besides providing shade and fruit, this avenue plantation of indigenous species serves as year round food source for varied avifauna of Keonjhar District.

Serving as crucial corridor, Champua and Koira range together represents only a fragment of contiguous wilderness area that once sprawled across in between great Saranda forests of Bihar to Similipal forests of Orissa. Now it has been fragmented due to all sorts of developmental activity and due to burgeoning human & cattle population. Yet the natural forests are still maintained in a degraded state with clusters of artificial plantations all around habitations raised by Orissa Forest Development Corporation, Social Forestry project, Territorial plantation etc funded by Forest dept. , NREP,DRDA JRY Schemes. Due to its strategic location as a corridor link as described above, concerted efforts must be made to link up fragmented wilderness area either by artificial or semi-natural plantations with indigenous species. Developmental activities have cut off the traditional migratory routes of elephants over the years, which might have irritated them resulting in escalated Man-elephant conflict. More and more number of sub-adults and adult tuskers are resorting to crop raids and house raids and are spending most of their time wandering near habitations rather than in dense forests. They have learned over the years with experience that it is easy to get a handsome meal by crop-raiding or house raiding rather than wandering inside degraded forests which are without any palatable fodder. Moreover there is no problem for these raiding bulls to quench their thrust in nearby village tanks. Handia (country liquor) is also quite available with tribal people staying close to forest, which is delicacy for these marauders. At present the isolated forests of this region hardly capable of sustaining a viable wild life population of any kind. Only remnant and isolated non viable populations of wild life is available which has

blink future unless long-term wild life conservation measures are taken by establishing corridor link up and improving the existing habitat conditions. Elephant is an indicator species and a flagship species. If conservation of elephant habitat is undertaken it will automatically take care of the survival of other sympatric herbivores and carnivores.

Objective - 2

To conserve the natural biodiversity, aesthetic and geo-morphological values of the protected area through appropriate management of sites, habitats and landscapes include the zone of influence.

Problem with habitat.

Wild Fires

Forest fire sweep across all the forested tracts of the two divisions during summer season. Unscrupulous people set fire deliberately in most of the cases thereby destroying available shrub level forage besides causing temporary shifting of wildlife from burnt areas to unburnt areas. Fire is set by the inhabitants of mine huttings, encroachers and grazers for collection of Sal seed, Sal leaves, Mahua flower, Mahua seed, for better sprouting of Kendu leave and for facilitating hunting by creating better visibility.

Repeated fires arrest plant succession and retrogression sets in. The regeneration is destroyed and thorny and fire hardy species take their place. The role of fire in shaping vegetation communities and its management implications is thought provoking.

Livestock grazing

Heavy trampling by cattle leads to compaction of soil thereby accelerating soil erosion, run off and reduce percolation of water. This also drastically reduce

seed germination and regeneration is affected. Overgrazing sets in retrogression and allows obnoxious weed invasion viz., Eupatorium odoratum ,Parthenium histerophorus, Agiratum connizoides ,etc.which proliferate in forested blanks thereby reducing the availability of palatable shrubs and grasses to wild herbivores.

Seasonally and distribution of water

All the important reserved forests of Keonjhar and Bonai forest division i.e. Sidhamath R.F., Karo R.F., Baitarani R.F., Thakurani R.F. , Uliburu R.F.,Boula R.F., Khajuridihi R.F,Sarkunda RF ,Khandadhar RF, Amrudihi RF etc. boasts of numerous perennial streams and rivers (Fig. 6) which are life line of thousands of people including the labourers engaged in mining.. Since these water sources are intensely used by human being and domestic animals, the wildlife has to travel long distances in pinch summer months to get an undisturbed water source. Hence waterholes are needed to be constructed in interior areas for wildlife use strictly.

Illicit felling and smuggling

Timber mafias are found to be very active in Koira - Bolani-Barbil area boardering Bihar recently. A lot of valuable Teak plantations have been plundered along with natural big Sal trees. Scores of labourers from huttings in mining belt are resorting to illicitfelling for firewood collection, poles etc. both for bonafide domestic use and also for getting extra income by selling in the nearby township. Since most of the mines are situated in reserved forests the same have been degraded due to rampant illicit felling. Particularly Sal poles are heavily exploited for use in thatched houses and fencing.Similarly smuggling of timber in Similipal -Hadagarh area and Daitary-Sukinda area boarding Athgarh Division is acute.

Poaching

Recently Ivory poaching has been detected in Joda area. Besides that wildlife trade is thriving in Jhumpura village of Champua range. Leopard, wildboar, hare capture and trade of baby bears, hyena, hornbill etc. have been reported. Recently one gang involved in Ivory trade has been arrested from Joda area.

Encroachments

Encroachments are prevalent in Uliburu R.F., Karo R.F. compartment No. 1 to 6, compartment No. 7 near Kiriburu township, compartment No. 10 & 11 near Hirakud colony of Thakurani R.F., near Sayabali village (Thakurani R.F.) from the eastern boundary line along Bhadrasahi & Barbil road of Thakurani R.F., Baitarani 'A' & 'B' etc. Besides these some revenue forests (Khesara) also have been encroached . All these encroachments need to be evicted so as to reestablish vegetation cover.Similarly new colonies at Tensa ,Barsuan,Kalta,Khandadhar , Malda etc. have come up to accommodate employees of their mines.

Shifting cultivation

Karo and Sidhamath R.Fs. are subjected to the pernicious practice of shifting cultivation since 70 to 80 years. The incidence of these podu cultivation has been reduced considerably now and sporadic cases are found in the remotest areas inside these R.Fs.

Mining

The last but not the least is the increased mining activities inside the R.Fs. viz. like Karo, Sidhamath, Thakurani, Baitarani Uliburu Khandadhar, Anrudihi, Khajuridihi etc. which contributes to forest destruction to an appreciable amount. All these forests have been honey-combed with mines, increasing seismic danger in future. Not only the valuable forests have been destroyed

by mining but also the mine spoils also pose a serious problem of soil erosion, damage to the fertility status of the agricultural lands on the foot hills. Unless mine reclamation plan and afforestation plan is implemented quickly the problem will be serious in future.

Objectives - 3

To conserve the catchment of rivers and stream systems for maintaining catchment capability and functions.

Problems - Landscape approach

For the purpose of planning the protected areas on its geographic scale including areas outside its legal boundaries identified as a buffer on the zone of influence to which planning is to be extended is viewed as landscape. Landscape includes all heterogeneous vegetation type such as riparian forest to degraded scrub forests and even plantations. What is happening outside Reserved Forests or protected forests in the form of changing landuse is difficult to control. In upper catchment areas of Karo Baitarani ,Brahmani river an integrated watershed developmental planning is needed. Whatever changes in the catchment viz. denudation of vegetal cover, intensive mining activity, expansion of agriculture with pesticide & fertilizer, establishment industry etc. has an effect on the river system down below thereby affecting wildlife and their health. In order to maintain catchment capability, increasing percolation, reducing runoff, planting with indigenous species especially fruit and fodder trees is essential which is unfortunately not taking place now. Any change in land use pattern outside wilderness area or forested area which is not compatible from wild life and environment point of view will lead to fragmentation of habitat and loss of corridor link which is essential for migration of wild animals.

As a planner we should have a far-sighted vision and should able to fore-see the possible changes beyond forested tracts .Taking this point ,the complete regional conservation planning may take Saranda-Bonai - Champua- Keonjhar-Karanjia-Similipal as a single conservation unit at a macro-level.High spatial requirement of the top herbivores (elephant) and top carnivore (Tiger) necessitate a larger area for long-term conservation. Mining rich belts of Champua and Koira ranges holds only a fragmented population of central elephant population that ranging from Saranda to Similipal. To conserve a minimum viable population of elephants (considered to be 500 at least), its year .round habitat requirements, seasonal migratory routes should be protected for better genetic exchange for long-term survival. A few lone tuskers roam about in between forests from Saranda,Bonai,Keonjhar and Similipal. Therefore we can not think of taking conservation measures only for the isolated elephant population of any single range. Wild life protection in multiple use areas with an integrated management approach compatible with the conservation objectives is needed.

Objective - 4

To reduce the dependency of local people on protected area resources within the zone of influence culturally, Socially, Economically acceptable and ecologically sustainable viable alternatives by taking up compatible wild life conservation oriented eco-development programmes.

Problem - Current unsustainable living

The presence of huttings, encroachments inside R.Fs., DPFs. etc. and their impact as a whole degrading the habitation is unsustainable. These people and their livestock have to leave the reserves for greater cause of conservation. This will also reduce man - animal conflict and make the ecosystem more productive in terms of wildlife, vegetation, biodiversity. Similarly the

mushrooming of settlement without any support system in terms of day to day fuel wood requirement, poles for construction of hutment etc. need village wood lots in the line of social forestry to sustain them without damaging R.Fs., DPFs., Khesra Forests.

Eco-development

An integrated approach to sustainable development for people and protected areas of Keonjhar-Bonai conservation Unit.

Back Ground

In the face of pronounced and on going degradation of natural ecosystems over the country as a whole, there has been conscious and steady effort at enhancing the protected area coverage. Protected areas in the present plan includes only R.Fs,. DPFs., UDPFs., of Keonjhar-Bonai forest ranges including Hadagarh wildlife sanctuary. As we know most of the protected areas in India suffers from lack of completion of legal formalities and regulation of resource use by local people, in the absence of scientifically drawn up management plans, proper zoning and corresponding management are a rarity. Even where plan exists or where zones have been defined,as incase of Hadagarh wild life sanctuary appropriate management suffers from two constraints. First is the paucity of resources, and the second is the lack of a planned compatible package of measures which while achieving the regulations necessary to better management, can also meet people's needs or provide them with alternatives.

In result, humble attempts to set up new protected areas (PAs) and enlarge the size; or intensity of management in the existing ones are encountering unprecedented resistance in many cases. Spill-over of wild animals from better managed PAs is causing crop and livestock depredations giving rise to interface conflicts of a different variety. Admittedly, these problems are not

readily tractable, but it is also true that efforts at solving them have been meager.

Experience gained from the implementation of project Tiger (Panwar,1987) has shown that it is only a people friendly approach that can assure effective management of PAs on a long term basis.

The Problem

Pressures upon wild lands and the dependence upon biomass resources seem to be at the core of the problem The population explosion has given way to the mushrooming of habitations inside wildlife habitat i.e. forests. This togeth with the burgeoning developmental activities viz. constructions of reservoirs, mines, roads, industries etc. the pristine & prime wildlife habitat has been fragmented resulting in loss of food, shelter, cover to the wildlife. The people inside interspersed human habitations are purely depending upon biomass resources of the forests. In remote times, with a favourable man to land ratio, the traditional lifestyles based on marginal land farming, slash and burn agriculture, pastoralism as well as hunting, gathering and fishing were sustainable. In the present day scenario, land use changes have completely upset the equations already stressed by the unbridled growth of human an livestock populations.

Alternative strategies

Clearly, such well considered answers to be "Hows" and "Whys" lead us to the only conclusion that a prolonged neglect of landuse, inadequate and inappropriate inputs in to rural development in the wilderness regions and a forest management approach that could not involve local people as partners in conservation, have been collectively responsible for the present situation of vanishing wilderness and dwindling wild life population. Thus, environmental

security, forest productivity, biodiversity and wildlife conservation and the well being of the inhabitants of wildlands, have all been the common victims of these aberrations in the use of land and other resources as well as of rural development and forest-management strategies.

The main purpose in highlighting these aberrations and their consequences is not to paint a picture of dismal gloom, but to emphasize that there is an urgent need of policy decisions that take in to account all these issues and address them holistically on large-landuse scales. Such large landscapes may comprise PAs (preferably sanctuaries and national parks), forests (R.Fs, D.P.Fs) then other wildlands (R.Fs/Village forests groves etc) and the rural areas including in the degraded C.P.Rs (Common property resources). There is no doubt that most degraded areas as yet are conducive of restoration of productivity, given the resilience due to a predominately tropical climate. But this could call for area specific programmes developed and implemented with participation of people. Programme areas can be defined by micro-water sheds or by community clusters practising similar lifestyles and sharing the same C.P.Rs. Context of special establishment viz. a major development project should feature in broad plan at the landscape level, so that such an establishment is compatible with the local area welfare.

Eco-Development and protected areas. (here Sanctuaries R.Fs, D.P.Fs.)
Such a holistic, people friendly and inter agency approach can contribute to environmental security, higher productivity and the well being of people. There is universal acceptance of such an approach but as yet this is not adequately reflected in the developmental programmes such as in mining projects of these two divisions.

In conjunction with the protected areas, such an approach will make it possible to conserve biodiversity efficaciously. For the protected areas to fit into this landscape scale development strategy, they shall have to follow zonation approach which sets apart an inviolate "Core" area, with an adequate "Conservation" and "Peoples resource" buffer zone. The two types of functions expected from buffer zone, as out lined by FAO organised regional expert consultation in Bangkok in December, 1990 can be as follows:-

Conservation Buffer

Supplementary and or dispersal habitat for the wildlife of the protected area, as well as movement routes for long ranging species and generally gene trav corridors for all biota. Such buffer zone provisions would also have value for environmental concerns e.g. soil and water resource conservation.

People's resource buffer

Managed to provide suitable utilisation of resources by local people supplemented by eco-development measures aimed at restoration of local eco-system to levels as near self sufficiency as possible in order that pressures of resource needs on protected areas are effectively mitigated.

Note

The degree to which these two functions need be met will depend on the relative proportions of natural vegetation & agricultural areas in the buffer zone..

The fiscal resources available for eco-development are limited at present. There is hence a need to assign them on priority to protected areas, especially those that harbour higher biological values and one also under threat - viz. -

fragmented elephant population in Keonjhar-Bonai divisions in degraded forests in general and Hadgarh wildlife sanctuary in particular.

Eco-Development measures :

Eco-development is seen as a site specific conservation friendly package of measures from rural development and use of biomass resources by local people , so as to be of help to the P.A (Protected Area) conservation in the following two ways :-

Enhancing sustainable economic productivity of PPRs as well as augmenting incomes from on farm & off-farm activity,so that communities have less economic dependence upon the resources of the P.As.

Enhancing productivity of the buffer zones especially to meet the resource needs of people while rationalizing practices for gathering/utilising the resources.

Providing technology to improve efficacy of use of conventional resources and to promote use of substitutes where ever necessary and feasible.

An axiomatic phenomenon to be recognised is that the forest, the wildlife and the people are presently caught in a self perpetuating vicious cycle of attrition, which can only be broken by introducing cogent eco-development measures. People consider the easiest way of resorting to plunder forest resources because they do not have any practicable options to gamble. Because the current practices of depending upon forest are not sustainable in long run and alternate practices and materials shall have to come in. But change over will be over a gestation period during which returns may fall or

cease altogether. Eco-development [illegible] period" including sustained income there after.

Eco-development measures in a given area are bound to need in puts at levels higher than presently going there, but it is not visualised as an investment intensive programme. The main criteria of success will be trust building and full participation of people in planning process and in the implementation of the package. Another requirement will be redirection of the present inputs from other rural development agencies to pick up related components of the package. The importance of credible NGO's in this effort can not be over emphasized, especially in trust building with people as well as trust worthy feedback at all stages of planning and implementation. At sites where credible NGO's do not exist or can not be lured, their formation may have to be catalysed. Hence, the P.A Manager has to play a nodal role since the aim of the whole exercise is also to achieve strengthening of conservation of wildlife and biodiversity and promote local acceptance of P.A. objectives.

Eco-development may not succeed if prior concerted effort is not taken in formulating a holistic and site specific plan prepared with active participation of people. Use of participatory rural appraisal (PRA) methods in the planning exercise and later for monitoring the quality and the impact of implementation will be essential.

Institutionalization and Role of Training

It is needless to stress further that there is a growing consensus on the causes of the problem and the role of eco-development to support forest conservation in general and the protected area management in particular. This has already been reflected in the policy directives of Govt. of India vide the

National Wildlife Action plan of 1983 as reendorsed by the National Forest policy of 1988.

It is pertinent here to say that Ecodevelopment around PAs must rapidly grow in to a major programme, considering the urgency, and enormous amount of threats to the PAs as well as the accumulated impoverishment of inhabitant or neighbouring people. A large programme can not rely only on missionary zeal for success and hence there is need for institutionalisation. Modalities will need to be standardised and guidelines prescribed among other things, for (I) selection of sites, specifying actual sections of buffer zones or adjacent areas in each case (ii) Criteria and procedure for selection of key personnel (iii) training of personnel in institutions and on-job-for planning, implementation and monitoring (iv) process for site-specific participatory planning alongside trust building including advisory assistance from training institutions (v) identification and involvement of credible NGOs (including training, where necessary) right from planning through to implementation and monitoring (vi) formation of local apolitical committee for planning and implementation including joint management and usufruct sharing of resources (vii) formation of "user groups" or "protection committees" for the protection, collection and use of biomass resources (viii) clearing procedures for approval of plans and allocation of funds - adoption of committee approach combining concerned State and Central Govt. authorities for expeditious consideration, sanction and authorisation (ix) procedures for early authorization of some urgent and justified activities, ahead of the regular plan coming in to operation, as means of early relief and trust building. (x) monitoring, feed-back and course correction mechanisms. (xi) Mid-term and final evaluations.

Guidelines for planning and Implementing Ecodevelopment programmes as a means of integrating management of protected areas with the concerns of people for sustenance and culture.

1. Ecodevelopment and protected area management are to become essential and mutually complementing components of an integrated landscape scale management strategy.
2. The participatory planning process for both should make use of local knowledge, decision making processes and structures, based on the identification and understanding of the concerns of people and objectives protected areas. This process should aim at formulating a holistic package of measures addressing all aspects of use of land and other resources including on-farm income generating activities, infrastructure development, sanitation and education.
3. In order to promote an understanding of the need and welfare functions of protected areas (PA), manager and local people should have on-ground interactions inside the P.A.. This will be a precursor to the participatory planning process for P.A. management itself viz. zoning and regulations for use of resources.
4. Developing an appropriate zoning plan for a given P.A. and its multiple use surrounds, as a part of the participatory planning process.
5. Constant dialogue among people, PA managers, other Govt. agencies and NGOs as means of building and nurturing trust through the planning phase and on to the implementation phase, by monitoring progress and making on-course corrections.
6. Undertaking some urgent measures with assured merit as ascertained in the initial stages of the participatory planning process, as a move to mitigate

obvious hardships or incongruities as well as to foster trust building necessary to sustaining people's interest in the holistic planning process.

7. Planning process should use rapid "participatory Rural Appraisal" methods assisted by trained nodal persons, so that interim measures can be identified in two -three months and put up to implementation well before the full plan becomes ready. For the full plan itself the total time should not exceed 12 to 15 months right to the stage of approvals and authorisation of funds.

8. Ecodevelopment measures to be directed at reducing dependencies of people upon resources in protected areas, while promoting people's economic well being and respecting their cultural values.

9. Assigning of priority to the local community for the use of resources and acquiring skills for better use through education and training.

10. Introduction of joint management of resources in the buffer zones and surrounds with an agreed mechanism for usufruct sharing with user groups that directly participate in such joint management.

11. Ensuring that a proportion of profits accruing from protected areas is earmarked for local community development works.

12. Identifying and involving individuals with communication and entrepreneurial potential from the local communities as bridges for trust building and for lunching innovative pilot enterprises which are compatible with the aims of PA viz. cottage industries and or other value addition process using local material as well as possible local skills.

13. Making appropriate technology inputs a part of the package of measures viz. more efficient use of energy, alternative energy sources and techniques for water harvesting, improved dry-farming, alternative crops, cottage industries and other processing.

14. Reorientation and re-enforcement of education with a view to promoting self-esteem and a sense of belonging and responsibility in the management of resources and developing skills thereof.

15. Focussing the underlying approach of Ecodevelopment around local people with a balance identification of gender roles, especially to ensure that women are released from avoidable drudgery (e.g. bringing drinking water from long distances) and enable to harness their decision making potential, skills and time to more productive activities and better care of the family and its economy.

15. Incorporating improved marketing measures in order to ensure better returns for products exported and economic prices for materials acquired from market with enabling mechanisms so that communities are not only able to countenance market economy but benefit from it.

16. Attitudinal orientation of PA managers and other Govt. agencies as well as NGO's to accept such a holistic and integrated approach of Ecodevelopment .This would necessitate comprehensive institutionalization through training and enabling mechanisms ,including statutes and procedures in Governmental programmes and those supported by international agencies and bilateral aid.

18. Reassessment of existing rural development measures and their required redirection as to become a part of the package, participatorily evolved.

19. Provision of additional finances on priority for eco-development around PA as this would be essential to find the alternative and cooperatively determined resource use practices and income generation activities.

Objective - 5

To provide enlightened wilderness experience to visitors and to promote conservation awareness among the local communities through conservation education packages in order to secure their support for conservation of the protected areas though appropriate eco-tourism approach.

Lack of Committed Approach

Keonjhar - Bonai Forest Divisions boasts of a rich mineralised zone. Whenever tourists are coming from the outside district or State to Keonjhar to see Ghagara waterfall, Tarini temple of Ghatagaon at Khandadhar water fall ,of Bonai Division etc; they are not prompted to see the unique scenes of mining zone which besides providing great academic interest also are places of recreation viz. Hadagarh , Bolani (SAIL), TISCO, Joda, Kaira, Bonai,Tensa, Khandadhar etc. They have maintained very good rest houses,water falls, Scenic beauty Botanical gardens and unique study sites of faults, folds and stratification of geological eras. The impact of mining, safety measures, afforestation are worth seeing. In fact all mines should develop T&V (Training & Visit) programmes in their mines for people, academicians researchers, to understand the intricacies of conservation measures in mining environment.

Inadequate Visitor Services

Although accommodation etc. are not a problem yet some guide facility and interpretation center, visitor center should be developed to emphasize the co-existence of developmental activity with that of wildlife and environment. Forest department, Mining department, private and public sector mines should have these facilities. There should be some botanical gardens along Karo river and other places (Haramath Temple area), Khandadhar along Brahmani river,Hadagarh reservoir near Boula mines so as to provide enlightened wilderness experience with nature trail , wayside exhibits , interpretive trail, lawns, picnic spots,facility for boating etc.There should be facility for Library, accommodation, catering,travels and tours.

Lack of Package for Nature Education

Protected areas should have different packages for various target groups. For children nature camp, adventure camp, for older people short interpretive nature trails, promonades etc. are needed. For young people wayside exhibits, angling, bird watching etc. are lacking at present. In short there is not much attempt to provide enlightened wilderness experience through eco-tourism and wild life tourism by either public sector mines or by private mines although there is enough potential to develop so. Awarness centers / Van chetana Kendras should be constructed at one place in each division.

Objective - 6

To identify and define the significant research and monitoring activities and the modalities of their implementation to support the other objectives of management.

Lack of Research and Monitoring Activities

At present there is no on-going research and monitoring activities. For such a novel idea viz. Regional wildlife management plan there should be one research committee to advise upon for basic and applied research. One research officer and one research Assistant must be there to assist the management authority for collection of basic data on wildlife and environment. There must be institutionalised monitoring and allocation of funds M/s. SAIL, Bolani an M/s. TISCO have done some good environmental impact assessment and ecology studies.

Lack of organisation of research wing

There is no such provision of Research fellowship etc. to carryout vegetation monitoring, studies on environmental changes,study on wildlife etc.

Limitation of information

Not much information is available at present on prey-predator relationship, territory and ranging pattern, population dynamics, status of flora/fauna, impact of mining on forestry & wildlife etc.

Lack of communication between wildlife manager & researcher

A manager should have upto date knowledge regarding what is happening in wild life research all around him. Lack of orientation towards wildlife management and research is the main problem in our country.

Lack of Financial Support

Sometimes long-term research projects are abandoned on the midway due to lack of financial support. Lack of departmental support to officers and field staff those who have genuine inherent interest in wildlife research. There is no departmental support for interested persons.

Lack of remuneration, regards and appreciation to take research as a career

No Such facility is available in research line at present.

Lack of trained personnel

Not many trained personnel are available at present at grass-root level.

Lack of infrastructural support and amenities

In order to carryout scientific research proper laboratory facilities, field equipments, computer, vehicle, quarter etc. should be provided.After all unless

appropriate environment for grooming future scientists and wildlifer is provided nothing can be achieved.

Lack of Organisational Policy

Due to lack of promotional avenue & facilities no body likes a research posting.

Objective - 7

To enhance and maintain the management capability of line & staff personnel at all levels through appropriate training programme, infrastructural facilities and welfare support

Lack of proper infrastructure and equipment

For protection squad adequate number of vehicles, uniform VHFs, arms and ammunitions, camping gear etc are not provided.

Lack of adequate funding

The welfare activity including staff quarter, drinking water facilities, electricity, education, medical facility etc. are avoided due to lack of adequate funds. Most of the staff who have families in far off places have to undergo severe physical & mental agony which is reflected in their attitude towards management problems.

Lack of Special Pay & Remuneration to Staff

The field staff should be given extra incentive and rewards for their arduous nature of job in interior areas.

Objective - B

To reduce man-animal conflict by ensuring contiguity of the habitat inside and outside Keonjhar-Bonai conservation unit by developing corridor link up, improvement of habitat developmental activity on a regional basis and on a long-term basis.

Lack of fund to take massive afforestation programme

Corridor link up is important for maintaining contiguity of vegetation cover for movement of wildlife. This may be by natural, semi-natural on artificial means. But preferably indigenous fast growing fodder, fruit & fuelwood species be planted. For this huge amount of fund is required which is lacking.

Lack of fund to compensate the loss due to man-animal conflict

At present only human kills and injuries are being paid by state wild life wing. This has to be mitigated by providing adequate funds so as to reduce apathy of the people towards wildlife, in case of other wildlife depredations viz. crop and house damage.

CHAPTER - 10

THE STRATEGIES

omponents of strategies -

In order to solve the problems, the following strategies need to be adopted.-

ological & Ecological measures:		Habitat improvement, increasing prey-base, weed eradication, corridor linking.
hysical Measures	:	Site specific structures viz. water harvesting structures, check dams, water holes, soil and water conservation measures.
Eco-development measures	:	Rehabilitation of encroachers outside reserves, Eco-development measures in the buffer & multiple use zones.
Legislation & Regulation	:	For forest & wild life protection, fire controlling, overgrazing, Eco-tourism development.
Administrative measures	:	Staff structure & amenities.
Land scape approach	:	Overall.

: :Boundaries

Although there are some existing boundary pillars or stone cairns around most of the R.Fs, D.P.Fs yet they need to be reconstructed putting pillar numbers

etc. There is no boundary maintenance by cleaning boundary line as was done annually earlier due to lack of funds. Hence the system of boundary maintenance need to be revived and all demarcated protected forests should be processed for declaring them as R.Fs after delineating and refixing pillars in boundary line. The compartment lines need to be maintained which will also serve as internal fireline. Appropriate sign boards of R.Fs. Compartment No,etc should be maintained.

10.2 :Zonation and Zone plans

Zonation is a management concept in order to provide proper recognition and protection for protected area resources. The following zones are recommended for better management of habitats.

1. Core zone or the wilderness zone.
2. Buffer zone or multiple use area.
3. Restoration zone or recuperative zone.
4. Tourism zone (over lapping)

Core zone(Wilderness Zone)

The zone has been planned to have a cross section of values of the protected area. This zone will be managed for minimum human interference to serve as a replica for the biological region. Here core area will be the least disturbed portions of Reserve Forests and DPFs except the mining zones . The mining area inside R.Fs and DPFs will be strictly delineated separately with clear boundary lines with pillar posting .All the encroachments should be evicted outside R.Fs on a priority basis.Till the process of eviction and relocation is completed the encroachments should be ringlined on a priority basis. The collection of minor forest produce / Non timber forest produce should be strictly regulated in wilderness zone.

Core zone ,being the sanctum-sanctorum of the protected area nothing in the way of human activity will be permitted within this zone that will degrades its values. The main objective of this zone is protection of unique habitats in an unaltered state. Only those structures or operations which are necessary for the management and preservation of the wilderness qualities of this zone will be permitted. Because of fragile and unique qualities of the natural resources of this zone we have to limit all human activities and such other biotic interference.....

Although strictly speaking no tourism has to be allowed in core area, care has been taken to segregate the conflicting objectives and their strategies by permitting a limited tourism route through core zone just to provide enlightened wilderness experience to tourists.

Problems of Core

1. Many illegal settlements are inside the core zone in the form of huttings and encroachments. The presence of people and their cattle is disturbing the wildlife. Moreover, their presence is degrading the wilderness effect by way of illicit felling, forest fire, pollution of water hole, spreading of disease from domestic animals to wildlife due to sharing of the common water points.
2. Moreover presence of domestic cattle deprives wildlife using the palatable fodder / browse material / grass etc.
3. Weed and soil erosion problem become more acute around encroachments due to opening of forest canopy.
4. Since the illegal settlements have occupied some of the most fertile and productive valleys which once relocated would cover with excellent vegetation or can be developed to grasslands.

Strategies

1. Water resource development - (See theme plans)

   This includes - Survey for perennial water sources and mapping.

   - Survey for semi-perennial and seasonal water sources.

   - Classifying according to permanence, type, access.

Habitat analysis based on water resources -

* Development of supplementary water sources
* Providing access to natural water sources.

  (I) Tapping Shallow ground water or seepages

  (ii) Diverting natural water supply

  (iii) Percolation trenches.

* Providing artificial water sources.

  (I) Check dam

  (ii) Water harvesting structures.

2. Fire protection (See theme plans)
3. Protection (See theme plans)
4. Protection of riverine, mesic sites, special habitat (See theme plans)
5. Habitat Amelioration measures (See theme plans)
6. Relocation of illegal settlements / eviction (See theme plans)
7. Soil and Water conservation.
8. Vegetation monitoring.
9. Animal health surveillance.

Buffer Zone (Multiple use area)

This will lie outside the R.Fs. and D.P.Fs and will consist of Gochar, Village forests (Khesara Forests) and revenue waste lands preferably around 5 Km. width ring outside R.F & DPF boundary.

Mackinnon (1982) has classified two types of buffering for the development of conservation buffer zones and enclaves in Indonesia, viz.

1) Extension buffering : Practically this a extension of the nature reserve , where the spillover of the total breeding populations of both plant and animal species can establish , after exceeding the limits of the reserve boundaries. Protection forests, recreation forest and forestry areas under selection felling are examples of such extension buffering.
2) Socio-buffering : Here the land is used for the benefit of local people to provide various products derived from the forests which are formally gathered from the reserve.

The extension buffering is similar to a corridor which allows the flow of the protected animals from one reserve to another.

Objectives

The buffer concepts of management helps in absorbing the outside impact thereby providing adequate protection to the core. All villages just on the fringes of protected core area exert tremendous pressure on protected area (PA) resources. If we can set out the influence of traditional dependency i.e. dependency of people on PA resources, then we must know the zone of influence. This zone of influence determine the effective buffer. In general, villages situated within 5 Kms. radius from PA boundary should be considered as zone of influence and hence is considered for buffer zone management.

Problems

Most of the people depend upon PA resource for meeting their bonafide domestic requirement viz. small timber, firewood, MFP etc. Many people resort to illicit felling for smuggling and a few also resort to poaching.

2. All the domestic cattle of these fringe villages invariably enter in to PA for grazing and browsing, there by causing extensive damage to forest.
3. Man-animal conflict in this zone is highest.

Strategies

Scientific buffer management.

This embodies a conservative resource use with people's participation by increasing productivity and regulating exploitation in a sustainable manner. Soucl buffering and Extension buffering are other two tools in buffer zone management which includes such activities viz.

- Rotational grazing / Deferred grazing / grazing closure
- Rotational lopping, no lopping during growing season (monsoon), stall feeding etc.
- Planting of indigenous multipurpose fast growing species for fodder, fuel, fruit & medicine etc.
- Reclamation of waste land.
- Community fodder & pasture development
- Water harvesting on community basis.
- Other eco-development programme viz. Replacement of scrub cattle by high yielding milch cattle, use of wood substitutes - fuelwood saving chullas, gobargas plant, use of biofertilizer, organic farming etc.

Recuperative zone / Restoration Zone

All the mining affected area and illegal settlements / encroached villages come within this zone.

Problem

Presence of encroached villages and their problem of domestic cattle in degrading forest all around.

Presence of huttings and mines which degrades the general environment & forest.

ctive

To create favourable habitat condition by taking appropriate restorative measures.

Strategies

Protection of forest, environment, unique habitat, riverine site, controlled grazing, Habitat amelioration, Weed eradication, Water source improvement, Creation of greenbelt, Safetyzone, Village woodlots etc. Encouraging Agri-pastoral, Horti -pastoral, Agro-forestry, Farm-forestry, Pyra-cropping, Crop-rotation, intercropping in and around encroached villages. Alternate source of energy-Gobar gas, Fuel efficient Chullas, Wood substitude, Low cost house construction materials have to be provided by mine owners free of cost.Income generating schemes to be provided for unemployed youngs.

Tourism Zone

This is an overlapping zone. In order to facilitate eco-tourism and to provide enlightened environmental & wildlife awareness some tourism points, routes, zones have to be developed especially in mining zone and core zone. Recreational sites are there near Kiriburu-Meghatburu (Sunset point) Harmatha temple site along Karo river, Khondadhar water fall in Bonai division

etc are excellent tourist spots. Besides this most of the public sector and private mines have excellent accommodation with lawns, nurseries, gardens. Only some nature trails, interpretive trails, important geological formation sites (SAIL, Bolani) need to be developed with Audio-Visual facilities, Amphi-theatres in the mines and surrounding environment.

10.3: Theme Plans

10.3.1. Fire Management Plan

Fire is one of the most wide spread and fundamental habitat factors. Fire in deciduous forest is anthropogenic in origin. Repeated fire sets in retrogression and deprive wildlife of their cover and food.

Present system of fire management

Towards fag end of the financial year a small amount of fund is released for creation of fire line or deploying a few fire watchers which is insignificant in comparison to the enormous work to be done in fire protection.

Management Actions needed

Principal fire lines of 30 mtrs. width can be maintained along R.F and D.P.F, Boundaries, compartment boundaries and subsidiary fire lines of 15 mtrs width along principal bridle paths. The protection watchtower when constructed on strategic locations would also serve as fire watchtower. During summer, firewatcher can be deployed for fire fighting. The watch tower staff can use Wulkie-Talkies to communicate with the other ground staff or control or other watchtower after locating fire or smoke. Fire tracing has to be completed before 15th of January & un-burnt patches along with roads have to be re-burnt before 15th February.

evention of Fire

urning and cutting plan

Alternate cutting and burning is better. Sweeping dry leaves and burning them by accumulating on fire line is better.

ool Season Burning

To be completed between 2nd and 3rd week of December since it moves slowly and does not have a desiccating effect unlike late burning.

P ribed burning in different zones

In core zone and inaccessible areas high-density fuel may be retained. The areas and routes frequently used by people and cattle must be cleared off fuel debris i.e. in recuperative and tourism zone. Buffer zones should clear fire line as early burning. Principal firelines will run along the base of foothills following the contours; Subsidiary fire lines will run along the same contour on the hills. No vertical firelines should be created since it will accelerate soil erosion. As done is Similipal, small brush piles will be made in the center of the fireline to provide cover for ground dwelling birds. The sporadic fire resistant trees on the fireline should not be cut since they don't aid groundfires.

Involving villagers in fire prevention work

The people in the buffer zone should be taken to an educational field four and should be explained the harmful effect of fire and the methods of suppressing or preventing fire prior to fire season.

Fire detection

Timely detection of fire and its communication to the fire control machinery is crucial for controlling fire which has to be ensured by engaging fire watcher, using VHF, movement facilitated by Jeeps, alerting villagers and staff, keeping ready tools for fire fighting.

Fire fighting

Fire fighting squad with proper logistics support should be kept ready during fire season .A gang of motivated villagers; One Forester and Two guards should from a squad. They can use Jeep, Motor Cycle and Cycles whatever available. The basic fire fighting equipments include axe, spade, broom, sticks, shovels, bill hooks, Jerry cans for carrying drinking water, food packets, walky -talkies etc. If funds are available fire-fighting dresses can be procured.

Training, Fire Fighting Drills

Fire drills should be conducted involving various aspects of detection, communication, transport and fire fighting on the site. Record of fire in different years should be recorded on fire map so as to identify vulnerable areas. Fire safety measures, techniques of counter fire need to be taught. Post fire suppression operations viz. extinguishing smoldering logs, extent of fire, fire mapping, evaluation of loss due to fire etc. to be done.

Maintenance of fire records

Fire map, Fire history record, Fire duty registers should be maintained.

10.3.2.Protection Plan

This plan envisages taking stern protective measures against poachers, smugglers, encroachers, overgrazing etc.

atrolling

A few patrolling camps need to be established in interior areas. The patrolling party should consist of one Forester, Two Forest Guards, and Two Game watchers. They should be provided with Guns, Walkie-Talkies and Motor Cycles. A spare Jeep should be available at Range Office concerned to augment surprise group patrolling. One Mobile Range Officer should head flying squad.

Informers

The collection of information regarding poaching, illicit felling, manganese smuggling etc. shall be done as practiced in Police department. Secret funds, must be created to give reward to informers without disclosing their identify.

Strengthening the sections & Beats with special staff & introduction of Thana System

At present staffs are deployed which are scattered in beats. Since now-a-days it is very difficult to curb smugglers single handedly, thana system should be introduced i.e. One Forester 3-4 Forest Guards should be stationed at one place i.e. Section H.Q so as to facilitate group patrolling.

aining

The staff should be given in-service refresher training every now and then to imbibe new techniques like commando training, Annual shooting training, weapon training, use and maintenance of VHF sets, Map reading. Special training should be given on forest law, Cr. P.C., I.P.C., prosecution of cases etc. Field tours must be conducted to different areas within state and outside state to gain up-to-date knowledge on management of parks and sanctuaries. Capsule courses and practical demonstration on capture in restraint of problematic wild animals, immobilisation and tranquilization techniques, radio-

collaring,radio-telemetry must be organised for field staff and officers of forest department. Mine owners must be given some orientation training on wild life and habitat management.

Cash awards and incentives

In recognition of commendable performance in the field of forest, wildlife and environmental protection, cash awards, citations should be given to the field staff to maintain high moral. Due promotions should be given to deserving candidates showing excellence in the field of forest and wild life protection. Extra allowances should be given to staff for their arduous nature of work. Welfare activities for their families should be taken care. The staff should be protected form counter cases--by activating Forest-Police-Judiciary Co-ordination meetings.

Control of Grazing

The notification regarding closure of grazing in RFs. should be published as per grazing rule. Strict enforcement should be ensured. Rotational grazing/deferred grazing etc. may be practiced in kheshera forest.

Encroachments

Insidious expansion of illegal settlements must be strictly checked. After joint verification with Mining Dept., Revenue and Forest authorities illegal huttings, encroachments etc. should be delineated by pillar posting / rubble wall and effort may be taken either to evict or relocate as per need. New encroachers should be strictly prosecuted. All villages inside forests should be ringlined on a priority.

Village Forest Protection Committee / Joint Forest Management

The new V.F.P.C. and J.F.M should be formed on the fringes of R.Fs. and D.P.Fs. and old ones should be revived. Since these will be benefited by Eco-

development programme due attrtion must be given in this regard. The committees should be rewarded for significant work in Forest and wild life conservation. Similarly joint forest management should be encouraged on a massive scale and micro-plans should be incorporated for achieving self-sufficiency at village level.

10.3.3: Habitat Management (Both for R.Fs., DPFs and Kfs.)

10.3.3(a) Water Resource Management

This region receives an average annual rainfall over 1450 mm. During pinch summer months water becomes a limiting factor for wild life. Although many perennial streams are running yet the people from huttings and villages disproportionately use these for which wild life suffers a lot. High runoff is evident due to rugged terrain & mining activities.

Strategies

- To distribute water evenly so as to have even range utilisation of habitat thereby minimising heavy pressure in a particular zone.
- Area provides excellent terrain conditions to harness run-off.
- Use of cost effective techniques involving the utilisation of locally available materials as far as practicable which should contribute towards the micro-level development of the catchment areas.
- To make contingent drought mitigation measures for wild life.

Structures

Rainfall harvesting structures, check dams can be constructed according to need on foothills to harness runoff and improve ground water status by percolation.

Identification of water sources

Perennial, seasonal & semi-perennial water sources can be identified and mapped. Some of the management options are.

1. (A) Diversion: A part of main stream can be diverted through a small channel for use of domestic cattle.

(b) Runoff: Can be checked by constructing staggered trenches in hill slopes so as to get a natural pool of water on the foot hills for use of wild life.

2. Limiting access of cattle to waterholes:

Restrict all waterholes in RF. & D.P.Fs for domestic cattle use. In Khesara & Village wood lots water holes can be created for cattle use. In encroached sites rubble wall fencing can ensure restricted use of waterholes by cattle.

4. Use of simple methods to augment existing water points:

Periodically cleaning should be taken up in all water points besides deepening and desilting. Wherever required artificial water point can be created (Tubewell or dug-well) for providing water to wildlife or domestic cattle.

10.3.3(b) Riperian areas & mesic site management

Location of habitations (huttings, villages, and encroachments) close to riperian zone deprives wild life using the water resource. The villagers also keep their livestock near riperian zone and pollute the water by wallowing, defecation & urination. These water points become source of epidemic to wildlife. Riperian zone is the lifeline of wildlife and hence all illegal habitations must be relocated from this zone as far as possible. Riperian zone serves as a migratory route of wildlife and thus serves as good corridor linkage. Hence measures viz. improvement of regeneration of Riperian species such as

Syzygium, Mango, Ficus; Mankadakendu, which are liked by herbivores, must be ensured.

Mesic Sites

These are biodiversity hot spots and should be protected.

10.3.3(c) Special habitats

Edges & Eco-tones: An edge is the place where plant communities meet. Species richness associated with edges is an additive effect. Edges and their Eco-tones are rich in wildlife and should be protected.

Snags & Stubs: It is a standing dead tree. If dead tree is broken up and height is shorter than 6.1 m. is called a stub. They provide a portion of life support system for many species of plants, invertebrates, birds and mammals. There is a snag succession exists. These are important for primary excavator & secondary cavity users. Snags should be protected from forest fire.

Dead and down woody material: Windfall trees, dead and down woody material along with decay succession has a tremendous role in wildlife management. Hollow logs are important cover and denying sites of different small vertebrates. While prescribing burning certain amount of dead logs should be protected. Logs half buried in streams provide excellent habitat for aquatic and amphibians.

Unique habitat

Geomorphic features create these. They are not associated with plant communities. They add diversity to wildlife habitat and hence should be protected. Each unique habitat has atleast one species that can not live

elsewhere. Once destroyed they seldom can be replaced viz. Cliffs, talus, caves, ledges etc.

Cliffs

One steep, vertical or overhanging rock faces. It provides physical protection for reptiles, birds and mammals.

Talus

Is an accumulation of broken rocks at the base of a cliff. It concentrates frogs, toads, lizards, snakes, birds and small mammals.

Caves

Provides shelter from extreme weather condition; varying degree of darkness and solitude from the outside world. They also provide stable internal environment for wildlife & physical protection from predators.

Cracks & Crevices

Provide unique microclimate for bats, birds (swallows swifts), and bees.

Management considerations

Unique habitats are fragile environments and little or nothing can be done to improve them except protection.

The roads or trails towards this unique habitat should be closed. Cave dwelling bats for examples are very easily eliminated by cave exploration, artifact hunting, fire & vandalism. Hence such areas should not be advertised.

The vegetal cover adjacent to dry stream beds provide adequate cover and protection to animals like sambar (Cervus unicolor), cheetal (Axis axis), wild

boar (Sus scrofa) and the mouse deer; the mouse deer is reported to be frequently breeding near stream beds strewn with large boulders amidst old tree bases. A dense shrubby growth favours the reproduction of species like gaur (Bos gaurus), sambar (C. unicolor), chinkara (Gazella gazella), chousingha (Tetracerus quadricornis), cheetal (Axis axis) and blue-bull or nilgai (Boselaphus tragocamelus). Features like burrows, dens or caves, talus and overhangs are used by species likewold, civet and mouse deer for reproduction. Wild boar 'nests' are frequent in undulating broken areas.

3.3(d) Weed eradication

All open areas, forested blanks areas highly disturbed viz. Habitations, roadsides, fire affected areas etc. have been invade by weeds which are quite obnoxious, opportunistic and fast growing. As they are not palatable they reduce the forage availability to wild ungulates. These weeds include - Eupatorium odoratum, Lantana Camara, Partheniums, Neurocanthus spp. Achyranthus spp, Cassia tora, these weeds need to be uprooted or burnt before flowering. The area after weeding should be protected from grazing and allowed for nature to start succession.

10.3.3(e)(I) Eco-restoration of degraded forest areas

Considering the dietary pattern of wild ungulates some plantations of palatable species can be planted in all degraded areas. This may include fodder 44& fruit bearing species viz. Bambao, Emblica, Terminalia chebula, T. belerica; Syzygim cumini, Bucchania lonzan, Zyzyphus species, Bauhinia species, Mitragyna parviflora, Helicteris isora, Ficus species, Wrightia tomentosa, Carissa opeca, Morinda tinctoria, Mango, Kendu, Jackfruit. Besides providing ample food for herbivores these trees provide excellent resting and roosting cover for birds.

Eco-restoration areas should be monitored and should be protected from fire and grazing. Suitable regeneration techniques and nursery techniques should be developed. A few good permanent nurseries and other temporary nurseries as per site specific requirement should be created.

10.3.3(e)(ii) Eco-restoration of abandoned habitation sites

Once the encroachers are evicted or the huttings / villages are relocated, the soil and land preparation work has to be completed in abandoned site in order to reduce soil compaction and to make the ground ready for seed sowing and planting. Meadows can be developed with plantations on fringes.

10.3.3(f) Improvement of prey-base to attract more carnivores

Since Chital is amopen forest animal, Samber and barking deer are forested animal, they require different habitat conditions. Similarly wild boar is also found in open forest. Hence forest; grass land, riverine sites etc. provides different habitat condition for different wildlife. Once their number is increased the carnivores like Tiger, Leopard, Wild dog number will automatically increase. If habitat becomes better as compared to adjacent area more sub-adult tigers and leopards will migrate and will establish their new territories. At present there is only one Tiger in Keonjhar Division and in Bonai division as per latest census. But its co-predators viz. Hyena, Wolves, Wilddogs are found.

10.3.3(g) Special habitat management for Elephants both in Forest and non-forest Areas:

Elephant need enormous quantity of fodders each day to keep it going. As already indicated a wild full grown elephant consumes about 220 Kg of green fodder daily and by the process may destroy 3 to 5 times that much vegetation. It also needs plenty of water to drink 80-100 Liters and loves to

bath in river and forest pools and to wallow in the mire and dust it self afterwards with dry earth. Some where during the course of their evolution the Elephants have adopted the survival factors of not staying in an area for long. Probably the migration patterns and routes are imprinted through generations. If the Elephants will stay in a place permanently the habitat will be destroyed completely. Hence, migration of Elephant is desirable for intermixing of genes. When we are discussing Elephants of a particular Range it is absurd in terms of ecological point of view. The Ecological behaviour of animals clearly reveals that they do not recognise legal boundary. Elephants are intermixing from Saranda of Bihar, Bonai division, Keonjhar Division, Athgarh division, Dhenkanal division, Bamra division, Devgarh division, and Koranjia division up to Similipahar biosphere reserves. Hence, the rational for study of ecological boundary is an eye-opener, which suggests management strategies of the whole conservation unit. It is true that conservation value of a protected area is a function of its size. Here, all corridors including the degraded forests of all sorts need to be restocked with fast growing indigenous fodder, fruit bearing species. Massive bamboo plantations mixed with other fruit and fodder trees should be taken up with perennial grassy meadows interspersed with small water pools.

Elephant fits in the role of flagship species extremely well. It is a K-selected species and is a long ranging megaherbivore which requires large areas, pollution free water, abundant forage and protection from poaching keeping area as inviolate as possible. A well-managed elephant conservation unit will be an excellent abode for numerous other symmetric species. Above all the glamorous species like elephant, which is an integral part of Indian culture and religion, and therefore, it is possible to sway public opinion in favour of the protection, which can significantly strengthen the conservation momentum in the state. Hence, special habitat management for elephants both in R.Fs,

D.P.Fs and K.Fs including corridor-linking forests of Saranda, Donai, Karanjia, Keonjhar and Similipahar etc has tremendous significance.

10.3.3(h) Canopy manipulation to improve the browse layer

Since the wild ungulates / herbivores preferred to browse hence the canopy in high forest has to be manipulated so that the preferred shrubs would come up in plenty so as to serve their food requirement. This is essential in pure Sal forests.

10.3.3(I) Improvement of camouflage to provide cover for animals

This has to be maintained in order to provide different type of cover for pray and predators viz. Breeding cover , escape cover, etc.

10.3.3(J) Modification of Silviculture and practices to augment the requirements of wildlife.

In order to augment in the best intrest of wildlife the silvicultural practices prescribed should be slightly modified in the following manner .

1. Modification of silvicultural practices (viz. Removal ofunimportant species, undergrowth, etc.) should be done wherever possible, so as to conserve food and shelter for wildlife.
2. Discontinuous stocking, giving adequate horizontal strafification in space should be done in uniform forests.
3. Wherever possible, group selection system should be advocated in place of selection system, so that adequate young areas are created which offer food and cover for wildlife.
4. The retention of some hollow and dead trees to assist species like squirrels, rodents, woodpeckers - should be done; snags have their own value in wildlife management.

5. Proper juxtaposition of plant communities and stand conditions should be done to serve as 'edges' for wild animals.

6. Encouragement of ground cover, retention of certain thickets for cover values, provision of exposed soil patches for 'sand bath', provision of salt licks, protection of stream beds, provision of cover near wallows and waterholes, impounding of water at various places, creation of 'corridor' and travel lanes in dense areas to enhance the 'cruising radius' of animals, making linear strips near woodlands (serving as firelines also) - are all of considerable significance to wildlife, while being comparatively simple to incorporate in forest management.

In the present context, the changed natural conditions call for a management of forests which would cater to the fauna and flora alike, so that a true wilderness area is maintained which is viable both ecologically and commercially.

Forest management and faunal richness management are inseparable. Hence, it becomes necessary for a forester to understand the relationships existing between the forests and wildlife, and to ascertain the required conditions for the various wildlife species.

Since we have to integrate the management of wildlife habitats with timber management, it becomes essential to equate the plant comunities and successional stages with the wildlife habitat. Successional stages are produced as a result of natural growth and development of plant communities, but are at times altered by various management activities like thinning, planting, burning and so on. The altered conditions may differ slightly from the natural ones, but they are analogous, because the structure of altered forest is akin to the

various stages of succession lunder natural conditions. Thus, by linking the individual and groups of wildlife species with plant communities and successional stages, the forest manager can obtain relevant information pertaining to wildlife habitats.

10.3.4: Soil and moisture conservation measures

The region with its intense mining activity is more susceptible to soil erosion and run off. A watershed management approach will be the best option. Soil and moisture conservation should be taken up, first in the most degraded areas particularly forests subjected to mining, frequent fire, over grazing and illicit felling. Other priority areas are areas with poor site quality and low tree density, catchment areas of the rivers. Major soil and water conservation works will include staggered trenches, check dams, contour trenches, contour bunding, peripheral bunding, gully plugging, river training works, construction of spurs and gabions etc.

Strategy for soil and moisture conservation works in summer water blanks

(A) Areas with semi-perennial water holes

(1) Vegetative silt traps - storage capacity of water holes is reduced due to silt deposition. Since desalting is costly vegetative silt traps on the upstream sides is recommended. Preferably perennial grass species should be planted in series across the width of nalas. The storage capacity of natural water holes can be maximised by deepening and enlarging their size.

(2) Invented Bandharas - these are to be provided on the down stream side of the waterhole and just adjacent to it. The structure should be built in the underground and should of single brickwall in cement mortar. This will check the underground transmission of water. When the water hole dries up a

pond of adequate size should be dug in the basin of the water hole where underground stored water is expected to rush-in.

(3) Stream Improvement - small streams, which originate and traverse through summer water blanks, should be taken up for improvement. The improvement works should start from the origin of the nala and should include gully plugging, checkdams, planting Ficus and Jamun along nala blanks etc.

(B) Areas with ephemeral waterholes

The constraints ingrained in the geology and topography of the region are in no way negotiable. The water retentivity of the ephemeral water hole is difficult to stretch till the onset of monsoon, so anicuts are good but costly.

10.3.5: Grazing and grassland management plan

This should be started on a small scale, based on grass regeneration in different vegetation communities. Meadows should be developed in foothills of core areas to attract more wild ungulates. Similarly meadows can be developed in abandoned sites after relocation of habitations and also along steams & reservoirs. Palatable grass species like Apluda, Schima, Themeda & Heteropogan need to be increased by suitable habitat manipulation. Similarly by artificial seeding small meadows can be developed by using paragrass mixed with leguminous grass viz. Berseem, Napier grass Phragmites Karka & Typha elephanta grass can be raised in moist valleys. But during summer the highly combustible dry biomass of grasses will pose a potential fire hazzard. It is proposed to go for an alternate cutting and burning in a mosaic pattern to prevent fire. Seeding (seed + cowdung + earth ball) in the form of pellets of palatable species after soil preparation will improve the situation and grass will be established quickly. Dicanthium annulatum & Cenchrus Ciliaris species

are good for loamy soils. Furrows can be made along contour for sowing seeds. Fire & Grazing should be strictly prohibited in these areas.

10.3.6: Animal Health Surveillance & Care

Nothing is reported from the wild. But livestock suffers from foot & mouth diseases, rinderpest etc. Since the wild animals and domestic cattle often share the same water hole, there is chance of disease outbreak. The uncontrolled grazing inside key habitat may transmit disease. The P.A. authority has to carry out prophylactic vaccination programme for the livestock within P.A. boundary. Vaccination of livestock of fringe villages within the zone of influence has to be taken up by State Vetenary Dept. annually.

The plan proposes to have an animal health monitoring and disease surveillance cell which can look after wild health monitoring post mortem, collection and preservation of materials, packing and despatch of specimen, recording of biological information viz. - migration of animals, carcass collection, sanitation procedure etc.

Improvement of Health of domestic cattle.

1. Artificial insemination.
2. Providing high yielding milch & drought cattle.
3. Wipe out scrub cattle by castrating
4. Encouraging stall-feeding.

Proposal for establishment of a veterinary unit in the line of Nandankanan Biological park

In order to carryout systematic research and monitoring work with respect to wildlife health, to carryout effective vaccination programme, to involve in animal translocation, capture of problematic wild life, rescue of wildlife,

tranquilisation, physical restraints with modern tranquilisation equipment (gun & immobilans) a small veterinary unit should be established in the line of Nandankanan Biological park at Barbil with all modern equipment and drugs. It is proposed that unit will have one veterinary surgeon and two veterinary field Assistants with some experience or orientation and interest in wild life.

Propossal for construction of Rescue center cum Rehabilitation station

It is proposed to construct one Rescue center at Khandadhar (Bonai Division) and to upgrade the existing Rehabilitation at Laxmidunguri RF at Sambalpur Circle level . Similarly one rescue cum rehabilitation center has to be established at Keonjhar for treatment of injured and problematic wildlife with all ancellary facilities .

10.3.7: Eco-development Sub-plan-Already discussed in Objective-4

10.3.8: Tourism sub-plan Already discussed in Objective - 5

10.3.9: Revival of habitat corridors

Forests of Champua range are contiguous with Karampada RF, Kadalibadi R.F., Ghatkuri R.F, Tatiba P.F., Pandrasali P.F. of Bihar, forests of Koira range of Bonai forest Division, Bhuyan & Juangapirh range & Keonjhar range of Keonjhar Division & Karanjia Division. It is linked to Similipal Forest with Ghatagaon range of Keonjhar Division. (Atei R.F.) Satakosia R.F. of Karanjia Division. At present deciduous forest of Keonjhar Division are in a very degraded state for which crop raid & house raids by elephants are increasing. In order to reduce the fragmentation of the habitat, revival of habitat conditions by restocking the existing forest with suitable fodder and fruit bearing trees and maintaining the corridor link is needed. In view of other developmental activity, extensive artificial plantations have to be raised. For compatible land use in consonance with wild life conservation we have to seek

inter developmental co-operation headed by district collectors, M.L.As, M.Ps and NGO's. They all should be oriented towards importance of wildlife and Environment. Any developmental activity envisaged in a district forum should seek suggestion and clearance from DFO so as to take-up subsidiary wildlife welfare activity. The corridors and Migratory routes of elephants have already been discussed in Chapter-8.

10.10 : Management considerations for mining zones

It has been made mandatory to submit diversion proposals (DRP) for all mines, which falls under forest areas . While complying this they also submit Mining plan(approved by IBM) , mine reclamation plan , Environmental Management Plan etc. They are also giving provison for safety zone mangement by planting trees. For controlling pollution necessary water spraying is done and dust extractor are being used. Periodical Monitoring of its effectiveness is being done by the concerned authority. The wildlife management prescriptions are being discussed around the buffer zones of active mines. It is being observed that even with the blasting operations elephants are roaming about in active mine areas.

10.11: Maintenance of Forest Roads

All forest roads have to be properly maintained in both Keonjhar and Bonai Forest Divisions.

10.12: Measures to reduce Man-Elephant conflict

The following measures are suggested to reduce man -elephant conflict :

1. Compensation should be given within 24 hours in case of death and injury of human beings . For this the concerned wildlife warden should be provided with adequate fund. Incase of crop and house damage the compensation should be paid within a week . This will reduce the public resentment .

2. Elephant drive in problematic area should be continued on a sustained basis for which sufficent fund should be provided with the wildlife wardens.

3. Public awareness should be generated not to store any country liquor (Handia and Mahuli) in and around their houses for which, the elephants have a penchant.

4. The overall habitat of the elephant range need to be improved with planting of appropriate forage species and water facilities for elephant by creating water holes. The corridor link up with adjacent elephant habitat need to be established.

CHAPTER - 11

RESEARCH, MONITORING & TRAINING

11.1: Research

Research is the most fundamental item in the plan outline of any conservation programme, which provides basic information for possible solution.

Some of the priority research need of this region is -

1. Inventory of flora and their status.
2. Studies on status and Eco-logy of wildlife.
3. Vegetation mapping & their long term monitoring to know the trend in succession or retrogression.
4. Impact of mining activities on wild life.
5. Research on man-Elephant conflict.

Establishment of a Research unit

For carrying out systematic research and to suggest possible solution for better management, a research cell headed by one Research Officer, Two-research assistant, One Documentation Officer, and two-field assistant is needed. Research cell may be established at Joda or Bolani in Keira with all infrastructure viz. Laboratory, Lab. equipment, Computer, quarters etc.

There should be a research policy, Code of service rules, provision of incentive & promotion etc. for research staff.

Involvement of other organisations and Institutions

The P.A. authority should allow and encourage basic & applied research work by local colleges, Universities; National and Inter national organisation for

recognition of research work in the region. Research assignments can be collaborated with distinguished organisations viz. Bombay Natural History Society, Wild Life Institute of India, World wildlife fund, zoological Survey of India, Botanical survey of India etc.

Funding organisation should be involved viz. UGC, USFWL, WWF, IUCN, UNEP, GEF, etc.

11.2: Monitoring

It is the process of ascertaining and quantifying changes. Monitoring of changes of vegetation by establishment of ecological monitoring plot, laying out preservation plot etc. is very important. Monitoring impact of management inputs, Wildlife population structure, health etc. are essential.

Wildlife census

This is the most important to know the status of wildlife. All our management inputs can be evaluated by knowing the census result. This will indicate approximate no. Of wild life, their population structure, Sex-ratio etc. NGO's & local institutions should be involved to carry out credible systematic census.

Establishment of a 'A' class meteorological observatory.

There is a need to record all climatological data, which can be used in research and management for which one meteorological observatory has to be setup in this region.

Establishment of a Lab cum-Field museum & library

For maintenance of herbarium, collection of scat, dung, pellet, samples of hair, skulls, lower jaw for estimation of age, shed antlers etc. a lab cum field

museum headed by a Curator and Assistant is needed. They can provide significant evidence in trial of wildlife poaching cases in the court of law.

For collection, storage & retrieval and analysis of data a few computers with printers is needed. One library should be opened for reading and reference on wild life, environment & Forestry.

11.3: Training

With dissemination of advance technology, imparting proper training should enhance knowledge of local staff.

On the job training & formal training courses

Organisation of short capsule courses in which experts will be invited in relevant fields. For officers - there are wildlife Diploma course, Eco-development course to be imparted in wild life institute of India, Dehradun. Short courses on tranquilisation technique, Geographical information system etc. are available for R.Os, A.C.Fs. & D.C.Fs.

Short-term refresher courses/capsule courses can be provided for F.Gs, Frs local guides, villagers and NGO's etc. Important seminars can be organised for mine owners in the subject of mine and wildlife and mine environment and forests etc. to give them orientation so as to involve them in conservation programme. Annual weapon training and target practice should be given to all field staff. For enforcement of wildlife act and environmental laws special training on law matter should be organised involving field staff, public prosecutors and Judges.

Management of non-forest area

It is reported in District level Committee that about? ha. Of non-forest Govt. land but it is having some good forest growth. These are interspersed in between R.F, DPF and villages. All habitat improvement work, Eco-development work etc. can be done here as prescribed in forest lands. Eco-development programmes can be implemented from funds prescribed in this plan in some of the villages close to R.Fs D.P.Fs. Rest work can be done from the funds provided by DRDA, Social Forestry and all other funds released by state Govt. through district administration for tree planting, soil and water conservation.

CHAPTER - 12

ORGANISATION AND ADMINISTRATION

12.1: Structure and responsibilities

In order to implement the various prescriptions of this plan existing organisation and administration set up has to be utilized in respective divisions.

Creation of New posts:

Research wings	-	Research Officer,
		2 research assistants,
		2 Field Assistants,
		Documentation Officer.
Veterinary wing	-	Veterinary Surgeon,
		Veterinary Field Assistant.
Eco-tourism	-	Curator
		Museum Assistant.

Interpretation Centre / Visitor Centre:

		One Officer,
		One assistant.
Librarian	-	One
Computer technician	-	One

Local people should be engaged as firewatcher etc.

N.B. till new posts are sanctioned the posts will be managed by engaging persons on contract or wage basis assisted by dept. staff.

12.2: Staff-amenities

Considering the arduous nature of job in remote areas the staff should be provided with cycles & Motor cycles. R.O.s, will use jeeps for group patrolling and supervision of various Wonles Vans will be needed for Eco-development &

habitat improvement work. Additional staff quarters, provision of electricity, water, recreation facilities will be provided.

12.3: Rewards & Incentives

For commendable work in the field of protection, plantation or such other things the field staff should be suitably rewarded.

CHAPTER - 13

MISCELLANEOUS REGULATIONS

13.1: Record of deviations and implemented targets

This has to be scrupulously maintained.

13.2: The record of employment potential

This has to be maintained to know the employment we have provided to local people.

13.3: The control Forms

This would help in collection of various data with respect to P.A. and help management to bring further improvements in the plan.

Control Form No. I:	Record of monthly rainfall & rainydays. Maximum & Minimum temp.
Control Form No. II:	Record of water sources & their distribution.
Control Form No. III:	Record of waterhole count. (Census)
Control Form No. IV:	Record of wild animal kills by carnivores.
Control Form No. V:	Record of sighting of wild animal.
Control Form No. VI:	Record of firearms within 10 k.m. Distance from P.A. boundary.
Control Form No. VII:	Record of maintenance of boundary line.
Control Form No. VIII:	Record of management operations and its impact on wild life.
Control Form No. IX :	Record of fire incidence.
Control Form No. X:	Record of illicit felling.
Control Form No. XI :	Record of illicit grazing.
Control Form No. XII:	Record of poaching cases.

Control Form No. XIII:	Record of domestic animal injury or kill by wild animal.
Control Form No. XIV:	Record of injury on kill of human by wild animal.
Control Form No. XV:	Record of crop raid by wild animals.
Control Form No. XVI:	Record of encroachments.
Control Form No. XVII:	Record of crop raid by wild animals.
Control Form No. XVIII:	Record of animal disease incidences.
Control Form No. XIV:	Record of death of wild animals.
Control from No.XV:	Record of compensation payment.

13.4: Maintenance of Compartment histories

Compartment histories are synonymous with traditional forestry practices. Whatever incident, changes on operations are taking place within each compartment must be mentioned from time to time. Senior officers must check this at regular interval.

13.5: Maintenance of P.A. book

It will give detailed account of management of the P.A. and will be maintained by concerned D.F.Os. It is just like running commentary in all aspects of management. It would lay emphasis on the extent to which objectives of the management plan have been realised and extent to which strategies prescribed have been found suitable. The P.A. authority can know his achievement, failure & problems. He should carry it alongwith him during every field visits and should record his observation. P.A. book will be maintained separately for each zone.

THE BUDGET

FINANCIAL FORECAST AND BUDGET PROVISION

Sl.No.	The Schedule of operation and budget	Allotment of 10 years.			
		1st	2nd	3rd to 10th per year.	
Protection					
1.	Replacement of pillars/maintenance, construction of new pillars, trenches, stone wall/boundary maintenance of R.F. DPF etc.	4.0	2.0	1.0	14.0
2.	Construction/maintenance of patrolling camps/ Mobile Barrack	4.0	2.0	0.5	10.0
3.	Purchase/Maintenance of V.H.F. sets/construction of VHF tower.	4.0	2.0	0.5	10.0
4.	Cash awards/Incentives	1.0	1.0	1.0	10.0
5.	Maintenance of forest roads.	2.0	1.0	0.5	7.0
6.	Purchase & maintenance of arms & ammunitions (heavy bore rifle, short guns, revolvers, flares, very light pistol, blank ammunition, rubber bullet, search light, public address system etc.)	10.0	5.0	1.0	23.0

7.	Secret funds for informers etc.	0.5	0.5	0.5	5.0
		25.5	13.5	5.0	79.0
Fire					
1.	Creation & Maintenance of fire line.	2.0	1.5	1.0	11.5
2.	Wages for fire-cum-protection watcher	1.0	1.0	1.0	10.0
3.	Creation & Maintenance of fire observation-cum-protection towers.	3.0	2.0	1.0	13.0
4.	Purchase & Maintenance of fire fighting equipment, tools, clothing etc.	2.0	1.5	0.5	7.5
5.	Purchase and maintenance of one morden Fire fighting vehcile	25.0	1.0	0.5	30.0
		33.0	7.0	4.0	72.0

Sl. No.	The Schedule of operation and budget	Allotment of 10 years.			Total Rs. (in lckhs)
		1st	2nd	3rd to 10th per year.	
Habitat Management					
A.	Water Resourse Management				
1.	Creation of new & maintenance of existing water points, wallowing grounds including cross dams on the nalha.	5.0	3.0	2.0	24.0
2.	provision for artificial supply of drinking water during pinch period viz. Tube well pump set etc.	2.0	1.5	1.0	11.5
B.	Creation & Maintenance of meadows, purchase of grass seeds etc.	2.0	1.5	1.0	11.5
C.	Creation & Maintenance of Salt licks	0.5	0.5	0.5	5.0
D.	Planting of fodder & fruit bearing species, creation of nurseries both permanent & temporary with all necessary infrastructure & equipment.	25.0	10.0	5.0	75.0
E.	Relocation of encroachers (Separate fund will be borne by state Govt.) Ring lining of encroachment / villages on priority basis has to be done	2.0	1.5	1.0	11.5
F.	Improvement of Riperian zone, plantation, construction of gabion and spurr for streamline control etc.	3.0	2.0	1.0	13.0
G.	Weed eradiction-wages & implements.	3.0	1.5	1.0	12.5
H.	Habitat corridor linking by improvement of vegetal cover.	10.0	8.0	7.0	74.0
I.	Rehabilitation of degraded forests work.	10.0	8.0	7.0	74.0
		62.5	37.5	26.5	312.0

Soil & Moisture conservation measures.					
1.	Watershed management programmes i.e. treatment of catchment with forest trees, cashew, Horticulture species, Agril. species & grass.	10.0	8.0	7.0	74.0
2.	Water harvesting structure and check dam.	15.0	10.0	8.0	89.0
3.	Contour, trenches, staggered trenches.	5.0	3.0	1.0	16.0
4.	Peripherial bunding & contour bunding.	2.0	2.0	1.0	12.0
5.	Construction & maintenance of other soil conservation measure & water conservation measures. Vis. gully plugging, inverted bunds.	2.0	1.0	0.5	7.0
		34.0	24.0	17.5	198.0

Sl. No.	The Schedule of operation and budget	Allotment of 10 years.	Total Rs. (in lakhs)		
		1st	2nd	3rd to 10th per year.	
Vehicles for protection, Eco-development & other plantation work.		16.0	2.0	2.0	34.0
1.	Purchase and maintenance of four Commander jeeps, two for patrolling two for inspection etc.	14.0	1.0	1.0	23.0
2.	Purchase and maintenance of two mini truck.	5.0	2.0	2.0	23.0
3.	Purchase and maintenance of 12 motor cycle	0.5	0.0	0.0	0.5
4.	Purchase of 30 bicycles	6.0	0.5	0.5	10.5
6.	Purchase and maintenance of two Tractors with Trolley and accessories for habitat improvement work	10.0	10.0	10.0	100.0
5.	Maintenance of POL of these vehicles, wages for drivers (hired).	51.5	15.5	15.5	191.0
Eco-tourism		10.0	5.0	2.0	31.0
1.	Interpretation centre/visitor centre with all inputs and maintenance.	5.0	3.0	2.0	24.0
2.	Signages/Interpretive displays, wayside exhibits, Nature trail, Botanical garden, Lawn and maintenance etc.	5.0	2.0	1.0	15.0
3.	Camping equipment / campgears and maintenance.	2.0	2.0	2.0	20.0
4.	Wages for persons to look after these.	4.0	2.0	2.0	22.0
5.	Purchase and maintenance of two mechanised Boats for Tourism				

	and protection inside Hadagarh Wildlife Sanctuary				
		26.0	14.0	9.0	112.0
Eco-development planning/ peripheral dev. Activity					
1.	Agro forestry (FFRP), Silvipasture, fuelwood planting & Horticultural crop, use of Biofertilizer, organic farming, introduction of cropping pattern, crop rotation, Cashew plantation etc.	10.0	5.0	2.0	31.0
2.	Water harvesting structure.	10.0	5.0	5.0	55.0
3.	RDF work in Khesaras/ non forest land having forest growth / village wood lot community forest.	5.0	5.0	5.0	50.0
4.	Stall feeding/introduction of High Yielding milch cattle, marketing etc.	1.0	1.0	1.0	10.0
5.	Biogas, fuel effecient chulas, solar light etc.	2.0	1.5	1.0	11.5
6.	Health camp.	2.0	1.0	0.5	7.0
7.	Roads, Education, drinking water,Electrification,Solar Lighting System etc.	5.0	4.0	3.0	33.0
8.	Income generating scheme, handicraft, cottage Indus., mushroom farming, tassar cultivation, Basket making, poultry etc.	2.0	1.0	0.5	7.0
		37.0	23.5	18.0	204.5
Wildlife & Environmental education / awareness					
1.	Organisation of nature camp/trekking.	1.0	0.5	0.5	5.5
2.	Slide projector / overhead projector.	1.0	0.5	0.1	2.3
3.	Camera with other equipment.	0.5	0.2	0.1	1.5

4.	Video, Audio-Visual Aid, Film projector ,Computer with Printer and accessories (one operator)	2.0	1.0	0.5	7.0
5.	Construction of one library and maintenance.	10.0	2.0	1.0	20.0
6.	Book, Magazine for library.	3.0	2.0	1.0	13.0
7.	Wage of one person for up keeping of Library	0.5	0.5	0.5	5.0
8.	Construction of one field museum / Herbarium and maintenance.	5.0	1.0	1.0	14.0
9.	Wage for persons for collection & upkeep.	0.5	0.5	0.5	5.0
10.	Publication - Brochures etc.	1.0	1.0	0.5	6.0
11.	Driving away Elephant ,Purchase of crackers, Kerosin,search light etc. Wild life compensation and POL for Vehicle.	2.0	2.0	2.0	20.0
12.	Purchase of map, records, Topo sheet, Village sheet etc.	1	0.5	0.2	3.1
13.	Construction of Van Chetana Kendras/Awareness center and mainterance	5	3	1	16.0
		32.5	14.7	8.9	118.4
Animal Health Care.					
1.	Purchase of tranquilisation equipment, Cage, Capture Equipment etc.	5.0	3.0	1.0	16.0
2.	Purchase of vaccine, drug.	1.0	1.0	0.5	6.0
3.	Construction of veterinary unit with lab & equipment and mainterance/ Construction of rescue cum rehabilitation centers	5.0	2.0	1.0	15.0
4.	Expenditure on contigency plan-fire, drought, storm earthquake etc.	2.0	1.0	1.0	11.0
5.	Wage for one field assistant	0.5	0.5	0.5	5.0
		13.5	7.5	4.0	53.0

Sl. No.	The Schedule of operation and budget	Allotment of 10 years.			Total (in lakhs)
		1st	2nd	3rd -10th per year.	
Research and monitoring					
1.	Construction & maintenance of Research cell.	10.0	5.0	2.0	31.0
2.	Construction of one meteorological observatory.	10.0	1.0	1.0	19.0
3.	Purchase / maintenance of lab equipment.	3.0	2.0	1.0	13.0
4.	Purchase / maintenance of computers printers and scanners with accessories etc.	10.0	5.0	2.0	31.0
5.	Purchase / maintenance of Xerox machine.	1.5	1.0	0.5	6.5
6.	Purchase / maintenance of Fax machine	0.5	0.3	0.2	2.4
7.	Purchase / maintenance of Telephone	1.0	0.5	0.5	5.5
8.	Wages for computer operators and field research assistants.	2.0	2.0	2.0	20.0
		38.0	16.8	9.2	128.4
Training					
1.	For Staff, Villagers, NGO's , Mine owners etc.	1.0	1.0	1.0	10.0
Staff Amenities					
1.	Construction & Maintenance of staff quarters.	10.0	5.0	2.0	31.0
2.	First - aid, Uniform.	2.0	2.0	2.0	20.0
3.	Drinking Water.	5.0	2.0	1.0	15.0
4.	Electrification	5.0	2.0	1.0	15.0
5.	Recreation	2.0	1.0	0.5	7.0

Miscellaneous		24.0	12.0	6.5	88.0
1.	Stationary, Furniture, Office contigency	2.0	1.5	1.0	11.5
2.	Misc. expenditure & Office expencess including cost of census operation.	2.0	1.0	0.5	7.0
		4.0	2.5	1.5	18.5
	G. Total	382.5	189.5	126.6	1584.8

At present there are 76 working mines in Joda circle having 27,161.003 ha. lease hold area,13 Working mines in Keonjhar Circle having 3319.0563 Ha. lease hold area , 58 working mines having 9933.6855 Ha. lease hold area in Koira Circle. One working mine (Daitary Iron Ore Project, OMC Ltd.) of JK Road Circle comes under Keonjhar Forest Division having 95.60 Ha. lease hold area .There are 40 non-working mines having 4578.9537 ha. lease hold area in Joda Circle , 55 Non working mines having 9991.4961 Ha. lease hold area in Keonjhar Circle and 70 non-working mines having 13572..2269 Ha. lease hold area in Koira Circle of Keonjhar and Bonai Divisions.. The schedule of operation and budget has been shown as above to be executed over next 10 years. The budget envisaged is 1584.8 lakhs. At present, the lessee / user agency will have to deposit money @ Rs. 944/- per ha. of lease hold area for the first year, @ Rs. 468/- for second year and @ Rs. 313/- for subsequent years only for the working mines. The lessee/user agency will deposit the money with the concerned Divisional forest officers (DFO, Keonjhar and DFO Bonai) in shape of Bank draft. The non working mines will have to deposit the money due of that year as per the budget provision as and when they will start their operation. The extra money so generated will be spent by the concerned DFOs after deciding about new works which are not being envisaged in this plan.

M.L. & P.L. AREA OF JODA CIRCLE WITH THEIR STATUS (Working)

TOPO SHEET NO. 73 - F/8

Sl. No.	Name of Lessee	Location	Area In Hectares	Minerals	Remarks
1	D.R. Patnaik	Mugabeda	15.378	Iron Ore	ML-1
2	Dr. S.Pradhan	Baitarani	52.892	Iron Ore	ML-2
3	TISCO	JODA EAST	670.807	Iron Ore	ML-3
4	SAIL	Bolani	1320.895	Iron Ore	ML-4
5	O.M.D.C	Bhadrasahi	103.600	Iron Ore	ML-10
6	B.P.M.E.L.	Thakurani	1600.873	Iron Ore	ML-11
7	K.N.Ram(MESCO)	Roida-I	104.68	Iron Ore	ML-13
8	Kaypee Enterprise	Thakurani	228.040	Iron Ore	ML-15
9	A.Lodha	Balagonda	326.508	Iron Ore	ML-19
10	K.C. Pradhan	Lakraghat	10.72	Iron Ore	ML-24
11	Dr. S. Pradhan	Balita	34.750	Iron Ore	ML-25
12	Bhanj Minerals(P) Ltd.	Deojhar	399.020	Iron Ore	ML-26
13	B.D. Pattnaik	Kalaparbat	25.633	Iron Ore	ML-27
14	TISCO	Manmora	16.349	Mn. Ore	ML-28
15	O.M.C.	Dalki	265.260	Mn. Ore	ML-35
16	B.P.M.E.L.	Dalki	267.760	Mn. Ore	ML-36
17	TISCO	Bamebari Baneikela	1150.550	Mn. Ore	ML-37
18	O.M.C.	Roida Block-D	129.499	Mn. Ore	ML-38
19	TISCO	Katamati	403.324	Mn. Ore	ML-43
20	OMDC	Belkundi	1276.865	Iron & Mn.	ML-44
21	TISCO	Joda West	1437.719	Iron & Mn.	ML-45
22	O.M.C.	Serenda Bhadarsahi	1734.517	Mn. Ore	ML-46
23	OMC/IDC	Roida Block-C	192.810	Iron & Mn.	ML-47
24	Bhanj Minerals (P) Ltd.	Inganijharana	242.313	Iron & Mn.	ML-51
25	B.P.M.E.L.	Roida	254.952	Iron & Mn.	ML-55
26	Kushaleswar Minerals	Kalaparbat	9.814	Mn. Ore	ML-58
27	K.C. Pradhan	Horomatta	61.015	Iron & Mn.	ML-59
28	S.D.Sharma	Raika	26.243	Iron & Mn.	ML-62
29	D.R.Patnaik	Thakurani	121.385	Iron & Mn.	ML-66
30	Dr. S. Pradhan	Inganijharan	18.700	Iron & Mn.	ML-67

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	Remarks
31	SAIL	Bolani	1787.093	Iron & Mn. Ore	ML-68
32	Essel Mining & Ind. Ltd.	Kasia	194.196	Iron, Limestone & Dolomite	ML-70
33	K.N.Ram & Co.	Roida-II	74.866	Iron Ore	ML-80
34	OMDC	Bagiaburu	21.520	Iron Ore	ML-82
35	N.M.D.C	Kiriburu	1051.981	Iron Ore	ML-88
36	Tarini Minerals	Deojhar	34.365	Iron Ore	ML-98
37	Dr. S.Pradhan	Kalaparbat	177.453	Iron & Mn.	ML-108A

TOPO SHEET NO. 73 - G/5

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	Remarks
38	Patnaik Minerals	Jaribahal	106.534	Iron Ore	ML-5
39	O.M.C.	Khandabandha	366.311	Iron Ore	ML-6
40	S.C.Padhi	Gurubeda	49.776	Iron Ore	ML-7
41	Narayani Sons	Surjaturpa	138.900	Iron Ore	ML-8
42	K.M.Corporation	Jururi	27.170	Iron & Mn.	ML-9
43	R.P.Sao	Guali	365.026	Iron Ore	ML-12
44	K.J.S Ahluwalia	Nuagaon	767.284	Iron Ore	ML-14
45	K.C.Pradhan	Chainkpur	142.697	Iron	ML-16
46	Sirazudin & Co.	Balda	335.890	Iron Ore	ML-17
47	O.M.C	Balda,Palsa, Jajang	866.595	Iron Ore	ML-18
48	K.M.C.	Jaruri	135.570	Iron & Mn.	ML-20
49	K.M.C	Jaruri	12.690	Iron	ML-21
50	Mineral Trading Syndicate	Bhalubasa	62.322	Iron Ore	ML-22
51	T. B. Lal	Jajang	39.897	Iron & Mn.	ML-23
52	Patnaik Minerals	Joribahal	17.150	Mn	ML29
53	TISCO	Guruda & Joruri	643.612	Mn	ML-30
54	O.M.D.C	Bhadrasahi	999.706	Mn	ML-31
55	Rungta Sons Pvt.Ltd.	Katasahi	226.624	Mn.	ML-33
56	O.M.C	Dubna	1135.419	Iron	ML-34
57	M.L.Rungta	Kalimati	715.639	Mn	ML-39
58	K.M.C.	Joruri	54.754	Mn	ML-40

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	Remarks
59	K.M.C	Jaruri	39.456	Mn	ML-41
60	S.N.Pal	Katamati	9.699	Iron	ML-42
61	O.M.C	S.G.B.K.	1011.462	Iron & Mn	ML-48
62	Essel Mining Ind. Ltd.	Jilling & Langalata	456.10	Iron & Mn	ML-49
63	H.G.Pandya & Others	Jajang	100.137	Iron & Mn	ML-50
64	A.Roy & B.Roy	Jalahuri	182.108	Iron & Mn	ML-52
65	Rungta Mines (P) Ltd.	Jajang	669.35	Iron & Mn	ML-53
66	S.C. Padhee	Banspani	41.682	Iron & Mn	ML-54
67	TISCO	Khandabandh	1293.433	Iron & Mn	ML-56
68	M.R.Das	Kalaparbat	5.139	Iron & Mn	ML-57
69	R.B.Das	Kundrupani	10.255	Iron & Mn	ML-61
70	S.N.Mohanty	Unchbali	9.63	Iron & Mn	ML-63
71	Essel Mining Ind. Ltd.	Unchabali	107.306	Iron & Mn	ML-64
72	K.J.S. Ahluwalia	Kendudihi	40.306	Iron & Mn	ML-65
73	N.Patnaik	Jajang Khandabandh	66.368	Iron	ML-96

TOPO SHEET NO. 73-G/9

74	B.K. Mohanty	Parsala	28.670	Quartzite	ML-71
75	G.L. Chauda	Chauthia	3.07	Quartzite	ML-73

TOPO SHEET NO. 73-G/13

76	S.N.Mohanty	Raruangada	32.921	Quartzite	ML-72

ML = Mining Lease PL = Prospecting License

LIST OF GRANTED M.L. & P.L. IN KEONJHAR CIRCLE

(Working)

Sl No.	Name of the lessee	Location	Acre in Ha.	Minerals	Remarks
TOPOSHEET NO. 73 - G 10 & 6					
01	B.L.Neutia	Madrangajori	53.80	Pyrophillite	M.L No.357
02	B.L.Neutia	Tikarpara & Ambadahara	112.4876	Pyrophillite Quartz & Quartzite	PL No. 615 & ML No.587
03	K.S.Sahu (U.M.P.L)	Nitigote	3.92	Pyrophillite & Quartzite	ML No.554
04	G.P Behera (S. Pratap)	Ambadahara	24.4025	Pyrophillite	PL No. 105 & ML No. 591
05	O.M.C	Block-B	1590.867	Iron Ore	RML-5
06	OMC	Block-A	618.576	Iron Ore	ML-558
07	D.M.Minerals	Medinopur	142.04	Pyrophillite, Quartz & Talc	ML No.408
08	G.P.Behera	-do-	35.00	Pyrophillite	ML No. 590
09	S.C. Malik	Kadipose	195.452	P.Q. & Q	RML No.516
10	Gandhamard-an Sponge Industries	Putulipani	100.1632	Iron Ore	ML-577
TOPOSHEET NO. 73 - K/7					
11	IMFA	Nuasahi	40.468	Chromite	ML No. 586
12	FACOR	Boula	187.03	-do-	RML No.517
13	OMC	Bangur	145.85	-do-	RML No.599

List of mines Under Jajpur Road Circle (Working)

TOPO SHEET NO. 73 G /16

Sl No.	Name of the lessee	Location	Acre in Ha.	Minerals	Remarks
1	OMC Ltd.	Daitary Iron Ore Project	95.60	Iron	RML

LIST OF M.L. AREA & P.L. AREA IN KOIRA CIRCLE OF BONAI SUB DIVISION OF SUNDERGARH DISTRICT(Working)

TOPO SHEET No. 73 G/1

Sl. no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with topo Ref-No
01	M/s SAIL	Kalta ,Barsuan	2486.82	Iron	ML-1
02	M/s E M I Ltd.	Koira	90.143	-do-	ML-2
03	M/s. S.N. Mohanty	Raikela	18.315	-do-	ML-4
04	M/s O.M.M. (P) Ltd.	Orahuri	51.476	Mn.	ML-5
05	-Do-	Kusumdih	31.549	-do-	ML-8
06	M/s. A.M.T.C. Ltd.	Mahulsukha	399.284	-do-	ML-9
07	-do-	Narayan West	349.254	Iron & Mn.	ML-10
08	M/s National Enterprises	Raikela	45.932	Iron	ML-16
09	M/s K.C.Pradhan	Nuagaon	39.888	Mn.	ML-21
10	M/s. S.D. Sharma	Nuagaon	12.942	Iron & Mn.	ML-22
11	-do-	Raikela	14.933	Iron	ML-24
12	M/s Penguin Trading & Agencies Ltd.	-do-	49.372	-do-	ML-28
13	M/s. Jindal Steel and Power Ltd.	Tantra Raikela, Bandhal	297.847	-do-	ML-29
14	M/s S.N Mohanty	Joldihi	336.065	Iron & Mn.	ML-30
15	Sh.U.C. Mishra	Kamanda	43.067	Bauxite	ML-31
16	M/s Tarini Minerals (P) Ltd.	Teherai	29.810	Iron & Mn.	ML-32
17	-do-	Nuagaon	7.85	Mn.	ML-33
18	M/s Orind Ltd	Tantra	106.138	Bauxite	ML-36
19	M/s Gitarani Mahanty	Raikela	67.582	Iron	ML-37
20	Smt. Kavita Agarwal	Tantra	72.566	-do-	ML-38
21	M/s J.C. Budhraj	Bhaludungri	110.479	Soapstone	ML-39
22	M/s C.P. Sharma	Raikela	69.606	Iron	ML-42
23	M/s O.M.M. (P) Ltd.	Tentuldih	35.610	Mn	ML-45
24	M/s. S.N. Mohanty	Nuagaon	29.257	Iron & Mn.	ML-47

TOPO SHEET No. 73 G/5

Sl no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with topo Ref-No
25	TISCO	Malda	1734.272	Iron & Mn.	ML-3A
26	-do-	-do-	95.650	-do-	ML-3B
27	-do-	-do-	109.420	-do-	ML-3C
28	-do-	-do-	86.975	-do-	ML-3D
29	-do-	-do-	95.283	-do-	ML-3E
30	O.M.M (P) Ltd	Patmunda	807.316	Mn	ML-6
31	-do-	Bhanjikusum	8.498	Mn	ML-7
32	M.G. Mohanty	Gonua	82.083	Iron & Mn.	ML-11
33	Freegrade & Co (P) Ltd.	Nadidih	121.405	-do-	ML-12
34	B.I.Co. Ltd.	Nadidih	73.855	-do-	ML-13
35	-do-	Teherai	137.480	-do-	ML-14
36	National Enterprise	San Indpur	75.000	-do-	ML-15
37	S.N . Mohanty	Gonua	14.159	-do-	ML-17
38	Rungta Mines(P) Ltd.	Kalmang	210.528	Mn	ML-18
39	Rungta Sons(P) Ltd.	Oraghat	82.916	Iron	ML-19
40	-do-	San Indpur	147.100	Iron	ML-20
41	K.C. Pradhan	Gonua	12.530	Iron & Mn.	ML-25
42	Matandin Sharda	Beldih Khajurdih	31.566	-do-	ML-26A
43	-do-	Dalita	32.3748	-do-	ML-26B
44	M.G.Mohnaty	Patabeda	19.425	-do-	ML-27
45	S.N.Mohanty	Jaldihi	336.065	Iron & Bauxite	ML-30
46	Maitri Shukla	Gonua	102.890	Iron & Mn	ML-34
47	D.K. Bai Pandya	Gonua	109.890	-do-	ML-35
48	Sun Alloys Minerals Ltd.	Patmunda	81.197	Mn	ML-40
49	J.N.Pattnaik	Bhanjapali	18.000	Iron	ML-41
50	O.M.M(P) Ltd.	San Patuli	28.670	Mn	ML-43
51	Rungta Mines (P) Ltd.	Kanthar Koira	73.653	Mn	ML-44
52	S.A.Halim	Oraghat	25.847	Iron	ML-46

TOPO SHEET NO 73 C 13

Sl no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with topo Ref-No
53	M/s S.D. Sharma	Bhaludungri	155.430	Soapstone	ML-23
54	M/s J.C. Budhraj	-do-	110.479	-do-	ML-39
55	M/s JK & KP Jhujhunwala	Kulijhar	24.167	Quartzite	ML-55

TOPOSHEET No. 73 F/4

Sl no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with Topo Ref.No
56	M/s SAIL	TODA R.F.	15.1838	Iron	ML-50A
57	-do-	-do-	22.9982	Iron	ML-50B

ML= Mining Lease P.L. = Prospecting License

M.L. & P.L. AREA JODA CIRCLE WITH THEIR STATUS(Non-working)

TOPO SHEET NO. 73 - F/8

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	Remarks with topo Ref-No
1	B.K.Mohanty	Uliburu	62.726	Iron & Mn. & Quatzite	ML-74
2	B.K.Mohanty	Uliburu	56.940	Iron ,Mn & Limestone	ML-75
3	T.B.Lal	Kasia Barpada	77.497	Iron Ore	ML-78
4	S.N. Mohanty	Khuntapani	15.378	Iron	ML-79
5	Jagdish Mishra	Uliburu	30.513	Iron	ML-90
6	Dr. S.Pradhan	Baitarani	12.505	Iron	ML-92

TOPO SHEET NO. 73 - F/8

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	Remarks
7	O.M.C.	Roida Sidhamath	78.711	Iron Ore	ML-94
8	M.R.Das	Uliburu	3.076	Mn. Ore	ML-95
9	B.C.Deb	Dadwan	114.934	Iron & Mn.	ML-97
10	M.R.Das	Deojhar	11.537	Iron Ore	ML-99
11	S.L.Sarda & M.L. Sarda	Thakurani	947.046	Iron	ML-102
12	K.C.Pradhan	Bolani	17.10	Iron Ore	ML-106
13	Kushaleswar Minerals	Raika	6.228	Iron & Mn.	PL-108

TOPO SHEET NO. 73 - G/5

Sl. No	Name of Lessee	Location	Area in Hectares	Minerals	Remarks
14	R.P.Sao	Chormalda	141.122	Mn	ML-32
15	K.C. Pradhan	Paredipada	12.10	Iron & Mn	ML-60
16	Pragati (P) Ltd.	Khuntapani	18.615	Iron & Mn	ML-69
17	O.M.C	Banspani	380.40	Iron	ML-76
18	O.M.C	Sekradihi	564.356	Iron Ore	ML-77
19	M.H.Rehman	Topadihi	26.476	Iron	ML-81
20	M/S. U.M.S	Laidapada	28.328	Mn	ML-81A
21	D.C.Jain	Dalpahar,BI-A	89.961	Iron	ML-83
22	D.C.Jain	Dalpahar BI-B	0.697	Iron	ML-84
23	-do-	Dalpahar BI-II	7.697	Iron	ML-85
24	-do-	Dalpahar BI-III	1.012	Iron	ML-86
25	-do-	Dalpahar BI-C	2.002	Iron	ML-87
26	O.M.C.	Tiringpahar	79.30	Iron	ML-89
27	Rungta & Sons	Bandhubeda	26.226	Iron Ore	ML-91
28	O.M.C	Parulipada	170.170	Iron & Mn	ML-93
29	FACOR	Katasahi	13.674	Iron	ML-100
30	Smt. Indrani Patnaik	Unchabali	106.1127	Iron	ML-101
31	S.N.Mohanty	Unchabali	10.117	Iron & Mn.	PL-103
32	O.M.C.	Chormalda	416.835	Mn	ML-104
33	O.S.I.L	Gurubeda	148.357	Iron Ore	ML-107
34	T.P.Mohanty	Naibarga	69.978	Iron & Mn.	PL-109
35	T.P.Mohanty	Naibarga	29.226	Iron & Mn.	PL-110
36	T. B. Lal	Brahmanijhori	429.917	Iron & Mn.	PL-111
37	S.N.Paul	Katasahi	31.346	Mn	PL-112
38	R.B. Thakur	Katasahi	96.568	Iron & Mn.	ML 112A

TOPO SHEET NO. 73-F/12

39	Akhil Ch. Mahanta	Ramchandrapur	38.30	Chinaclay	PL-113

TOPO SHEET NO. 73-G/9

40	Black Stone Mining	Dhabakuchuda	205.870	Pyrophillite	PL-105

LIST OF GRANTED M.L. & P.L. IN KEONJHAR CIRCLE
(Non-Working)

Sl No.	Name of the lessee	Location	Acre in Ha.	Minerals	Remarks
TOPOSHEET NO. 73 - G/5					
01	MESCO Steel Ltd.	Kadakala & Lohabeda	1101.480	Iron Ore	ML No. 673
02	-DO-	Pidpalheri & Sundra	494.987	-do-	ML No. 672
TOPOSHEET NO. 73 - G/7-G/8					
03	S.P.Goenka	Sikheswari	1050.00	Industrial Garnet	P.L NO. 674
	S.Goenka	Balabhadrapur	363.764	-do-	P.L NO. 684
05	-do-	Kulanga	1236.00	-do-	P.L NO. 689
TOPOSHEET NO. 73 - G 10 & 6					
06	H.V. Rather	Dalimapur	2.7559	Pyrophillite & Soapstone	ML No.650
07	-do-	-do-	132.486	Pyrophillite	ML No.449
08	S.P. Patnaik	Jamudiha	20.50	Pyrophillite	PL No.107
09	OMC	Block-C (Suakati)	99.805	Iron Ore	ML
10	OMC	Suakati	18.21	Iron Ore	ML-255
11	Keonjhar Minerals	Amjore	29.228	Pyrophillite	ML
12	B.L.Neutia	Medinapur	43.483	Pyrophillite,Quartz & Quartzite	ML No.494
13	R.K. Agarwal	Talkiapur & Sundaria	385	Soapstone, Asbestos & Jasper	ML-333
14	R.G.Jhanwar	Kansa	212.240	Pyrophillite,Quartz & Quartzite	PL No.493
15	D.B.Patnaik	Jamudiha	171.289	PQ & Q	PL No. 445
16	-do-	-do-	21.323	-do-	PL No. 446
17	B.L.Newatia	-do-	76.777	-do-	ML
18	S.P.Patnaik	-do-	20.5087	-do-	PL No. 104
19	S.M.Das	Duarsuni	26.7456	P.Q. & Q	PL No. 656

20	B.L. Newatia	Gopalpur,Barposi & Kandsore	49.232	Asbestos	ML No. 367
21	Narayani Sons	Lallpada	141.33	IronOre	ML
22	P.C. Mahapatra	Uper-Samanta	69.70	P.Q. & Q	PL No. 621
TOPOSHEET NO. 73 - G/6					
23	D.M.Minerals	Urmunda & Gandhamardan	241.658	Iron	ML
24	A.K.Giridhar	Jaldiha	129.199	Pyrophillite	PL No. 97
25	Orissa Industries Ltd.	Phuljahr	6.182	Quartz	PL No.79
TOPOSHEET NO. 73 - K/3					
26	A.K.Jain	Tangri	416.000	Steatite	ML No. 355
TOPOSHEET NO. 73 - G/14					
27	S.M.Das	Kundapitha	1.7806	Quartzite & Quartz	PL No. 659
TOPOSHEET NO. 73 - K/4					
28	M.P.Singh	Kardamali	13.05	Quartz	ML
29	P.K.Singh	Narda	2.89	Quartzite & Quartz	PL No.397
30	D.K.Rout	Asia	13.98	P.Q. & Steatite	PL No. 631
31	M.B. Chakra	Pandua	5.00	Quartz	PL. No. 86
TOPOSHEET NO. -73 -G/16.					
32	Harihar Sahu	Tukuripada kusumjori	174.559	Pyrophillite, Steatite,Q&Q	PLNO.489
33	Harihar Sahu	Tukuripada	93.08	Pyrophillite, Steatite,Q&Q	PLNO.488
TOPOSHEET NO.73-G/11					
34	Sipra Das	Hunda	42.9311	Pyrophillite, Quartzite & Quartz	PLNO.557
35	I. L. Manik	Khajurbani Block-A	142.50	Pyrophillite	Pl No.454(A)
36	-do-	Khuntamara	46.495	Pyrophillite	PL No. 454(B)
37	Ambika Mines & Minerals	Alanga	162.41	Quartz Quartzite & Steatite	Pl No.517
38	Rajesh Ku. Bhuyan	Alanga	98.5177	Pyrophillite, Steatite & Talc	Pl No.463

39	Minerals & Metals (P) Ltd,	Pithagola	18.79	Steatite	PL No.524
40	Minerals & Metals (P) Ltd,	Kuladhankuni	44.86	Steatite. Quartz & Quartzite	PL No.523
41	K.B. Pohi	Rampakote	32.45	Pyrophillite	PL No.100
42	A.K. Behera	-do-	24.766	Pyrophillite, Quartz & Quartzite	PL No.101
43	R.S. Rathor	Rampakote & Pithagola	34.511	Pyrophillite	PL No.453
44	A.K. Jain	Rebana	4.557	Pyrophillite	Pl No.471
45	-do-	-do-	4.552	Pyrophillite	PL No.473
46	Utkal Minerals	Rampakote	80.076	Pyrophillite	PL No. 116
47	K.B. Pohi	Rebana	3.3936	Pyrophillite	PL No.634
48	Harhar Sahu	Maragola	114.537	Pyrophillite & Red Ocher	PL No. 499
49	R.K. Mahanta	Panasia	25.1919	Steatite	Pl No.535
50	Utkal Mineral	Rebana	25.500	Pyrophillite	PL NO. 108
51	R.K. Mahanta	Hunda	83.519	Quartz Quartzite & Pyrophillite	Pl No. 521
52	B.S. Barik	Godinarda	70.723	Pyrophillite Steatite, Q. & Qt.	PL No. 673
TOPOSHEET NO. 73 - K/7 Restricted					
53	OMC	Bangur, Madhuban-& Bidyadharpur	208.00	-do-	PL No. 410
54	OMC	Baula	207.36	-do-	RML No.444
55	OMC	Baniapanka	1582.633	-do-	ML No. 99

LIST OF M.L. AREA & P.L. AREA IN KOIRA CIRCLE OF BONAI SUB DIVISION OF SUNDERGARH DISTRICT (Non - Working)

)PO SHEET No. 73 G/1

Sl. no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with topo Ref. No.
1	M/s. SAIL	-DO-	3.140	Iron	ML- 48
2	M/s. SAIL	-DO-	77.940	-DO-	ML- 49
3	-do-	-do-	15.1838	-do-	ML- 50A
4	M/s.K.J.S. Ahluwalia	Tantigram	29.575	Iron & Mn.	ML -52
5	M/s.O.M.C Ltd.	Kashira	418.353	Iron	ML -53
	M/s.O.M.C Ltd.	Bhanjapali	141.675	Iron	ML -54
7	A.M.T.C	Domuhari	147.842	Mn.	ML-56
8	E.M.I.Ltd.	Sarkunda	160.900	Mn.	ML-57
9	Feegrade & Co. (P) Ltd.	Sarkunda	393.556	Mn.	ML-58
10	U.C. Mishra	Kamanda	60.700	Mn.	ML-59
11	Smt.Kavita Agrawal	Kusumudih	47.484	Mn.	ML-60
12	B.I Co. Ltd.	Kusumudih	52.176	Mn.	ML-61
13	M/S O.M.C. Ltd.	Kurmita	1212.47	Iron	ML-63A
14	M/s O.M.C Ltd.	Ranthe	408.8731	Iron	ML-63D
15	T.P.Minerals & Industry	Bhutuda	40.619	Mn.	ML-66
16	Orind Ltd.	Kusumdih	102.790	Bauxite	ML-67
	SAIL	Tentra	117.440	Bauxite	ML-68
18	M/s O.M.C Ltd.	Uskunda	560.570	Iron	New lease-63C
19	M/s O.M.C Ltd.	Kalta	294.472	Iron &Mn.	New-63D
20	M/s M.G.Mohanty	Kusumdihi	153.972	Mn.	-do—62B
21	M/s Penguin Trading & Agencies	Bandhal Reikela	40.104	Iron & Mn.	PL-70
22	M/s Orissa Cement Ltd.	Kamanda & Kusumdih	16.810	Bauxite	PL-73
23	M/s Mines Minerals & Chemicals	Lusi	25.583	Iron & Mn.	PL-74
24	M/S Penguin Trading & Agencies Ltd.	Sidimba Tentulidih	88.648	Bauxite	PL-75

25	M/s Mangalam Carbide Ltd.	Kilinda ,Badbhuin Tentabahal	287.448	Iron & Mn.	PL-76
26	Sh. Bakhsi Singh	Lusi	44.613	-do-	PL-83
27	M/s Mangalam Carbide Ltd.	Dengula	31.262	-do-	PL-83A
28	Sh. Bakhsi Singh	Tantra Tensa	24.586	-do-	PL-86
29	M/s Mangalam Carbide Ltd.	Tantra	13.336	-do-	PL-88B
30	Sh.Ganesh Agarwal	Kamando	21.477	-do-	PL-89
31	Sh.S.Sahoo	Sidimba & Ranug	45.972	Bauxite & Iron	PL-90
32	M/s S.Lal & Co.	Kamando	48.120	Iron	PL-93
33	Sh.Rajesh Vig	Kusumdih	21.509	Iron & Mn.	PL-94
34	Sh.H.G.Pattanaik	Jaldihi	16.910	-do-	PL-95
35	Sh.N.K.Paul	-do-	55.505	-do-	PL-96
36	Sh.P.C. Agrawal	Lusi & Kensara	21.562	-do-	PL-97
37	Sh. Basudev Das	Raisuan	27.728	Iron & Mn	PL-99
38	Sh. N.K. agarwal	Bandhal	102.345	-do-	PL-100
39	Sh.R.G. Jhanwar	Dengula	28.449	Iron	PL-107
40	Sh.Basudev Das	Raisuan	15.613	Iron & Mn.	PL-108

TOPO SHEET No. 73 G/5

Sl no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with topo Ref-No
41	O.M.C	Kalta	294.972	Mn	ML NEW-63D
42	M/S Nilachal Ispat Nigam	Kadalia,San Rishibenua Hangibherga	1850.000	Iron & Mn.	ML NEW-64
43	M/s Mangalam Carbide Ltd.	Bhanjapali	106.837	Bauxite	PL-69
44	M/s S.N. Mohanty.	Gopua	3.604	Mn	ML-65
45	M/s M.G.Mohanty	Patabeda	28.397	Iron	PL-71
46	Sh. Sayed Abdula Hallim	Oraghat	45.00	Iron & Mn.	PL-72

47	M/s Penguin Trading & Agencies Ltd.	Kalmong Beldihi	108.909	-do-	PL-77
48	M/s C.P. Sharma & Sons	Ranisal Sonua	17.806	-do-	PL-78
49	Sh. Subhas Agarwala	San Indpur Sargigarh	15.277	Iron Mn & Bauxite	PL-79
50	M/s M.G. Mohanty	Patabeda	14.000	Iron & Mn.	PL-80
51	M/s Kanakdhara Mining & Minerals (P) Ltd.	Bad Patuli Patmunda	30.513	-do-	PL-81
52	Sh. P.C. Agarwal	Sargigarh	30.253	-do-	PL-82
53	Sh. Sayed Abdula Halim	Bad Indpur	18.030	-do-	PL-84
54	Sh. I.S. Manik	Teherai	19.368	Bauxite	PL-91
55	Sh. N.K. Paul	Teherai	12.356	Iron & Mn.	PL-92
56	Sh. N.K.Agarwal	Kalmong	57.598	Iron & Mn.	PL-98
57	M/s National Enterprises	Adaghat	15.074	Iron	PL-101
58	Sh. Shrinivas Sahoo	Koira Teherai	5.79	Iron & Mn.	PL-106
59	Sh. G.L. Agarwal	Gonua	3.540	-do-	PL-109
60	K.J.S Ahluwalia	Gonua	23.300	Iron & Mn.	ML-51
61	O.M.C	Kashira	418.353	Iron	ML-53
62	-do-	Bhanjapali	141.675	Iron	ML-54
63	M/s M.G. Mohanty	Ranisal	67.484	Iron & Mn.	ML-62A

TOPO SHEET NO 73 C 13

Sl. no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with topo Ref. No
64	Sh. M.R. Das	Jharbera Mushposhi Shivnathpur	442.329	Soapstone	PL-103
65	M/s Indian Morble Co.	Jamiradidhi	50.646	-do-	PL-104

TOPOSHEET NO. 73 C- 14

Sl no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with topo Ref-No
66	M/S Matadin Sharda	Badabandhabhuin Sanbandhabhuin	163.673	Quartzite	PI-102
67	-do-	-do-	103.452	Soapstone	PL-105

TOPOSHEET No. 73 G/2

Sl no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with topo Ref-No
8	Sh. Bakshi Singh	Uskuda	148.668	Iron	PL-85
69	M/s O.M.C Ltd.	Kurmitra	1212.470	-do-	ML-63A
70	-do-	Uskuda	560.570	-do-	New Lease)63C

ML= Mining Lease P.L. = Prospecting License

FINANCIAL FORECAST FOR WORKING LEASES
JODA CIRCLE OF KEONJHAR DIVISION

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year (Rs.) @ Rs.944/-	2nd Year (Rs.) @ Rs.468/-	3rd year to 10th year per year rate(Rs) @ Rs.313/-	Total (Rs.)
1	D.R. Patnaik	Mucabeda	15.378	Iron Ore	14516.63	7196.90	4813.31	80220.25
2	Dr. S.Pradhan	Baitareni	52.892	Iron Ore	49930.05	24753.46	16555.20	207125.07
3	TISCO	JODA East	670.807	Iron Ore	633241.81	313937.58	209962.59	2626880.21
4	SAIL	Boleni	1320.895	Iron Ore	1246924.88	618178.86	413440.14	5172624.82
5	O.M.D.C	Bhadrasahi	103.600	Iron Ore	97798.40	48484.80	32426.80	405697.60
6	B.P.M.E.L.	Thakureni	1600.873	Iron Ore	1511224.11	749238.56	501073.25	6269018.67
7	K.N.Ram(MESCO)	Roida-I	104.68	Iron Ore	98817.92	48990.24	32764.84	409925.86
8	Koypee Enterprise	Thakureni	228.040	Iron Ore	215269.76	106722.72	71376.52	893004.64
9	A.Lodha	Balagonda	326.508	Iron Ore	308223.55	152805.74	102197.00	1276605.33
10	K.C. Pradhan	Lakrachar	10.72	Iron Ore	10119.68	5016.95	3355.36	41979.52
11	Dr. S. Pradhan	Baiita	34.750	Iron Ore	32804.00	16263.00	10876.75	136081.00
12	Shanj Minerals(P) Ltd.	Deojhar	399.020	Iron Ore	376674.88	186741.36	124893.28	1562552.32
13	B.D. Pattnaik	Kalaparbat	25.633	Iron Ore	24197.55	11996.24	8023.13	100378.83
14	TISCO	Manmora	16.349	Mn. Ore	15433.45	7651.33	5117.24	64022.68
15	O.M.C.	Daiki	265.260	Mn. Ore	250405.44	124141.68	83026.38	1038758.16
16	B.P.M.E.L.	Dalki	267.760	Mn. Ore	252765.44	125311.68	83806.88	1048548.16
17	TISCO	Bamebari Bonaikela	1150.550	Mn. Ore	1086119.20	538457.40	360122.15	4505553.80
18	O.M.C.	Roida Block-D	129.499	Mn. Ore	122247.05	60605.53	40533.19	507118.08
19	TISCO	Kalamati	403.324	Mn. Ore	380737.85	188755.53	126240.41	1579416.76
20	OMDC	Belkundi	1276.865	Iron & Mn.	1205360.65	597572.82	399666.75	5000206.34
21	TISCO	Joda West	1437.719	Iron & Mn.	1357206.74	672852.49	450006.05	5630107.60

22	O.M.C.	Serenda Bhadersahi	1734.517	Mn. Ore	1637384.05	611753.98	542903.82	8792358.57
23	OMC/EDC	Roida Block-C	192.810	Iron & Mn.	182012.64	90235.08	80349.53	755043.96
24	Bhanj Minerals (P) Ltd.	Ingenijharena	242.313	Iron & Mn.	228743.47	113402.46	75843.97	948857.71
25	S.P.M.E.L.	Roida	254.952	Iron & Mn.	240674.69	119317.54	75799.98	998392.03
26	Kushaleswar Minerals	Kalaberbat	9.814	Mn. Ore	9264.42	4592.95	3071.76	38431.62
27	K.C. Prachan	Haremotto	61.015	Iron & Mn.	57598.18	28555.02	19097.70	238934.74
28	S.D.Sharma	Raika	26.243	Iron & Mn.	24773.39	12281.72	8214.06	102767.59
29	D.R.Patnaik	Thakurani	121.385	Iron & Mn.	114587.44	56808.18	37993.51	475243.66
30	Dr. S. Prachan	Ingenijharan	18.700	Iron & Mn.	17652.80	8751.60	5853.10	73229.20
31	SAIL	Saleni	1787.093	Iron & Mn. Ore	1687015.79	835359.52	559360.11	6995255.19
32	Essel Mining & Ind. Ltd.	Kasia	194.196	Iron, Limestone & Dolomite	183321.02	90883.73	60783.35	760471.54
33	K.N.Rem & Co.	Roida-II	74.866	Iron Ore	70673.50	35037.28	23433.06	293175.26
34	OMDC	Bagiaburu	21.520	Iron Ore	20314.88	10071.36	6735.76	84272.32
35	N.M.D.C	Kiriburu	1051.981	Iron Ore	993070.06	492327.11	329270.05	4119657.60
36	Tarini Minerals	Deolner	34.365	Iron Ore	32440.56	16082.82	10756.25	134573.34
37	Dr. S.Pradhan	Kalaberbat	177.453	Iron & Mn.	167515.63	83048.00	55542.79	694905.95
38	Patnaik Minerals	Joribahal	106.534	Iron Ore	100556.10	49857.91	33345.14	417187.14
39	O.M.C.	Khandabandh a	366.311	Iron Ore	345797.58	171433.55	114655.34	1434473.98
40	S.C.Padhi	Gurubeda	49.776	Iron Ore	46983.54	23295.17	15578.98	194922.62
41	Narayani Sons	Surjaturpa	138.900	Iron Ore	131121.60	65005.20	43475.70	543932.40
42	K.M.Corporation	Juruni	27.170	Iron & Mn.	25646.48	12715.56	8504.21	106397.72
43	R.P.Sao	Gboli	365.026	Iron Ore	344584.54	170832.17	114253.14	1429441.82
44	K.J.S Ahluwalia	Nuagaon	767.284	Iron Ore	724316.10	359088.91	240159.59	3004684.14
45	K.C.Pradhan	Chamkpur	142.697	Iron	134705.97	66782.20	44654.15	558801.45
46	Sirazudin & Co.	Baida	335.890	Iron Ore	317060.15	157196.52	105133.57	1315345.24

48	K.M.C.	Jaruri	35.570	Iron & Mn.	127976.08	[illegible]446.76	42433.41	530892.12
49	K.M.C.	Jaruri	12.690	Iron	11979.35	[illegible]938.92	3971.97	49684.04
50	Mineral Trading Syndicate	Bhalubasa	62.322	Iron Ore	58831.97	29166.70	19506.79	244052.95
51	T. B. Lal	Jajang	39.897	Iron & Mn.	37662.77	18671.80	12487.76	156236.65
52	Patnaik Minerals	Joribahal	17.150	Mn	16189.60	8026.20	5367.95	67159.40
53	TISCO	Garuda & Jaruri	643.612	Mn	607569.73	301210.42	201450.56	2520384.59
54	O.M.D.C	Bhadrasahi	999.706	Mn	943722.46	467862.41	312907.98	3914846.70
55	Rungta Sons Pvt.Ltd.	Katasahi	226.624	Mn.	213933.06	106060.03	70933.31	887459.58
56	O.M.C	Dubna	1135.419	Iron	1071835.54	531376.09	355386.15	4446300.80
57	O.M.C	Kalimati	715.639	Mn	675563.22	334919.05	223995.01	2802442.32
58	M.L.Rungta	Kalimati	54.754	Mn	51687.78	25624.87	17138.00	214416.66
59	K.M.C	Jaruri	39.456	Mn	37245.46	18465.41	12349.73	154509.70
60	K.M.C	Jaruri	9.699	Iron	9155.86	4539.13	3035.79	37981.28
61	S.N.Pal	Katamati	1011.462	Iron & Mn	954820.13	473364.22	316587.61	3960885.19
62	O.M.C	S.G.B.K.	456.10	Iron & Mn	430556.40	213454.80	142759.30	1786067.60
63	Essel Mining Ind. Ltd.	Jilling & Langalata	100.137	Iron & Mn	94528.33	46864.12	31342.68	392136.49
64	H.G.Pandya & Others	Jajang	182.108	Iron & Mn	171909.95	85226.54	56999.80	713134.93
65	A.Roy & B.Roy	Jalahari	669.35	Iron & Mn	631866.40	313255.80	209506.55	2621174.60
66	Rungta Mines (P) Ltd.	Jajang	41.682	Iron & Mn	39347.81	19507.18	13046.47	163225.71
67	S.C. Padhee	Bonspani	1293.433	Iron & Mn	1221000.75	605326.64	404844.53	5065083.63
68	TISCO	Khandabandh	5.139	Iron & Mn	4851.22	2405.05	1608.51	20124.32
69	M.R.Das	Bhulabala	10.255	Iron & Mn	9680.72	4799.34	3209.82	40158.58
70	R.B.Das	Kundrupani	9.63	Iron & Mn	9090.72	4506.84	3014.19	37711.08
71	S.N.Mohanty	Unchbali	107.306	Iron & Mn	101296.66	50219.21	33586.78	420210.30
72	Essel Mining Ind. Ltd.	Unchabali	40.306	Iron & Mn	38048.66	18863.21	12615.78	157838.30
73	K.J.S. Ahluwalia	Kendudihi	66.368	Iron	62651.39	31060.22	20773.18	259897.09
74	N.Patnaik	Jajang						

		Khandabandh			27064.48	13417.55	8973.71	112271.72
73	B.K. Mohanty	Paradip	29.670	Quartzite	2893.08	1435.73	960.91	12023.12
74	G.L. Chauda	Chantrale	3.07	Quartzite	31077.42	15407.03	10304.27	128918.84
75	S.N.Mohanty	Baruanbada	32.921	Quartzite	2563955.33	1271135.40	850406.94	10636259.75
77	TOTAL							

KEONJHAR CIRCLE OF KEONJHAR DIVISION

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year (Rs.) @ Rs. 944	2nd Year(Rs.) @ Rs. 468/-	3rd year to 10th year per year rate(Rs.) @ Rs.313/-	Total(Rs.)
01	B.L.Neutia	Madrengaloi	53.80	Pyrophillite	50737.20	25178.40	16839.40	210680.80
02	B.L.Neutia	Tikarpara & Ambadahara	112.4875	Pyrophillite Quartz & Quartzite	105188.29	52644.20	35208.62	440501.44
03	K.S.Sahu (U.M.P.L)	Nitigote	3.92	Pyrophillite & Quartzite	3700.48	1834.56	1226.96	15350.72
04	G.P Behera (S. Pratap)	Ambadahara	24.4025	Pyrophillite	23035.95	11420.37	7637.98	95560.19
05	O.M.C	Block-B	1590.867	Iron Ore	1501778.45	744525.76	497941.37	6229835.17
06	OMC	Block-A	618.576	Iron Ore	583935.74	289493.57	193514.29	2422343.62
07	D.M.Minerals	Medinapur	142.04	Pyrophillite,Quartz & Talc	134085.76	66474.72	44458.52	556228.64
08	G.P.Behera	-do-	35.00	Pyrophillite	33040.00	16380.00	10955.00	137060.00
09	S.C. Malik	Kadipose	195.452	P.Q. & Q	184506.69	91471.54	61176.48	765390.03
10	Gandhamadan Sponge Industries	Putulipani	100.1632	Iron Ore	94554.06	46876.38	31351.08	392239.09
11	IMFA	Nuasahi	40.468	Chromite	38201.79	16939.02	12566.48	158472.69
12	FACOR	Sukla	187.03	-do-	176556.32	87530.04	58540.39	732409.46
13	OMC	Baneur	145.85	-do-	137682.40	68257.60	45651.05	571148.60
TOTAL					3,033,053.15	1,521,026.35	1,017,267.62	12727220.47

FINANCIAL FORECAST FOR WORKING LEASES
JAJPUR CIRCLE OF KEONJHAR DIVISION

Sl.No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year(Rs.) @ Rs. 944/-	2nd Year(Rs.) @468/-	3rd year to 10th year per year rate @ Rs.313/-	Total(Rs.)
1	OMC Ltd.	Daitery Iron Ore Project	95.60	Iron	90246.40	44740.80	29922.80	374369.60
TOTAL					90246.40	44740.80	29922.80	374369.60

FINANCIAL FORECAST FOR WORKING LEASES
KEONJHAR CIRCLE OF BONAI DIVISION

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year. @ Rs.944/-	2nd Year @ Rs.468/-	3rd year to 10th year per year rate @Rs.313/-	Total (Rs.)
01	M/s SAIL	Kaita ,Barsuan	2486.82	Iron	2347558.08	1163831.76	778374.66	9738387.12
02	M/s E M I Ltd.	Keira	90.143	-do-	85094.99	42186.92	28214.76	352999.99
03	M/s. S.N. Mohanty	Raikela	18.315	-do-	17289.36	8571.42	5732.60	71721.54
04	M/s O.M.M. (P) Ltd.	Orshuri	51.476	Mn.	48593.34	24090.77	16111.99	201580.02
05	-Do-	Kusumdih	31.549	-do-	29782.26	14764.93	9874.84	123548.68
06	M/s. A.M.T.C. Ltd.	Mahulsukha	399.284	-do-	376924.10	186864.91	124975.89	1563593.14
07	-do-	Narayan West	349.254	Iron & Mn.	329695.78	163450.87	109316.30	1367678.66
08	M/s National Enterprises	Raikela	45.932	Iron	43359.81	21496.18	14376.72	179869.71
09	M/s K.C.Pradhan	Nuagaon	39.888	Mn.	37654.27	18667.58	12484.94	156201.41
10	M/s. S.D. Sharma	Nuagaon	12.942	Iron & Mn.	12217.25	6056.86	4050.85	50660.37
11	-do-	Raikela	14.933	Iron	14096.75	6988.64	4674.03	58477.83
12	M/s Penguin Trading & Agencies Ltd.	-do-	49.372	-do-	46607.17	23106.10	15453.44	193340.75
13	M/s. Jindal Steel and Power Ltd.	Tentra Raikela, Bendhal	297.847	-do-	281167.57	139392.40	93226.11	1166358.85
14	M/s S.N Mohanty	Jaldihi	336.065	Iron & Mn.	317245.36	157278.42	105168.35	1315030.54
15	Sh.U.C. Mishra	Kamanda	43.067	Bauxite	40655.25	20155.36	13479.97	168658.37
16	M/s Tarini Minerals (P) Ltd.	Tehersi	29.810	Iron & Mn.	28140.64	13951.08	9330.53	116735.96
17	-do-	Nuagaon	7.85	Mn.	7410.40	3673.80	2457.05	30740.60
18	M/s Orind Ltd	Tentra	106.138	Bauxite	100164.27	49672.58	33221.19	415836.41

19	M/s Gitarani Mohanty	Raikela	67.582	Iron	63797.41	31628.38	21153.17	264651.11
20	Smt. Kavita Agarwal	Tantra	72.566	-do-	68502.30	33960.89	22713.16	284168.46
21	M/s J.C. Budhraj	Bhalodungri	110.479	Soapstone	104292.18	51704.17	34579.93	432635.76
22	M/s C.P. Sharma	Raikela	69.606	Iron	65708.06	32575.61	21786.68	272577.10
23	M/s O.M.M. (P) Ltd.	Tentuldih	35.610	Mn	33615.84	16665.48	11145.93	139446.76
24	M/s. S.N. Mohanty	Nuagaon	29.257	Iron & Mn.	27618.61	13692.28	9157.44	114570.41
25	TISCO	Malda	1734.272	Iron & Mn.	1637152.77	811639.30	542827.14	6791409.15
26	-do-	-do-	95.650	-do-	90293.60	44764.20	29938.45	374565.40
27	-do-	-do-	109.420	-do-	103292.48	51208.56	34248.46	428488.72
28	-do-	-do-	86.975	-do-	82104.40	40704.30	27223.18	340594.10
29	-do-	-do-	95.283	-do-	89947.15	44592.44	29823.58	373128.23
30	O.M.M (P) Ltd	Patmunda	807.316	Mn	762106.30	377823.89	252689.91	3161449.46
31	-do-	Bhanjikasum	8.498	Mn	8022.11	3977.06	2659.87	33276.17
32	M.G. Mohanty	Gonua	82.083	Iron & Mn.	77485.35	38414.84	25691.98	321437.03
33	Freegrade & Co (P) Ltd.	Nadidih	121.405	-do-	114606.32	56817.54	37999.77	475421.98
34	B.I.Co. Ltd.	Nadidih	73.855	-do-	69719.12	34564.14	23116.62	289216.18
35	-do-	Teherai	137.480	-do-	129781.12	64340.64	43031.24	538371.68
36	National Enterprise	San Indpur	75.000	-do-	70800.00	35100.00	23475.00	293700.00
37	S.N. Mohanty	Gonua	14.159	-do-	13366.10	6626.41	4431.77	55446.64
38	Rungta Mines(P) Ltd.	Kalmang	210.528	Mn	198738.43	98527.10	65895.29	824427.65
39	Rungta Sons(P) Ltd.	Oraghat	82.916	Iron	78272.70	38804.69	25952.71	324699.06
40	-do-	San Indpur	147.100	Iron	138862.40	68842.80	46042.30	576043.60
41	K.C. Pradhan	Gonua	12.530	Iron & Mn.	11828.32	5864.04	3921.89	49067.48
42	Matendin Sharda	Beldih Khajurdih	31.566	-do-	29798.30	14772.89	9880.16	123612.46
43	-do-	Dolita	32.3748	-do-	30561.81	15151.41	10133.31	126779.72
44	M.G.Mohnaty	Patabeda	19.425	-do-	18337.20	9090.90	6080.03	76068.30
45	S.N.Mohanty	Jaidihi	336.065	Iron & Bauxite	317245.36	157278.42	105168.35	1316030.54

48	Sun Alloys Minerals Ltd.	Patmunda	11.197	Mn	7664	38000.20	25414.66	31798
49	J.N.Pattnaik	Bhanjapali	18.000	Iron	16992.00	8424.00	5634.00	70488.00
50	O.M.M(P) Ltd.	San Patuli	28.670	Mn	27064.48	13417.56	8973.71	112271.72
51	Runata Mines (P) Ltd.	Kenthar Kaira	73.653	Mn	69528.43	34469.60	23053.39	288425.15
52	S.A.Halim	Oraghat	25.847	Iron	24399.57	12096.40	8090.11	101216.85
53	M/s S.D. Sharma	Bhaludunari	155.430	Soapstone	146725.92	72741.24	48649.59	608663.88
54	M/s J.C. Budhraj	-do-	110.479	-do-	104292.18	51704.17	34579.93	432635.76
55	M/s JK & KP Jhajhunwala	Kulijhar	24.167	Quartzite	22813.65	11310.16	7564.27	94637.97
56	M/s SAIL	TODA R.F.	15.1838	Iron	14333.51	7106.02	4752.53	59459.76
57	-do-	-do-	22.9982	Iron	21710.30	10763.16	7198.44	90060.95
58	Matadin saraca	Manda Joda, Ganua, Gideri	55.6037	Iron & Mn.	52489.89	10763.16	7198.44	120840.54
TOTAL					9377407.61	4633709.65	3099040.86	38803444.12

FINANACIAL FORECAST FOR LEASES
LIST OF NON-WORKING MINES OF JODA CIRCLE

Sl.No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year @Rs.944/-	2nd Year @ Rs.468/-	3rd year to 10th year per year rate @ Rs.313/-	Total(Rs.)
1	B.K.Mohanty	Uliburu	62.726	Iron & Mn. & Quatzite	59213.34	29355.77	19633.24	245835.02
2	B.K.Mohanty	Uliburu	56.540	Iron ,Mn & Limestone	53751.38	26647.92	17822.22	222977.04
3	T.B.Lal	Kasia Barpada	77.497	Iron Ore	73157.17	36268.60	24256.58	303478.25
4	S.N. Mohanty	Khuntepani	15.378	Iron	14516.83	7196.90	4813.31	60220.25
5	Jagdish Mishra	Uliburu	30.513	Iron	28804.27	14280.08	9550.67	119488.91
6	Dr. S.Pradhan	Baitarani	12.505	Iron	11804.72	5852.34	3914.07	48959.56
7	O.M.C.	Raida Sidhamath	78.711	Iron Ore	74303.18	36836.75	24636.54	308232.26
8	M.R.Das	Uliburu	3.076	Mn. Ore	2903.74	1439.57	962.79	12045.62
9	B.C.Deb	Dadwer	114.934	Iron & Mn.	108497.70	53789.11	35974.34	450061.54
10	M.R.Das	Deojhar	11.537	Iron Ore	10890.93	5399.32	3611.05	45178.89
11	S.L.Serda & M.L. Serda	Thakurani	947.046	Iron	894011.42	443217.53	296425.40	3708532.14
12	K.C.Pradhan	Bolani	17.10	Iron Ore	16142.40	8002.80	5352.30	66963.60
13	Kushaleswar Minerals	Raika	6.228	Iron & Mn.	5879.23	2914.70	1949.36	24388.65
14	R.P.Sao	Chormolda	141.122	Mn	133219.17	66045.10	44171.19	552653.75
15	K.C. Pradhan	Paredipada	12.10	Iron & Mn	11422.40	5662.80	3787.30	47383.60
16	Pragati (P) Ltd.	Khuntapani	18.615	Iron & Mn	17572.56	8711.82	5825.53	72866.34
17	O.M.C	Banspani	380.40	Iron	359097.60	178027.20	119066.20	1489546.40
18	O.M.C	Sekradihi	564.356	Iron Ore	532752.06	264178.61	176643.43	2210018.10
19	M.H.Rehman	Topadihi	26.476	Iron	24993.34	12393.77	8288.99	103680.02

20	M/S. U.M.S	Laidapada	28.328	Mn	26741.63	13257.50	8856.66	110932.45
21	D.C.Jain	Dalpehar BI-A	69.961	Iron	64923.18	42101.75	28157.79	352287.28
22	D.C.Jain	Dalpehar BI-B	0.697	Iron	657.97	326.20	218.16	2729.45
23	-do-	Dalpehar BI-II	7.697	Iron	7265.97	3602.20	2409.16	30141.45
24	-do-	Dalpehar BI-III	1.012	Iron	955.33	473.62	316.76	3962.99
25	-do-	Dalpehar BI-C	2.002	Iron	1889.89	936.94	626.63	7839.63
26	O.M.C.	Tirlingpehar	79.30	Iron	74859.20	37112.40	24820.90	310538.80
27	Rungta & Sons	Bandhabeda	26.226	Iron Ore	24757.34	12273.77	8208.74	102701.02
28	O.M.C	Paralipada	170.170	Iron & Mn	160640.48	79639.56	53263.21	666385.72
29	FACOR	Kataschi	13.674	Iron	12908.26	6399.43	4279.96	53547.39
30	Smt. Indrani Patnaik	Unchabali	106.1127	Iron	100170.39	49660.74	33213.28	415537.33
31	S.N.Mohanty	Unchabali	10.117	Iron & Mn.	9550.45	4734.76	3166.62	39618.17
32	O.M.C.	Chormalda	416.835	Mn	393492.24	195078.78	130469.36	1632325.86
33	O.S.I.L	Gurubeda	148.357	Iron Ore	140049.01	69431.08	46435.74	580966.01
34	T.P.Mohanty	Naiberea	69.978	Iron & Mn.	66059.23	32749.70	21903.11	274033.85
35	T.P.Mohanty	Naiberea	29.226	Iron & Mn.	27589.34	13677.77	9147.74	114449.02
36	T. B. Lal	Brahmanijhari	429.917	Iron & Mn.	405841.65	201201.16	134564.02	1683554.97
37	S.N.Paul	Kataschi	31.346	Mn	29590.62	14669.93	9811.30	122750.94
38	R.B. Thakur	Kataschi	96.568	Iron & Mn.	91160.19	45193.82	30225.78	378160.29
39	Akhil Ch. Mahanta	Ramchandrapur	38.30	Chinaclay	36155.20	17924.40	11987.90	149982.80
40	Black Stone Mining	Dhabakuchuda	205.870	Pyrophillite	194341.23	96347.16	64437.31	806186.92
TOTAL					4322632.29	2142952.33	1433225.51	17931182.69

FINANACIAL FORECAST FOR LEASES

LIST OF NON-WORKING MINES OF KEONJHAR CIRCLE

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year (Rs.)	2nd Year (Rs.)	3rd year to 10th year per year rate(Rs.)	Total (Rs.)
01	MESCO Steel Ltd.	Kodakala & Lohabeda	1101.480	Iron Ore	1039797.12	515492.64	344763.24	4313395.68
02	-DO-	Pipalheri & Sundra	494.987	-do-	467267.73	231653.92	154930.93	1938389.09
03	S.P Goenka	Sikheswari	1050.00	Industrial Garnet	991200.00	491400.00	328650.00	4111800.00
04	S.Goenka	Balabhadrapur	363.764	-do-	343393.22	170241.55	113858.13	1424499.82
05	-do-	Kulanga	1236.00	-do-	1166784.00	578448.00	386868.00	4840176.00
06	H.V. Rathor	Dolimapur	2.7559	Pyrophillite & Soapstone	2601.57	1289.76	862.50	10792.10
07	-do-	-do-	132.486	Pyrophillite	125066.78	62003.45	41468.12	518815.16
08	S.P. Patnaik	Jamudiha	20.50	Pyrophillite	19352.00	9594.00	6416.50	80278.00
09	OMC	Block-C (Suakati)	99.805	Iron Ore	94215.92	46708.74	31238.97	390833.38
10	OMC	Suakati	16.21	Iron Ore	17190.24	8522.28	5699.73	71310.36
11	Keonjhar Minerals	Amjore	29.228	Pyrophillite	27591.23	13678.70	9148.36	114456.85
12	B.L.Neutia	Medinapur	43.483	Pyrophillite,Quartz & Quartzite	41047.55	20350.04	13610.18	170279.43
13	R.K. Agarwal	Telkiapur & Sundaria	385	Soapstone, Asbestos & Jasper	363440.00	180180.00	120505.00	1507665.00
14	R.S.Jhanwar	Kansa	212.240	Pyrophillite,Qua	200354.66	99328.32	66431.12	831131.64

				rtz & Quartzite				
15	D.B.Patnaik	Jamudiha	171.289	PQ & Q	161395.82	80163.25	53613.46	670767.72
16	-do-	-do-	21.323	-do-	20129.81	9979.16	6674.10	83503.87
17	S.L.Newetia	-do-	76.777	-do-	72477.49	35931.64	24031.20	300656.73
18	S.P.Patnaik	-do-	20.5087	-do-	19355.21	9598.07	6419.22	80312.07
19	S.M.Das	Duarsuni	26.7456	P.Q. & Q	25247.85	12518.94	8371.37	104736.77
20	S.L. Newatia	Gopalpur,Serpa-si & Kendsora	49.232	Asbestos	46475.01	23040.53	15409.62	192782.51
21	Narayani Sons	Lalbeda	141.33	IronOre	133415.52	66142.44	44236.29	553448.28
22	P.C. Mahapatra	Uper-Samanta	69.70	P.Q. & Q	65796.80	32619.60	21816.10	272945.20
23	D.M.Minerals	Urmunda & Gandhamarden	241.658	Iron	228125.15	113095.94	75638.95	945332.73
24	A.K.Giridhar	Jaldiha	129.199	Pyrophillite	121953.86	60455.13	40439.29	505943.28
25	Orissa Industries Ltd.	Phuljarr	6.162	Quartz	5815.81	2883.18	1934.97	24208.71
26	A.K.Jain	Tenari	416.000	Steatite	392704.00	194668.00	130208.00	1629055.00
27	S.M.Das	Kundapitha	1.7806	Quartzite & Quartz	1680.69	833.32	557.33	6972.83
28	M.P.Singh	Kardamali	13.05	Quartz	12319.23	6107.40	4084.65	51,03.80
29	P.K.Singh	Narda	2.89	Quartzite & Quartz	2728.16	1352.52	904.57	11317.24
30	D.K.Rout	Asia	13.98	P.Q. & Steatite	13197.12	6542.64	4375.74	54745.68
31	M.B. Chakra	Pandua	5.00	Quartz	4720.00	2340.00	1565.00	19580.00
32	Harihar Sahu	Tukuripada kusumjori	174.559	Pyrophillite, Steatite,Q&Q	164783.70	81,93.61	54636.97	683573.04
33	Hariher Sahu	Tukuripada	93.08	Pyrophillite, Steatite,Q&Q	87887.52	43561.44	29134.04	364531.28
34	Sisra Das	Hunda	42.9311	Pyrophillite, Quartzite & Quartz	40525.55	20091.75	13437.43	168118.18
35	T. L. Manik	Khajurbani	142.50	Pyrophillite	134520.00	66690.00	44602.50	558030.00

		Block-A						
35	-do-	Khuntamara	46.495	Pyrophillite	43691.28	21759.66	14552.64	182074.42
37	Ambika Mines & Minerals	Alonga	152.41	Quartz Quartzite & Steatite	153315.04	76007.88	50934.33	635997.56
38	Rajesh Ku. Bhuyan	Alonga	98.5177	Pyrophillite, Steatite & Talc	93000.71	46106.28	30936.04	385795.31
39	Minerals & Metals (P) Ltd.	Pithegola	18.79	Steatite	17737.76	8793.72	5881.27	73581.64
40	Minerals & Metals (P) Ltd.	Kuladhankuni	44.86	Steatite Quartz & Quartzite	42347.84	20994.46	14041.18	175671.76
41	K.S. Pohi	Rampakote	32.45	Pyrophillite	30632.80	15186.60	10155.85	127074.20
42	A.K. Behera	-do-	24.766	Pyrophillite, Quartz & Quartzite	23379.10	11590.49	7751.76	96983.66
43	R.S. Rathor	Rampakote & Pithagola	34.511	Pyrophillite	32578.38	16151.15	10801.94	135145.08
44	A.K. Jain	Rebana	4.557	Pyrophillite	4301.61	2132.68	1426.34	17845.21
45	-do-	-do-	4.552	Pyrophillite	4297.09	2130.34	1424.78	17825.63
46	Utkal Minerals	Rampakote	60.076	Pyrophillite	75591.74	37475.57	25063.79	313577.62
47	K.S. Pohi	Rebana	3.3935	Pyrophillite	3203.56	1588.20	1062.20	13289.34
48	Harhar Sahu	Maragola	114.537	Pyrophillite & Red Ocher	108122.93	53603.32	35850.08	448525.69
49	R.K. Mohanta	Panasia	25.1919	Steatite	23781.15	11789.81	7885.03	98651.48
50	Utkal Mineral	Rebana	25.500	Pyrophillite	24072.00	11934.00	7981.50	99858.00
51	R.K. Mohanta	Hunda	83.519	Quartz Quartzite & Pyrophillite	78841.94	39086.89	26141.45	327060.40
52	B.S. Barik	Godinarda	70.723	Pyrophillite Steatite,	66762.51	33098.36	22135.30	276951.27

				D. & Qt.				
53	OMC	Bangur, Madhuban & Bidyadharpur	208.00	-do-	196852.00	97 4.00	65104.00	814528.00
54	OMC	Baula	207.35	-do-	195747.84	97044.48	64903.68	812021.76
55	OMC	Bantaponka	1582.633	-do-	1494005.55	740572.24	495334.13	6197590.83
TOTAL					9366,636.32	4643730.17	3105754.28	38856494.73

FINANACIAL FORECAST FOR LEASES

LIST OF NON-WORKING MINES OF BONAI CIRCLE

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year @ Rs.944/-	2nd Year @ Rs.468/-	3rd year to 10th year per year rate @ Rs.313/-	Total (Rs.)
1	M/s. SAIL	-DO-	3.140	Iron	2964.16	1469.52	982.82	12298.34
2	M/s. SAIL	-DO-	77.940	-DO-	73575.36	36475.92	24395.22	305213.34
3	-do-	-do-	15.1838	-do-	14333.51	7106.02	4752.50	59459.76
4	M/s.K.J.S. Ahluwalia	Tentigram	29.575	Iron & Mn.	27919.90	13841.10	9255.92	115815.70
5	M/s.O.M.C Ltd.	Kashira	418.353	Iron	394925.23	195789.20	130944.49	1638270.35
6	M/s.O.M.C Ltd.	Bhanjapali	141.675	Iron	133741.20	66303.90	44344.28	554788.33
7	A.M.T.C	Domuheri	147.842	Mn.	139562.85	69190.06	46274.55	578949.27
8	E.M.I.Ltd.	Sarkunda	160.900	Mn.	151869.60	75301.20	50361.70	630084.40
9	Feegrade & Co. (P) Ltd.	Sarkunda	393.556	Mn.	371515.86	184184.21	123183.03	1541183.30
10	U.C. Mishra	Komanda	60.700	Mn.	57300.80	28407.60	18999.10	237701.20
11	Smt.Kavita Agrawal	Kusumudih	47.484	Mn.	44824.90	22222.51	14862.49	185947.34
12	B.I Co. Ltd.	Kusumudih	52.176	Mn.	49254.14	24418.37	16331.09	204321.23
13	M/S O.M.C. Ltd.	Kurmita	1212.47	Iron	1144571.68	567435.96	379503.11	4748032.52
14	M/s O.M.C Ltd.	Ranthe	408.8731	Iron	385976.21	191352.61	127977.25	1601147.06
15	T.P.Minerals & Industry	Bhutudc	40.619	Mn.	38344.34	19009.69	12713.75	159064.00
16	Orind Ltd.	Kusumdih	102.790	Bauxite	97033.76	48106.72	32173.27	402525.54
17	SAIL	Tentra	117.440	Bauxite	110855.35	54961.92	36758.72	459858.04
18	M/s O.M.C Ltd.	Uskunda	560.570	Iron	529178.08	262346.76	175458.41	2195182.13
19	M/s O.M.C Ltd.	Kalta	294.472	Iron &Mn.	277961.57	137812.90	92169.74	1153152.35
20	M/s M.G.Mohanty	Kusumdihi	153.972	Mn.	145349.57	72058.90	48195.24	602954.35
21	M/s Penguin Trading & Agencies	Bendhel Reikela	40.104	Iron & Mn.	37858.16	18769.57	12552.65	157047.35
22	M/s Orissc Cement	Komanda &	16.810	Bauxite	15865.64	7867.09	5261.53	65827.85

	Ltd.	Kusumdih						
23	M/s Mines Minerals & Chemicals	Lusi	25.583	Iron & Mn.	24160.35	11572.84	8007.48	100183.03
24	M/S Penguin Trading & Agencies Ltd.	Sidimba Tentulidih	88.648	Bauxite	83693.71	41487.26	27746.82	347145.57
25	M/s Mangalam Carbide Ltd.	Kitinda, Badbhuin Tentebahal	287.448	Iron & Mn.	271393.91	134525.66	89971.22	1125646.37
26	Sh. Bakhsi Singh	Lusi	44.613	-do-	42114.67	20878.98	13963.57	174704.51
27	M/s Mangalam Carbide Ltd.	Dengula	31.262	-do-	29511.33	14630.62	9785.01	122421.99
28	Sh. Bakhsi Singh	Tantra Tensa	24.586	-do-	23209.18	11506.25	7695.42	96278.78
29	M/s Mangalam Carbide Ltd.	Tantra	13.236	-do-	12499.18	6241.25	4174.17	52223.79
30	Sh.Ganesh Agarwal	Kamendo	21.477	-do-	20274.29	10051.24	6722.30	84103.93
31	Sh.S.Sahoo	Sidimba & Ranug	45.972	Bauxite & Iron	43397.57	21514.90	14389.24	180026.35
32	M/s S.Lal & Co.	Kamdida	48.120	Iron	45425.28	22520.16	15061.55	188437.82
33	Sh.Rajesh Vig	Kusumdih	21.509	Iron & Mn.	20304.50	10066.21	6732.32	84229.24
34	Sh.R.S.Patteraik	Jaldihi	16.910	-do-	15963.04	7913.88	5292.82	66219.55
35	Sh.N.K.Paul	-do-	55.505	-do-	52395.72	25978.34	17373.07	217357.59
36	Sh.P.C. Agrawal	Lusi & Kansara	21.562	-do-	20354.53	10091.02	6748.91	84436.79
37	Sh. Basudev Das	Raisuan	27.728	Iron & Mn	26175.23	12976.70	8678.86	108582.65
38	Sh. N.K. agarwal	Bandhal	102.345	-do-	96613.68	47897.46	32033.99	400783.02
39	Sh.R.G. Jhanwar	Dengula	28.449	Iron	26855.86	13314.13	8904.64	111405.28
40	Sh.Basudev Das	Raisuan	15.613	Iron & Mn.	14739.67	7306.88	4885.87	61140.81
41	O.M.C	Kalta	294.972	Mn	278453.37	138048.93	92326.24	1155110.35
42	M/S Nilachal Ispat Nigam	Kodalic,Sen Rishibenua Hanaibheroo	1850.000	Iron & Mn.	1746403.00	865800.00	579050.00	7244600.00
43	M/s Mangalam Carbide Ltd.	Bhanjapali	106.837	Bauxite	100864.13	49999.72	33439.98	418373.89
44	M/s S.N. Mohanty	Gonuc	3.604	Mn	3402.18	1686.67	1128.05	14113.26

45	M/s M.G.Mohanty	Patabeda		28.397	Iron	26206.77	13269.80	8885.26	111202.65
46	Sh. Sayed Abdula Halim	Oreghat		45.00	Iron & Mn.	42480.00	21660.00	14055.00	176220.00
47	M/s Penguin Trading & Agencies Ltd.	Kalmera	Baldihi	108.909	-do-	102510.10	50969.41	34088.52	425487.64
48	M/s C.P. Sharma & Sons	Ranisal	Sonua	17.606	-do-	16208.86	8333.21	5573.29	69725.30
49	Sh. Subhas Agarwala	San Indpur	Sarajeeh	15.277	Iron Mn & Bauxite	14421.49	7149.64	4761.70	59624.73
50	M/s M.G. Mohanty	Patchege		14.000	Iron & Mn.	13216.00	6552.00	4382.00	54824.00
51	M/s Kanakdhara Mining & Minerals (P) Ltd.	Bad Patuli	Patmunda	30.513	-do-	28804.27	14280.05	9550.57	119458.91
52	Sh. P.C. Agarwal	Sarajeeh		30.253	-do-	28558.83	14158.40	9469.19	118470.75
53	Sh. Sayed Abdula Halim	Sad Indpur		18.030	-do-	17020.32	8438.04	5643.39	70605.48
54	Sh. L.S. Manik	Teherai		19.369	Bauxite	18283.39	9064.22	6062.18	75845.09
55	Sh. N.K. Paul	Teherai		12.356	Iron & Mn.	11664.06	5782.61	3867.43	48356.10
56	Sh. N.K.Agarwal	Kalmera		57.598	Iron & Mn.	54372.51	26955.86	18028.17	225553.77
57	M/s National Enterprises	Adaghat		15.074	Iron	14229.85	7054.63	4719.15	59029.78
58	Sh. Shrinivas Sahoo	Koira	Teherai	5.79	Iron & Mn.	5465.76	2709.72	1812.27	22673.64
59	Sh. G.L. Agarwal	Gonua		3.540	-do-	3341.76	1656.72	1108.02	13862.54
60	M.I.S Ahluwalia	Gonua		23.300	Iron & Mn.	21995.20	10904.40	7292.90	91242.80
61	O.M.C	Kashire		418.353	Iron	394925.23	195789.20	130944.43	1638270.35
62	-do-	Bhanjaeli		141.675	Iron	133741.20	66303.90	44344.28	554799.30
63	M/s M.G. Mohanty	Ranisal		67.484	Iron & Mn.	63704.90	31582.51	21122.49	264257.34
64	Sh. M.R. Das	Jharbera	Mushpeshi Shivnathpur	442.329	Soapstone	417553.58	207009.97	138446.98	1732160.38
65	M/s Indian Marble Co.	Jamirdih		50.646	-do-	47809	23702.33	15852.20	198329.74

66	M/S Matadin Sharda	Badabandhabhuin Sanbandhabhuin	163.673	Quartzite	154834.66	76598.96	51229.65	641270.81
67	-do-	-do-	103.452	Soapstone	97865.59	48415.54	32380.45	405324.94
68	Sh. Bakshi Singh	Uskuda	148.668	Iron	140639.93	69576.62	46533.08	582481.22
69	M/s O.M.C Ltd.	Kurmitra	1212.470	-do-	1146996.62	567435.96	379503.11	4750457.46
70	-do-	Uskuda	560.570	-do-	530299.22	262346.76	175458.41	2196313.25
TOTAL					10791706.29	5347955.29	3576743.78	44753907.65



PART-III

CHAPTER - 15

EXTRACTS FROM ECOLOGY OF THE AREA IN AND AROUND BOLANI ORE MINE, KEONJHAR DISTRICT, ORISSA PREPARED BY CENTER FOR STUDY OF MAN AND ENVIRONMENT, CK-II, SECTOR - 2, SALT LAKE CITY, CALCUTTA - 700 091, DEC. 1996.
TERRESTRIAL ECOLOGY

15.1 : FLORA :

15.1(1) Six major forest types viz.

i) Moist Peninsular Sal Forest

ii) Northern Dry Mixed Deciduous Forest

iii) Dry Peninsular Sal Forest

iv) Moist Mixed Deciduous Forest

v) Tropical Wet Evergreen/Semievergreen Forest

vi) Tropical Riparian Fringe Forest have been identified from the study area. In general, the edaphic and climatic factors have contributed to the development of these different forest types. Sal is the predominant species of the area accounting 80% or more of the vegetation and is an extension of the sal forests of adjoining Saranda Forest Division of Singhbhum district of Bihar.

At Uliburu, Karo, Siddhamath, Thakurani etc. areas moist peninsular valley sal is generally noticed. Extensive dry peninsular sal forest is also observed at different places of Siddhamath area. Other plant associations such as Xerophytic miscellaneous forests (particularly in Thakurani), moist or semi-evergreen types (particularly in the Saranda Forest areas) are also met with the local edaphic climaxes. The prevalence of pole to middle aged sal in the

study area indicates the incidence of shifting cultivation in the past and the change in crop pattern and can, therefore, be considered to be of secondary in origin.

Vegetation

Core Mining

The original vegetation of much of the area in the core mining zone has disappeared over the years. Only a few scattered remnants were found along roadsides, waste lands, scrubland and in and around villages. The area wise distribution of vegetation is as follows :

The colony area and nearby habitations :

- Remnants of Original flora :

(roadsides, waste places etc.)

1. Schleichera oleosa(Kusum)	5.Stereospermum chelonoides (Patuli)
2. Alstonia scholaris (Chhatiwan)	6. Mangifera indica(Am)
3. Ficus benghalensis (Bargad)	7. Madhuca longifolia (Mahul)
4. Salmalia malabarica (Semal)	8. Diospyros melanoxylon (Kendu)

- Avenue trees and ornamentals :

(on roadsides)

1. Pithecollobium dulce	11. Spathodea campanulata
2. Eucalyptus sp.	12. Erythrina variegata
3. Polyalthia longifolia Var. Pendula	13. Albizia lebbeck
4. Azadirachta indica	14. Melia dubia
5. Drypetes roxburghii	15. Leucaena latisiliqua
6. Delonix regia	16. Ziziphus mauritiana
7. Anthocephalus chinensis	17. Casuarina equisetifolia
8. Ficus religiosa	18. Jacaranda mimosifolia
9. F. rumphii	19. Pterospermum acerifolium
10. Artocarpus heterophyllus	

- Roadside thickets and shrubberies on waste land in and around colony :

1. Ipomoea carnea	6. Argemonmexicana (Sarpuni)
2. Lantana camara (Putus)	7. Solanum torvum (Kantra)
3. Calotropis gigantea	8. Vitex negundo (Nirgundi)
4. C. procera (Akaon)	9. Dodonaea viscosa
5. Ziziphus spp. (Boyer)	

- scrubland vegetation:

(* Very abundant)

1. Ipomoea carnea	6.Argemonmexicana (Sarpuni)
2. Ziziphus numinularia (Boyer)	7. Calotropis spp.
3. * Lantana camara	8. Vitex negundo (Nirgundi)
4. Hyptis suaveolens (Ganga tulsi)	9. Holarrhena antidysenterica
5. * Chromolaena odoratam	

- Village shrubberies and orchards :

1. Alangium solvifolium	6. Carica papaya
2. Madhuca longifolia	7. Azadirachta indica
3. Mangifera indica	8. Schleichera oleosa
4. Terminalia alata	9. Ipomoea carnea
5. Plumeria accuminata	10.Vitex negundo
11. Ziziphus mauritiana	16. Calotropis procera
12. Artocarpus heterophyllus	17. Chromolaena odoratam
13. Ficus religiosa	18. Lantana camara
14. Psidium guajava	19. Hyptis suaveolens
15. Bambusa spp.	

- Plantations :

1. Acacia auriculiformis	4. Azadirachta indica (Nim)
2. Cassia siamea (Chakunda)	5. Tectona grandis (Sagon)
3. Melia dubia (Mahanim)	6. Alstonia scholaris (Chhatiwan)
7. Polyalthia longifolia	

The Mines Area :

This area is forested by High level, low level and Valley type of Moist Peninsular sal. The forests have numerous other elements besides Sal. The following species were observed in density forested mining area having an altitude well above 800m.

- Trees :

1. Gmelina arborea	13. Trema orientalis
2. Adina cordifolia	14. Macaranga peltata
3. Callicarpa arborea	15. Bridelia retusa
4. Alstonia scholaris	16. Wendlandia heynei
5. Ficus bengha lensis	17. Wrightia arborea
6. Ficus rumphii	18. Albizia odoratissima
7. Sysygium cumini	19. Cassia fistula
8. Mangifera indica	20. Lagerstroemia parviflora
9. Cleistanthus collinus	21. Lannea coromandelica
10. Mitragyna parvifolia	22. Artocarpus heterophyllus
11. Buchanania lanzan	23. Careya arborea
12. Mallotus Philippensis	24. Pterocarpus marsupium

- Shrubs & Herbs :

1. Hyptis suaveolens

- Climbers

1. Bauhinia vahlii	3. Butea parviflora
2. Combretum roxburghii	

There are manual mining areas in plateau at about 820 m elevation and presents a barren and desolate appearance, since it is practically devoid of any vegetation. A few straggling and stunted Sal trees have also been noticed in this region. At present the areas have scrubby growth of stunted Catunaregum spinosa, Canthium dicoccum, several saplings of Holarrhena

antidysenterica and Cassia fistula, dried up weedy undergrowth of Hyptis suaveolens and Chromolaena odoratum, several herbaceous elements like Spermacoce hispidium, Leucas sp., Sida acuta and several species of dried grasses.

The abandoned benches at places at an elevation between 600 - 700 m showed natural regeneration forming secondary forests probably helped by the terrace like area on the eastern hill slopes checking the soil erosion to an appreciable extent. The vegetation seen here is enumerated below :

- Trees :

1. Terminalia alata.	11. Dalbergia sissoo.
2. Syzygium cumini	12. Leucaena latisiliqua
3. Bauhinia retusa	13. Alstonia scholaris
4. B. Malabaricum	14. Adina cordifolia
5. B. purpurea.	15. Tamarindus indicus
6. Wendlandia heynei	16. Cassia fistula
7. Anogeissus Latifolia	17. Ficus benghalensis
8. Acacia sp	18. Trema politoria
9. Bridelia retusa	19. Shorea robusta
10. Morinda pubescens	20. Salmalia malabarica

- Shrubs:

1. Gardenia gummifera	6. Lantana camara
2. Woodfordia fruticosa	7. Chromolaena odorat
3. Colebrookia oppositifolia	8. Hyptis suaveolens.
4. Indigofera cassioides	9. Pogostemon benghalensis.
5. Solanum erianthum.	

In Panposh area of Bolani ore Mines:

Some amount of plantations of Alstonia scholaris on the over burden dumps has been raised. In other mines Eucalyptus & Acacia plantations have been raised as a green belt.

5 Km. buffer zone beyond core mining zones :

To the south of the Bolani core (leasehold) area the Karo RF (beyond 'F' Area) continues to harbour dense Moist Peninsular Sal forests. The Base Camp of NMDC and Haramutu village area in this region is, however, a largely cleared up areas. Beyond these settlements the Karo forests continue as mixed dry deciduous forests, partially degraded forests and scrub land.

To the south east of Bolani beyond Kalinga colony the countryside is open with scattered patches of vegetation, scrubland and cultivated fields accompanied by prolific weedy intrusions. Some hills here are having dry mixed deciduous forests.

The Barbil and Thakurani Colony areas, towards the east, are practically devoid of forests and natural vegetation.

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10 Km. Buffer Zone :

The Karo RF in this zone is an extension of 5 km zone beyond Haramutu. The Panduliposi village has led to a chunk of this forest being cleared up. The forests beyond Panduliposi are of the Dry Northern Mixed Deciduous type having the following typical floral components :

1. Anogeissus latifolia	4. Hymenodictyum orixense
2. Boswellia serrata	5. Helicteres isora
3. Cochlospermum religiosum	6. Woodfordia fruticosa

The Kora river harbours patches of semi-evergreen forests on its banks. Representative species of this forest include Ficus virens, Anogeissus acuminata, Lannea coromandelica, Crataeva adansonii & Syzygium cumini.

The forests of Sidhamath R.F. leading up the ghat road from Bhadrashi are dense with some good Sal crops belonging to the Moist peninsular Sal forests. The other important element recorded are as follows:

- Trees :

1. Terminalia alata	5. Careya arborea
2. Bauhinia retusa	6. Wendlandia heynei
3. Protium serratum	7. Aegle marmelos
4. Adina cordifolia	

- Shrubs :

1. Flemingia chappar	3. Desmodium triquetrum
2. Woodfordia fruticosa	

- Climbers :

Combretum roxburghii, Milletia extensa & Bauhinia vahlii.

The Sidhamath RF towards Kundra nala is degraded with open inferior Sal forests in the undulating mines area. Dendrophthe falcata, a parasite was found infesting many Sal trees here. The portions to the south and southeast bear degraded forests due to the congestion of numerous mines specially towards Joda side. Secondary forest patches are evident here and there.

The Thakurani RF in this zone is usually Moist Peninsular Sal forest type. The region from Boneikela to Deojhar and beyond to Murgabehra on the eastern fringe of this zone is mostly cleared and devoid of forest vegetation. The

barren areas have Ipomoea carnea as a weedy intrusion, alongwith Argemone mexicana and Jatropha curcas.

The landscape in and around the human settlements is marked by scattered clumps of Dendrocalamus strictus, Tamarindus indica, Artocarpus heterophyllus, Mitragyna parvifolia, Artocarpus lacucha, Alangium salvifolium and Oroxylum indicum. Cultivation of paddy is also evidenced here. The Thakurani RF towards the North-east of this zone are somewhat mixed deciduous type where as vast areas outside the RF limits are scrublands. The Bada Jamda town and further northern areas are mostly non-forested and whatever forests are present are of poor quality.

Two rare species viz., Michelia champaca and Ixora undulata have been recorded from the Saranda Division falling within the buffer zone.

Fauna of Core Mining

Mammals

The wild mammals which are generally encountered in the core mining areas are Rhesus Macaque (Macaca mulatta), Langur (Presbytis entellus), Bengal Fox (Vulpes bengalensis) Jungle Cat (Felis chaus), Grey Mangoose (Herpestes edwardsi), Rufous-tailed Hare (Lepus nigricollis ruficaudatus) and few bats and rats. Occassional appearence of Leopard (Panthera pardus) and the Sloth Bear (Melursus ursinus) belonging to Schedule-I of Wild Life (Protection) Act, 1972 have been reported by the local people .

Birds

The most commonly seen avifauna in the area are Blackwinged kite (Elanus caeruleus), Doves (Streptopelia decaocts, S. tranquebrica, S. chinensis) Roseringed Parakeat (Psittacula krameri), Crow pheasant (Centropus sinensis),

Indian Cuckoo (Cuculus micropterus), Koel (Eudynamys scolopacea), Drongo (Dicrurus adsimilis), Mynas (Acridotheres trists, Sturnus 0), crows (Corvus splendeus, C. macrohynchos), Tailor Bird (Orthotomus sutorius), Purple sunbird (Nectarina asiatica), Coppersmith (Megalaima haemacephala), etc.

COLD BLOODED VERTEBRATES

Reptiles

The reptile fauna comprise geckos (Hemidactylusbrooki, B. flaviviridis, Gecko gecko), skink (Mabuya carinata), Rock lizard (Psammophilus dorsaalis), Common Garden Lizard (Calotes versicolor) and few snakes. The Indian Python (Python molurus) is rarely seen.

Amphibia

The terrestrial amphibians which are seen in the area are common Indian Toad (Bufo melanostictus), Tree Frog (Racophorus leucomystax), etc.

Fauna between 5 to 10 km buffer zone :

MAMMALS :

Supreme predator :

The supreme predator of the forest, the Tiger (Panthera tigris), has a wide adaptibility in terms of shelter and food. The capacity allows it in the utilisation of the available habitat to a considerable extent. According to Shahi (1977)1 there were nine tigers in the area of Saranda but now only 4 to 5 individuals are known. There is, however, hardly any tiger in this zone perhaps due to lack of sufficient food.

1. Shahi, 1977 : Back to the walls : Saga of wild life in Bihar, India. East-West Press, Madras.

Co-predators

The most important copredators in the area are the Leopard (Panthera pardus), the Wolf (Canis lupus) and the Indian Wild Dog (Cuon alpinus).

Scavengers

The Jackal (Canis aureus) and the Hyaena (Hyaena hyaena) are the chief scavangers who give vulterestic finish of the corpse remains of an abandoned kill of major carnivores or the caracasses of animals dying through disease, etc. /The Hyaena is available everywere.

Prey animals

The wild artiodactyles, primates and lagomorphs constitute the main food for the carnivores. The important prey animals present in the area include the following :

Artiodactyla

Suidae : Sus scrofa cristatus, Wild Boar.

Cervidae : Axis axis, Spotted Deer (Population noticably very low)

Cervus unicolor, sambar (population not very high)

Trgulidae : Tragulus meminna, Mouse Deer (greatly reduced in number

Bovidae : Tetraceros quadricornes, Four-horned Antelope (very rarely seen).

Bos gaurus, Gaur (mainly confined to Karanpada and Tholkabad blocks in limited number).

The Barking Deer (Muntiacus muntiaick) is observed in various places. It appears that the number of prey species have greatly deteriorated and under heavy hunting / poaching pressure. The following prey species were, however, observed during the present survey.

Primates

- Carcopithecidae

Macaca mulatta, Rhesus Macaque (Population very good)

Presbytis entellus, Langur (Population very good).

Lagamorpha

- Leporidae

  Lepus nigricollis ruficaudatus Rufous, tailed Hare (Survives in many places, but under hunting pressure).

- Elephant (Elephus maximus)

  Elephant is the dominant mammal of the area. It is found in various places of the stydy area singly or in small herds. Shahi (1981)1 Stated that about 140 - 150 elephants were present inside the Saranda Forest. However, according to the Forest Department information, the present number of elephants of Saranda region will be between 40 to 43. The major reason for such depletion in number must be due to stress in their habitat. Opinion of Forest Officers is that these elephants do not move over long distances. At times they move to the adjoining Kolhan and Porhat Forest Divisions of Bihar or to the Bonai Forest Range of Orissa, in small herds.

- Other animal association

  Sloth Bear (Melursus ursinus), Bengal Fox (Vulpes bengalensis), Jungle Cat (Felis chaus), Common Palm civet (Paradoxurus hermaphroditus), Common Grey Mongoose (Herpestes edwardsi), Giant Flying Squirrel (Petaurista petaurista) an Indian.

Shahi, S.P. 1981 Report of the Asian Elephant Group, Central India Task Force. In the status of the Indian Elephant in Indian Subcontinent, J.C. Daniel (Ed.) Bombay Natural History Society, Bombay, pp. 35-42.

Giant Squirrel (Ratufa indica) are among the other important animal association using the same habitat. The small mammals are represented by small squirrels, rats, mice, and different bats, shrews, etc. (detailed list of mammals in Appendix - 13).

Seasonal movements

During monsoon and winter when water and food are abundant, the animals, particularly the herbivores, are well dispersed all over the area including the hilly areas. During summer when the water becomes scarce there is movement of the animals where water is available. In the crop seasons, due to the attraction of cultivated crop in the village sites, the movement of wild herbivores is also not iced.

Birds

The species of birds commonly seen in the area includes Jungle crow (Corvu macrorhynclos), House crow (Corvus splendous), Pied Myna (Strnus contra), Common Myna (Acridotheres tristis), Koel (Endynamys scolopacea), Indian Cuckoo (Cuculus micropterus), Brain fever Bird (Cuculus various), Black Drongo (Dicrurus adsimilis), Purple Sunbird (Neetarina asiatica), rose ringed Parakeet (Psittacula cynocephala), Alexendrine Parakeat (Psittacula eupatria), Barbet (Megalaima zeylanica), Coppersmith (Megalaima haemacephala), Blackwinged kite (Elanus caeruleus), Pariah kite (Milvus migrous), Whitebacked Vulture (Gypus bengalensis) and various other birds as babblers, flycatchers, bee-eater, pigeons, doves, owlets, etc. The pea Fowl (Pavo cristatus) is found in certain areas of the forest. Birds like Grey Partridge (Francolinus pondicerianus), Common Quail (Coturinx coturnix), Red Jungel Fowl (Gallus gallus), Red Spurfowl (Galloperdix spadicea), Green Pigeon (Treron

phoenicoptera), House swift (Apus affinis), Common Grey Hornbill (Tockus birostrits), Grey shrike (Lamius excubitor), Golden Oriole (Oriolus oriolus), Racket - tailed Drongo (Dicrurus paradiscus), scarlet Minivet (Pericrocotus flammeus), Small Minivet (Pericrocotus cinnamomeus), Iora (Aegithine tiphia), etc are also not uncommon.

Cold Blooded Vertebrates :

Having beautiful forest cover with suitable habitats the area harbours a good number of cold blooded terrestial vertebrates as reptiles and amphibians.

Altogether 36 species of reptiles comprising of lizards (Hemidactylus leschenaulti), H. brook, H. flaviviridis, Gecko gecko, etc.) Chameleon (Chamaeleon zeylanicus), skinks Mabya carinata, M. macularia, etc.) and various snakes as Python molurus, Dendrelophis tristis, Ahaetulla mastus, Bungurus caeruleus, Naja naja, Vipera russelli and others. The occurrence of the Asian Elongated Tortoise (Indotestudo elongata)has been recorded from this zone.

The terrestrial amphibian fauna in the area are represented by eight species. The species like Toad (Bufo melanostictus), Burrowing Frog (Tomopterna breviceps), Ornate Microhylid (Microhyla ornata), Marbled Baloon Frog (Uperodon systoma), Tree Frogs (Rhacophorus leucomystax, Polypedates maculata), Caecilian (Icthyophis glutinosus), etc.

Terrestrial Invertebrates

Some terrestrial invertebrates, the occurrence of which are very common, are listed below :

Annelids

Leech	:	Hirudinaria sp.
Earthworm	:	Pharetima sp.

Arthropoda

Crickets	:	Gryllus linaculatus De Geer
		Taleogryllus testaceus (Walker)
Grasshoppers	:	Aulacobothrus inclytus Walker
		Eucopatacra praemorsa Stal
		Hieraglyphus banian (Fabracius)
Butterflies	:	Euthalis nais (Forester)
		Precis almana (Linnaeus)
		Precis atbiles (Linnaeus)
Odonate	:	Pantala flavescens (Fabricius)
		Tholymis tillarga (Fabricius)
		Orthetram sabina (Drary)
Termites	:	Odontotermes bellahunisensis Halmgren and Halmgren
		Microtermes obesi Halmgren

Scorpions and centipeds are also commonly seen.

Mollusca

land gastropods	:	Achitina fulica (Bowdich)
		Ariophanta iterrupta (Benson)
		Rachis praeterinissus (Blanford)

- Endangered and threatened species

Endangered and threatened animals of India have been listed in the Schedule I and Schedule II of Wildlife (Protection) Act 1972 (amended in 1991). The

endangered and threatened animals present in the stydy area are also available in all the tiger reserves, sanctuaries and various reserve forests throughout India. The list of these species present in the study area are given below :

- Endangered and threatened species in the leasehold area

Schedule I

Mammals : Sloth Bear, Melursus ursinus (Shaw) leopard, Panthera Pardus (Linnaeus)

Reptile : Indian Python, Python molurus (Linnaeus).

Schedule II

Mammals : Rhesus Macaque, Macaca mulatta (Zimmermann) Hanuman Langur, Preshytis cutellus (Dufresne) Bengal Fox, Vulpes bengalensis (Shaw) Common Palm Civet, Paradoxurus hermaphroditus (Pallas) Jungle Cat, Felis chaus (Guldenstaedt)

Reptile : Indian Cobra, Naja naja (Linnaeus) Russell's Viper, Vipera russelli shaw

- Endangered and threatened species in the buffer zones

Species marked with asterix (*) indicate endangered and threatened animals within 5 km radius from leasehold area.

Schedule I

Mammals :

* Indian Pangolin, Manis crassicaudata (Gray)
* Wolf, Canis lupus Linnaeus Ratel, Mellivora capensis (Schreber)
* Sloth Bear, Melursus ursinus (Shaw)

* Leopard Cat, Felis benga lensis(Kerr) Tiger, Panthera tigris (Linnaeus)

* Elephant, Elephus maximus (Linnaeus)

* Mouse-Deer, Tragulus meminna (Erxlben) Four-horned Antelope, Tetraceros quadricornis (Blainville) Gaur, bos gaurus (Smith).

Birds : Redheaded Marlin, Falco chicquera (Daudin) Shahin Falcon, Falco peregrinus (Sundeva) 11

* Pea Fowl, Pavo cristatus Linneaeus Indian Pied Hornbill, Anthroceros malabaricus (Gmelin)

Reptile : Yellow Monitor, Varanus flavescens (Gray)

* Indian Python, Python molurus (Linnaeus)

Schedul II

Mammals : * Rhesus Macaque, Macaca mulatta (Zimmermann)

* Hanuman Langur, Presbytis entellus (Dufresne)

* Asiatic Jackal, Canis aureus Linnaeus

* Bengal Fox, Vulpes bengalensis (Shaw) Indian Wild Dog, Cuon alpinus (Pallas)

* Small Indian Civet, Viverricula indica (Desmarest)

* Common Palm Civet, Paradoxurus hermaphroditus (Pallas)

Jungle Cat, Felis chaus Guldenstaedt

* Common Giant Flying Squirrel, Petaurista petaurista (Pallas)

Indian Giant Squirrel, Ratufa indica (Erxleben).

Reptile :

Common Indian Monitor, Varanus bengalensis(Dandin)

* Indian Cobra, Naja naja (Linnaeus) King Cobra, Ophiophagus hannah (Cantor)
* Russell's Viper, Vipera russelli (shaw)
* Rat snake, Ptyas mucosus (Linnaeus)

Checkered Kell Back, Xenochrophis Discator (Schneider).

Note : Schedule II (part I) of Indian Wildlife (Protection) Act includes chamelon. The species name mentioned there is Chamaeleo calcaratus. There is a doubt whether C. calcaratus is a valid name. The species Chamaeleo zeylanicus is the only species of chamelon that is known from India and it occurs in the buffer zone of the study area.

Endemic species

There is no endemic species of animals in the study area.

15.2 : Aquatic Ecology

Introduction

The Mining belt of Champua Range is intersected by streams, nalas and rivers with occassional occurrences of ponds in the valley Baitarani Suna, Karo river is the principal drainage channel. In addition, the area is drained by many perrenial streams viz., the Baitarani, Suna, Champua, Kundra and the Jhikaria. The water of these streams are being used for drinking purpose. Swamps of seasonal nature have been observed in some places a long the nalas and rivers. The water bodies other than river is also found in this range area.

Planktons

Aquatic microbiota consists mainly of phyto and zooplanktons. Planktons are floating organisms, mostly microscopic, which are drifted by current. The study records twenty three types of planktons of which twenty are phytoplanktons and rest zooplanktons. The study reveals that the density of phytoplankton species are higher than those of zooplanktons. among the phytoplantons, Bacillariophyceae is the dominant plankton group with the record of Fragillaria occurring abundantly.

The abundance of fresh water Chlorococcales rather than the Bacillariophyceae points to the eutrophic nature of the water. Karo river which is characterized by the presence of large number of Bacillarophyceae, indicates that the river water is rich in silicates and other nutrients which support diatom growth

Aquatic Flora

A checklist of the aquatic flora recorded from rivers, nalas and ponds indicates that out of 28 identified taxa, 10 are rooted in the water and the remaining 18 are fringe vegetation. They are rich specially along the combined flow of Jhikaria and Champua nala near Bolani village.

The estimated primary productivity of the area under report is as a whole very low. The low productivity may be attributed to the low plankton load of the aquatic system.

Species Diversity Index (SDI)

The species Diversity Index (SDI)1 of planktonic population was calculated by applying Shannon-Wiener's Diversity Index. Generally, the undisturbed

ecosystem contains high species diversity. However, the number of species goes down in case of any disturbance in the ecosystem. SDI values of less than 1, 1 to 3 and 3 to 5 indicates heavily stressed, stressed and stable ecosystem respectively. The over all Diversity Index varies from 0.4 to 2.1 in the entire area.

1Species Diversity Index

$$H = -\sum_{I=1}^{S} (pI)(\log_2 Pi)$$

S= number of species

Pi = proportion of total samples belonging to ith species.

$$= \frac{ni}{N}$$

ni = number of individuals of a particular species

N = total number of individuals.

SPECIES DIVERSITY AND GROSS PRIMARY PRODUCTIVITY OF DIFFERENT STATIONS.

Sample No								
ITEM	AE 1	AE 2	AE 3	AE 4	AE 5	AE 6	AE 7	AE 8
Sp. Diversity	1.87	2.17	1.03	1.45	-----	0.99	0.4	1.6
Primary Productivity (Gross)	112.5	112.5	120.0	60.0	-----	73.3	120.0	112.5

AE 1 = Karo valley Pond; AE 2 = Karo exit from buffer zone; AE 3 = Karo entry to buffer zone; AE 4 = Upstream Panposh; AE 5 = Downstream Panposh; AE 6 = Jhikaria; AE 7 = Champua; AE 8 Koina near Kundi.

General Comment on Aquatic Ecology

The low depth and low nutrient status of the rivers and the streams may be responsible for low plankton load and low species diversity.

15.3:- Impacts on Ecosystem

General

In all the mines both the built and natural environment have got an interdependant relationship. There are a number of factors both natural and anthropogenic which play a significant role in determining the state of the existing ecology. These factors contributed by different nature of activities and some times act as a stress on the prevailing ecosystem.

Impact of Mining

Most of the mines falls undre the jurisdication of RFs and PFs (Village forests) of Champua Range and was as reported densely forested and sparsely populated prior to mining. The flora and fauna were then much less disturbed. During the early part of twentith century mining for iron and manganese ores started in this area. The clearing of the forested areas and site preparation for mining have led to he loss of large chunks of natural forested tracts and asssociated wild life habitats in this areas. The quality of the surviving forest is mostly poor but in some areas there are evidences of secondary forest formation. A few straggling and stunted sal and mixed deciduous forest species reminds one of the dense forested tracts which existed in the past.

Patches of moderately dense forest could be seen in the some patches of Rfs having high level, low level and valley type moist peninsular sal.

Before the commencement of mining in Champua Range adjoining areas the various land forms in the area were in a different state of dynamic equilibrium with the natural processes. With the advent of mining activities, the extent of landforms has been modified in the active mining areas. The modified landforms due to mining in core zone are without much vegetal cover. Such landforms are not in equilibrium with the present natural processes. As a result, landslips, soil erosion with formation of rills and gullies could be seen in (i). old quarries, (ii). abandoned mines, (iii). over burden dumps, (iv). ore and fine dumps near the old washing plant.

The mining operations in various mines generates a considerable amount of overburden material and ore fines. These waste products are dumped in predetermined designated places which with time create new dynamic landforms. The forms are not in dynamic equilibrium with operative geomorphic processes and are quite unstable. Theyare prone to erosion with rills and gullies acting as channels for transport of the eroded material to low lying areas and into the adjoining water bodies. Check Dams and foot hill garlanding constructed by various mining agencies in some cases have, however, ensured protection against chances of major wash outs.

The low diversity value of the phytoplankton population indicates that the aquatic ecosystem of the mining area is under a fair degree of stress. Moreover, the low count of Chlorophyceae is reflected in the low diversity which eventually indicates the low nutrient level of aquatic ecosystem. However, the cause for the stress can not be attributed to mining a lone.

The routine mining activities in the mines cause noise and ground vibration due to blasting, movement of heavy vehicles, operation of heavey equipments etc. These disturbances have considerable adverse impact on wild life habitats.

The generation of dust due to mining operations and by vehicle movement on haul roads is one of the major concerns in mines area. The health impact of high level of dust is well known: High concentration will have some adverse impact on the vegetation also. Prolonged settling of dust on the leaves reduces the penetration of sunlight and exchange of gases within the leaf tissues and thereby reduces the photosyntetic and metabolic activities. In some of the the mines, authorities have strengthened mitigating measures through the use of mobile water sprinkler system for suppression of dust in active areas.

As mining has been in operation for a long time, the Forest land had been used by mining companies for different activities. Moreover, mining and ancillary industries in this area employ a good number of labourers. The fuel needs of these labourers usually come from adjoining forests. Cattles maintained by these labourers graze inside the forest. Both these activities are causing considerable stress and damage to the forest ecosystem.

Impact due to Factors other than Mining

Encroachments of forest land

Conversion of forest land into agricultural land, frequent encroachment by tribals & landless people, tribal hunting, large scale illicit felling by smugglers besides industrial and mining activities have reduced the forest land at an alarming pace. This in turn, has resulted in reduction of biological resources of the area and threat to the balance within the ecosystem.

Forest Fire

The most important threat to the forests during the dry months (March-May) is forest-fire which is mostly anthropogenic in origin. It causes irrepairable damage to the young seedlings and coppice growth as well as destroys seedlings of vulnerable species and causes loss of species diversity to some extent. It also adversely affects the saplings and poles. The top soil also gets baked and thus, the available organic matter in soil gets reduced. The forest fire also destroys the microfauna of the top soil and eventually affects the general health of the forest vegetation.

Damage of plants by insect pests

Damage of plant, foliages, seeds etc. of Sal by wood borers, beetles and larvae during summer months are common. Besides, these terinites also cause considerable damage to various trees, especially Sal.

Shifting cultivation

Certain parts of the Karo RF and Siddhamath RF are subjected to the practice of shifting cultivation for a long-time. The problem has aggravated by rising unemployment among the tribals. The landless tribals cleared huge areas of the forest and started farming the land. The practice involves deforestation and destruction of wildlife habitat. Moreover, deforestation of the hill slopes for shifting cultivation has resulted in high rate of soil erosion.

Grazing

Increased intensity of grazing of domestic cattle is a serious problem in the study area. Uncontrolled grazing and high rate of cattle population have i). adversely affected the regeneration of plants, ii). led to the formation of hard top soil in many areas and, iii). increased man - animal conflicts.

15.4: Ecology of Saranda and Its Adjoining Region .

Status

The 10 km buffer zone of the Bolani Iron Ores Mines includes the eastern part of Saranda Forest Division, District West Singhbhum, Bihar. The Division consist of four ranges viz., Sainta (Jaraikela) , Koina (Monoharpur), Gua and Sasangda (Kiriburu).

On the whole, Dense Forest is the predominant class, which occupies 91% of the Saranda region falling within the buffer zone of Bolani Ore Mines.

Sal is the principal species with overwheling preponderance over other species. The vegetation represents the present climatic climax of the area. The condition of germination, establishment and development of Sal are so favourable in this division that this division may perhaps be considered to be the locality in which the optium conditions for the growth of Sal exists. The Sal forest of Saranda are admittedly the best in India and truly be called the home of Sal. Sal regeneration is not a problem here except in the narrow valley belts of semievergreen Forests. Drought and frost are so rare as to be negligible. However, fire is common in the dry months of the year. The favourable climatic conditions are held responsible for the excellence of the natural regeneration of Sal in this division.

Shifting cultivation was widely practised in these forests approximately between 1830 and 1882. Old sites marked by "Sasangdir" (burial stones) are numerous. True jhuming practised in these years on upper and middle slopes have been resulted in the production of well stocked even aged crop of poles, quite common all over the Division.

The different forest types frequently encountered in the Buffer zone of BOM falling within the Saranda Division are namely,

- Moist peninsular Low-Level Sal [C2e(ii)]
- Moist Peninsular Valley Sal [C2e(iii)].
- Northern Dry Mixed Deciduous Forest [5B/C2]
- Dry Peninsular Sal Forest [5B/Ck]
- Moist Mixed Declduous Forest [3c/C3a]
- Northern/Tropical Wet Evergreen/SemiEvergreen Forest [2B/c3]
- Tropical Riparian Fringe Forest [RS1]

Areawise details including the dominant floral element of different forest types is provided in Appendix - I.

Published accounts on the floristic composition of Saranda are available from the works of Haines (1921-25)1 and Mooney (1950)2. During the present investigation floristic survey were conducted in the Saranda area falling within the Buffer zone of BOM. Study records 218 genera and 276 species. Out of the total 218 genera 1 is algae 3 are ferns, and rest are angiosperms.

Two rare species viz., Michelia Champaca and Ixora undulata have been recorded from the Meghahataburu and Kundi area of the Saranda Division respectively. These species are considered here as rare with regard to their restricted occurrence in Saranda.

The Saranda Division, however, has not been botanically explored intensively. This is illustrated by the fact that only two literature references represent our knowledge on the flora of Saranda region 1,2. a proper survey would in all probability bring to light several additional rare and interesting elements in the flora.

1. Haines, H. H. 1921-25. The Botany of Bihar and Orissa. Parts I-IV.

2. Mooney, H. 1950. Supplement to the Botany of Bihar and Orissa, Ranchi.

There is no wild life Sanctuary in the Saranda Division. Nearly, four decades back Sosangdaburu sanctuary existed which was famous for its Elephants and Gaurs. The sanctuary was denotified before the Kiriburu mines was established during sixties.

The Division is rich in faunal resources. Elephant (Elephus maximus) is the most important animal of the Division.

Valleys so characteristic of the Division bear luxuriant vegetation ideally suited for elephants. At present a research project is being conducted in Saranda jointly by the Bihar State Wild life Department and the Wild Life Institute of India, DehraDun on Elephants.

A comprehensive record of the fauna of the Saranda Division is available from the working Plan of Saranda Forest Division. The report provides a list of 21 species of Mammals, 28 sp. of birds, 7 sp. of reptiles and 5 sp. of fishes. However, the EMP for Kiriburu & Meghataburu Iron ores Mines of SAIL provides a list of 65 mammals, 288 birds, 50 reptiles and 12 amphibians from the 10 km buffer area around the mines.

Compilation of data from the Saranda forest area falling within the buffer zone reveals 56 species of mamals, 174 species of birds, 38 species of reptiles and 12 species of amphibians. A list of the number of wild life resources including their qualitative representation and number of wild life belonging to different wild life schedule are given in Table below -

WILD LIFE STATUS OF SARANDA FALLING WITHIN THE BUFFER ZONE OF BOM

Representation	Occurrence				Total	No. of wildlife in wild life schedule				
Wild Life	Common	Occassional	Sporadic	Rare	Total	I	II	III	IV	V
Mammals	18	13	7	18	56	11	10	5	5	9
Birds	35	28	34	77	174	4	-	-	169	-
Reptiles	10	9	3	16	38	1	5	-	14	-
Amphibians	4	2	1	3	10	-	-	-	2	-

The part of Saranda Division falling within the buffer zone of BOM are the habitat of some endangered and threatened species. The endangered and threatened animals of India have been listed in the Schedule I and Schedule II of the Indian wild life (Protection Act) 1972 (Ammended in 1991). Out of 16 Schedule II animal species recorded from the buffer zone falling within the Saranda Division 11 belongs to mammals, 4 to Birds and 1 to Reptiles while out of 16 Schedule I species 10 belong to Mammal and 6 to Reptiles. A detailed list of such species recorded from the study area are given below :

A. Schedule I	Common Name	Scientific Name	Recorded/Reported /Sighted from
A.1 Mammals :			
	A.1.1 Elephant	Elephus raximus	Karmpada RF, Ghatkuri RF
	RFA.1.2 Indian Pangolim	Maris crassicaudata	Kiriburu RF, Ghatkuri RF
	A.1.3 Sloth Bear	Melursus ursinus	Karampada RF, Ghatkuri RF
	A.1.4 Ratel	Mellivora capensis	Kiriburu RF
	A.1.5 Wolf	Canis lupus	Karampada RF, Ghatkuri RF
	A.1.6 Leopard Cat	Felis bengalensis	Ghatkuri RF

	A.1.7 Leopard	Panthera pardus	Karampada RF, Ghatkuri RF
	A.1.8 Tiger	Panthera tigris	Karampada RF, Ghatkuri RF
	A.1.9 Mouse Deer	Tragulus peminna	Karampada RF, Ghatkuri RF
	A.1.10 Gaur	Bos gaurus	Karampada RF, Tholkabad RF
	A. 1.11 Four horned Antelope	Tecraceros quadricornis	Ghatkuri RF, Karampada RF
A.2 Birds			
	A.2.1 Redheaded Marlin	Falco Chicquera	Kiriburu RF
	A.2.2 Shahin Falcon	Falco pergrinus	Kiriburu RF
	A.2.3. Pea Fowl	Pavo cristatus	Karampada RI, Ghatkuri RF

A. Schedule I	Common Name	Scientific Name	Recorded/Reported /Sighted from
	A. 2.4 Indian Pied Hornbill	Anthroceros alabaricus	Gua RF
A.3 Reptiles	A.3.1 Yellow monitor	Varanus Flavescens	Kiriburu RF
B. Schedule II			
B.1 Mammals			
	B.1.1 Rhesus macaque	Macaca nulatta	Karampada RF
	B.1.2 Hanuman Langur	Presbytis entellus	Kiriburu
	B.1.3. Asiatic Jackal	Canis aureus	Kiriburu
	B.1.4 Bengal Fox	Wlpes bengalensis	Ghatkuri, Kiriburu
	B.1.5. Indian Wild Dog	Cuon alpinus	Karampada
	B.1.6. Small Indian Civet	Viverricula indica	Karampada
	B.1.7 Indian Giant Squirrel	Ratufa indica	Karampada, Ghatkuri
	B.1.8 Common Giant Flying Squirrel	Petaurista petaurista	Karampada, Ghatkuri
	b.1.9 Common Palm	Paradoxurus	Ghatkuri RF, kundi

	Civet	hermaphroditus	
	B.1.10 Jungle Cat	Felis chaus	Kumdi
B.2 Reptiles			
	B.2.1 Common Indian Monitor	Varanus Bengalensis	Kiriburu RF
	B.2.2 Rat Snake	Ptyas rucosus	Kumdi
	B.2.3 Checkered keel Back	Xenochrophis piscator	Kiriburu RF
	B.2.4 King Cobra	Ophiophagus hannah	Gua
	B.2.5 Russel's Viper	Vipera ruselli	Kumdi

15.5 Appendix - 1

THE FOREST TYPES RECORDED FROM MINING BELTS OF CHAMPUA RANGE

1. Moist Peninsular Sal Forest

(Category 3c/C 2e)

1.1. Moist Peninsular high Level Sal

[Category C 2e (i)]

I (Tall & medium sized tress)

Shorea robusta, Syzygium cumini, Toona ciliata, Xylia xylocarpa, Callicarpa arborea, Pterocarpus marsupium, Dillenia indica.

II (Small trees & shrubs)

Phyllanthus emblica, Bauhinia retusa, Colebrookia oppositifolia, Grewia hirsuta, Phoenix acaulis, Wendlandia heynei, Aegle marmelos, Woodfordia fruticosa, Moghania semialata.

III (Grasses)

Themeda triandra, Thysanolaena maxima, Heteropogon contortus, Imperata cylindrica

IV (Climbers)

Bauhinia valilii, Butea superba

Habitat

On hill top and plateau above 800 m msl. in the, 'D', 'F' area of the Bolani Mines.

1.2 Moist Peninsular low-level Sal

[Category C 2e (ii)]

I (Tall trees)

Shorea robusta, Terminalia alata, Adina cordifolia, Mitragyna parvifolira, Anogeissus latifolia, Bridelia retusa, Albizia procera, Hymenodictyum orixense, Pterocarpus marsupium, Salmalia malabarica, Gmelina arborea.

II (Medium & Small trees)

Wendlandia heynei, Cleistanthus collinus, Dalbergia latifolia, Syzygium cumini, Dillenia pentagyna, Dillenia aurea, Diospyros spp., Mallotus philippensis.

II (a) (Bamboos)

Dendrocalamus strictus.

III(Shrubs)

Cipadessa fruticosa, Woodfordia fruticosa, Clerodendrum viscosum, Ziziphus oenoplia.

IV (Grasses)

Themeda quadrivalvis, Thysanolaena maxima, Imperata cylindrica, Heteropogon contortus.

V (Climbers)

Combretum roxburghii, Butea superba, B. parviflora, Bauhinia vahlii, Milletia extensa.

Habitat

On lower hill slopes in the, I). Northeastern part of the Thakurani RF, ii). 'C' area of Bolani mines at an altitude about 700m and some of the lower slopes below 'F' area; iii). parrts of Karo RF.

1.3 Moist Peninsular Valley Sal Forests

[Category C 2e (iii)]

I (Tall trees)

Shorea robusta, Terminalia alata, Terminalia belerica, Adina cordifolia, Pterocarpus marsupium, Schleichera oleosa, Madhuca indica, Alstonia scholaris, Mangifera indica.

II (Medium & small trees)

Polyalthia cerasioides, Syzygium cumini, Schleichera oleosa, Ougeinia oujeniensis, Aphanamixis polystachya, Miliusa velutina, Glochidion ellipticum, Canthium dicoccum, Litsea nitida, Bridelia retusa.

III (Shrubs)

Clerodendrum viscosum, Croton oblongifolius, Flemingia chappar, Indigofera cassioides, Desmodium spp.

IV (b) (Grasses)

Imperata cylindrica, Themeda triandra, Thysanolaena maxima.

V (Climbers)

Bauhinia vahlii, Milletia extensa, Butea superba, Dioscorea spp., Combretum roxburghii, Acacia intsia.

Habitat

Valley bottoms with deep loam soils, I) of large portion of Karo RF, siddhamath, Thakurani and Uliburu RF of Champa Range, ii) base of the hills below 'F' area, in the 'D' area of Bolani Ore Mines.

2. Northern dry mixed deciduous forests

(Category 5B c2)

I & II (Large & medium trees)

Anogeissus latifolia, Boswellia serrata, Adina cordifolida, Mitragyna parviflora, Hymenodictynum orixense, Aegle marmelos, Chloroxylon sweitenia, Schleichera oleosa, Lannea coromandelica, Schrebera sweitenioides, Lagerstroemia parviflora, Bridelia retusa, Bauhuinia malabarica, Madhuca longifolia, Diospyros montana, Cochlospermum gossypium.

II (a)(Bamboos)

Dendrocalamus strictus.

III(Shrubs)

Petalidium barlerioides, Helicteres isora, Strobilanthes auriculatus, Woodfordia fruticosa.

IV(a)(Herbs)

Eranthemum purpurascens, Rungia pectinata, Hemigraphis latebrosa, Justicia spp., Eulophia campestris, Habenaria spp., Geodorium dilatatum, Flemingia spp., Dendrobium spp., Vanda tesellata.

V(Grasses)

Eulalia trispicata, Eulaliopsis binata, Apluda mutica.

Habitat

On steep slopes with soils having low moisture content, I). in several patches Uliburu RF and the southern part of Karo RF near Pacheri and beyond Haramutu towards Panduliposi. The forest of the undulating hilly terrain south of Bhadrasahi in the Siddhamath RF.

3. Dry Peninsular Sal Forests

(Category 5B Ck)

I & II (Large & medium trees)

Shorea robusta, Boswellia serrata, Cochlospermum religiosum, Dillenia aurea, Buchanania lanzan, Syzygium caryophyllifollum, Madhuca longifolia, Diospyros tomentosa, Phyllanthus emblica, Wendlandia tinctoria.

II (a) (Bamboos)

Cephalostachyum pergracile.

III(Shrubs)

Ziziphus xylopyrus, Gardenia gummifera, Grewia hirsuta, Phoenix acaulis.

IV(a)(Herbs)

Blumea flava, Vicoa indica, etc.

V(Grasses)

Eulaliopsis binata, Arundinella retusa, Pseudopogonatherum contortum, Thysanolaena maxima.

Habitat

Areas with comparatively dry soil, specially on exposed dry rocky hill sides and ridges, I) in the Siddhanath RF, li), in small restricted areas in Karo RF near Pacheri Nala;

4. Moist mixed deciduous forests

(Category 3C/c3a)

I(Large & medium trees)

Terminalia alata, T. belerica, Diospyrou peregrina, Mangifera indica, Anogeissus acuminata, Salmalia malabarica, Adina cordifolia, Bridelia retusa, Dillenia pentagyna, Hymenodictyum orixense, Kydia Calycina, Mallotus philippensis, Polyalthia cerasioides, Aphanamixis polystachya, Anthocephalus cadamba, Litsea nitida, Micromelum integerrinum.

III(Shrubs)

Alangium salvifolium, Flemingia sp., Cipadessa fruticosa, Petalidium barleriolides, Colebrookia oppositifolia, Pogostemon benghalensis.

IV(a)(Herbs)

Ruellia beddomei, Daedalacanthus nervosus, Barleria strigosa.

V(Climbers)

Combretum roxburghii, Naravelia zeylanica, Uvaria hamiltonii, Mucuna imbricata, Smilax macrophylla, Butea parviflora, Entada pursaetha.

Habitat

Lower elevation valies with poor drainage condition in I) portion of 'C' area of Bolani Ore Mines.

5. Northern/Orissa/Tropical [illegible] green/Semi-evergreen forests

(Category : 2B/C3)

I & II (Large & medium trees)

Firmiana colorata, Ficus spp., Aphanamixis polystachya, Michelia champaca, Actinodaphne angustifolia, Macaranga peltata, Saraca indica, Mangifera indica, Glochidion spp., Bischofia javanica, Amoora rohituka, Crataeva adansonii, Linociera intermedia, Micromelum integerrinum Xylosma longifolium, Albizia Stipulata, Barringtonia acutangula, Premna calycina, Sideroxylum tomentosum.

III(Shrubs)

Licuala peltata, Angiopteris evecta, Hiptage madhablota, Ficus scandens, Ardisia depressa., Leea robusta, l. sambucina, Daedalacanthus nervosus, Grewia disperma.

IV(a)(Herbs)

Nephrodium spp., Leea crispa, Curcuma aromatica, Hibiscus pungens, Triumfetta pilosa, Strobilanthes scaber, Carex phacota, Curculigo recurvata, Gastrochilus longiflora.

VI(Climbers)

Mezoneuron cucullatum, Entada pursaetha, Clematis gouriana, scindapsus officinalis, Vitis auriculata, Mucuna imbricata, Gouania leptostachya.

Habitat

Along the streams in the deep and damp valleys, I) near Ghagra falls on Karo River in the surrounding forests of Karo RF, ii) in the Siddhanath RF by the side of the nalas.

6. Tropical Riparian Fringing Forests

(Category : RS1)

I & II (Tall, medium & small trees)

Sysygium heyneanum, S. cumini, Homonoia riparia, Glochidion velutinum, Ficus spp., salmalia malabarica, Terminalia arjuna, T. alata.

III (Shrubs)

Woodfordia fruticosa, Alangium salvifolium.

Iv (a) (Herbs)

Ludwigia spp., Polygonum spp., Cyathocline purpurea, Lepidagathis fasciculata.

IV (b) (Grasses)

Panicum repens, Phragmites Karka, Saccharum Spp., Ischaemum hirtum.

Habitat

In the deep and damp valleys, I) along almost all the water courses.

15.6 : Appendix - 2

QUANTITATIVE ASSESSMENT OF THE VEGETATION OF THE 5 KM BUFFER ZONE OF THE BOLANI ORE MINES

A . Large to Medium trees

Sl No	Species Name	Frequency	Density	Abundance	Dominance	IVI
1	Shorea robusta	100.00	88.47	91.00	94.69	283.16
2.	Buchanania lanzan	75.00	2.17	4.33	0.02	77.19
3.	Alstonia scholaris	50.00	0.41	1.50	0.005	50.42
4.	Salmalia malabarica	50.00	0.41	1.50	0.02	50.43
5.	Syzygium heyneanum	25.00	1.09	8.00	0.11	26.20
6.	Mallotus philippensis	50.00	0.41	1.50	0.002	50.41
7.	Schleichera oleosa	50.00	2.17	8.00	0.01	52.18
8.	Diospyros melaxoxylon	25.00	0.68	4.00	0.0009	25.68
9.	Miliusa velutina	50.00	0.54	2.00	0.003	50.54
10.	Bridelia retusa	75.00	2.04	5.00	0.009	77.05
11.	Adina cordifolia	75.00	0.54	1.33	0.006	75.55
12.	Anogeissus latifolia	50.00	1.09	4.00	0.006	51.10
13.	Terminalia alata	75.00	7.87	18.33	1.53	84.40
14.	Mitragyna parvifolia	50.00	0.54	2.00	0.02	50.56
15.	Phyllanthus emblica	50.00	2.04	7.50	0.02	52.06
16.	Terminalia chebula	75.00	3.80	9.33	0.02	78.82
17.	Lagerstroemia parviflora	25.00	1.36	10.00	0.005	26.37
18.	Eugenia cojeinensis	5.00	1.36	10.00	0.04	26.40
19.	Madhuca longifolia	25.00	1.63	12.00	0.02	26.65
20	Mangifera indica	25.00	0.41	3.00	0.05	25.46
21.	Protium serratum	50.00	1.63	6.00	0.01	51.64
22	Syzygium cumini	100.00	14.11	26.00	1.34	115.45

B.Small trees to shrubs

Sl. No.	Species Name	Freqyency	Density	Abundance	Dominance	I V I
1.	Chromolaena odorate	25.00	34.388	00.00	2.26	61.64
2.	Lantana camara	75.00	33.82	262.33	3.72	112.54
3.	Holarrhena antidysenterica	50.00	9.02	104.00	2.45	61.47

4.	Helicteres isora	50.0	0.77			
5.	Alangium salvifolium	25.00	2.28	53.00	33.76	61.04
6.	Cassia fistula	50.00	0.21	2.50	0.07	50.28
7.	Croton oblongifolius	50.00	0.99	11.50	1.28	52.27
8.	Canthium dicoccum	75.00	3.05	23.67	30.26	108.31
9.	Flacourtia indica	50.00	0.26	3.00	0.09	50.35
10.	Flemingia chappar	4.00	31.00	2.32	131.67	75.00
11.	Symplocos racemosa	50.00	0.21	2.50	0.22	50.43
12.	Pavetta indica	50.00	1.07	13.00	0.86	51.93
13.	Ixora undulata	25.00	0.52	12.00	0.09	25.61
14.	Oroxylum indicum	50.00	0.09	1.00	0.04	50.13

C.Herbs and grasses & (ferns)

1.	Scoparia dulcis	25.00	14.29	29.00	-	-
2.	Tephrosia purpurea	25.00	19.70	40.00	—	-
3.	Pygmaeopremna herbacea	25.00	19.70	40.00	—	-
4.	Blumea mollis	25.00	5.91	12.00	—	-
5.	Curculigo orchioides	25.00	3.94	7.00	—	-
6.	Nephrodium molle	1.48	1.50	—	-	50.00
7.	Thysanolaena maxima	25.00	5.91	12.00	—	-
8.	Oplismenus compositus	25.00	27.09	55.00	-	-

D.Climbers

1.	Celastrus paniculatus	75.00	16.81	19.67	0.57	92.38
2.	Combretum roxburghii	25.00	9.12	32.00	0.02	34.14
3.	Milletia extensa	75.00	9.69	11.33	0.017	84.71
4.	Bauhinia vahlii	50.00	9.97	2.63	0.166	0.13
5.	Canavalia virosa	25.00	3.42	12.00	—	-
6.	Smilax ovalifolia	50.00	9.12	16.00	0.002	59.12
7.	Ichnocarpus frutescens	25.00	21.37	75.00	0.01	46.38
8.	Merremia umbellata	25.00	5.13	18.00	0.05	30.18

15.7 : Appendix - 3

QUANTITATIVE ASSESSMENT OF THE VEGETATION OF THE 10 KM. BUFFER CORE ZONE OF THE BOLANI ORE MINES

A. Large to Medium trees

Sl. No	Species Name	Frequency	Density	Abundance	Dominance	I V I
1.	Shorea robusta	100.00	35.42	96.00	85.37	220.79
2.	Buchanania lanzan	100.00	7.50	20.33	0.56	108.06
3.	Schleichera oleosa	66.67	4.31	17.50	5.72	76.70
4.	Diospyres melanoxylon	100.00	11.81	32.00	0.51	112.32
5.	Miliusa velutina	66.67	3.81	15.50	0.78	71.26
6.	Haldina cordifolia	66.67	0.86	3.50	0.03	67.56
7.	Anogeissus latifolia	100.00	6.15	17.67	0.65	106.80
8.	Terminali alata	100.00	8.61	23.33	2.48	111.09
9.	Lannea coromandelica	100.00	1.10	3.00	0.03	101.13
10.	Bauhinia retusa	66.67	2.09	8.50	0.10	68.86
11.	Careya arborea	66.67	0.25	1.00	0.003	66.92
12.	Mitragyna orixense	66.67	0.49	2.00	0.02	67.18
13.	Phyllanthus emblica	66.67	2.46	11.00	0.05	69.18
14.	Bowwellia serrata	33.33	0.37	3.00	0.02	33.72
15.	Terminalia chebula	66.67	0.86	3.50	0.05	67.58
16.	Lagerstroemia parviflora	100.00	2.58	7.00	0.40	102.98
17.	Pterocarpus marsupium	100.00	3.32	9.00	0.32	103.64
18.	Terminalia bellerica	100.00	0.49	1.33	0.008	100.50
19.	Madhuca longifolia	66.67	4.67	19.00	1.60	72.94
20	Ficus virens	33.33	0.25	1.00	0.10	33.68
21.	Diospyros montana	33.33	0.98	8.00	0.005	34.32
22	Syzygium cumini	66.67	1.35	7.50	0.02	68.04
B.	Small trees to Shrubs					
1.	Holarrhena antidysenterica	100.00	12.62	8.67	0.09	100.09

2.	Celastrus paniculatus	100.00	13.11	7.67	0.08	43.19
3.	Croton oblongifolius	66.67	14.08	15.00	0.06	80.81
4.	Phoenix acaulis	66.67	9.71	10.00	0.01	76.39
5.	Catunaregam spinosa	100.00	7.77	6.00	0.02	107.79
6.	Meynea spinosa	33.33	1.94	6.00	0.005	35.28
7.	Flemingia chappar	33.33	14.56	30.00	0.02	47.91
8.	Symplocos racemosa	33.33	12.14	25.00	0.10	45.57
9.	Wendlandia heynei	66.67	5.34	5.50	0.02	72.03
C.	Herbs and grasses & (ferns)					
1.	Polygala chinensis	33.33	32.43	12.00	—	—
2.	Blumea mollis	33.33	67.57	25.00	—	—
D.	Climbers					
1.	Bauhinia vahlii	100.00	36.22	15.33	0.52	136.74
2.	Butea parviflora	33.33	2.36	3.00	0.01	35.7
3.	Celastrus	66.67	13.39	8.50	0.03	90.38

15.8 : Appendix - 4

TIMBER SPECIES RECORDED FROM CHAMPUA RANGE

Sl.NO.	Scientific Name	Local Name
i)	Adina cordifolia	Kurum
ii)	Anogeissus latifolia	Dhaura
iii)	Madhuca longifolia	Mahul
iv)	Bridelia retusa	Kasi
v)	Cleistanthus collinus	Bheru
vi)	Dalbergia sissoo	Bali sissoo
vii)	Syzygium cumini	Jamun
viii)	Gmelina arborea	Gambhari
ix)	Lagerstroemia parviflora	Sidha
x)	Ougeinia oojeinensis	Bandhan
xi)	Pterocarpus marsupium	Piasal
xii)	Schleichera oleosa	Kusum
xiii)	Shorea robusta	Sal
xiv)	Mitragyna orixense	Mitikinia
xv)	Terminalia arjuna	Arjuna
xvi)	Terminalia alata	Asan
xvii)	Xylia xylocarpa	Kangada

15.9 : Appendix - 5

ECONOMICALLY AND MEDICINALLY IMPORTANT PLANTS FROM CHAMPUA RANGE

Sl.NO	Scientific Name	Use
i.	Shorea robusta (Sal)	Seed oil edible, medicinal
ii.	Buchanania lanzan (Char)	Fruit edible
iii.	Alstonia scholaris (chhatina)	Bark medicinal
iv.	Salmalia malabarica. (Semal)	Seed cotton for pillows & quilts; bark & resin medicinal
v.	Mallotus philippensis(Kamalagundi)	Dye (Kamala) from red glands of fruits; fruits medicinal.
vi.	Aegle marmelos (Bela)	Fruit medicinal; leaves edible, used in rituals.
vii.	Schleichera oleosa (Kusum)	Host for lac insects; seed oil edible, medicinal.
viii.	Diospyros melanoxylon (Kendu)	Fruit edible; leaves used for bidi manufacture.
ix.	Ficus benghalensis (Bara)	Elephant fodder (leaves); fruit edible; tree sacred.
x.	Azadirachta indica (Nim)	Bark, leaves & fruits medicinal; twigs used as toothbrush.
xi.	Bauhinia purpurea (Kanchan)	Bark fibre; leaves as vegetable.
xii.	Miliusa velutina (Gandha palas)	Fruit edible.
xiii.	Tamarindus indicus(Tentuli)	Flowers, leaves, fruits medicinal & edible; fruits for flavouring.
xiv.	Terminalia alata (Asan)	Fuelwood; leaves food for Tassar silkworms; fruit edible.
xv.	Bauhinia retusa (Choari)	Bark fibre.
xvi.	Careya arborea (Kumbhi)	Bark fibre, medicinal; fruit edible; roots used as fish poison.
xvii.	Terminalia chebula (Harida)	Fruits medicinal.
xviii.	Madhuca longifolia (Mahul)	Seed oil for cooking & indus. trial uses; flowers edible, yields alcoholic, bark medicinal.
xix.	Phyllanthus emblica (Amla)	Fruits edible; medicinal

Sl. No.	Scientific Name	Local Name
xx.	Terminalia belirica (Bahada)	Fruits medicinal
xxi.	Holarrhena antidysenterica (Kurein)	Bark medicinal.
xxii.	Syzygium cumini (Jamu)	Fruit edible, medicinal.
Xxiii.	Croton oblongifolius (Masundi)	Bark root medicinal.
xxiv.	Cassia fistula (sunari)	Firewood; charcoal; bark for tanning; flowers edible; leaves & fruits medicinal.
xxv.	Ziziphus mauritiana (Borkuli)	Fruits edible, medicinal
xxvi.	Mangifera indica (Amba)	Fuelwood; fruit edible.
Xxvii.	Alangium salvifolium (Ankula)	Bark, root & fruit medicinal; fruit edible.
Xxviii.	Psidium guajava (Amrud)	Fruit ediblexxixVitex negundo (Nirgundi)Roots & leaves medicinall whole plant insect repellant.
xxx.	Calotropis gigantea (akanda)	Bast fibre; leaves & deccoction medicinal.
xxxi.	Dioscorea belophylla (Konta-alu)	Roots edible.
Xxxii.	Thespesia lampas (Ban-Kapas)	Fibre, roots & fruits medicinal.
Xxxiii	Asparagus racemosus (Gaichera)	Roots edible, medicinal
Xxxiv.	Semecarpus anacardium (Bhalia)	Thalamus edible; fruit is the marking nut & medicinal.
xxxv.	Nyctanthes arbortristis (Ganga siuli)	Seeds medicinal; essential oil from flowers used for perfumes; dye from flower; roots edible.
Xxxvi.	Cleistanthus collinus (Karoda)	Roots & fruits as fish poison; bark for tanning

15.10 : Appendix - 6

MAMMALS RECORDED BETWEEN 5 TO 10 KM BUFFER ZONE OF BOLANI ORE MINES

Scientific Name	Common Name	Area of Record	Status	Wild Life Schedule
Family Kmballonuride				
Taphozo Longimanus Hardwicke	long-armed Tomb Bat	Kiriburu	Sporadic	
Taphozous melanopogon Temminck	Bearded Tomb Bat	Kiriburu	Occassional	
Family Rhinolophidae				
Rhinolophus rouxi Temminck	Horse Shoe Bat	Kiriburu	Occassional	
Hipposideros lankadiva Kelaart	Kelaart's Leaf-nosed bat	Kiriburu	Rare	
Hipposideros bicolor (Temminck)	Bicoloured Leaf-nosed Bat	Kiriburu	Rare	
Family Vespertilionidae				
Pipistrellus coromandra (Gray)	Indian Pipistrelle	Kiriburu	Occassional	
Hesperoptenus tickelli (Hlyth)	Tickell's Bat	Kiriburu	Rare	
Scotophilus heathi (Horsfield	Greater Yellow Bat Kiriburu	Common		
Order Primates		Siddhamath R.F		

Family Cercopithecidae				
Macaca mulatta(Zimmerman in)	Rhesus Macaque	Kiriburu	Common	II
Presbytis entellus (Dufresne)	Hanuman Langur Kiriburu Common	Kiriburu	Common	II
Order Pholidota				
Family Manidae				
Manis crassicaudata Gray	Indian Pangolin	Kiriburu		
Order Carnivora				
Family Canidae				
Canis lupus Linnaeus	The Wolf	Siddhamath R.F.	Rare	I
Canis aureus Linnaeus	Asiatic Jackal	Siddhamath R.F	Sporadic	II
Vulpes bengalensis (shaw)	Bengal Fox	Kiriburu	Common	II
Cuon alpinus (Pallas)	Indian Wild Dog	Siddhamath R.F.	Rare	II
Family Ursidae				
Melursus ursinus (Shaw)	Sloth Bear	Siddhamath R.F.(R)	Common	I
Family Mustelidae				
Mellivora capensis(Schreber)	Ratel or Honey Badger	Kiriburu	Rare	I
Family Viverridae				
Viverricula indica (Desmareset)	Small Indian Civet	Siddhamath R.F.	Occassional	II
Herpestes edwardsi (Geoffroy)	Indian Grey Mongoose	Siddhamath R.F.	Common	IV
Family Hyaenidae	Striped Hyaena	Different areas	Sporadic	III
Hyaena hyaena(Linnaeus)				

Family Felidae		Siddhamath R.F.	Occassional	II
Felis chaus Guldenstaedt	Jungle Cat			
Felis bengalensis Kerr	Leopard Cat	Siddhamatha R.F		
Panthera pardus (Linnaeus)	Leopard		Occassional	I
Order Proboscidia				
Family Elephantidae				
Elephas maximus Linnaeus	Indian Elephant	Siddhamath R.F.s	Common	I
Order Artiodactyla				
Family Suidae				
Sus scrofa Linnaeus	Wild Boar	Siddhamath R.F.	Rare	III
Family Tragulidae				
Tragulus memmina (Erxleben)	Mouse-Deer	Siddhamath	Rare	I
Family Cervidae				
Muntiacus muntiak (Zimmermann)	Barking Deer	Siddhamath	Sporadic	III
Cervus unicolor Kerr	Sambar	Siddhamath	Rare	III
Family Bovidae				
Order Lagomorpha				
Family sciuridae				
Petaurista petaurista (Pallas)	Common Giant Flying Squirrel	Siddhamath	Rare	II
Ratufa indica(Erxlebe)	Indian Giant Squirred	Siddhamath	Rare	II
Family Hystricidae				
Hystrix Indica Kerr	Indian Crested Porcupine	Different areas	Rare	IV

(latham)	pie			
Corvus splendens vieillot	house Crow	Differaent places (s)	common	IV
Scentific Name	Common Name	Areaof record	status	Wild Life Schedule
Corvus macrorhynchos Wogler	Jungle Crow	Different places (s)	common	IV
Family Campchagidae				
Tephrodornis gularis Raffles	Woodshrike	Kiriburu	Rare	IV
Coracina melanoptera (Ruppelll)	Black headed Cuckoo shrike	Kiriburu	Rare	IV
Pericrocotusflammeus(F roster)	Scarlet-Minivet	Different places (S)	Common	IV
Pericrocotus roseus(Vieillot)	Rosy Minivet	Siddhamath R.F.(S)	Occassio nal	IV
Pericrocotus cinnamomeus (Linnaeus)	Small Minivet	Different places(S)	Common	IV
Pericrocotus erythropygiusJerdon	Whitebellied Minivet	Kiriburu	Rare	IV
Family Irenidae				
Aegithina tiphia (Linnaeus)	Common lora	Different places (S)	Common	IV
Family Pyconotidae				
pycnonotus melonicterus (Gmelin)	Blackheaded Yellow Bulbul	Kiriburu	Occassio nal	IV
Pycnonotus jocosus (Linnaeus)	Redwhiskered Bulbul	Different places(S)	Common	IV
Pycnonotus cafer (Linnaeus)	Redvented bulbul	Different places (S)	Common	IV
Pycnonotus luteolus (Lesson)	Whitebrowed Bulbul	Diffreent places (s)	Sporadic	IV
Family Muscicapidae				
Dumetia hyperythra (Franklin)	Rufousbellied Babbler	SiddhamathR.F.	Rare	IV
Turdoides caudatus (Dumont)	Common Babbler	Different places(S)	sporadic	IV

Turdoides striatus orissae Jerdon	Jungle Babbler	Siddhamath R.F.	Common	IV
Alcippe poioicephala (Jerdon)	Quaker Babler	Different places (S)	Sporadic	IV
Muscicapa tickelliae (Blyth)	tickell's Blue Flycatcher	Siddhamath R.F.	occassional	IV
Terpsiphone paradisi (Linnaeus)	Paradise Flycatcher	SiddhamathR.F.	Rare	IV
Cisticola exilis (Vigors & Horsfield)	Fantail Warbler	Kiriburu	Rare	IV
Orthotomus sutorius (Pennant)	Tailor Bird	Different places (S)	Common	IV
Phylloscopus affinis (Tickell)	Tickell's leaf Warbler	Siddhamath R.F.	Rare	IV
Copsychus saularis (Linnaeus)	Magpie Robin	Different places(S)	Common	IV
Cosychus malabaricus (Scopoli)	Shama	Different places (S)	Common	IV
Zoothera wardii (Blyth)	Pied Ground Thrush	Siddhamath R.F.	Rare	IV
Turdus unicolor Tickell	Tickell'sTush	Kiriburu	Occassional	IV
Family Paridae				
Parus major Linnaeus	Grey Tit	Different places(S)	Sporadic	IV
Family Sittiae				
Sitta frontalis Swainson	Velvetfronted Nuthatch	Siddhamath R.F.	Rare	IV
Family Motacillidae				
Anthus similis Jerdon	Brown Rock Pipit	Kiriburu	Rare	IV
Family Nectarinidae				
Nectarinia zeylonica (linnaeus)	Purplerumped Sunbird	Kiriburu	Rare	IV
Nectarinia asiatic (Lathum)	Sunbird	Different places(S)	Common	IV
Aethopyga siparaja (Raffles)	Yellowbacked Sunbird	Kiriburu	Rare	IV
Arachnothera longirostris (Latham)	Little Spiderhunter	Kiriburu	Rare	IV

Scientific Name	CommonName	Area ofRecord	Status /	Wild Life Schedule
Lonchura kelaarti (Jerdon)	Rufousbreasted Munia	Kiriburu	Rare	IV
Varanus flavescens (Grey)	Yellow Monitor	Kiriburu	Rare	I
Suborder Serpentes				
Family Typhlopidae				
Ramphotyphlops braminus (Daudin)	Common Blind Snake	Kiriburu	Occassional	
Typhlops acutus (Dum. &Bir)	The Beaked Blind Snake	Uliburu R.F.	Occassional	IV
Family Boidae				
Python molurus (Linnaeus)	Indian PythonSiddhamath R.F. Kiriburu	Rare		
Eryx conicus (Schneider)	Russels Sand Boa	Kiriburu	Rare	
Family Colubridae				
Xenochrophis piscator Schneider	Checkered Keel Back	Kiriburu	Occasional	II
Family Elapidae				
Naja naja (Linnaeus)	Indian Cobra	Siddamath R.F.	Rare	IV
Family Viperidae				
Trimeresurus gramineus (Shaw)	Bamboo Pit Viper	Kiriburu	Rare	IV

15.13 : Appendix - 9

AMPHIBIANS RECORDED BETWEEN 5 TO 10 KM BUFFER ZONE OF BOLANI ORE MINES

Scientific Name	Common Name	Area of Record	Status	Wild Life Schedule
Order Anura				
Family bufonidae				
Bufo melanosticus (Schnider)	Common Indian Toad	Uliburu R.F.	Common	
Family Ranidae				
Rana cyanophylyctis (Schneider)	Skipping Frong	Siddhamath R.F.	Common	IV
Rana limnocharis (Wiegmann)	Paddy-field Frog	Siddhamath R.F.	Common	IV

15.14 : Appendix - 10

MAMMALS RECORDED WITHIN 5 KM RADIUS OF BOLANI ORE MINES

Scientific Name	Common Name	Areaof Record	Status	Wild Life Schedule
Order Insectivora				
Family soricidae				
Suncus murinus (Linnaeus)	house Shrew	Haramutu	Common	
Order Chiroptera				
Family Pteropodidae				
Cynopterus sphinx (Vahl)	Short-nosed Fruit Bat	Uliburu R.F.	Common	
Family RhinopomatidAe				
Rhinopoma hardwickii Gray	Lesser Rat-tailed Bat	Karo R.F.	Sporadic	
Family Vespertilionidae				
Pipistrellus mimus Wroughton	Indian Pygmy Pipistrelle	Different places	Common	
Pipistrellus ceylonicus (Kelaart)	kelaart's Pipistrelle	Different places	Common	
Scotophilus kuhli Leach	Lesser Yellow Bat	Different places	Common	
Scotophilus heathi (Horsfield)	Greater Yellow bat	Different places	Common	
Order Primates				
Family Cercopithecidae				
Macaca mulatta (Zimmermann)	Rhesus Macaque	Karo R.F.	Common	II
Presbytis entellus (Dufresne)	Hanuman Langur	Karo R.F.	Common	II
Order Pholidota				
Family Manidae				
Manis crassicaudata Gray	Indian Pangolin	Karo R.F	Rare	I
Order Carnivora				

Scientific Name	CommonName	Area of Record	Status	Wild Life Schedule
Family Canidae				
Vulpes bengalensis (Shaw)	Bengal Fox	Uliburu R.F.	Common	II
Canis aureus Linnaeus	Asiatic Jackal	Uliburu	Sporadic	II
Canis lupus Linnaeus	Wolf	Karo R.F	Rare	I
Family Ursidae				
Melursus ursinus (Shaw)	Sloth Bear	Karo R.F.	Common	I
Family Viverridae				
Viverricula indica (Desmarest	Small Indian Civet	Uliburu R.F.	Occassional	II
Paradoxurus hermaphroditus (pallas)	Common Palm Civet	Haramutu	Occassional	II
Family Herpestidae				
Herpestes edwardsi (Geoffroy)	Indian Gray Mongoose	Haramutu	Common	IV
Family Hyaenidae				
Hyaena hyaena (Linnaeus)	Striped Hyaena	Karo R.F.	Sporadic	III
Family Felidae				
Felis chaus Guldenstaedt	Jungle Cat	Karo R.F.	Occassional	II
Felis bengalensis Kerr	Leopard Cat	Karo R.F.	Rare	I
Panthera pardus (Linnaeus)	Leopard	Karo R.F	Occassional	I
Order Proboscidia				
Family Proboscidae				
Elephus maximus Linnaeus	Indian elephant	Karo R.F.	Common	I
Order Artiodactyla				
Family Suidae				
Sus scrofa Linnaeus	Wild Boar	Karo R.F. uliburu R.F.	Common	III
Family Tragulidae				
Tragulus meminna (Erxleben)	Mouse-Deer	Karo R.F.	Rare	I
Family Cervidae				

Muntiacus muntjacus (zimmermann)	Barking Deer	Karo R.F.	sporadic	III
Cervus unicolor Kerr	Sambar	Karo R.F.	Rare	III
Order Lagomorpha				
Family Leporidae				
Lepus nigricollis ruficaudatus	Rufoustailed Hare	uliburu R.F.Haramutu	Occassional	IV
Order Rodentia				
Family Sciuridae				
Petaurista petaurista (pallas)	Common Giant Flying Squirrel	Karo R.F.	Rare	II
Funambulus palmarum (Linnaeu)	Three-Striped Palm-Squirrel	Haramutu	Sporadic	IV
Ratufa indica (Erxleber)	Indian Giant Squirrel	Karo R.F.	Rare	II
Family Hystricidae				
Hystrix indica Kerr	Indian Crested Porcupine	Karo R.F.	Rare	IV
Family Muridae				
Rattus blanfordi (Thomas)	Blanford's Rat	Karo R.F.	Occassional	V
Rattus rattus (Linnaeus)	House Rat	Haramutu	Common	V
Mis musculus Linnaeus	House Mouse	Haramutu	Common	V
Mus booduga(Gray)	Little Indian Field Mouse	Uliburu R.F.	Common	V
Bandicota bengalensis (Gray)	Lesser bandicoot Rat	Haramutu	Common	V
Tatera indica (Hardwicke)	Indian Gerbil	Uliburu R.F.	Occassional	V

15.15 : Appendix - 11

BIRDS RECORDED WITHIN 5 KM. RADIUS OF BOLANI ORE MINES.

Scientific Name	Common Name	Area of Record	Status	Wild Life Schedule
Order Psittaciformes				
Family Psittacidae				
Psittacula eupatria (Linnaeus)	Large Indian Parakeet	Karo R.R	Occassional	IV
Psittacula krameri (Scopoli)	Roseringed Parakeet	Karo R.F. Uliburu R.F.	Common	IV
Psittacula cyanocephala (Linnaeus)	Bloosomheaded Parakeet	Karo R.F.	Rare	IV
Order Cuculiformes				
Family Cuculidae				
Cuculus varius Vahl	Common Hawk-Cuckoo	Ulburu R.F.	Rare	IV
Cuculus micropterus Gould	Indian Cuckoo	Karo R.F.	Sporadic	IV
Cacomantis passerinus (Vahl)	Indian PlaintiveCuckoo	Uliburu R.F.	Rare	IV
Eudynamys scolopaceae (Linnaeus)	Koel	Different places	Common	IV
Centropus sinensis (Stephens)	Crow pheasant	Different places	Common	IV
Order strigiformes				
Family Strigidae				
Otus scops (Linnaeus)	Scops Owl	Karo R.F.	Sporadic	IV
Otus bakkamoena ennant	Collared scops Owl	Karo R.F.	Rare	IV
Glaucidium radiatum (Tickell)	Jungle Owlet	Different places	Common	IV
Athene brama (Temminck)	Spotted Owlet	Uliburu R.F.	Common	IV
Order Caprimulgiformes				
Family Caprimulgidae				
Caprimulgus indicus	Indian	Uliburu R.F.	Occassional	IV

latham	JungleNightjar			
Caprimulgus asiaticus Latham	Indian Little Nightjar	Karo R.F.	Occassional	IV
Order Apodiformes				
Family Apodidae				
Apus affinis (J.E. Gray)	House Swift	Haramutu	Sporadic	IV
Order Coraciiformes				
Family alcedinidae				
Alcedo atthis (Linnaeus)	Common Kingfisher	Uliburu R.F.	Occassional	IV
Halcyon smyrnensis (linnaeus)	White breasted kingfisher	Uliburu R.F.	Occassional	IV
Melargopis capensis	Stork billed Kingfisher	Pandaliposi	Rare	IV
Family Meropidae				
Merops orientalis latham	Green Bee-eater	Uliburu R.F.	Sporadic	IV
Merops leschenaulti Vieillot	Chestnut-headed Beeeater	Karo R.F.	Sporadic Rare	IV
Family Bucerotidae				
Tockus birostris (Scopoli)	Common Grey Hornbill	Karo R.F.	Rare	IV
Order Piciformes				
Family Capitonidae				
Megalaima zeylanica (Gmelin)	Green Barbet	Karo R.F.	Common	IV
Megalaima haemacephala (Muller)	Coppersmith	Uliburu R.F.	Common	IV
Family Picidae				
Dinopium benghalensis (Linnaeus)	Lesser Goldenbacked Woodpecker	Karo R.F.	Sporadic	IV
Picoides mahrattensis (Latham)	Yellowfronted Pied Woodpecker	Karo R.F.	Sporadic	IV
Chrysocolaptes lucidus (scopoli)	Large Goldenbacked Woodpecker	Karo R.F.	Rare	IV

Order Passeriformes				
Family Pittidae				
Pitta brachyura(Linnaeus)	Indian Pitta	Karo R.F.	Rare	IV
Family Alaudidae				
Eremopterix grisea (Scopoli)	Ashycrowned Finch - Lark	Uliburu R.F.	Sporadic	IV
Ammomares phoenicurus (Franklin)	Rufoustiled Finch-Lark	Karo R.F.	Sporadic	IV
Family Laniidae				
Lanius cristatus Linnaeus	BrownShrike	Haramutu	Occassional	IV
mily Oriolidae				
Oriolus oriolus (Linnaeus)	Golden oriole	Karo R.F.	Occassional	IV
Oriolus xanthornus (Linnaeus)	Blackheaded Oriole	Karo R.F.	Occassional	IV
Family Dicruridae				
Dicrurus adsimilis (Bechstein)	Black Drongo	Different places	Common	IV
Dicrurus paradiseus (Linnaeus)	Racket-tailed Drongo Pandaliposi		Occassional	IV
Family Sturnidae				
Sturnus contra Linnaeus	Pied Myna	Different places	Common	IV
Acridotheres tristris (Linnaeus)	Common Myna	Different places	Common	IV
Family Corvidae				
Dendrocitta vagabunda (Latham)	Indian Tree Pie	Karo R.F.	Sporadic	IV
Corvus splendens Vielliot	House Crow	Different places	Common	IV
Corvus macrorhynchos Wagler	Jungle Crow	Different places	Common	IV
Family Campephagidae				
Pericrocotus Flammeus (Forster)	Scarlet-Minivet	Different places	Common	IV
Pericrocotus cinnamomeus (Linnaeus)	Small minivet	Different places	Common	IV

Scientific Name	Common Name	Area of Record	Status	Wild Life Schedule
Family Irenidae				
Aegithina tiphia (Linnaeus)	Common Tora	Different places Common		IV
Family Pycnonotidae				
Pycnonotus iocosus (Linnaeus)	Redwhiskered Bulbu	Haramutu	Sporadic	IV
Pycnonotus cafer (Linnaeus)	Redvented Bulbul	Uliburu R.F.	Common	IV
Family Musicapidae				
Turdoides caudatus (Dumon)	Common Babbler	Uliburu R.F.	Sporadic	IV
Turdoides striatus Orissae Jerdon	Jungle Babbler	Karo R.F.	Common	IV
Terpsiphone paradis (Linnaeus)	Paradise Flycatcher	Karo R.F.	Rare	IV
Hypothymis azurea (Boddaert)	Blacknaped-Blue Flycatcher	Karo R.F.	Rare	IV
Cisticola juncidis (Vigors & Horsfield)	Fantail Warbler	Uliburu R.F.	Rare	IV
Prinia hodgsonii Blyth	Frankli's Longtail Warbler	Uliburu R.F.	Rare	IV
Orthotomus sutorius (Pennant)	Tailor Bird	Uliburu R.F.	Common	IV
Copsychus saularis (Linnaeus)	Magpie robin	Uliburu R.F.	Common	IV
Copsychus malabaricus (Scopoli)	Shama	Karo R.F.	Common	IV
Saxicola torquata (Linnaeus)	Stone Chat	Uliburu R.F.	Rare	IV
Saxicoloides fulicata (Linnaeus)	Indian Robin	Karo	Sporadic	IV
Zoothera wardii (Blyth)	Pied Ground Thrush	Pandoliposi	Rare	IV
Family Paridae				

Scientific Name	Common Name	Area of Record	Status	Wild Life Schedule
Parus major Linnaeus	Grey Tit	Karo R.F.	Sporadic	IV
Parus xanthogenys Vigors	Black spotted Yellow	Karo R.F.	Sporadic	IV
Family Motacillidae				
Motacilla maderspatensis Gmelin	Large Pied Wagtail	Karamutu	Rare	IV
Family Nectariniidae				
Nectarina asiatica (Latham)	Purple sunbird	Different places	Common	IV
Family Aosteropidae				
Zosterops palpebrosa (Temminck)	White Eye	Uliburu R.F.	Sporadic	IV
Family Ploceidae				
Passer domesticus (Linnaeus)	House Sparrow	Different places	Common	IV
Lonchura malabarica (Linnaeus)	Whitethroated Munia	Uliburu R.F.	Occassional	IV
Lonchura punctulata (Linnaeus)	Spotted Munia	Karo R.F.	Occassional	IV

15.16 : Appendix - 12

REPTILES RECORDED WITHIN 5 KM. RADIUS OF BOLANI ORE MINES.

Scientific Name	Common Name	Area of Record	Status	Wild Life Schedule
Order Squomata				
Suborder Sauria				
Family Gekkoridae				
Hemidactylus brooki Gray	Brook's Geeko	Haramutu	Common	
Hemidactylus flaviviridis ell	House Geeko	Haramutu	Common	
Hemidactylus leschenaulti Dum & Bibr.	Bark Geeko	Karo R.F.	Rare	
Gekko gecko (Linnaeus)	Tuck Too	Karo R.F.	Rare	
Family Agamidae				
Calotes versicolor (Daudin)	Common Garden Lizard	Different places	Common	
Family Chamaeleonidae				
Chamaeleon zeylanicus aurenti	Indian Chameleon	Karo R.F.	Rare	
Family Scincidae				
Mabuya carinata Schneider)	Common Skink	Diffferent places	Common	
der Derpentes				
Family Typhlopidae				
Ramphotyphlops braminus Daudin)	Common Blind Snake	Karo R.F.	Sporadic	
Family Boidae				
Python molurus (Linnaeus)	Indian python	Karo R.F.	Rare	I
Family Colubridae				
Ptyas mucosus	Linnaeus Rat Snake	Ulliburu R.F.	Occassional	II
Zamenis (Dendrelaphis) tristis Daudin)	Common Indian Bronzeback	Haramutu	Common	IV
Dryophis nasutus Lacepède)	Whipe snake	Ulliburu R.F. Karo R.F.	Common Common	IV IV

Family Elapidae				
Bungarus Fasiatus (Schneider)	Banded Krait	Kaio R.F.	Rare	IV
Bungarus caeruleus (Schneider)	Common Indian Krait	Haramutu	Rare	IV
Naja naja (Linnaeus)	Indian Cobra	Kaio R.F.	Rare	II
Family Viperidae				
Vipera russelli Shaw	Russell's viper	Uliburu R.F.	Rare	II

15.17 : Appendix - 13

AMPHIBIOUS RECORDED WITHIN 5 KM. RADIUS OF BOLANI IRON ORE MINES.

Scientific Name	Common Name	Area of Record	Status	Wild Life Schedule
Order anura				
Family Bufonidae				
Bufo melanostictus Schneider	Common Indian Toad	Different Places	Common	IV
Family Ranidae				
Rana tigerina Daudin	Indian Bull Frog	Uliburu	Common	IV
Rana Cyanophlyctis Schneider	Skipping Frong	Karo R.F.	Common	IV
Rana Limnocharis Wiegmann	Paddy-field frog	Karo R.F.	Common	IV
Family Rhacophoridae				
Racophorus leucomystax (Kuhl)	Tree Frog	Karo R.F.	Rare	

15.18 : Appendix - 14

CHECK LIST OF PHYTO-PLANKTONS AND ZOO-PLANKTONS RECORDED

PHYTOPLANKTONS

Chlorophyceae

1. Eudorina elegans
2. Pediastrum simplex
3. Chlorococcum sp.
4. Scenedesmis sp.
5. Sirogonium sp.
6. Spirogyra sp.
7. Cosmerium sp.
8. Closterium sp.Cyanophyceae
9. Oscillatoria sp.

Bacillariophyceae

10. Fragilaria-crotensis
11. Melosira sulcata
12. Gomphonema sp.
13. Pinnularia sp.
14. Cymbella sp.
15. Navicula sp.
16. Nitzschia sp.
17. Biddulphia sp.
18. Diatoma sp.
19. Pinnularia sp.

Euglenophyceae

20. Euglena sp.Zooplanktons
21. Arthropoda
22. Keratella sp.
23. Copepoda

15.19 : Appendix - 15

AQUATIC MACROPHYTES RECORDED FROM CORE AND BUFFER ZONE OF BOLANI ORE MINES

A. Rooted in flowing water		
1.	Polygonum barbatum var staghinum	Polygonaceae
2.	Polygonum hydropiper	Polygonaceae
3.	Ludwigia perennis	Onagraceae
4.	Centella asiatica	Apiaceae
5.	Phyllanthus virgatus	Euphorbiaceae
6.	Eriocaulon rivulare	Eriocaulaceae
	Crinum defixum	Amaryllidaceae
8.	Panicum repens	Paeceae
9.	Eragrostis tenella	Poaceae
10.	Nitella sp.	Characeae
B. Along the steams		
1.	Syzygium heyneanum	Myrtaceae
2.	Homonoia riparia	Myrtaceae
3.	Zyzygium cumini	Myrtaceae
4.	Glochidion velutinum	Euphorbiaceae
5.	Pongamia pinnata	Fabaceae
6.	Terminalia arjuna	Combretaceae
7.	Salix tetrasperma	Salicaceae
8.	Terminalia alata	Combretaceae
	Salmalia malabarica	Bombacaceae
10.	Woodfordia fruticosa	Lythraceae
11.	Ludwigia spl.	Onagraceae
12.	Polygonum sp.	Polygonaceae
13.	Cyathocline purpurea	Asteraceae
14.	Panicum repens	Poaceae
15.	Phragmites Karka	Poaceae
16.	Saccharum sp.	Poaceae
17.	Ischaemum hirtum	Poaceae

15.20: Appendix-16

AQUATIC FAUNA RECORDED FROM CORE AND BUFFER ZONES OF BOLANIORES MINES

Scientific Name	Common Name
FISH	
Order Cypriniformes	
Family Cyprinidae	
• Puntius Sophore(Hamilton)	Common Barb
• Puntius ticto(Hamilton)	Fire- Finbarb
• Danio acquipinnatus(Mc Clelland)	Giant Danio
• Danio rerio (Hamilton)	Zebra fish
• Rasbora daniconius (Hamilton)	Common Rasbora
Cirrhinus reba (Hamilton)	Reba
Esomus darika (Hamilton)	Darika
• Labeo bata (Hamilton)	Darika
• Labeo bata (Hamilton)	bata(R)
• Labeo rohita (Hamilton)	Rohu (r)
• Labeo gonius (Hamilton)	Kurchi
• Garra gotyla (Gray)	Stone sucker
• Tor Putitora (Hamilton)	Masheer
Faily Colitidae	
Lepidacephalus guntea (Hamilton)	Loach
• Noemacheilus denisonik Day	Loach
Order Siluriformes	
Family Bagridae	
Mystus cavasius (Hamilton)	Tengra
Rita rita(Hamilton)	Ritha
Family Pangasidae	
Pangasius pangasius (Hamilton	
Family Clariidae	
• Clarius batrachus (Linnaeus)	Mangur
Scientific Name	Common Name
Family Heteropneustidae	
• Heteropneustes fossilis (Bloch)	Singi
Order Channiformes	
Family Charnidae	
• Channa orientalis (Schneider)	Cheng
• Channa Punctatus (Bloch)	Lata
• Channa marulius (Hamilton)	Giant Snake heae(R)

Order perciformes	
Family Nandidae	
Badis badis (Hamilton)	Mud perches
Family Centropomidae	
Chanda nama (Hamilton)	Glass fish
Order Mstacembliformes	
Family Mastacembelidae	
Mastacembelus armatus (Lecepede)	Ban

AMPHIBIA

Frongs :	Rana tigerina Daudin	-	Indian Bull Frog
	Rana cynophylyctis Schneider	-	Skipping Frog
	Rana limnocharis wiegmann	-	Paddy-field Frog

MOLLUSCA

Bivalve : Lamellidens marginatus (Lamark)

Gastropod : Pila globosa (Swainson)

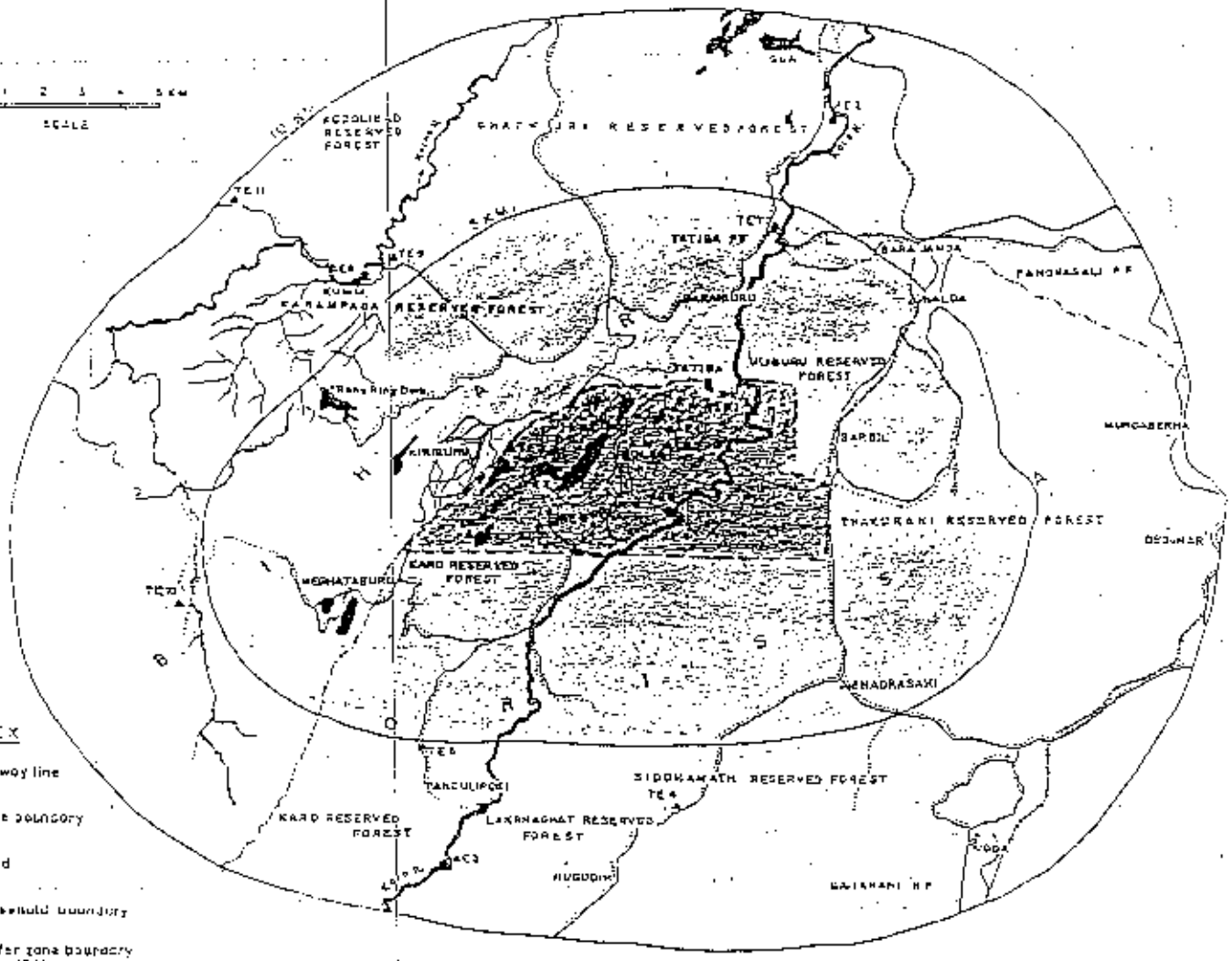
CRUSTACEA

Shrimp : Macrobrachium sp.

Crab : Paratelphusa sp.

EXHIBIT-I

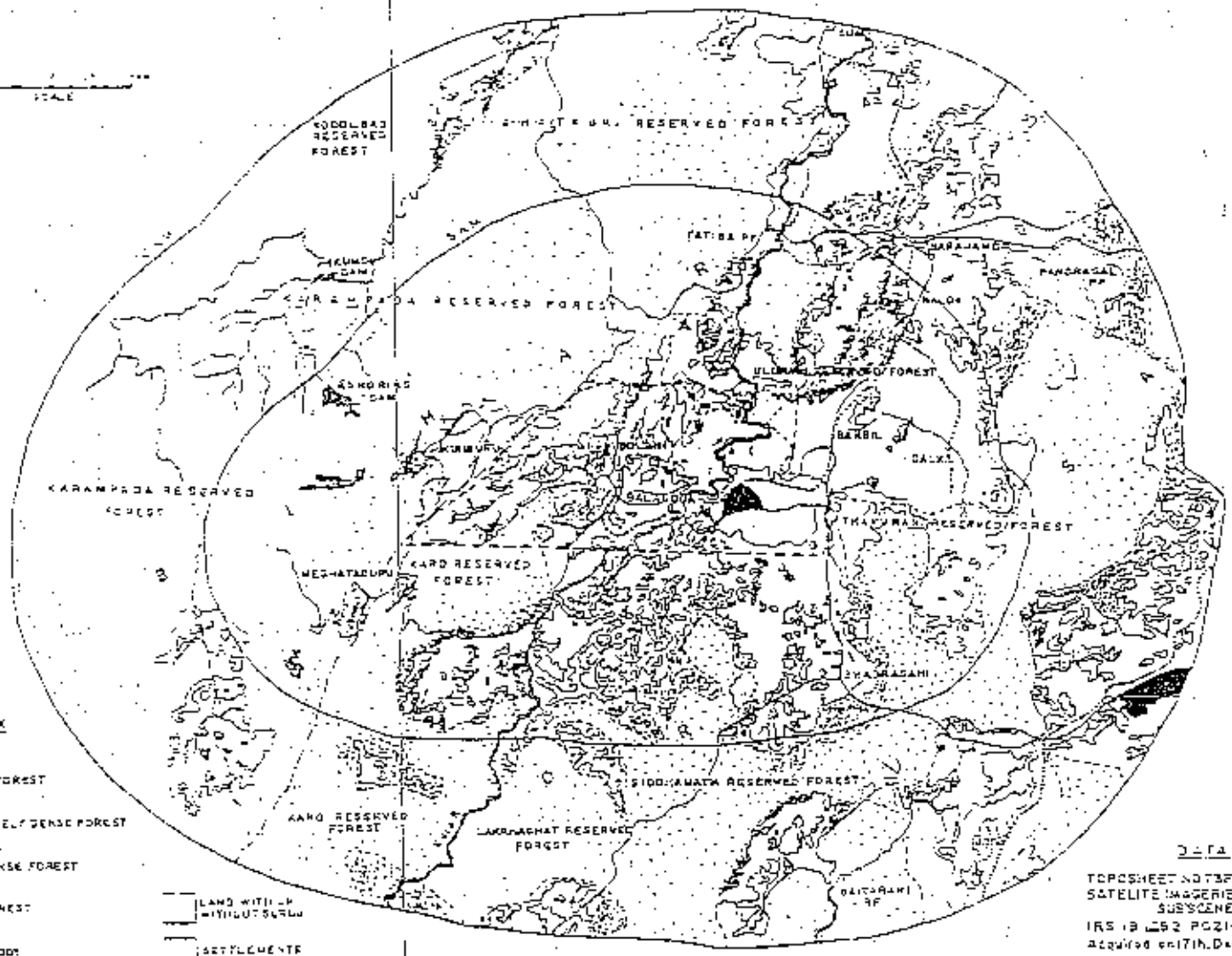
MAP SHOWING AQUATIC AND TERRESTRIAL ECOLOGICAL SAMPLING LOCATION FALLING WITHIN THE CORE AND BUFFER ZONES OF BOLANI ORE MINES



CENTER FOR STUDY OF MAN AND ENVIRONMENT CALCUTTA

ECOLOGY OF THE AREA IN AND AROUND BOLANI ORE MINES, KEONJHAR DISTRICT, ORISSA

MAP SHOWING LAND COVER/LAND USE OF THE AREA FALLING WITHIN THE CORE AND BUFFER ZONES OF BOLANI ORE MINES



INDEX

- DENSE FOREST
- MODERATELY DENSE FOREST
- LESS DENSE FOREST
- OPEN FOREST
- WATER BODY
- RIVER
- AGRICULTURE
- LAND WITH OR WITHOUT SCRUB
- SETTLEMENTS
- MANGANESE QUARRIES
- MINE/MINING IRON ORE RELATED ACTIVITIES
- LEASE-HOLD BOUNDARY
- STATE BOUNDARY
- BUFFER ZONE BOUNDARY 5KM. 10KM
- INDUSTRIAL
- ROAD/ RAIL

DATA

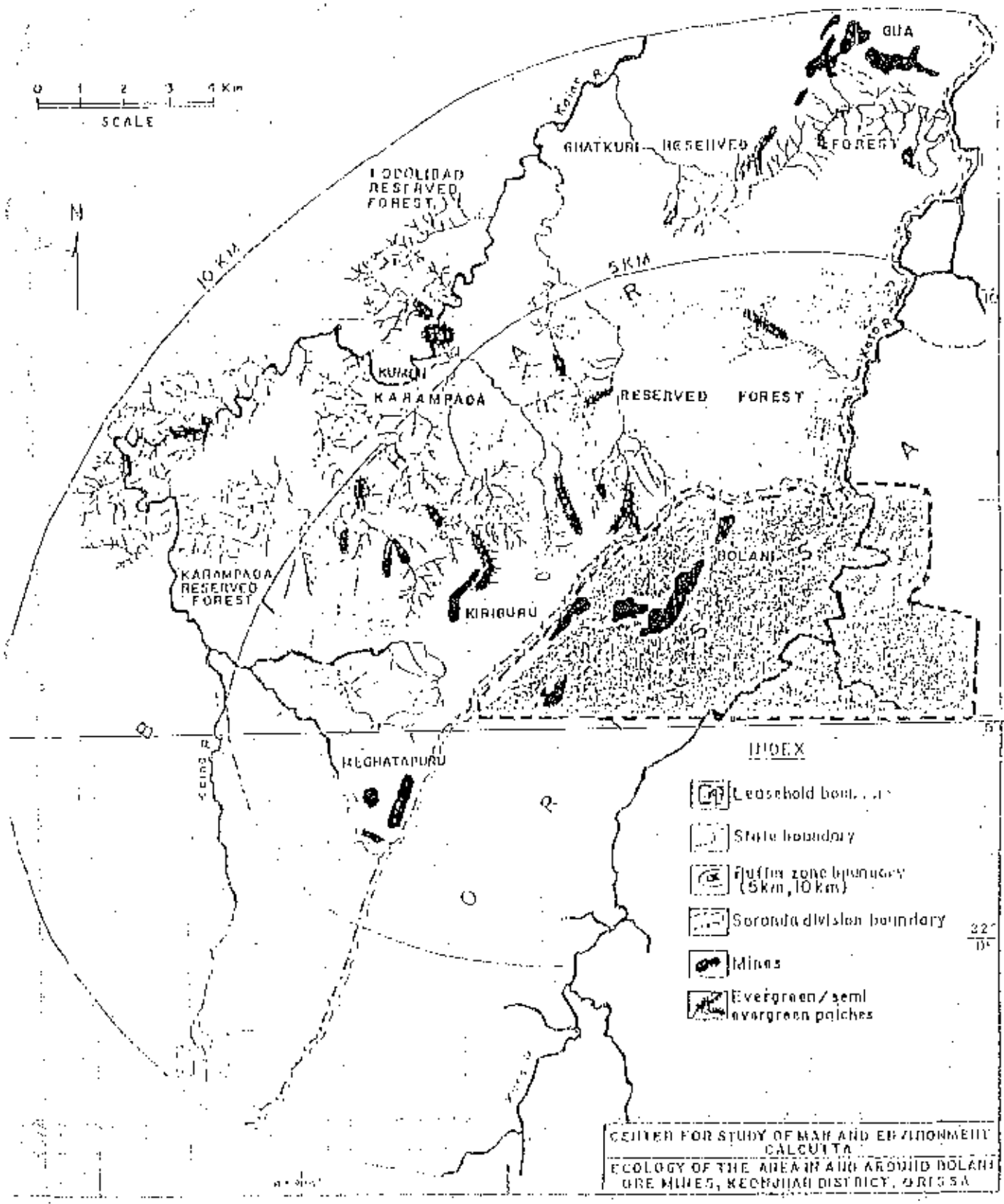
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SATELITE IMAGERIES-DECODED SUBSCENES
IRS 1B LISS2 PO21— R51
Acquired on 17th Dec, 1996

CENTER FOR STUDY OF MAN AND ENVIRONMENT CALCUTTA

ECOLOGY OF THE AREA IN AND AROUND BOLANI ORE MINES, KEONJHAR DISTRICT, ORISSA.

EXHIBIT – 3

AP SHOWING EVERGREEN/SEMI EVERGREEN PATCHES IN SARANDA (FOREST) VISION FALLING WITHIN BUFFER ZONES OF BOLANI ORE MINES



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APPENDIX-I

AREA AND POPULATION OF KEONJHAR DISTRICT (1991 CENSUS)

TOTAL POPULATION	S.C	% OF S.C TO TOTAL POPULATION	S.T	% OF S.C TO TOTAL POPULATION	TOTAL WORKER	MAIN WORKER	MARGINAL WORKERS	NON-WORKERS
[illegible]	[illegible]	11.49	5.95	18.84	[illegible]	[illegible]	79575	[illegible]

CLASSIFICATION OF MAIN WORKER

Cultivation	Agricultural Labourers	Live Stock, Forestry, Fishing, Hunting & Plantation Orchards & Allied Activities	Mining And Quarrying	Manufacturing Processing Household Industry	Manufacturing Processing Other form H.H. Industry	Servicing & Repair
2,59,789	1,07,379	7,063	30,708	10,208	12,247	

APPENDIX-II

BLOCKWISE LAND UTILISATION PATTERN OF KEONJHAR DISTRICT (1994-95)

(Area in Hect.)

Name of the Block	Misc. Tree crops & grasses not included in rest over shower	Permanent Pasture & other grazing land	Cultivable waste Land	Forest Area	Land put to non agricyuitural uses in Ha.	Barren & Uncultivable land	Current follows	Other follows	Net over Sown
Telkoi	342	1.304	1.042	25.174	2.274	3.902	4.972	1.650	15.162
Harichandanpur	1.013	1.666	3.144	18.929	5.538	4.159	6.869	2.281	20.287
Ghasipura	412	2.338	216	547	4.831	476	1.482	892	22.826
Anandapur	150	1.605	452	5.614	2.094	1.428	3.172	1.008	14.903
Harichhi	380	979	1.090	1.229	10.755	102	877	882	17.616
Ghatagaon	459	2.008	866	9.674	2.524	3.223	8.530	2.019	17.117
Keonjhar Sadar	396	1.104	1.859	6.264	5.006	5.810	3.719	2.579	22.158
Banspal	209	4.438	4.798	23.447	3.390	56.645	4.531	4.643	11.853
Joda	45	3.125	441	14.333	1.879	8.524	3.103	4.405	5.524
Jhumpura	416	1.960	1.290	12.448	2.854	5.513	5.079	1.678	17.493
Patna	647	1.539	1.037	6.225	3.475	2.252	7.065	2.437	17.242
Saharpada	638	1.095	909	2.525	3.379	3.153	6.323	2.229	19.082
Champua	345	576	1.656	2.810	5.087	1.173	3.933	2.975	18.043
Total	5.452	23.675	18.803	1.34.219	51.064	95.860	59.655	29.698	2.19.305

APPENDIX-III

LIVESTOCK AND ANIMAL HUSBANDRY CENSUS 1995 OF KEONJHAR DISTRICT

Category	Keonjhar Sadar Division		Anandapur Sub Division		Champua Sub-Division		Keonjhar District		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Total Cattle	3,78,047	7,356	1,52,652	9,740	1,41,785	6,379	6,72,484	23,455	6,95,939
Buffaloes	22,626	26	6,476	2	7,419	1,397	36,421	1,430	37,851
Sheep	70,590	783	19,774	290	79,654	1,189	1,70,018	2,262	1,72,280
Goats	2,08,374	1,547	47,866	5,353	88,430	10,475	3,44,670	15,374	3,60,044
Pigs	17,886	291	1,839	57	3,490	3,732	23,215	4,040	27,255
Fowl	5,74,418	8,104	1,35,847	5,025	2,88,907	17,207	9,99,172	30,337	10,29,509

Source :- Directorate of Animal Husbandary and Veterinary Services ,Orissa.

Appendix-IV

Collection time of Minor Forest Products in Keonjhar and Bonai Forest Divisions

Name of Minor Forest Products		Collection Time
Common Name	Botanical Name	
Mahua flower	Madhuca indica	April - May
Pasal garuda	Rauwolfia serpentina	Round the year
Arrowroot	Curcuma leucorrhiza	May - June
Nux vomica	Strychnus nuxvomica	Dec – Jan
Chiretta (Bhuneem)	Andrographis paniculata	Sept – May
Gilo	Entada scanderis	March –May
Genduli Gum	Sterculia urens	Round the year
Tamarind	Tamarindus indica	Dec – Feb
Amla	Emblica Officinalis	Oct – April
Bahada	Terminalia belerica	Jan –Feb
Harida	Terminalia chebula	Nov – Feb
Mahua seed	Madhuca indica	May – June
Kusum seed	Schleichera oleosa	June – Aug.
Sal	Shorea robusta	June – July
Charo	Buchanania lanzan	April – May
Palas	Butea monosperma	May – July
Dhatiki flower	Woodfordia fruticosa	Feb – April
Sabai grass	Eulaliopsis binata	Dec – Jan. and Aug - Sept
Ban Tulsi	Perilla laciniodes	Oct – Dec.
Indrajaba	Wrightia tinctoria	Oct – Feb
Bagbahakhi	Martynia annua	Nov – Dec
Castor seed	Ricinus Communis	April – June
Menda seed	Polygala chinensis	July – Dec.
Bai dahka	Mucuna monosperma	Feb – April.
Sikakai	Acacia concinna	Dec – March
Sunari	Cassia fistula	March – April
Cashew nut	Anacardium occidentale	March – June.

Appendix-V

Population Structure of Bonai Division

Name of the C.D. Block Forest Village /Town	Scheduled Caste	Scheduled Tribes	Others	Total population
	Total	Total	Total	
Bonai (Rural)	6402	29249	19730	55381
Gurudiha (Rural)	2617	40762	8178	51557
Lahunipada (Rural)	4665	49952	20371	74989
Koira (Rural)	3407	42282	10993	55682
Forest Villages not in any C.D. Block	211	4059	93	4363
Tensa Town (Urban)	444	1917	3238	4599
Total	17747	167201	62603	247551

Appendix-VI

ANNUAL RAIN FALL DATA (in mm.) OF KEONJHAR DISTRICT

YEAR	JAN	FEB	MAR	APRIL	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	TOTAL
1991	17.8	4.7	16.4	32.4	53	185	365	456	156	124.3	17.6	1.8	1430.2
1992	NIL	11.4	NIL	8.9	113.8	179	244.6	288.6	173	34.6	NIL	NIL	1054.1
1993	NIL	NIL	2	102	98.4	280.9	339	283.5	297	85.1	2	NIL	1460.9
1994	NIL	17.4	NIL	9.9	97.3	255.6	388	317	196.7	46.5	3.3	NIL	1292.7
1995	22.5	11.8	NIL	4.8	197.9	95.7	182.3	266.4	203.2	110.5	91.8	NIL	1186.9
1996	1.6	0.7	0.2	11.2	26.5	257.2	202.5	302.6	91	25.3	1.2	NIL	920
1997	3.3	1.1	28.4	112.3	55.9	251	212.6	375.1	233.4	73.7	35.5	62.6	1444.9
1998	68.4	2.5	12.4	65.3	45	177.4	180.1	148	271.3	137.5	46.2	NIL	1154.2
1999	NIL	NIL	NIL	18.9	171.2	242	NA	NA	NA	NA	NA	NA	432.1
NORMAL	22.2	38	23	43.3	88.9	209.5	391.8	335.3	233	112.7	31.7	NIL	1529.4

APPENDIX - VII
RAIN FALL DATA (in mm) OF BONAI DIVISION
STATION : KOIRA

MONTH	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	Avg. Rain Fall
Jan.	27	10	0	0	0	5	0	0	5	101.2	7	2	98	0	18.23
Feb.	61.4	16	91	0	21	9	0	1	31	11	12	0	6.5	0	18.56
Mar.	15	7	20.5	2	57	2	0	1	0	4.2	0	0	39.5	0	10.59
Apr.	1.4	27	49	0	26	0	33	71	35	11	9	65	3	0	23.53
May.	65.7	69	27	52	76	8	163	68	75.2	180	61	24	79	184.5	80.89
Jun.	321.4	53	203	445	257	163	149	312	391	84	344	415.5	109.5	324.45	255.14
Jul.	381.2	439	345	149	360	539	236	372	721	368.2	210.1	247	214.5	299.15	343.02
Aug.	261.5	265.5	295	350	174	504	309	335	569	377.2	306.2	504.5	308.5	517	362.60
Sep.	123	271	251.1	126	343	155	81	305	180	315	99	156.2	281.5	414.25	221.52
Oct.	80.1	27	55	19	192	117	29	81	83.2	132	19.5	55.5	147	378.25	102.61
Nov.	60	6	3	0	16	19	7	0	7.2	96.2	0	26.5	124	0	27.49
Dec.	40	0	0	0	0	24	0	0	0	0	0	70	0	0	9.57
TOTAL RAIN FALL	1357.7	1190.5	1380.5	1143	1522	1545	1007	1546	2098	1560	1067.8	1566.2	1411	2117.6	1473.74
TOTAL NO. OF RAINY DAYS	113	79	83	73	104	80	70	93	106	84	76	91	97	106	89.64

APPENDIX - VIII

Meteorological data Recorded in Regional Research station Judia farm, Keonjhar.

Orissa University of Agriculter & Techonology.

Month	1995				1996				1997				1998			
	Tempt in °C		RH(%)	Rainfall	Tempt °C		RH(%)	Rainfall	Tempt °C		RH(%)	Rainfall	Tempt °C		RH(%)	Rainfall
	min.	max.	(11.30hrs)	(mm)	min.	max.	(11.30hrs)	(mm)	min.	max.	(11.30hrs)	(mm)	min.	max.	(11.30hrs)	(mm)
Jan	9.6	22.9	44.1	63.6	10.7	27.2	62.7	11.3	8.3	27.5	52.3	24.5	7.3	29.5	76.6	65.8
Feb	12.8	27.9	34.8	20.8	11.7	30.1	51.5	21.1	12.5	33.3	36.2	4.7	10.3	31.1	73.2	4.8
Mar	17.1	32.2	31.2	11.3	16.5	37.1	33.2	4.6	18	36.4	40.6	65.8	11.2	35.3	64.6	25.2
Apr	20.9	37.2	22.1	12.8	20.3	37.7	39.7	62.8	18.1	35.3	49.2	136.1	16.5	38.8	59.1	53.3
May	23.1	34.8	42.5	269.4	23.4	40.2	40.3	50.6	22.3	38.7	42.6	66	19.2	42.8	58.7	66
Jun	23.1	33.9	60.5	169.3	22.9	34.6	69.2	224.2	22.8	38.7	63.2	294.4	17.7	43.6	68.4	168.
Jul	21.9	30.2	71.8	155.7	22.7	31.5	76.5	177.1	22.5	31.2	79	311.9	21.9	34.5	79.8	184.8
Aug	21.8	29.6	75	319.7	21.7	29.8	82.2	327.3	22.7	31.1	78.2	218	22.2	32.8	80.2	95.8
Sep	21	29.4	73	199.6	21.9	32.2	73.7	80.6	21.5	31.4	79.8	120.5	21.3	32.4	84.2	249.7
Oct	20.6	28.8	68.4	113.9	17.2	30.9	76.3	12.5	17.5	30.6	67.9	41.3	17.4	32.4	83.4	191.8
Nov	10	28.5	75.9	105.8	12.1	29.9	45.2	0	16.1	29.4	68.3	28.6	10.7	29.5	78.5	64.1
Dec	9.5	28.6	69.3	Nil	7.8	26.5	39.9	0	11.9	26	72.7	57.4	6.7	28.3	62.6	0
				1442.3				972.1				1369.2				1169.3

APPENDIX - IX

LIFE STOCK AND ANIMAL HUSBANDRY CENSUS OF BONAI DIVISION

Name of the C. C. Block	No. of Cattles.	No. of Buffaloes	No. of Goats	No. of Sheep	Total No. Live Stock
Bonai	33393	1623	11711	2155	48883
Gurundia	37844	2127	23439	2478	65888
Koira	37670	4463	26976	4961	74070
Lahunipada	36153	4733	25957	3243	70086
Total	145060	12946	88083	12838	258927

(Source : District Statistical Office, Suindargarh on the basis o f1991 cnesus.)

APPENDIX- X

HIGHEST RAIN FALL IN A SINGLE DAY IN KEONJHAR DIVISION (FROM 1990-99)

Sl no	Year	Month	Date	Rain fall (in mm.)
1	1990	June	14-06-90	147.5
2	1991	July	21.7.91	106.0
3	1992	June	9.6.92	112.0
4	1993	June	16.6.93	104.0
5	1994	July	8.7.94	103.5
6	1995	May	15.5.95	95.5
7	1996	August	25.8.96	88.0
8	1997	August	20-8-97	108.5
9	1998	September	10-9-98	90.0
* 10	1999	October	29.10.99	257.0
* 11	1999	October	30.10.99	695.5
* 12	1999	October	31.10.99	52.0

* Indicates rain fall during Super cyclone of 1999.

SOURCE :- M/S FACOR BOULA.

APPENDIX- XI

Temperature Data of Bonai Division recorded in the Silt Research Station, Soil conservation Dept. Bijakuli.

Year	1993		1994		1995	
Month	Max.(in °C)	Min. (in °C)	Max.(in °C)	Min. (in °C)	Max.(in °C)	Min. (in °C)
Jan.	29.0	18.0	27.5	18.5	24.0	13.0
Feb.	28.0	18.5	26.0	17.0	30.5	21.0
Mar.	31.0	25.0	31.0	25.5	35.0	26.0
Apr.	39.5	26.0	38.0	26.0	39.0	29.0
May	43.0	27.0	40.0	32.0	40.0	27.0
June	40.0	27.0	40.0	25.5	39.0	26.0
July	35.0	26.0	33.0	26.0	33.0	25.0
Aug.	34.0	27.0	30.0	25.0	*	*
Sep.	32.0	26.0	32.0	25.0	*	*
Oct.	34.0	26.0	32.0	24.0	*	*
Nov.	30.0	21.0	28.0	21.0	*	*
Dec.	26.0	15.5	25.0	16.0	*	*

- Temperature data for these months are not recorded.

59489/2020/F & E

ANNEXURE - A

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE) & CHIEF WILDLIFE WARDEN, ODISHA

Department of Forest and Environment, Government of Odisha

No. 8426 /7WL-I-D & WLC-159/2020
Dated, Bhubaneswar the 16 Oct, 2020

To

The Executive Director (F&E),
The Odisha Mining Corporation Ltd.,
OMC House, Bhubaneswar - 751001

Sub: ***Sukurangi Chromite Mining Project of M/s The Odisha Mining Corporation Ltd. located in Village(s) Sukrangi, Saruabil and village limits of Ostapal, Kamarda and Talangi, Tahsil Sukinda, District Jajpur, Odisha – Approval of Site Specific Wildlife Conservation Plan***

Sir,

A site specific wildlife conservation plan at a cost of ₹154.00 lakh was earlier approved and communicated to you in this office memo No.4418 dt 21.07.2009 in connection with diversion of 104.79 ha (originally proposed 132.94 ha) of forest land for the above mining project. Now, the user agency has informed that in connection with grant of Environment Clearance, they have been advised by the EAC in their meeting held on 28.05.2020 to revise the site specific wildlife conservation plan by including all of the ten Scheduled-I species available in the core/buffer zone of the project.

In compliance to above, the site specific wildlife conservation plan approved for Sukurangi Chromite Mines is revised after incorporating certain additional interventions with cost worked out on the existing minimum wage rate of ₹303.40 per manday.

2. Accordingly, this additional site specific wildlife conservation plan in respect of the above project is approved by the undersigned with financial forecast of **₹576.5288 lakh** (Rupees five crore seventy-six lakh fifty-two thousand eight hundred eighty) only for the following activities.

(a)	For activities to be implemented in project area by the user agency:	₹181.0218 lakh
(b)	For activities to be implemented by in project impact area by DFO, Cuttack Division:	₹395.5070 lakh
	Grand Total:	**₹576.5288 lakh**

2. Various activities in the lease hold area will be executed by the Project proponent under the guidance of the Divisional Forest Officer, Cuttack division. A sum of ₹297.5070 lakh only (after adjusting the amount of ₹98.00 lakh only already deposited) may be deposited in the State CAMPA fund for the purpose for implementation of various activities within the project impact area by the Forest Department as envisaged in the plan.

3. The User Agency may be advised to note the following conditions for future compliance.

- This Plan may be revisited after 5 years and the User Agency will give undertaking to contribute towards the revised cost of the conservation plan till the project period, if any.
- The project proponent has to prepare and submit the Conservation Plan for the next 10 years at least one year before the expiry of the present Conservation Plan and deposit the outlay amount upon its approval. In case of delay, it will be dealt as per law for violations of Forest Conservation Act, 1980 and Environment (Protection) Act, 1986.

P.T.O.

59489/2020/F & E

- The project proponent has to give an undertaking to bear the differential cost in case of enhancement of wage rate at the time of implementation of this plan.

Yours faithfully

Encl: Copy of approved site specific WL Conservation Plan (2 sets)

Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha

Memo No. 8427 /date 16/10/2020

Copy forwarded for information and necessary action to the -

1. Special Secretary to Government of Odisha, F & E Department, Bhubaneswar
2. Principal CCF, Odisha with reference to memo No.2973 dt 02.09.2020 of RCCF, Angul Circle.
3. Regional Chief Conservator of Forests, Angul Circle with reference to his memo No.2971 dt 02.09.2020
4. Divisional Forest Officer, Cuttack Division alongwith a copy of the approved site specific wildlife conservation plan with reference to memo No.2972 dt 02.09.2020 of RCCF, Angul Circle.

Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha

REVISED SITE SPECIFIC

CONSERVATION PLAN

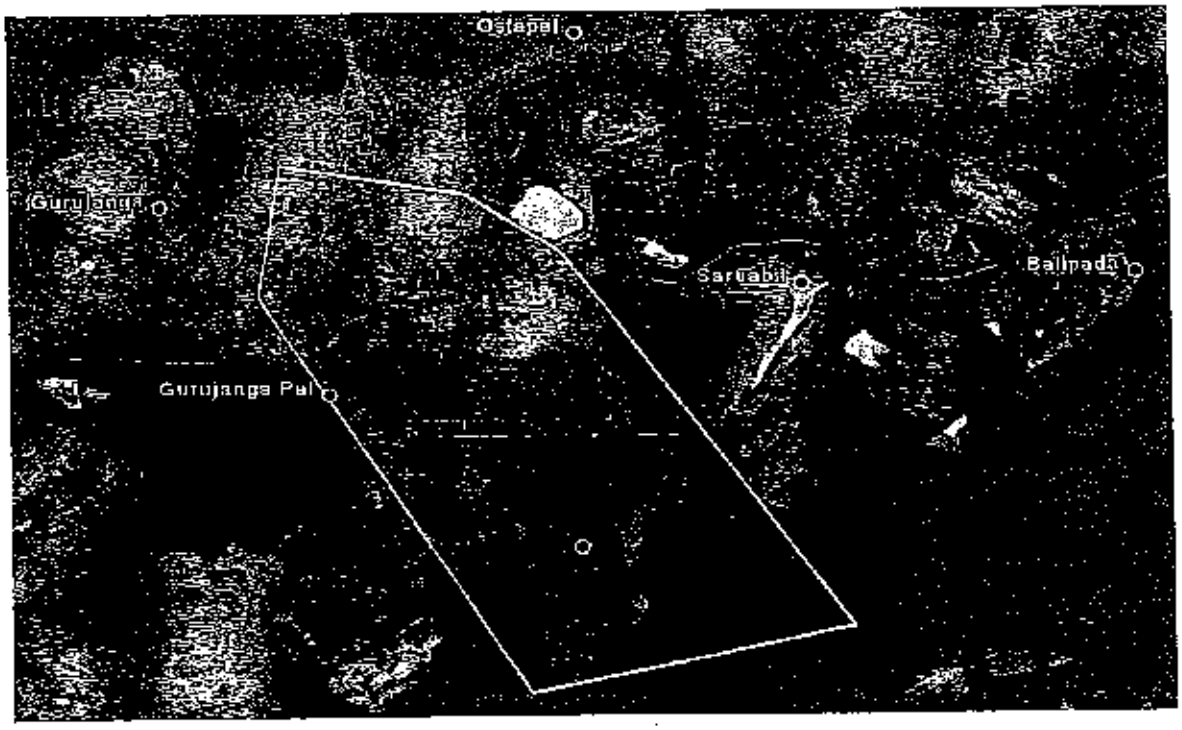
FOR

WILDLIFE MANAGEMENT

OF

SUKURANGI CHROMITE MINES

JAJPUR DISTRICT



OF

M/S ODISHA MINING CORPORATION LTD.

(A GOVT.OF ODISHA UNDERTAKING)

OMC HOUSE, BHUBANESWAR-751001

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EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

0.1.1. Odisha is a mineral rich State and incidentally 97% of chromite reserve of the country occurs in Odisha. Sukurangi Chromite Mine in Sukinda Valley of Sukinda Tahasil of Jajpur district has been leased to M/s. OMC Ltd. As a part of its renewal process, the State Government has stipulated implementation of a conservation plan for the mine and its surrounding.

0.1.2. The total mining lease area is 382.70 Ha and out of this 267.21 Ha is forest land and the rest is located in revenue land of 5 villages.

0.1.3. It is surrounded by a cluster of 18 chromite mines big or small lying in Sukinda valley along Tomka-Sukinda road.

0.2.1. Sukurangi mine is located in the northern foot hill of Mahagiri DPF in Sukinda Valley. It has tropical vegetation classified as 'Northern Tropical Moist Deciduous Forest". It drains to river Brahmani through Damsal Nala, which passes through the lease area. The maximum mean temperature goes up to 39°C while the lowest temperature dips to 15°C. The highest elevation is 254 m from MSL. There are 26 villages within 10 km radius with a population of 61,649. The main avocation of people is mining related activities and agriculture.

0.3.1. This is an old mine worked manually and proposed to continue in semi-mechanised method. There is only one pit now. While the quarry slope is 30°, the slope of each bench wall is 85°. The total work force projected for the mining operation is 302 including supervisory, skilled and semi-skilled personnel.

0.4.1. As the mine is located in a forest area, the mining operation and its ancillary activities shall have several adverse impacts on the wildlife and its habitat. This and other mines shall have combined impact on the surrounding area due to their different activities.

0.4.2. In order to continue mining operation Stage-II Forest Clearance has been granted by MoEF vide letter No. 8-104/2000-FC dt. 21.07.2011 over 104.79 ha and Stage-I Forest Clearance over 162.42 ha has also been granted by MoEF & CC vide letter F.No. 8-22/2016-FC dt. 14.09.2017.

Environmental Clearance has been granted by MoEF & CC vide letter dt. 30.07.2020 for 0.3 MTPA of Chrome Ore Production.

0.4.3. Mining due to its various activities has adverse impacts on the surroundings. These adverse impacts include loss of forest habitat, forest fire, dust, noise, lighting, accidents, soil erosion and moisture loss, man-animal conflict, dependence of people on the forest and poaching etc.

0.5.1. In order to minimize these threats to wild animals and their wild habitat within the mines, measures like raising of plantation to fill the gaps in forest cover, soil and moisture conservation measures like gully plugging and check damming, staggered trenching, prevention of man-animal conflict through solar fencing, lighting, alternate cropping and anti-depredation measures and creation of awareness is proposed.

0.5.2. Similarly measures like protection of forest habitat through engagement of one unit of anti-depredation squad (10 persons), plantation over 50 Ha has been proposed. Measures like solar lighting, soil and moisture conservation, farm forestry, establishment of veterinary unit has been recommended. Construction of Watch tower at Nagada has been has been suggested.

0.5.3. As all 18 mines are in a cluster and their ZoI overlap, it is recommended to take the entire area as one unit and treat the same with financial support from all mines.

0.5.4. A monitoring committee headed by DFO, Cuttack has been proposed to monitor the approved prescription recommended in the Site Specific Wildlife Conservation plan.

0.5.5. The Site Specific Wildlife Conservation Plan has been approved by Conservator of Forests (WL) vide memo no. 4415 dt. 21.07.2009 with a total financial outlay of Rs. 154.00 lakhs. During appraisal for grant of EC for enhancement of chrome ore production from 0.13 MTPA to 0.3 MTPA in Sukurangi Chromite Mines, the Expert Appraisal Committee (EAC), MoEF & CC, Govt. of India observed that the list of schedule-I species authenticated by DFO, Cuttack vide letter dtd 19.02.2018 shows that there are 10 Schedule I Species viz. *Mellivora Carpensis* (Ratel); *Panthera Pardus* (leopard), *Melurs*

ursinus (Sloth Bear); *Elephas maximus* (Indian elephant); *Moschiola indica* Synonym *Tragulus meminna* (Mouse Deer); *Manis crassicaudata* (Pangolin); *Canis lupus pallipes* (Wolf); *Varanus bengalensis* (Bengal Monitor Lizard); *Python molures* (Python); and *Pavo cristatus* (Peacock). But all the ten species have not been covered in the conservation plan already approved. OMC should revise the Site Specific Wildlife Conservation Plan including the entire Schedule-I Species. In this context Addl. Principal Chief Conservator of Forests (WL), O/o the PCCF (WL) and CWLW, Odisha directed DFO, Cuttack Division vide letter no. 4953/1WL-FC-Mine- SSP-74/2018 dt. 18.09.2020 to modify the conservation plan including all the ten Schedule-I species. Hence, the Site Specific Wildlife Conservation Plan has been revised including the entire Schedule-I species at current wage rate of Rs. 303.40/- per man day.

0.5.6 The total cost of the plan for 10 years is **Rs.576.5288 lakhs,** out of which **Rs. 181.0218 lakhs** shall be spent by OMC within the lease, where as the balance **Rs. 395.5070 lakhs** shall be spent by DFO, Cuttack by implementing various mitigative measures within the ZoI of the cluster. OMC has already deposited an amount of Rs. 98.00 Lakhs. Therefore, balance amount of **Rs. 297.5070 lakhs** shall be deposited by OMC on getting approval and demand.

Divisional Forest Officer
Cuttack Forest Division

CHAPTER-1

INTRODUCTION

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INTRODUCTION

1.0 <u>Introduction to the area and back ground information:</u> The Odisha Mining Corporation Ltd (OMC) was jointly established by the Union and State Govt. in the first decade of the country's independence. It was the first Public Sector Undertaking in Odisha. By 1962, OMC became wholly state owned and operated Sukurangi Chromite Mine located in Sukinda valley in Jajpur district for quite a long time.

Sukurangi mine lease (ML) area is connected with the nearest railhead at Jajpur–Keonjhar Road on Howrah–Bhubaneswar–Chennai line of SE railway by an all weather road of 53 km via Duburi and Tomka. The ML area is also linked with Daitari-Paradeep Express Highway. State Capital at Bhubaneswar and district head quarter at Jajpur Road is located at road distances of 150 km and 53 km respectively from Sukurangi ML area.

Sukurangi ML in Sukinda Tahasil of Jajpur District was granted and executed in favour of M/s Sirajuddin & Co. for a period of 20 years with effect from dt 26.03.1959 to dt 26.03.1979. But after four years of operating the lease, it was determined on dt 05.04.1963 by the State Govt. The Orissa Mining Corporation (OMC) Ltd. was then allowed by the State Govt. vide letter No.III(G)M, 13/70-5592-MG, Dt.20.07.1970 to operate the said lease as an agent of the State Govt. till formal grant of the said lease in favour of OMC. Mining operation commenced by OMC in 1971 by expanding the area broken by M/s Sirajjudin & Co. Govt. of Orissa in their erstwhile Mining & Geology Dept. proceeding No. III (G)-MG- 10/78-7924 Dt.05.08.1978 **(Annexure-I)** granted a mining lease for exploitation of chromite in Sukurangi Chromite Mines over an area of 382.709 ha for a period of 20 years.

OMC applied for 1st renewal of the lease to the State Govt. for a further period of 20 years ending dt 19.09.2020. State Govt. in the Steel & Mines Dept. vide letter no. III (CR) SM-10/2006-296/SM dt. 08.01.2020 has extended the validity of ML till dt 19.09.2030 under rule 3 (1) of Mineral (Mining by Government Company) Rules 2015. Supplementary lease deed has been executed on dt 31.03.2020. The copy of the grant order and supplementary lease deed has been enclosed as **Annexure-II Series**.

The ML contains an estimated reserve of 6.67 million tons (proved) Chromite ore as on 31.03.2018.The mine life of Sukurangi lease is around 18 years at the proposed exploitation rate of 0.3 Mt of ore per year. It is an open cast mine.

1. a (i) Location of project and its impact area:

Project area: Village: Ostapal, Saruabil, Sukurangi, Tailangi, Kamarda and part of Mahagiri Protected Forest Block No.27.

Tahasil: Sukinda

Dist.: Jajpur

Forest beat: Kaliapani

Forest Section: Ransol

Forest Range: Sukinda Range

Forest Division: Cuttack Forest Division

1. a (ii) Extent of project area: Sukurangi ML of OMC over 382.709 ha comprises of 267.10 ha of forest land and 115.499 ha of non-forest Govt. land. The details of the land in different villages are given as under:

Sl. No.	Name of the village	Area included in Mining Lease (in Acr)
1	Ostapal	126.99
2	Saruabil	472.78
3	Sukurangi	246.17
4	Tailangi	5.42
5	Kamarda	58.25
6	Forest Block No. 27	36.10
	Total	**945.71 Ac or 382.709 ha**

The abstract of the land schedule is attached as **Annexure-III**.



Fig: Open Cast Mining Operation in Sukurangi Chromite Mines.

1. a (iii) Proposed land use pattern:

Sl. No.	Heads	Conceptual land use (in ha)
1	Excavated Area	141.09
2	Waste dump	67.98
3	Mineral Storage	18.91
4	Infrastructure (including ETP)	17.18
5	Roads	1.0596

6	Safety zone	53.31
7	Untouched land (Tenant, village road & Nala)	83.55
	Total	**382.709**

1. a (iv) GPS location of the Project:

The corner coordinates of the ML are given as under:

Pillar no.	Latitude	Longitude	Pillar no.	Latitude	Longitude
1	85° 47'43.77048"	21°3' 25.10280"	33	85° 49'17.79348"	21°2'29.06592"
2	85° 47'44.46060"	21°3'29.03976"	34	85° 49'13.62432"	21°2'28.07232"
3	85° 47'45.65472"	21°3'34.76160"	36	85° 49'08.95332"	21°2'27.11220"
4	85° 47'46.28148"	21°3'39.69216"	37	85° 49'03.07416"	21°2'25.94544"
5	85° 47'47.60844"	21°3'46.98252"	38	85° 48'59.66604"	21°2'25.13652"
6	85° 47'53.41164"	21°3'45.98496"	39	85° 48'57.50424"	21°2'24.77472"
7	85° 47'57.68268"	21°3'45.29736"	40	85° 48'53.59212"	21°2'23.95608"
8	85° 48'1.028520"	21°3'44.80668"	41	85° 48'49.68144"	21°2'23.14140
9	85° 48'5.744160"	21°3'43.98372"	42	85° 48'44.31348"	21°2'22.10352"
10	85° 48'18.04032"	21°3'41.95476"	43	85° 48'40.09860"	21°2'21.26472"
14	85° 48'33.78312"	21°3'32.30748"	43a	85° 48'39.04020"	21°2'20.94288"
15	85° 48'34.61580"	21°3'31.41612"	44	85° 48'36.83880"	21°2'20.58324"
16	85° 48'36.35964"	21°3'28.98108"	45	85° 48'35.97840"	21°2'20.38488"
17	85° 48'37.07496"	21°3'28.09980"	46	85° 48'31.84056"	21°2'19.58928"
18	85° 48'40.23864"	21°3'24.23268"	47	85° 48'28.28844"	21°2'18.85056"
19	85° 48'43.36884"	21°3'20.13372"	48	85° 48'25.11072"	21°2'23.51292"
21	85° 48'52.34184"	21°3'08.37648"	49	85° 48'22.33476"	21°2'27.64464"
22	85° 48'57.85164"	21°3'01.11888"	50	85° 48'20.51136"	21°2'30.38001"
23	85° 49'01.22016"	21°2'56.70420"	51	85° 48'19.65276"	21°2'31.61976"
24	85° 49'05.43324"	21°2'51.13212"	52	85° 48'16.94952"	21°2'35.70648"
25	85° 49'08.52240"	21°2'47.08032"	53	85° 48'12.10212"	21°2'42.98802"
26	85° 49'10.97184"	21°2'43.87884"	54	85° 48'10.57968"	21°2'45.08232"
27	85° 49'11.91396"	21°2'42.65484"	55	85° 48'07.97328"	21°2'49.11576"
28	85° 49'12.71856"	21°2'41.57448"	56	85° 48'02.43036"	21°2'57.35076"
29	85° 49'15.91248"	21°2'37.42224"	57	85° 47'55.54140"	21°3'07.48908"
30	85° 49'18.26328"	21°2'34.26684"	58	85° 47'50.80380"	21°3'14.41584"
31	85° 49'20.00856"	21°2'32.00928"	59	85° 47'48.80544"	21°3'17.39340"
32	85° 49'21.74412"	21°2'29.68440"	60	85° 47'47.27580"	21°3'19.66032"

Source: DGPS Survey vetted by ORSAC.

1. a (v) Status of Forest & Environmental Clearance:

MoEF, Govt. of India vide letter F. No. 8-104/2000-FC dt. 21.07.2011 has granted Stage-II FC over 104.79 ha of forest land. Stage-I FC has been granted by MoEF & CC vide F.No.8-22/2016-FC dt. 14.09.2017 over 162.42 ha of balance forest land. OMC has submitted the compliance to the stage-I stipulations to DFO, Cuttack for onward recommendation to higher ups for grant of stage-II FC over balance forest area. Mining in existing capacity (0.13MTPA) and proposed enhanced capacity (0.30MTPA) shall continue within approved forest area of 104.79 ha till final approval over balance forest land is obtained.

EC has been granted by MoEF, Govt. of India vide letter no. J-11015/409/ 2008-IA.II (M) dt. 18.02.2010 for production of 0.13 MTPA of Chrome Ore.

EC for enhancement of Chrome Ore production from 0.13 MTPA to 0.3 MTPA has been granted by MoEF & CC vide letter no. J-11015/348/2015-IA.II (M) dt. 30.07.2020. During appraisal for grant of EC for enhancement of chrome ore production from 0.13 MTPA to 0.30 MTPA in Sukurangi Chromite Mines, the Expert Appraisal Committee (EAC), MoEF & CC, Govt. of India observed that the list of schedule-I species authenticated by DFO, Cuttack vide letter dtd 19.02.2018 shows that there are 10 Schedule-I Species. But all the ten species have not been covered in the conservation plan already approved. The details are given in the table below:

Sl. No.	Schedule-I species authenticated by DFO, Cuttack vide letter dtd 19.02.2018	Schedule-I species covered in the conservation plan approved on dt 21.07.2009.
1	*Mellivora Carpensis* (Ratel);	*Melursus ursinus* (Sloth Bear)
2	*Panthera Pardus* (leopard),	*Elephas maximus* (Indian elephant)
3	*Melurs usursinus* (Sloth Bear);	*Tragulus meminna* (Mouse Deer)
4	*Elephas maximus* (Indian elephant);	*Varanus bengalensis* (Yellow Monitor)
5	*Moschiola indica* (Mouse Deer);	
6	*Manis crassicaudata* (Pangolin);	
7	*Canis lupus pallipes* (Wolf);	
8	*Varanus bengalensis* (Bengal Monitor Lizard);	
9	*Python molures* (Python); and	
10	*Pavo cristatus* (Peacock).	

The committee advised OMC to revise the Site Specific Wildlife Conservation Plan including the entire Schedule-I Species. In this context Addl. Principal Chief Conservator of Forests (WL), O/o the PCCF (WL) and CWLW, Odisha directed DFO, Cuttack Division vide letter no. 4953/1WL-FC-Mine-SSP-74/2018 dt. 18.09.2020 to modify the conservation plan including all the ten Schedule-I species. Hence, the Site Specific Wildlife Conservation Plan has been revised including the entire Schedule-I species at current wage rate of Rs. 303.40/- per man day.

1. a (vi) Project Impact area: The Sukinda Chromite Deposit is located in a valley. Daitari Range on the north are very steep and there are sheer cliffs devoid of any vegetation except sparse grasses. But in general the hills are thickly forested. In the valley there are several open cast mines. There are stretches of forest, villages and agricultural land.

The project impact area covers 10km radius from the ML boundary. The area exhibits an undulated topography with varying elevations between 147m to

697m above Mean Sea Level (AMSL). The landscape of the project impact area represents a complex of mining areas, agricultural land, rural habitation and natural vegetation (forest and scrubland).

The project impact area can roughly be divided into hills, plains and waste lands. The former is either covered with Northern Tropical Dry Deciduous Forests or barren (where the slope is extremely steep). Mining and allied activities and other anthropogenic activities have converted some of the Northern Tropical Dry Deciduous Forests into Dry Deciduous Scrub Forests. Mainly Daitari Protected Forest and Mahagiri Protected Forest is present in the project impact area.

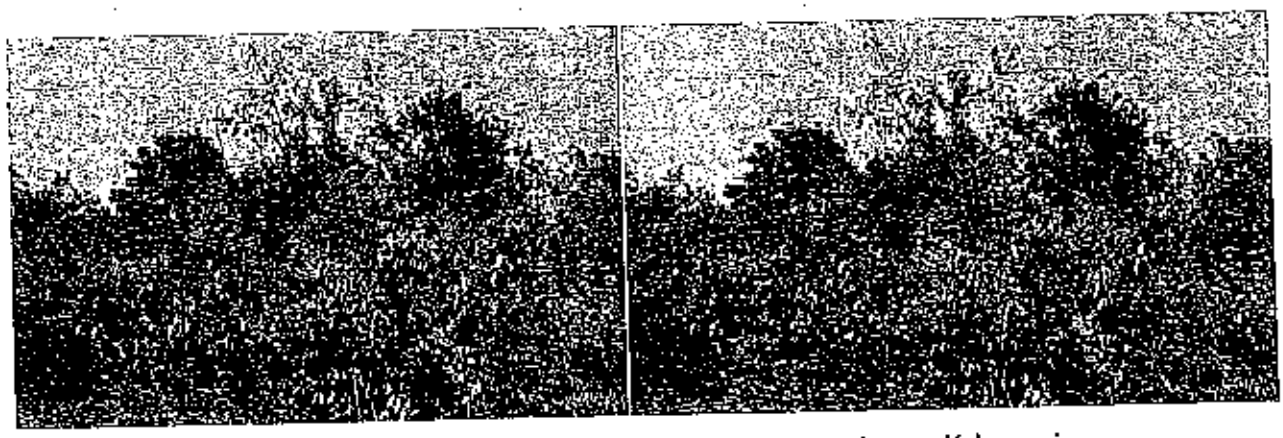


Fig.1. Daitari PF and Forest Near Bhimtanger Colony – Kalarangi



Fig.2. Forest on Mahagiri Hill Range and Forest Near Kansa Village

1. b. Villages and habitations within the Project area and Project Impact area: Total population of the study area is 61649. There are about 938 females per 1000 males. The study area is dominated by SC and ST population. About 40% of the population are in ST category while around 11% are in SC category. Hence, SC/ST together constitutes about ~51% of

the population in the study area. Literacy rate is about ~54%. Working population constitute about 37% of the total population.

Table: Demographic pattern of the study area

Sl. No.	Item	Study area	Share in total population (%)
1.0	**Population**		
1.1	Total	61649	
1.2	Male	31798	51.6
1.3	Female	29851	48.4
2.0	**Households**	12635	
3.1	**SC**	6875	11.1
3.2	**ST**	24252	39.3
4.0	**Literates**	32946	53.4
5.0	**Working population**	22637	36.7
5.1	**Main workers**	15471	25.1
5.1.1	Cultivators	4017	26
5.1.2	Agricultural labourers	3435	22.2
5.1.3	HH industry	1091	7.1
5.1.4	Others	6928	44.8
6.0	**Marginal workers**	7166	11.6

Source: Census 2011, Government of India

Details of village-wise demographic pattern

Sl. No.	Villages	No. of Households	Total population	Total Male	Total Female	SC	ST	Literates	Total Workers	Main Workers	Main cultivators	Main Agri labourers	Main Household industry	Main Others	Marginal workers	Non working population
1	Baliparbat	283	1188	654	534	158	799	542	514	487	8	1	69	409	27	674
2	Daitari	4823	23146	11924	11222	1344	16198	8445	9997	6618	2006	1988	261	2363	3379	13149
3	Talapada	221	979	486	493	44	707	582	512	358	201	126	4	27	154	467
4	Balipur	345	1753	898	855	279	304	1015	573	538	206	82	2	248	35	1180
5	Bamblio	392	2117	1102	1015	247	374	1444	593	509	154	64	6	285	84	1524
6	Gandapalli	224	1207	625	582	120	139	806	394	124	52	6	9	57	270	813
7	Gokan	419	1558	792	766	216	0	1183	462	391	152	85	51	103	71	1096
8	Gurujang	236	1115	576	539	42	615	516	347	202	15	17	16	154	145	768
9	Jemadeipur	555	3051	1598	1453	411	0	1778	1112	951	6	156	478	311	161	1939
10	Kakudia	360	1586	812	774	617	66	1032	542	347	53	108	11	175	195	1044
11	Kamarpada	279	1499	768	731	475	0	1056	592	423	87	98	4	234	169	907
12	Kanjiapal	91	403	201	202	0	287	176	220	13	6	2	0	5	207	183
13	Kansar	212	1144	581	563	0	1106	267	361	199	32	2	2	163	162	783
14	Manatira	574	2673	1318	1355	415	250	1928	664	492	39	61	12	380	172	2009
15	Ostapal	514	2252	1121	1131	144	586	1209	629	475	45	115	28	287	154	1623
16	Ostia	216	910	484	426	105	0	747	373	167	51	78	4	34	206	537
17	Patana	371	1626	786	840	346	309	1022	452	317	80	92	6	139	135	1174
18	Tangisahi	70	313	167	146	185	0	144	108	72	0	2	1	69	36	205
19	Tikarpada	307	1539	776	763	192	96	1164	434	303	175	50	11	67	131	1105
20	Udayapur	104	457	233	224	0	206	268	153	128	10	49	4	65	25	304
21	Anala.	360	1487	766	721	215	80	1112	489	402	116	58	5	223	87	998
22	Darjani	175	802	433	369	67	155	543	260	88	32	2	10	44	172	542
23	Kharakhari	197	991	511	480	17	595	506	424	231	78	77	36	40	193	567
24	Maruabili	393	2119	1008	1111	315	698	1411	1053	429	245	44	7	133	624	1066
25	Saranga	854	5343	2987	2356	918	292	3982	1305	1141	163	68	54	856	164	4038
26	Majhipal	60	391	191	200	0	390	68	74	66	5	4	0	57	8	317
	Total	**12635**	**61649**	**31798**	**29851**	**6872**	**24252**	**32946**	**22637**	**15471**	**4017**	**3435**	**1091**	**6928**	**7166**	**39012**

Source: Census 2011, Government of India

1. b (i) Occupational Pattern: Occupational pattern of the concerned study area are recorded to assess the skills of people. Occupational pattern also helps in identifying dominating economic activity in the area. In the study area the main and marginal workers are 25.1% and 11.6% respectively of the total population while the remaining 63.3% constitutes non workers.

The main workers composition is made up of cultivators (26.0%), Agricultural labourers (22.2%), HH Industry (7.1%), others (44.8).

1. b (ii) Existing Cropping Pattern:

Agriculture is characterized by mono-crop culture. The cropping intensity is quite low (about 51%). This indicates that the total land holding is not utilized for cultivation and waste/fallow land is there. With rising costs of cultivation, farm families are investing some part of the income from other sources e.g. service, wage labour, self-employment, small business, service etc. in agriculture so as to obtain at least rice and some vegetables, for family consumption. Even then, agricultural remained as backward as it was. There are 40% small farmers and 34% medium farmers present in the study area out of the total farmer community in the area.

1. b (iii) Extent of biotic pressure of villages on forest resource:

Mahagiri and Daitari PFs are close to the project site but as there are various mine leases adjacent to the project site in the above mentioned forest areas, thus these forests supports faunal species which have stabilized to prevailing conditions. Similarly in the core zone the fauna in the vicinity of the mine is restricted to few common small species. There are operating open-cast and underground mines close to the proposed project site, where blasting operations are frequent for which might have scared away the fauna from the ML area. But after the mine is closed, the plantations developed on the abandoned mine area will attract back at least some of the animals displaced/scared away by the project.

The extent of biotic pressure on forest resources is considerably low. Some of the villagers depend on forest for their firewood, timber for house construction, small timbers and bamboos for their consumption as well as at

times for trade purpose. They graze their cattle freely in the forest, sometimes they set fire to forest for finalization of collection of NTFP.

1. b (iv) NTFP collection, Method of collection & impact on wildlife:

Many people depend on forests for collection of Mahua flower and Kendu leaf, sal seed etc. for their consumption and trade. No specific schemes in this regard are in operation. NTFP like Kendu leaf, sal seed, Mahua flower, Myrobolams etc. are a source of income for the people. The State Forest Department, Orissa Forest Development Corporation, Tribal Development Co-operative Corporation etc. purchase the NTFP.

1. b (v) Cattle Population and grazing habit:

It is ascertained from the local staff there are about 5000 cattle population and about 3000 goat population and all these animals graze freely in the forest areas. The habit of stall feeding has not yet been popularized in the area.

1. C. Description of topography, natural drainage lines:

The mine lease is located at the foot of the Mahagiri hill range and slopes from SE to NW. The SE corner of the lease hold is marked by a steep hill rising up to 254 m AMSL. Subsequently the slope becomes gentler. The NW corner of the lease is at about 130 m AMSL. In the north-western part of the lease, there is a small mound rising to 154 m AMSL. In general, the lease area has more or less flat topography with varying elevations from 140 m to 160 m AMSL and slopes from N to S.

The area has sub-dendritic pattern of drainage. The principal drainage channel of Sukinda valley is Damsal Nallah, which flows from E to W along the length of the valley. Several seasonal and perennial channels flow down from Daitari hill range and the Mahagiri hill range to join Damsal Nallah. Damsal Nallah gradually swings towards SW and on emerging from the Sukinda valley turns south to join the Brahmani River. Damsal Nallah flows through the northern part of the lease. There are also a few small seasonal drainage channels in the lease which drain into Damsal Nallah.

➢ **Climate:** The study area lies in tropical region where climate is characterized by very hot summers and mild winters. Summer is typically from March to June when daily average maximum temperature ranges from

a maximum of 39°C during daytime to a minimum of 22°C at night. Winter is from November to February when daily average maximum temperature during day time goes up to 32°C and minimum temperature at night becomes as low as 15°C. The average annual rainfall as recorded at IMD observatory at Cuttack is 1475.3 mm. The South-west monsoon lasts from mid June to mid September and the area gets more than 75% of the annual rainfall during this period.

1. d. Details of linear infrastructure:

No such major linear infrastructures like railway, national highway passes through the project area. However Jakhapura-Barbil railway line of east coast railway, Daitari-Paradeep expressway and many other Panchayat roads passes through the project impact area.

A cluster of mines as mentioned below under Cuttack Forest division are located in the impact zone. These mining leases have fragmented the wildlife habitats located in different forest blocks and un-demarcated revenue forest as narrated in the foregoing paras causing obstructions for movement of mega wildlife. The pits of the ML have been safe guarded by respective lease holders; as a result there are no chances of fall of wild animals into mining pits. Sukurangi Chromite Mines of OMC bears a common boundary with South- Kaliapani Chromite mines of OMC. Out of 08 mines of OMC in Cuttack Division only two mines are functional at present. The functional mines are South-Kaliapani and Sukurangi mines of OMC.

1. e. Description of flora and fauna of the project area as well as impact area:

The forests in the project impact area as per Champion Seth, falls under Northern Tropical Dry Deciduous Forests. Vegetation in the Buffer project impact area is of varied type depending on the moisture level in soil, slope, topography and biotic interference. The predominant vegetation in forests in the area is Shorea robusta and the associate species are *Anogeissus lalifolia, Diospyros melanoxylon, Terminalia spp., Lannea sp, Dendrocalamus strictus,* etc. Other species commonly encountered are *Madhuca indica, Zyziphus spp,* etc.

List of plants growing in study area:

SN.	Vernacular Name	Botanical Name	Family	Remarks
1	Acacia	Acacia auriculiformis	Leguminosae	

SN.	Vernacular Name	Botanical Name	Family	Remarks
2	Achhu	Morinda tinctoria	Rubiaceae	
3	Amba	Mangifera indica	Anacardiaceae	Economic
4	Ambada	Spondias pinnata	Anacardiaceae	Economic
5	Amrud	Psidium guajava	Myrtaceae	
6	Ankula	Alangium lamarckii	Cornaceae	
7	Anla	Phyllanthus emblica	Phyllanthaceae	Medicinal
8	Asan	Terminalia tomentosa	Combretaceae	
9	Aswatha	Ficus religiosa	Moraceae	
10	Ata	Annona squamosa	Annonaceae	
11	Babul	Acacia nilotica	Leguminosae	
12	Bahada	Terminalia bellirica	Combretaceae	Medicinal
13	Bara	Ficus benghalensis	Moraceae	
14	Barabakulia / Dhoben	Dalbergia lanceolaria paniculata	Leguminosae	Economic
15	Barun	Crateva religiosa	Capparaceae	
16	Bela	Aegle marmelos	Rutaceae	Medicinal
17	Bhalia	Semecarpus anacardium	Anacardiaceae	Economic
18	Bhersunga	Murraya koenigii	Rutaceae	
19	Bheru	Chloroxylon swietenia	Meliaceae	
20	Borkuli	Ziziphus jujube	Rhamnaceae	Economic
21	Cashew	Anacardium occidentale	Anacardiaceae	Economic
22	Chakunda	Cassia siamea	Leguminosae	Ornamental
23	Champa	Michelia champaca	Magnoliaceae	Ornamental
24	Chara	Buchanania lanzan	Anacardiaceae	Economic
25	Chauli	Elaeodendron glaucum	Celastraceae	
26	Chhatian	Alstonia scholaris	Apocynaceae	Medicinal
27	Coconut	Cocos nucifera	Arecaceae	
28	Daba baunsa	Bambusa arundinacea	Poaceae	
29	Debadaru	Polyalthia longifolia	Annonaceae	
30	Dhala Sirisa / Tentra	Albizia procera	Leguminosae	Ornamental
31	Dhaman	Grewia tiliaefolia	Tiliaceae	
32	Dhaura	Anogeissus latifolia	Combretaceae	
33	Dhaurang	Holoptelea integrifolia	Ulmaceae	
34	Dimiri	Ficus racemosa	Moraceae	
35	Eucalyptus	Eucalyptus spp	Myrtaceae	
36	Gambhari	Gmelina arborea	Verbenaceae	Economic
37	Gandagohira	Macaranga peltata	Euphorbiaceae	
38	Gandhapalasha	Miliusa velutina	Annonaceae	
39	Gangasiuli	Nyctanthes arbor-tristis	Oleaceae	Medicinal
40	Ghurudu	Gardenia gummifera	Rubiaceae	
41	Giringa	Pterospermum canescens	Sterculiaceae	
42	Halda	Diospyros montana	Ebenaceae	
43	Harida	Terminalia chebula	Combretaceae	Medicinal
44	Jamu	Syzyglum cumini	Myrtaceae	Medicinal
45	Kadamba	Anthocephalus cadamba	Rubiaceae	Medicinal
46	Kala Sirisa	Albizia lebbock	Leguminosae	Ornamental
47	Kalachua	Diospyros sylvatica	Ebenaceae	Economic
48	Kamalagunid	Mallotus pallidus	Euphorbiaceae	
49	Kanchan	Bauhinia purpurea	Leguminosae	Ornamental
50	Kangada	Xylia xylocarpa	Leguminosae	
51	Kania / Tentuli	Tamarindus indica	Leguminosae	Economic
52	Kantaikoli	Ziziphus oenopolia	Rhamnaceae	
53	Kapasia	Kydia calycina	Malvaceae	
54	Karada	Cleistanthus collinus	Euphorbiaceae	
55	Karam / Mundi	Mitragyna parviflora	Rubiaceae	Medicinal
56	Karanja	Pongamia glabra	Leguminosae	Economic

SN.	Vernacular Name	Botanical Name	Family	Remarks
57	Kasi	Bridelia retusa	Euphorbiaceae	
58	Katha Champa	Plumeria rubra	Apocynaceae	Ornamental
59	Kendu	Diospyros melanoxylon	Ebenaceae	Economic
60	Khakada	Cascaria elliptica	Salicaceae	
61	Khira	Acacia catechu	Leguminosae	Economic
62	Kochila	Strychnos nux-vomica	Loganiaceae	Medicinal
63	Korai / Kurchi	Holarrhena antidysenterica	Apocynaceae	Medicinal
64	Krushnachuda	Delonix regia	Leguminosae	
65	Kumbhi	Careya arborea	Lecythidaceae	
66	Kurum	Adina cordifolia	Rubiaccae.	Medicinal
67	Kusum	Schleichera oleosa	Sapindaceae	
68	Lankajada	Ricinus communis	Euphorbiaceae	
69	Maha Neem	Ailanthus excels	Simaroubaceae	
70	Mahula	Madhuca Indica	Sapotaceae	Economic
71	Mai	Lannea coromandelica	Anacardiaceae	
72	Mankadakendu	Diospyros malabarica	Ebenaceae	Medicinal
73	Mol	Lannea grandis	Anacardiaceae	
74	Nima	Azadirachta indica	Meliaceae	Medicinal
75	Nimbu	Citrus medica	Rutaceae	Medicinal
76	Palasa	Butea monosperma	Leguminosae	Ornamental
77	Panasa	Artocarpus heterophyllus	Moraceae	Economic
78	Pani baunsa	Bambusa pallid	Poaceae	
79	Pani gambhari	Trewia nudiflora	Euphorbiaceae	
80	Patuli	Stereospirmum sauveolens	Bignoniaceae	
81	Phanphana	Oroxylum indicum	Bignoniaceae	
82	Phasi	Anogeissus acuminata	Combretaceae	Making Rath
83	Piasala	Pterocarpus marsupium	Leguminosae	Economic
84	Radhachuda	Peltophorum pterocarpum	Leguminosae	
85	Rai	Dillenia pentagyna	Dilleniaceae	
86	Rohini	Soymida febrifuga	Meliaceae	
87	Saguan	Tectona grandis	Verbenaceae	Economic
88	Sahada	Streblus asper	Moraceae	
89	Sajna	Moringa oleifera	Moringaceae	Medicinal
90	Sal	Shorea robusta	Dipterocarpaceae	Economic
91	Salai	Boswellia serrata	Burseraceae	
92	Salia baunsa	Dendrocalamus strictus	Poaceae	
93	Sidha	Lagerstroemia parviflora	Lythraceae	
94	Simili	Bombax ceiba	Malvaceae	
95	Sisoo	Dalbergia latifolia	Leguminosae	Economic
96	Sunari	Cassia fistula	Leguminosae	Ornamental
97	Tala	Borassus flabellifer	Arecaceae	Economic
98	Yellow Kaner	Thevetia peruviana	Apocynaceae	Medicinal
	Bamboo			
1	Daba bans/Kanta bans	Bambusa arundinacea	Poaceae	
2	Salia baunsa	Dendrocalamus strictus	Poaceae	
	Shrubs			
1	Akhukoli	Carissa carandas	Apocynaceae	
2	Amlri / Raipani	Ipomoea carnea	Convolvulaceae	
3	Ankul	Alanglum salvilfolium	Cornaceae	
4	Arakha	Calotropis gigantean	Apocynaceae	
5	Asadhua	Capparis zeylanica	Capparaceae	
6	Ata	Annona squamosa	Annonaceae	
7	Atundi	Combretum decandrum	Combretaceae	
8	Baigaba	Jatropha curcas	Euphorbiaceae	
9	Basanga	Adhatoda vasica	Acanthaceae	Medicinal

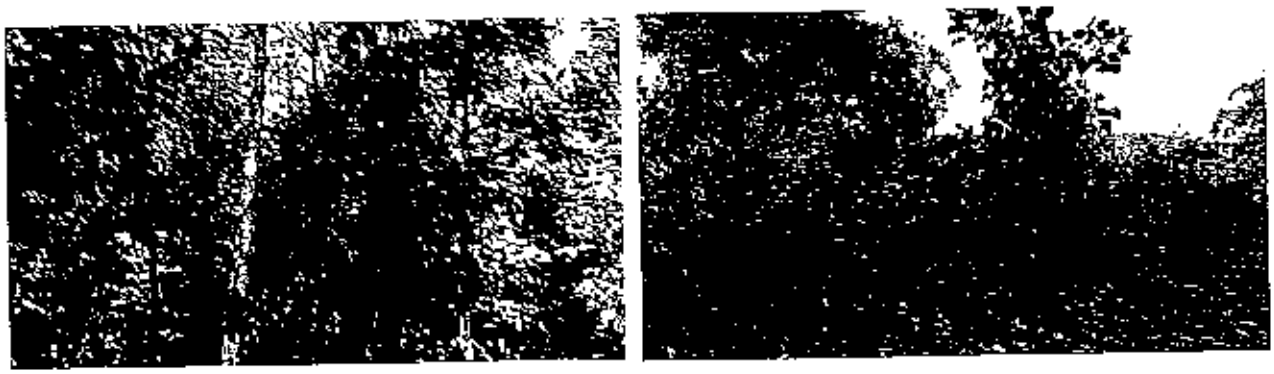
SN.	Vernacular Name	Botanical Name	Family	Remarks
10	Begunia / Valia	Vitex negundo	Lamiaceae	
11	Bhersunga	Murraya koenigii	Rutaceae	
12	Bhuin Anala	Phyllanthus niruri	Phyllanthaceae	Medicinal
13	Borkuli	Ziziphus jujube	Rhamnaceae	Economic
14	Chakunda	Senna tora syn. Cassia tora	Leguminosae	
15	Dhatuki	Woodfordia fruticosa	Lythraceae	
16	Dudura	Datura metal	Solanaceae	Medicinal
17	Gangashiuli	Nyctanthes arbor-tristis	Oleaceae	
18	Giliri	Indigofera pulchella	Leguminosae	
19	Kantaikoli	Ziziphus oenopolia	Rhamnaceae	
20	Katha Champa	Plumeria rubra	Apocynaceae	Ornamental
21	Khirkichi	Mimosa himalayana	Leguminosae	
22	Korai / Kurchi	Holarrhena antidysenterica	Apocynaceae	Medicinal
23	Lajakoli	Mimosa pudica	Leguminosae	
24	Lantana (Nagaairi)	Lantana camara	Verbenaceae	
25	Murgo	Agave Americana	Asparagaceae	
26	Murumuri	Helicteres isora	Malvaceae	
27	Nimbu	Citrus medica	Rutaceae	Medicinal
28	Papita	Carica papaya	Caricaceae	
29	Pokasungha	Eupatorium odoratum	Asteraceae	
30	Yellow Kaner	*Cascabela thevetia*	Apocynaceae	Medicinal
	Climbers			
1	Anantamul	Hemidesmus indicus	Apocynaceae	
2	Anantamula	Hemidesmus indicus	Apocynaceae	
3	Atundi	Combretum decandrum	Combretaceae	
4	Buduli	Butea superba	Leguminosae	
5	Gudamari	Gymnema sylvestre	Asclepiadaceae	
6	Guluchi	Tinospora cordifolia	Menispermaceae	
7	Kaincha	Abrus precatorius	Leguminosae	
8	Marda	Millettia racemosa	Leguminosae	
9	Satabari	Asparagus racemosus	Asparagaceae	
10	Siali	Bauhinia vahlii	Leguminosae	
11	Telgunia	Clerodendrum infortunatum	Lamiaceae	
	Herbs			
1	Basanga	Justicia adhatoda	Acanthaceae	
2	Basanga	Justicia adhatoda	Acanthaceae	
3	Bhuin Anala	Phyllanthus niruri	Phyllanthaceae	Medicinal
4	Bisalyakarni	Tridax procumbens	Asteraceae	
5	Chireita	Andrographis paniculata	Acanthaceae	
6	Lajvanti	Mimosa pudica	Leguminosae	
7	Shialkanta	Argemone Mexicana	Papaveraceae	
8	-	Desmodium triflorum	Leguminosae	
	Grasses			
1	Baguli	Eulaliopsis binata	Poaceae	
2	Bena	Vetiveria zizanioides	Poaceae	
3	Chhana	Imperata cylindrical	Poaceae	
4	Dhanwantary	Cymbopogon martini	Poaceae	
5	Duba grass	Cynodon dactylon	Poaceae	
6	Phulchanchani	Thysanolaena agrostis	Poaceae	
7	Sinkula	Heteropogon contortus	Poaceae	

Plant species found in the Core Zone

SN.	Vernacular Name	Botanical Name	Family	Remarks
	Trees			
1	Acacia	*Acacia auriculiformis*	Leguminosae	

SN.	Vernacular Name	Botanical Name	Family	Remarks
2	Achhu	*Morinda tinctoria*	Rubiaceae	
3	Amba	*Mangifera indica*	Anacardiaceae	Economic
4	Anla	*Phyllanthus emblica*	Phyllanthaceae	Medicinal
5	Asan	*Terminalia tomentosa*	Combretaceae	
6	Aswatha	*Ficus religiosa*	Moraceae	
7	Bahada	*Terminalia bellirica*	Combretaceae	Medicinal
8	Bara	*Ficus benghalensis*	Moraceae	
9	Barabakulia / Dhoben	*Dalbergia lanceolaria paniculata*	Leguminosae	Economic
10	Bela	*Aegle marmelos*	Rutaceae	Medicinal
11	Bhalia	*Semecarpus anacardium*	Anacardiaceae	Economic
12	Chakunda	*Cassia siamea*	Leguminosae	Ornamental
13	Champa	*Michelia champaca*	Magnoliaceae	Ornamental
14	Chara	*Buchanania lanzan*	Anacardiaceae	Economic
15	Chauli	*Elaeodendron glaucum*	Celastraceae	
16	Chhatian	*Alstonia scholaris*	Apocynaceae	Medicinal
17	Coconut	*Cocos nucifera*	Arecaceae	
18	Dhaman	*Grewia tiliaefolia*	Tiliaceae	
19	Dhaura	*Anogeissus latifolia*	Combretaceae	
20	Dimiri	*Ficus racemosa syn. Lanceolata*	Moraceae	
21	Eucalyptus	*Eucalyptus spp*	Myrtaceae	
22	Gambhari	*Gmelina arborea*	Verbenaceae	Economic
23	Gandhapalasha	*Miliusa velutina*	Annonaceae	
24	Giringa	*Pterospermum canescens*	Sterculiaceae	
25	Halda	*Diospyros montana*	Ebenaceae	
26	Harida	*Terminalia chebula*	Combretaceae	Medicinal
27	Jamu	*Syzygium cumini*	Myrtaceae	Medicinal
28	Kalachua	*Diospyros sylvatica*	Ebenaceae	Economic
29	Kangada	*Xylia xylocarpa*	Leguminosae	
30	Kania / Tentuli	*Tamarindus indica*	Fabaceae	Economic
31	Kantaikoli	*Ziziphus oenopolia*	Rhamnaceae	
32	Karada	*Cleistanthus collinus*	Euphorbiaceae	
33	Karam / Mundi	*Mitragyna parviflora*	Rubiaceae	Medicinal
34	Karanja	*Pongamia glabra*	Leguminosae	Economic
35	Kasi	*Bridelia retusa*	Euphorbiaceae	
36	Kendu	*Diospyros melanoxylon*	Ebenaceae	Economic
37	Kochila	*Strychnos nux-vomica*	Loganiaceae	Medicinal
38	Korai / Kurchi	*Holarrhena antidysenterica*	Apocynaceae	Medicinal
39	Krushnachuda	*Delonix regia*	Leguminosae	
40	Kumbhi	*Careya arborea*	Lecythidaceae	
41	Kurum	*Adina cordifolia*	Rubiaceae.	Medicinal
42	Kusum	*Schleichera oleosa*	Sapindaceae	
43	Maha Neem	*Allanthus excels*	Simaroubaceae	
44	Mahula	*Madhuca Indica*	Sapotaceae	Economic
45	Mai	*Lannea coromandelica*	Anacardiaceae	
46	Mankadakendu	*Diospyros malabarica*	Ebenaceae	Medicinal
47	Nima	*Azadirachta indica*	Meliaceae	Medicinal
48	Palasa	*Butea monosperma*	Leguminosae	Ornamental
49	Panasa	*Artocarpus heterophyllus*	Moraceae	Economic
50	Pani gambhari	*Trewia nudiflora*	Euphorbiaceae	
51	Patuli	*Stereospermum sauveolens*	Bignoniaceae	
52	Phanphana	*Oroxylum indicum*	Bignoniaceae	
53	Piasala	*Pterocarpus marsupium*	Leguminosae	Economic
54	Rai	*Dillenia pentagyna*	Dilleniaceae	
55	Saguan	*Tectona grandis*	Verbenaceae	Economic
56	Sahada	*Streblus asper*	Moraceae	

SN.	Vernacular Name	Botanical Name	Family	Remarks
57	Sal	*Shorea robusta*	Dipterocarpaceae	Economic
58	Sidha	*Lagerstroemia parviflora*	Lythraceae	
59	Simili	*Bombax ceiba*	Malvaceae	
60	Sisoo	*Dalbergia latifolia*	Leguminosae	Economic
61	Sunari	*Cassia fistula*	Leguminosae	Ornamental
62	Tentra	*Albizia procera*	Fabaceae	Ornamental
	Bamboo			
1	Salja-bans	*Dendrocalamus strictus*	Poaceae	
	Climbers			
1	Atundi	*Combretum decandrum*	Combretaceae	
	Shrubs			
1	Arakha	*Calotropis gigantean*	Apocynaceae	
2	Asadhua	*Capparis zeylanica*	Capparaceae	
3	Atundi	*Combretum decandrum*	Combretaceae	
4	Murumuri	*Helicteres isora*	Malvaceae	
5	Korai / Kurchi	*Holarrhena antidysenterica*	Apocynaceae	Medicinal
6	Baigaba	*Jatropha curcas*	Euphorbiaceae	
7	Gangashiuli	*Nyctanthes arbor-tristis*	Oleaceae	
8	Chakunda	*Senna tora syn. Cassia tora*	Leguminosae	
9	Begunia / Valia	*Vitex negundo*	Lamiaceae	
10	Dhatuki	*Woodfordia fruticosa*	Lythraceae	
11	Kantaikoli	*Ziziphus oenopolia*	Rhamnaceae	
	Herbs			
1	Chireita	*Andrographis paniculata*	Acanthaceae	
2	Shialkanta	*Argemone Mexicana*	Papaveraceae	
3	-	*Desmodium spp.*	Leguminosae	
4	Basanga	*Justicia adhatoda*	Acanthaceae	
5		*Mimosa pudica*	Leguminosae	
	Grasses			
1	Dhanwantary	*Cymbopogon martini*	Poaceae	
2	Duba grass	*Cynodon dactylon*	Poaceae	
3	Sinkula	*Heteropogon contortus*	Poaceae	
4	Chhana	*Imperata cylindrical*	Poaceae	
5	Phulchanchani	*Thysanolaena agrostis*	Poaceae	
	Epiphytes			
1	Malanga	*Loranthus sp*	Loranthaceae	



A View of Forest and Scrubland in the Core Zone

1. f. Description of forest and habitat conditions, wildlife scenario:

The list of fauna and avifauna in the **buffer zone/impact area** is given in the table below:

SN	Local Name	English Name	Scientific Name	Wild Life Protection Act Schedule
	Mammals			
1	Badodi	Shortnosed fruitbat	*Cynopterus sphinx*	V
2	-	Indian Field Mouse	*Mus booduga*	V
3	Musa	Common house Rat	*Rattus rattus*	V
4	Gundichimusa	Squirrel	*Funambulus pennantii*	IV
5	Jhinka	Indian Porcupine	*Hystrix indica*	IV
6	Thekua	Indian hare	*Lepus nigricollis ruficaudatus*	IV
7	Chital	Spotted Deer	*Axis axis*	III
8	Heta Bagha	Hyaena	*Hyaena hyaena*	III
9	Kutra	Barking Deer	*Muntiacus muntjak*	III
10	Barha	Wild Boar	*Sus scrofa*	III
11	-	Porcupine	*Hystrix indica*	III
12	-	Hyena	*Hyaena hyaena*	III
13	Bilua	Jackal / Bilua	*Canis aureus*	II
14	Balia kukur	Wild dog	*Cuon alpinus dukhunensis*	II
15	Banabiradi	Jungle Cat	*Felis chaus*	II
16	Hatia Neula	Common Mongoose	*Herpestes edwardsii*	II
17	Odha	Common otter	*Lutra lutra*	II
18	Mankada (Pati)	Rhesus Macaque	*Macaca mulatta*	II
19	Hanuman	Common Langur	*Presbytis entellus*	II
20	Saliapatani	Small Indian Civet	*Viverricula indica*	II
21	Kokisiali	Indian Fox	*Vulpes bengalensis*	II
22		Flying Squirrels	*Petaurista petaurista*	II
23	Hati	Indian elephant	*Elephas maximus*	I
24	Bhalu	Sloth Bear/Black bear	*Melursus ursinus*	I
25	Guranti	Mouse Deer	*Moschiola indica Synonym Tragulus meminna*	I
26	-	Ratel / Honey Badger	*Mellivora Capensis*	I
27	-	Pangolin	*Manis crassicaudata*	I
28	-	Wolf	*Canis lupus pallipes*	I
	Reptiles			
1	Rana	Banded Krait / Rana	*Bungarus fasciatus*	IV
2	Endua	Common garden lizard	*Calotes versicolor*	-
3		Chameleon	*Chamaeleo calyptratus*	II
4	Bahurupi	Indian chameleon	*Chamaeleon zeylanicus*	-
5	Laudonkia	Green vine snake	*Ahaetulla nasuta*	-
6	Jhitipiti	House lizard	*Hemidactylus flaviviridis*	-
7	Champainali	Mabuya	*Eutropis carinata*	-
8	Ahiraj	King Cobra	*Ophiophagus Hannah*	II
9	Gokhar	Common Cobra	*Naja naja*	II
10	Dhamana	Yellow Rat Snake / Dhamena	*Ptyas mucosa*	II
11	Chanda Boda	Russel's Viper / Chandraboda	*Vipera russelli*	II
12	Pani dhanda	Checkered Keelback / Dhanda	*Xenochrophis piscator*	II
13	Godhi	Bengal Monitor Lizard	*Varanus bengalensis*	I
14	Ajgara	Python	*Python molures*	I
	Tortoises			
1	Kainchha	Land tortoise	*Indotestudo elongata*	IV

List of Birds in the Buffer Zone / Study Area

SN.	Local Name	English Name	Scientific Name	Wild Life Protection Act Schedule
1	Kau (ati)	Common Crow	*Corvus splendens*	V
2	Bani	Common Mynah	*Acridotheres tristis*	IV
3	-	Common Iora	*Aegithina tiphia*	IV
4	-	Pond Heron	*(Ardeola grayii*	IV
5	Pecha	Spotted Owlet	*Athene brama*	IV
6	Nandibaga	Cattle Egret	*Bubulcus ibis*	IV
7	Kumbhatua	Crow Pheasant	*Centropus sinensis*	IV
8	Machharanka	Pied King fisher	*Ceryle rudis*	IV
9	Deulia para	Blue Rock Pegion	*Columba livia*	IV
10	-	Magpie Robin	*Copsychus saularis*	IV
11	Bhadabhadalia	Indian Roller	*Coracias benghalensis*	IV
12	Kau (Damara)	Jungle Crow	*Corvus macrorhynchos*	IV
13	Koili	Indian Cuckoo	*Cuculus canorus*	IV
14	-	Tree Pie	*Dendrocitta vagabunda*	IV
15	Kajalapati	Drongo	*Dicrurus adsimilis*	IV
16	Kajalapati	Black drongo	*Dicrurus macrocercus*	IV
17	Baga	Little Egret	*Egretta garzetta*	IV
18	Koili	Koel	*Eudynamys scolopacea*	IV
19	Teetri	Partridge	*Francolinus spp.*	IV
20	Banakukuda	Red Jungle Fowl	*Gallus gallus*	IV
21	Sankhachila	Kite brahminy	*Haliastur Indus*	IV
22	-	Shrikes	*Lanius spp*	IV
23	-	Pariah Kite / Chilla	*Milvus migrans*	IV
24	-	Wagtail	*Motacilla spp.*	IV
25	-	Purple Sunbird	*Nectarinia asiatica*	IV
26	Haladi Basanta	Black Headed Oriole	*Oriolus xanthornus*	IV
27	Tailor Bird	Tailor Bird	*Orthotomus sutorius*	IV
28	Ghar chatia	House Sparrow	*Passer domesticus*	-
29	Spotted Babbler	Spotted Babbler	*Pellorneum ruficeps*	IV
30	Panikua	Indian Cormorant	*Microcarbo niger*	IV
31	-	Wood pecker	*Picoides nanus*	IV
32	Baya	Indian Weaver bird	*Ploceus philippinus*	IV
33	Sua	Parrot	*Psittacula krameri*	IV
34	Champa	Odisha Red Vented Bul Bul	*Pycnonotus cafer*	IV
35	Sarguna	King vulture	*Sarcoramphus papa*	IV
36	Kapta	Spotted Dove	*Streptopelia chinensis*	IV
37	-	Pied Mynah	*Sturnus contra*	IV
38	Kundachadei	Jungle Babbler	*Turdoides striatus*	IV
39	-	Cuckoo	*Cuculus canorus*	IV
40	Mayura	Peacock	*Pavo cristatus*	I

List of Faunal Species in Core Zone:

SN	Local Name	English Name	Scientific Name	Wild Life Protection Act Schedule
	Mammals			
1	Badodi	Shortnosed fruitbat	*Cynopterus sphinx*	V
2	-	Indian Field Mouse	*Mus booduga*	V
3	Musa	Common house Rat	*Rattus rattus*	V
4	Gundichimusa	Squirrel	*Funambulus pennantii*	IV
5	Jhinka	Indian Porcupine	*Hystrix indica*	IV
6	Thekua	Indian hare	*Lepus nigricollis ruficaudatus*	IV

SN	Local Name	English Name	Scientific Name	Wild Life Protection Act Schedule
7	Heta Bagha	Hyaena	*Hyaena hyaena*	III
8	Barha	Wild Boar	*Sus scrofa*	III
9		Porcupine	*Hystrix indica*	III
10		Hyena	*Hyaena hyaena*	III
11	Bilua	Jackal / Bilua	*Canis aureus*	II
12	Balia kukur	Wild dog	*Cuon alpinus dukhunensis*	II
13	Banabiradi	Jungle Cat	*Felis chaus*	II
14	Hatia Neula	Common Mongoose	*Herpestes edwardsii*	II
15	Mankada (Pati)	Rhesus Macaque	*Macaca mulatta*	II
16	Hanuman	Common Langur	*Presbytis entellus*	II
17	Kokisiali	Indian Fox	*Vulpes bengalensis*	II
18	-	Ratel / Honey Badger	*Mellivora Carpensis*	I
	Reptiles			
1	Rana	Banded Krait / Rana	*Bungarus fasciatus*	IV
2	Endua	Common garden lizard	*Calotes versicolor*	-
3	Bahurupi	Indian chameleon	*Chamaeleon zeylanicus*	-
4	Laudonkia	Green vine snake	*Ahaetulla nasuta*	-
5	Jhitipiti	House lizard	*Hemidactylus flaviviridis*	-
6	Champainali	Mabuya	*Eutropis carinata syn. Mabuya carinata*	-
7	Gokhar	Common Cobra	*Naja naja*	II
8	Dhamana	Yellow Rat Snake / Dhamena	*Ptyas mucosa*	II
9	Chanda Boda	Russel's Viper / Chandraboda	*Vipera russelli*	II
10	Pani dhanda	Checkered Keelback / Dhanda	*Xenochrophis piscator*	II
	Tortoises			
1	Kainchha	Land tortoise	*Indotestudo elongata*	IV

List of Birds in the Core Zone

SN.	Local Name	English Name	Scientific Name	Wild Life Protection Act Schedule
1	Kau (ati)	Common Crow	*Corvus splendens*	V
2	Bani	Common Mynah	*Acridotheres tristis*	IV
3	-	Common Iora	*Aegithina tiphia*	IV
4	Pecha	Spotted Owlet	*Athene brama*	IV
5	Nandibaga	Cattle Egret	*Bubulcus ibis*	IV
6	Kumbhatua	Crow Pheasant	*Centropus sinensis*	IV
7	Machharanka	Pied King fisher	*Ceryle rudis*	IV
8	Deulia para	Blue Rock Pegion	*Columba livia*	IV
9	Kau (Damara)	Jungle Crow	*Corvus macrorhynchos*	IV
10	Koili	Indian Cuckoo	*Cuculus canorus*	IV
11	Kajalapati	Drongo	*Dicrurus adsimilis*	IV
12	Baga	Little Egret	*Egretta garzetta*	IV
13	Koili	Koel	*Eudynamys scolopacea*	IV
14	Teetri	Partridge	*Francolinus spp.*	IV
15	Banakukuda	Red Jungle Fowl	*Gallus gallus*	IV
16	-	Pariah Kite / Chilla	*Milvus migrans*	IV
17	-	Wagtail	*Motacilla spp.*	IV
18	Haladi Basanta	Black Headed Oriole	*Oriolus xanthornus*	IV
19	Spotted Babbler	Spotted Babbler	*Pellorneum ruficeps*	IV
20	Panikua	Indian Cormorant	*Microcarbo niger*	IV

SN.	Local Name	English Name	Scientific Name	Wild Life Protection Act Schedule
21	-	Wood pecker	*Picoides nanus*	IV
22	Baya	Indian Weaver bird	*Ploceus philippinus*	IV
23	Sua	Parrot	*Psittacula krameri*	IV
24	Kapta	Spotted Dove	*Streptopelia chinensis*	IV
25	-	Pied Mynah	*Sturnus contra*	IV
26	Kundachadei	Jungle Babbler	*Turdoides striatus*	IV

1. g. Movement of mega wildlife in the impact area: The project area is adjacent to the Mahagiri PF and Daitari PF. There is no such mega wildlife in the impact area except elephant. The forests and plenty of water in the streams and river provided an ideal habitat for the elephants in the past. Although degraded, the habitats still provide food, water, and shelter, for which elephant still roam freely in reduced numbers in the locality. Cultivation of rice and other food crops in different villages, provide added attraction to elephants as a source of nutritious food.

With fragmentation, degradation and shrinkage of habitats, the population structure of elephant herds is gradually breaking up. Adult solitary bulls roam in isolation over certain areas as also small herds of 3-5 elephants. Such phenomenon indicates drastic disruption in family bonds.

1. h. Man-animal conflict and depredation caused by the wild animals:

1. h (i) Human-Elephant conflict: Elephant menace is creating havoc in different villages over the years. Due to degradation of habitats and depletion of forest cover, they are resorting to crop raiding, an easiest way for their survival. In course of time the elephant have become accustomed to human presence and have lost fear of human beings. During crop season, hundreds of villagers guard their crop and drive the elephants by using flames, crackers and by beating drums. After the rice crop is harvested, the elephants transform themselves to house raiders from crop-raiders. At this period, damage to house property and human casualties increases, resulting in serious conflicts.

1. h (ii) Elephant depredation:

Details of Elephant depredation, crop/house damage, human injury/kill and elephant casualties of last three years in Cuttack Forest Division are furnished in the foregoing Para. From the available report it is seen that extent of crop/house damage by elephants & human injury is more on less

decreasing year after year due to anti-depredation measures taken by Forest Staff. Of course other wild animals such as wild boar and sloth bear cause depredation causing injury and casualty to human beings. Detail report in this context is being furnished in the foregoing para. This gives an indication of the present condition of wild life habitats in Cuttack Division.

1. h (iii) Electrocution of elephants:

Death due to electrocution is emerging as a new threat to elephants. Inadvertently elephants come in contact with poorly maintained and sagging high tension conductors, causing instant death. About one third of the elephant deaths in Cuttack Division have taken place due to electrocution during the last decade. At times people set live electric wire to protect crop from elephant damage near the crop fields, causing death of elephants.

Wild Animal Depredation

Year	Human Kill	Human Injury	Crop Damage in Ac.	House Damage	Cattle kill by
2017-18	1	1	153.47	4	Nil
2018-19	1	1	51.56	-	Nil
2019-20	4	2	147.53	5	Nil

Death of Elephant

Year	Death of Elephant	Date of detection	Sex	Location of death (Village wise)	Cause of death
2017-18	0		0	0	0
2018-19	1	02.09.2018	Male	Inside Campus of Green Point Farm House in village Badapokhari, Tangi, Cuttack	Due to electric shock
	1	16.11.2018		In Paddy field of Haladibasant village - backside house of Subash Chandra Chhatri, Tangi, Cuttack	Severe injury in mouth
	1	11.10.2018	Newly born elephant Calf (Male)	In Paddy field of Chhatisapata of Choudwar Section, Cuttack	Born died
	1	23.01.2019	Female	Inside Koliatha village under Mahanga CD Block of Cuttack.	By disease
2019-20	1	11.05.2019	Elephant Calf (Male)	Inside Ambilijhari PRF near village Machhapangi of Tangi-Choudwar CD Block of Cuttack District	Due to Stampede of other elephants herd

Death of wild animals

Sl. No.	Name of Animal	2017-18	2018-19	2019-20	Total
1	Barking Deer	3	1	0	4
2	Spotted Deer	1	7	0	8
3	Wild Boar	2	1	1	4
4	Scloth Bear	0	1	0	1
5	Wild Pig	0	1	0	1

1. i. Survey of working plan prescriptions: The working plan prescriptions for management of forests and wildlife of the Division including the study area is in vogue. The analysis of the prescriptions indicates that there has been considerable degradation of the natural forest, which has impacted the bio-diversity in the division. The main reasons for such degradation are anthropogenic pressure and negligible investments in the forests for silvicultural operations during the outgoing plan period. The thrust of the management strategy has been to conserve and restore the forest cover for maintaining ecological balance with active participation of the people in regards to regeneration, protection and development of the forests.

1. j Indicative plan showing location of other projects utilizing forest lands or otherwise in the zone of impact:

Sukurangi Chromite Mines of OMC bears a common boundary with South-Kaliapani Chromite Mines of OMC. There are 19 Mining leases in Cuttack Forest Division, out which 4 are in operation. The details of Mining Leases in Cuttack Forest Division are given as under:

Sl. No	Name of the User Agency	Name of the Project	Total area involved in the project (in Ha.)	Ore	Location
1	Sukarna Quartzite Mines of Smt. S.Sisoo	Sukarna Quartzite Mines of Smt. S.Sisoo	89.02	Quarzite	Sukinda
2	M/s OMC Ltd.	RML area Daltary Iron Ore Mines of OMC Ltd.	1018.3085	Iron	Tomka
3	M/s IDC Ltd	Tailangi –'A' Chromite Mines of IDC Ltd.	65.683	Chromite	Tomka
4	M/s OMC Ltd.	South Kaliapani Chromite Mines	552.457	Chromite	Sukinda
5	M/s Jindal Stainless Steel Ltd.	Kaliapani Chromite Mines of Jindal Strips Ltd.	89.00	Chromite	Sukinda
6	M/s TATA	Forest Land for dumping of over burden by M/s TISCO.	100.00	Chromite	Sukinda
7	M/s ICCL	Mohagiri Chromite Mines of ICCL Ltd. (Now Merged IMFA)	73.777	Chromite	Sukinda

8	M/s FACOR	Ostapal Chromite Mines	72.00	Chromite	Sukinda
9	Gurujang Chromite Mines of Late M.Aikath	Gurujang Chromite Mines of Late M.Aikath	14.836	Chromite	Sukinda
10	M/s B.C Mohanty & Sons (P) Ltd	Kamarada Chromite Mines of M/s B.C Mohanty & Sons (P) Ltd.	107.24	Chromite	Tomka
11	M/s Balasore Alloys Ltd	Chromite mining by M/s Balasore alloys Ltd. in Mohagiri DPF	35.285	Chromite	Sukinda
12	Sri Padmanav Sahoo	Salijanga Quartz & Quartzite Mines	3.197	Quarzite	Sukinda
13	M/s IMFA Ltd.	Chingudipal Chromite Mines	26.62	Chromite	Sukinda
14	M/s OMC Ltd	Kaliapani Chromite Mines	971.245	Chromite	Sukinda
15	M/s Mishrilal Mines (P) Ltd.	Saruabil chromite Mines	224.63	Chromite	Sukinda
16	M/s OMC Ltd.	Sukarangi Chromite Mines	382.70	Chromite	Sukinda
17	M/s TATA Steel Ltd.	Sukinda Chromite Mines	406	Chromite	Sukinda
18	M/S IMFA Ltd.	Sukinda Mines (Chromite)	116	Chromite	Sukinda
19	M/S IMFA	Mohagiri Mines (Chromite)	73.777	Chromite	Sukinda

Many Site Specific wildlife conservation plan has been approved in Cuttack Forest Division since 2015-16. The plans approved from 2015-16 are as follows:

Sl. No.	Year	Name of the project	Approved in lakh Rs.	
			For project area	For project impact area
1	2015-16	Panikoili Remuli section of NH-2015 of NHAI	0	9.87
2	2015-16	Sukinda Chromite mines of M/s Tata Steel Ltd.	87.50	554.8624
3	2015-16	Sukinda Chromite Mines of M/s IMFA	63.77	172.34
4	2015-16	Angul-Sukinda-Duburi New Rail Line	30.00	295.4592
5	2016-17	Rail line Jakhapura-Tata Steel, Kalinganagar	135.41	400.95
6	2016-17	Kaliapani Chromite Mines of M/s Jindal	439.0992	584.1312
7		Up gradation of NH-42 (Manguli -Angul Section) of M/s NHAI.		288.397
8	2018-19	Up gradation of NH-200 of M/s NHAI	832.54	1760.004
9	2018-19	Rail line of M/s Emami Cement limited through IDCO	46.04	129.722

1. k Summary of mitigative measures approved in the Conservation Plans of operating Projects in the project impact area to be executed by DFO, Keonjhar Division.

a) Habitat protection by engagement of forest protection squad.

b) Sowing of seed of elephant fodder species.

c) Construction of solar street light in the village area as a preventive measure against elephant depredations.

d) Soil and Moisture conservation measures-check dams, gully plugging etc.

e) Creation of Water body/Water hole/Water harvesting structure.

f) Cattle immunization.

g) Prevention of accident-signage etc.

h) Monitoring of movement of wild animals with night vision drone camera.

1. I Detailed Study report of project and project impact area:

Originally the scheme was prepared by Sri S.K. Pattnaik, IFS (Retd.) during 2009-2010. While considering the proposal for grant of Environmental Clearance for enhancement of chrome ore production from 0.13 MTPA to 0.3 MTPA in Sukurangi Chromite Mines, the Expert Appraisal Committee (EAC) observed that OMC should revise the Site Specific Wildlife Conservation Plan including the entire Schedule-I Species. In this context Addl. Principal Chief Conservator of Forests (WL) O/o the PCCF (WL) and CWLW, Odisha directed DFO, Cuttack Division vide letter no. 4953/1WL-FC-Mine- SSP-74/2018 dt. 18.09.2020 to modify the conservation plan including the entire Schedule-I species. Hence, the Site Specific Wildlife Conservation Plan has been revised with inclusion of the entire Schedule-I species at current wage rate of Rs. 303.40/- per man day as per new guidelines.

1. J. Special Habitats:

There is no national park, wildlife sanctuary, Biosphere reserve, Tiger/elephant corridor in the buffer zone. The nearest Sanctuary is the Kapilas Sanctuary. The Schedule-I species like *Mellivora Carpensis* (Ratel); *Panthera Pardus* (leopard), *Melurs usursinus* (Sloth Bear); *Elephas maximus* (Indian elephant); *Moschiola indica* (Mouse Deer); *Manis crassicaudata* (Pangolin); *Canis lupus pallipes* (Wolf); *Varanus bengalensis* (Bengal Monitor Lizard); *Python molures* (Python) and *Pavo cristatus* (Peacock) has been noticed in the buffer zone. So it is felt necessary to elaborate the habitat of these ten species.

1.J.i *Mellivora Carpensis* (Ratel):



The honey badger (*Mellivora capensis*), also known as the Ratel is primarily a carnivorous species. The honey badger has a fairly long body, but is distinctly thick-set and

broad across the back. Its skin is remarkably loose, and allows it to turn and twist freely within it. It accesses a large part of its food by digging it out of burrows. It often raids beehives in search of both bee larvae and honey. It also feeds on insects, frogs, tortoises, turtles, lizards, rodents, snakes, birds and eggs. It also eats berries, roots and bulbs.

1.3.ii *Panthera Pardus* (leopard):



The leopard depends mainly on its acute senses of hearing and vision for hunting. It primarily hunts at night in most areas. The leopard is a carnivore that prefers medium-sized prey with a body mass ranging from 10–40 kg. Leopards usually hunt on the ground. The leopard stalks its prey and tries to approach as close as possible, typically within 5 m (16 ft) to the target, and finally pounces on it and kills it by suffocation. It kills small prey with a bite on the back of the neck, but holds larger animals by the throat and strangles them. It is able to take large prey due to its massive skull and powerful jaw muscles, and is therefore strong enough to drag carcasses heavier than itself up into trees.

1.3.iii *Melurs ursinus* (Sloth Bear):

Shaggy, dusty, and unkempt, the reclusive sloth bear makes its home in the forests of South Asia. Emitting noisy grunts and snorts, it wanders alone, usually at night, in search of insects and fresh fruit.



Sloth bears feed predominantly on termites and ants and employ a well-evolved method to dig them out. Their long, curved claws are used for penetrating nest mounds, which can be rock-hard. Once they have opened a hole, they blow away excess dirt then noisily suck out the insects through a gap in their front teeth. To do so, they close their nostrils and use their lips like a vacuum nozzle.

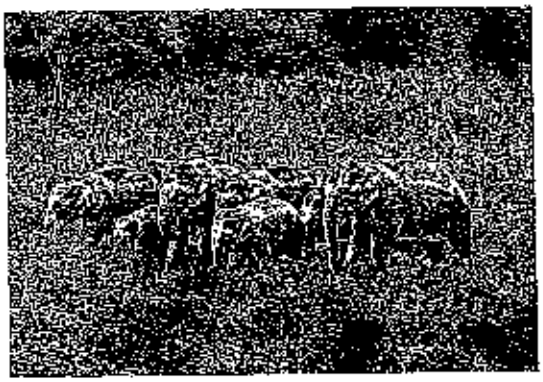
Beyond insects, sloth bears feast on a variety of fruit and flowers, including mango, fig, and ebony. They are also known to scale the occasional tree to

knock down a bee honeycomb, which they will then enjoy on the ground below. It is this habit that's given rise to their nickname, honey bears.

Sloth bears are solitary creatures and generally nocturnal. They grow up to 6 feet (1.8 meters) in length, and males can weigh up to 310 pounds (140 kilograms), while females weigh up to 210 pounds (95 kilograms). When threatened they respond by standing on their hind legs and displaying their formidable fore-claws.

Sloth bears are considered vulnerable animals. They are threatened by habitat loss and are sometimes captured for use in performances or hunted because of their aggressive behaviour and destruction of crop.

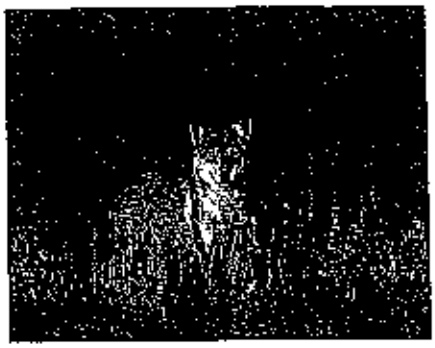
1.3.iv *Elephas maximus* (Indian elephant):



Elephants are classified as mega herbivores and consume up to 150 kg (330 lb) of plant matter per day.They are generalist feeders, and both grazers and browsers. Elephants were recorded to feed on 112 different plant species, most commonly of the order Malvales, and the legume, palm, sedge and true grass families. They graze on the tall grasses, but the portion consumed varies with season. When the new flush appears in April, they remove the tender blades in small clumps. Later, when grasses are higher than 0.5 m (1.6 ft), they uproot entire clumps, dust them skilfully and consume the fresh leave tops, but discard the roots. When grasses are mature in autumn, they clean and consume the succulent basal portions with the roots, and discard the fibrous blades. From the bamboos, they eat seedlings, culms and lateral shoots. During the dry season from January to April, they mainly browse on both leaves and twigs preferring the fresh foliage, and consume thorn bearing shoots of acacia species without any obvious discomfort.

1.3.v *Moschiola indica* (Mouse Deer):

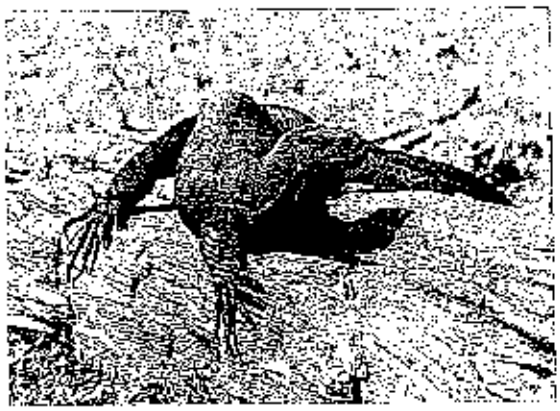
The greater mouse-deer is solitary and nocturnal. It uses small trails through thick brush in the forest. When the male is ready to mate, he rubs a large gland on his lower jaw against the female to determine whether she is read to mate. If she is not ready, she responds by walking away. The male is very territorial, marking his territory with feces, urine and secretions from the inter



The Indian wolf habits are similar to those of other grey wolf subspecies, though it generally lives in smaller packs rarely exceeding 6-8 individuals, and is relatively less vocal, having rarely been known to howl. Indian wolf vocalization includes howls, howl-barks, whimper, social squeals, and whines with howls an average fundamental frequency of 422 Hz and whines 906 Hz. It tends to breed from mid-October to late December, and whelp in holes or ravines. It typically preys on antelopes, rodents, and hares. It usually hunts in pairs when targeting antelopes, with one wolf acting as a decoy while the other attacks from behind.

1.J.viii *Varanus bengalensis* (Bengal Monitor Lizard):

The Bengal monitor (Varanus bengalensis) or common Indian monitor is a monitor lizard found widely distributed over the Indian Subcontinent, parts of Southeast Asia and West Asia. This large lizard is mainly terrestrial, and grows to about 175 cm from the tip of the snout to the end of the tail. Young monitors may be more arboreal, but adults mainly hunt on the ground, preying mainly on arthropods, but also taking small terrestrial vertebrates, ground birds, eggs and fish. Although large monitors have few predators apart from humans who hunt them for meat, younger individuals are hunted by many predators.



Bengal monitors are usually solitary and usually found on the ground, although the young are often seen on trees. V. b. nebulosus has a greater propensity for tree climbing. Bengal monitors shelter in burrows they dig or crevices in rocks and buildings, whilst clouded monitors prefer tree hollows. Both races will make use of abandoned termite mounds. Bengal monitors, like other varanids, show true sleep at night and are diurnal, becoming active around 6 AM and bask in the morning sun. During winter, in the colder parts of their distribution range, they may take shelter and go through a period of reduced metabolic activity. They are not territorial, and may change their range seasonally in response to food availability. They are usually shy and avoid humans. They have keen eyesight and can detect human movement nearly 250 m away. When caught, a few individuals may bite, but rarely do so.

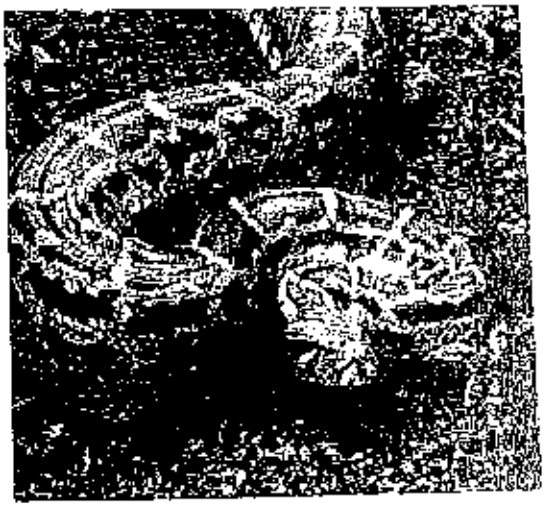
Captives have been known to live for nearly 22 years. Predators of adults include pythons, mammalian predators and birds. A number of ectoparasites and endoparasites are recorded.

Females may be able to retain sperm, and females held in confinement have been able to lay fertile eggs. Varanus niloticushas been demonstrated to be capable of parthenogenesis. The main breeding season is June to September. Males, however, begin to show combat behavior in April. Females dig a nest hole in level ground or a vertical bank and lay the eggs inside, filling it up and using their snouts to compact the soil. The females often dig false nests nearby and shovel soil around the area. They sometimes make use of a termite mound to nest. A single clutch of about 20 eggs are laid out of which 40-80% generally hatches in 168 to nearly as long as 254 days.

They are capable of rapid movement on the ground. Small individuals may climb trees to escape, but larger ones prefer to escape on the ground. They can climb well. On the ground, they sometimes stand on the hind legs to get a better view or when males fight other males. They can also swim well and can stay submerged for at least 17 minutes.

Large adults may ascend vertical tree trunks, where they sometimes stalk and capture roosting bats. Their normal prey consists of beetles, grubs, orthopterans, scorpions, snails, ants and other invertebrates. Vertebrate prey is comparatively rare, and includes frogs, fish, lizards, snakes and rodents. They sometimes feed on dead animals. In areas where livestock are common, they often visit dung, where they forage for beetles and other insects.

1.3.ix *Python molures* (Python):



The Indian python is a highly arboreal snake commonly found in the jungles of India, Sri Lanka, and East Indies. It can grow to a length of about 20 feet (6 m).

Python's jungle habitat is disappearing as trees are cut down for lumber, firewood and to make room for spreading human settlement and agriculture. This loss of habitat is aggravating the situation and is threatening the species.

1.1.x *Pavo cristatus* (Peacock):

Of the length of the Peafowl, 60% of his total body is feathers. When not displaying his tail feathers, the Peacock will carry his long feathers behind him like a long train. The tail display is not just a courting posture. Peahens often display too, especially younger birds. Even small chicks attempt to display and will form a tiny fan with their little tail feathers. The Peacock is one of the largest flying birds in the world. The male has been reported to have at least 11 calls. His loud call can carry great distances. Peafowl are ground feeders and forage in the early morning and at sunset. They eat insects, grains, small reptiles and mammals, berries and some cultivated crops. Peafowl nod their heads as they walk. During the heat of the day they r The Peafowl breeds during the rainy season in his native India and is polygamous. Males have harems of up to 5 females. The males establish territories which visiting females wander through. She chooses her mate on the basis of the size, color and the quality of his tail feathers. The male Peacock lures a female with his haunting mating call. He erects tail feathers in a dazzling display of color. He will lower his wings with a jerking motion until they almost touch the ground and shiver repeatedly so that his feathers rustle. When the hen is in front of him, he will turn his back on her and make pecking motions on the ground as if to show her food. She will circle around him; when she is almost around him, he will again turn his back. This behavior is repeated several times until the mood is right and mating takes place. The nest is made of sticks, leaves, and grass and hidden in the undergrowth. She lays 3-5 eggs. The male has no involvement in the incubation which last 28-30 days. After hatching, the chicks are able to follow the mother to feeding areas where they peck at the ground in imitation of their mother. Mutation occurs in captivity and includes the pied and the white peacock.



CHAPTER-2

PROJECT IMPACT

CHAPTER-2

PROJECT IMPACT

2. a Study Report an Impact of the Project on Environment in General

2. a (i) Impact on Soil: The mining activities, laying out of extraction path and other activities in the hilly terrain will subject to soil erosion. This will denude the hill slopes which supports vegetation for the sustenance of wild animals. As the terrain of the lease area is partly hilly and undulating, soil erosion and siltation inside the adjoining Nalas shall take place. Layers of dust will get accumulated over the vegetation due to the mining activities and transport of minerals. This will reduce photosynthetic activities and hence will affect growth of vegetation.

2. a (ii) Impact on Vegetation: Forest growth from an area of 267.10 ha will be cleared to accommodate mining pits, OB dumps, Haul roads, stock yards etc., there by a portion of the habitat will be lost.

2. a (iii) Impact on water: The principal drainage channel of Sukinda valley is Damsal Nallah, which flows from east to west along the length of the valley. Several seasonal and perennial channels flow down from Daitari hill range and the Mahagiri hill range to join Damsal Nala. Damsal Nala gradually bends towards the south-west and on emerging from the Sukinda valley turns south to join the Brahmani River. Damsal Nala flows through the northern part of the lease.

There will be soil erosion from the mining area especially from the quarries OB dumps, Road cutting, till the soil is stabilized the rough engineering and vegetative methods. This sediment load will go into water course. Turbid water curtails sunlight as a result the algal/submerged plant growth is affected due to reduced photosynthesis. Fish and other aquatic fauna dependent on such plant and phytoplankton will ultimately be affected. Fishes will also be affected by chocking of their gills by silt. Spillage of Diesel & Engine Oil from vehicles machineries will ultimately find way to aquatic ecosystems and affect invertebrate fishes, frogs etc.

2. a (iv) Impact on Air: Due to mining and its allied activities like drilling, blasting, handling of over burden and ore, operation of dumpers, trucks etc.

fugitive dust, noise, vibration, gaseous exhaust fumes will be generated which will affect the air quality and the environment suspended particulate matter will get settle down on the leaves of surrounding vegetation, affecting its growth.

2. b Pollutants-Quantum and Impact:

2. b (i) Soil: The principal solid waste produced in the open cast mine is overburden. Total waste generation till conceptual period shall be 45.825 Mm3 of waste. At conceptual stage an area over 141.09 ha will be excavated for mining which will be reclaimed by plantation. An area over 53.31 ha will be kept as safety zone. Around 67.98 ha of land to be utilized for waste dumping purpose and shall be stabilized by plantation.

2. b (ii) Air: The main pollutants affecting air are fugitive dust, noise and vibration, Chrome fines, gaseous exhaust fumes etc. The effect of these pollutants is described below.

➢ **Dust pollution:** Fugitive dust will be generated due to drilling, blasting, handling of overburden and ore and due to operation of dumpers/trucks on haul road. The ore from the mine will be stacked and dispatched by trucks.

➢ **Pollution due to noise and vibrations:** Blasting, excavation, loading, unloading, haulage and movement of people contribute to noise and vibration which not only affect the tranquillity of the area but also affect the health and reproduction process of wild animals. In order to maintain the noise level within permissible limits (work zone), noise generating machinery at surface mine shall be properly maintained. Static diesel machines shall be placed on vibration isolators. Green belt will be developed at selected locations in the lease to act as noise barrier.

➢ **Gaseous Pollutant in the exhaust:**

Fumes will be generated from the machineries and vehicles which can be controlled by proper maintenance. It will not have much impact on wildlife.

2.b (iii) Water: The water running off the OB dumps, ore stacks, roads and unused land surface carry red silt which may contaminate the streams down below affecting use of stream water by aquatic and terrestrial fauna.

Chromium exists in the environment in several diverse forms such as trivalent [Cr (III)] and hexavalent [Cr (VI)], of which hexavalent chromium

[Cr (VI)] is a carcinogen and a potential soil, surface water and ground water contaminant. The reduced trivalent form (Cr^{3+}) is much less toxic, insoluble and a vital nutrient for humans. Presently, the surface drainage water from the mine lease area including ore plots, sub grade storage area and the overburden dumps is drained through garland drain is being routed to the ETP located near Quarry-F of adjoining South-Kaliapani mine. During expansion phase, an Effluent Treatment Plant (ETP) will be installed within Sukurangi ML using Ferrous Sulphate or Sodium bi-sulphite to treat the hexavalent chromium. After treatment, the water from mine pits and surface drainage water getting collected in catch pit to be discharged into Damsal Nallah after meeting the statutory norms.

2. b (iv) Vegetation: Due to implementation of the project, forest growth from an area of 245.849 ha will be cleared for mining and other allied activities.

2. b (v) Animals: Mining activities like blasting, excavation, loading, unloading, haulage and movement of people and vehicles will contribute to noise and vibration, shrinkage of movement area and there will be scarcity of food and drinking water which will ultimately affect the health and reproduction process of wild animals. The toxic elements from gaseous fumes, SPM, oil spills etc. may find way to browse materials. Animals eating such contaminated browse may suffer from ailments including diarrhoea and impaired immune system. The mitigative measures against the above pollutant are proposed in Chapter-IV of this plan.

2. c Anticipated Degradation of Forest Resource

Forest resources get degraded when the forest are cleared entirely for mining and allied activities.

2. c (i) Qualitative changes in Wildlife habitat pattern: Mining and its ancillary activities not, only adversely impact wildlife in the lease area, but also the Wild life and their habitat in the surrounding area, i.e. project impact area. This also brings social, demographic and economic changes in the surrounding villages. Some of the threats to flora and fauna are described below.

2. c (ii) Loss of habitat quality: The habitat not merely means the extent of cover, food and water, but a safe abode where wild life mate, breed, take care of off spring and move freely without fear. The anthropogenic pressure likely to be generated due to mining and ancillary

activities will disturb the habitat, its tranquillity and serenity and may threaten the health of the fauna. With increased human presence, the demand for forest produce particularly fuel wood, small timber and brushwood will increase, affecting the density of vegetation. Chances of accidental forest fires will increase, which will affect the flora and water holding capacity of the soil. The water in the nalahs and water holes is likely to be polluted with fine ore sediments. The foliage of trees, shrubs etc. is likely to be covered with a thick layer of dust, making it unsuitable for browsing by wild animals. As such the habitat will deteriorate considerably, resulting in thinning out of wild life population and affecting their behavioural pattern.

2. d Perceived threats due to Project Implementation

2. d (i) Threat of Forest flora: Due to implementation of project thus there will be reduction of forest area, its density and the habitat quality will be degraded. Ancillary activities such as setting up hotels, colonies restaurants, tea stalls and different other businesses will necessitate dependence on the existing forest for meeting their fuel wood small timber and NTFP needs, posing a threat to the habitat.

➢ **Forest fires:** Since large number of work force will be engaged for mining and ancillary activities, slight negligence from an individual can cause fire, which may spread to neighbouring forest area. Repeated forest fires create permanent damage by altering the physical, chemical and biological properties of soil. Repetitive fires create perfect ground conditions for invasion of grass and weeds like Lantana Parthenium etc. Fires also damage the herbs and shrubs and destroy the habitat of ground nesting birds, reptile & rodents. Fires minimize the forage & browse materials.

Clearance of forest area often leads to increased concentration of Nitrogen in the soil by disruption of nitrogen cycle and removal of nitrogen sink (the forests). After one rain inorganic nitrogen in headed away and soil gets impoverished. It is partly compensated through release of Nitrogen from decomposed felling debris, if allowed to remain in the ground. Since the land will be utilized for mining activities, there is no scope for such a scenario.

2. d (ii) Threat of Forest Fauna: Increased human presence with greed for wild meat, may pose the threat of poaching for table purposes. The disturbances caused by mining and ancillary activities in the habitat may force the wild animals like Deer, Monkeys, wild Boar, Sloth bear etc. to flee from the forest and visit the nearby villages for forage of standing crops, grains etc. which may lead to 'man-animal' conflict. There are also instances of crop damage inside the zone of influence.

➢ **Displacement of small animals:** Small animals including rodents, reptiles, amphibians, avian, simians etc. will get displaced with the loss of forest growth bees, butterflies and insects, which are part of the biodiversity, will also be displaced from the site after forest clearance for mining activities.

➢ **Opening of roads:** Mining and its ancillary activities will increase the vehicular movement in the buffer zone for transportation of different products to the nearest railway siding or to National Highway. Therefore, new roads, extraction paths will be developed in the forest areas reducing the forest cover, accelerating soil erosion and land slide, enhancing noise, dust, light pollution and facilitating poachers for illegal hunting of wild animals.

➢ **Power lines:** A number of electric power transmission lines run inside the buffer zone for supply of power to different installations/villages. Due to improper maintenance and sagging of transmission lines the threat of electrocution is gradually posing problem for survival of the wild Elephants in the area.

➢ **Railways:** Although there is no Railway line in the Core zone, Jakhapura-Barbil Railway line of East-coast railway is passing through the buffer zone. This is a potential danger to wild animals, particularly elephants, which come to the buffer areas of the lease.

➢ **Accidental fall of animals:**

From the inception of mining, the pit attains considerable size which is enlarged in wedge shape in course of mining. Such deep mining pits are dangerous for wild animals, as any fall shall be fatal to them. The fall may even cause serious injury making them invalid for rest of life.

2. e Vehicular traffic and its impact

2. e (i) Probable increase in vehicular traffic:

The ore excavated is directly sold in market. The beneficial grade ore is upgraded in the Chrome ore beneficiation plant (COBP) located within adjoining South-Kaliapani ML of OMC and the concentrates produced are sold in the market, the sub-grade ore will be stacked and the rejects will be disposed in external dumps. Accordingly, the ore is being stacked into their respective stacking plots. Waste & sub grade materials generated is being transported to their respective dumping/stacking locations. Heavy vehicular traffic may also force animals for immigrate to more interior forests away from disturbance.

2. e (ii) Impact on flora and fauna :

As already narrated, noise generated by blasting, operation of machineries and vehicular traffic will affect the serenity and tranquillity of the area causing disturbances to the fauna. The water of the nala and rivers down below is likely to be polluted by fine ore dust, which may affect both human and wild life. The air is likely to be polluted by fugitive dust and emissions from machineries and vehicles which will have impact both on flora and fauna. Lubricants and grease dropping from badly maintained vehicles may pollute the soil and underground.

2. f. Pollution and its impact.

2. f (i) Noise pollution:

Blasting, excavation, loading, unloading, haulage and movement of workers with combined voice will contribute to noise. Noise not only affect the tranquillity of the area but also affect the health and reproductive process of wild animals. Therefore, many of these emigrate and seek safe refuge away from the source. Some of them also become victim to death and injury during emigration.

Blasting scares away the wild animals, who may run out of the mining area to the villages and get killed. Therefore low noise muffled blasting technique or any other new technique should be used. Over charging of blast holes should be avoided. Controlled blasting technique using delay detonation shall be applied. Blasting shall be limited to minimum and where-ever possible, ripping or use of surface miners should be deployed. Blasting shall be carried out during day time only synchronising with the

blasting timing of other nearby mines. PETN has been tried to minimise noise. If feasible, this can be used. The drills shall either be operated with dust extractors or equipped with water injection system.

2. f (ii) Water Pollution:

The water running off the OB dumps, ore stacks, roads and unused land surface carry red silt with iron fines which may contaminate the streams down below, affecting use of stream water by aquatic and terrestrial animals.

2. f (iii) Air Pollution :

Mining activity generates lot of dust, particularly in loading, unloading and during haulage. But this level of dust is not conducive to optimal plant growth and also effect the respiration of small animals, which may either flee from the area or chocked to death. Air pollution is a major environmental hazard, which affects all life forms. Ambient air quality monitoring stations has been established in the core zone as well as in the buffer zone which should regularly monitored and the levels of PM_{10}, $PM_{2.5}$, SO_2 & NOX and Vehicular emissions should be recorded. Appropriate measures should be taken to maintain the prescribed standards.

2. f (iv) Underground pollution:

During mining activity and laying of extraction path and other activities in the hilly terrain will subject the hill slopes to soil erosion, which is evident from the present situation triggered by earlier mining process. This will denude the hill slopes which support vegetation for the sustenance of wild animals.

2. f (v) Expert Visited:

This plan was earlier prepared by Sri S.K. Pattnaik, IFS (Retd.) during 2009-2010.

CHAPTER-3

MANAGEMENT OBJECTIVES AND MITIGATION STRATEGIES

CHAPTER-3

MANAGEMENT OBJECTIVES AND MITIGATION STRATEGIES.

3. a Objective of management to address issues of Wildlife Conservation:

- Conservation, protection and improvement of the flora and fauna in and around Sukurangi Chromite ore Mines on a sustainable basis, despite mining and ancillary activities.
- To conserve a viable population of Wild life in general and Schedule-I species in particular in their natural habitat.
- To conserve the natural biological diversity, aesthetic and geo-morphological values of the area through appropriate management of sites, habitats and landscapes.
- To conserve the catchment of rivers and stream systems.
- To reduce the dependency of local people on the forest resources through culturally, socially, economically acceptable and ecologically sustainable and viable alternatives, by taking up eco-development programmes.
- To promote conservation awareness among the local communities through conservation education packages in order to secure their support for conservation of forest.
- To reduce man-animal conflict, elephant in particular by ensuring contiguity of the habitat inside the zone of influence by improving habitat on long term basis.

3. b Strategies to mitigate the adverse impact on wildlife:

- Undertake appropriate remedial measures to minimize the adverse impacts of mining on wildlife conservation and protection in the core and buffer zone of ML to a tolerable limit.
- Improve the ecological status and quality of the wild life habitats in and around the mine, through restorative interventions.
- Provision for highly sophisticated elephant and mega wildlife movement warning and wading system.
- Provision for deployment of Gajabandhu to check the increasing incidences of man-animal conflict.

- Strengthening the tracking system of elephants and early communication through deployment of aerial vehicles (Drone).
- Undertake suitable soil and water conservation measures to improve the water regime of the landscape and to reduce the hazards of soil erosion as per the provision of Approved Mining Plan and Environmental Management Plan.
- Enlist people's participation in conservation initiatives through awareness, motivation and capacity building and involve them in afforestation programmes over blanks, road-side avenues, safety zone and during reclamation and overburden management of the mine.
- Formulate strategies for all perceived and assessed problems along with various process indicators so that continued monitoring on them could be possible.
- Ensure interdepartmental coordination for synergy among various departments operating in the area by formulation of a mechanism for action at the district level.

CHAPTER-4

STATUS OF IMPLEMENTATION OF APPROVED SITE SPECIFIC WILDLIFE CONSERVATION PLAN

CHAPTER-4

PROPOSED MANAGEMENT STRATEGIES WITHIN MINING LEASE AREA

A Site Specific Wildlife Conservation Plan pertaining to Sukurangi Chromite Mines of OMC Ltd. has been approved by Conservator of Forests (WL) vide letter dt. 21.07.2009 for a period of 20 years with a financial out lay of Rs. 154.00 Lakhs which includes Rs. 56.00 lakhs to be implemented by OMC and Rs. 98.00 lakhs to be implemented by DFO, Cuttack utilising the funds deposited by OMC. Accordingly, OMC has deposited Rs 98.0 lakh in shape of DD bearing No.495809 to 495818 (Rs 9, 80,000/- for each DD), dt 01.06.2010 as per the demand raised by DFO, Cuttack on dt 24.07.2009 towards execution of the work in the buffer zone. The implementation status of recommendation of Site Specific Wildlife Conservation Plan in the core zone is given as under:

Table No.4.1: Status of implementation by OMC within ML Area

Sl. No.	Approved description of work	Amount approved (Rs in lakhs)	Status of Implementation as on September, 2020
1	Wages of 1 Bana Sahayak Rs. 5000/- x 1 x 12 x 20 + equipments and mobility etc.	0	-
2	Plantation and maintenance for 7 years 25 Ha. Initial with grass on dumps and subsequent plantation wherever necessary with drip and sprinkler irrigation.	15.00	Implemented
3	Prevention of fire including wages of 4 fire watchers Rs. 2,500 x 4 x 5/ 12 x 20 including fire line, equipments etc.	4.00	Implemented (Is being taken up every year from Feb-Jun)
4	Solar fence	7.00	Shall be implemented.
5	Soil & Moisture conservation measures.	7.50	Implemented
6	Preventing man-animal conflict.	7.50	Shall be implemented.
7	One Jeep for anti-poaching and anti-depredation work including maintenance over 10 years.	10.00	Implemented
8	Garbage disposal.	0	Nil
9	Farm Forestry (5,000 seedlings).	2.00	Shall be implemented.
10	Awareness promotion.	3.00	Shall be implemented.
	Total	**56.00**	

Revised recommendations proposed within the Mining Lease Area:

In order to achieve the objectives enumerated in Chapter-2, the revised activities to be implemented within the mining lease area is given as under:

4. i. <u>Protection and improvement of habitat:</u> One existing pit shall continue to be worked for some more years and new pits are planned for future. The scheduling of management of overburden to be generated has been planned accordingly. Hence, majority of the land use of the mine shall be disturbed due to mining and dumping of over burden. The area along 7.5 meter strips of boundary of ML, 10 m on either side of road, forest area up to 100 meter on either side of the Damsal Nalla, forest area in Southern boundary of ML will be maintained as safety zone.

All farm bunds and back yards and institutional premises within the 2 settlements and colony shall be planted up, so that besides providing much needed shade and biomass, they can also provide food and perch for different animals and birds.

Recommended species for planting are Gambhari, Char, Asan, Aanla, Sissoo, Mango, Jack fruit, Ficus, Moi, Chhatian, Kurnbhi, Patali, Kanchan, Zizyphus, Bamboo etc. Grass seeds can be embedded in cow dung pallets and broadcast before rains for covering the blanks and providing quality fodder for animals.

In order to implement the above recommendation around 31947 number of plants has been planted during 2019-20 and around 8000 number of plants has been planted during 2020-21. Plantation shall be maintained for a period of three years.

4. ii. <u>Prevention of forest fire:</u> Forest fire plays havoc with the smaller ground dwelling animals and even larger animals and birds, due to different reasons as mentioned in the previous chapter. Hence, there cannot be any negligence in preventing such fire during the summer months. The work force and local people visiting the lease area need to be sensitized regarding adverse effect of forest fire for this purpose. Besides fire lines of 10m wide should be cleared every year before fire season, along the foot paths, ridges or other present features. Four Fire watchers may be engaged for 5 months

every year from February to June and provided with simple fire fighting equipments like spade, bill hook, buckets etc. In case they fail to control any fire, they should be supported by the mining work force.

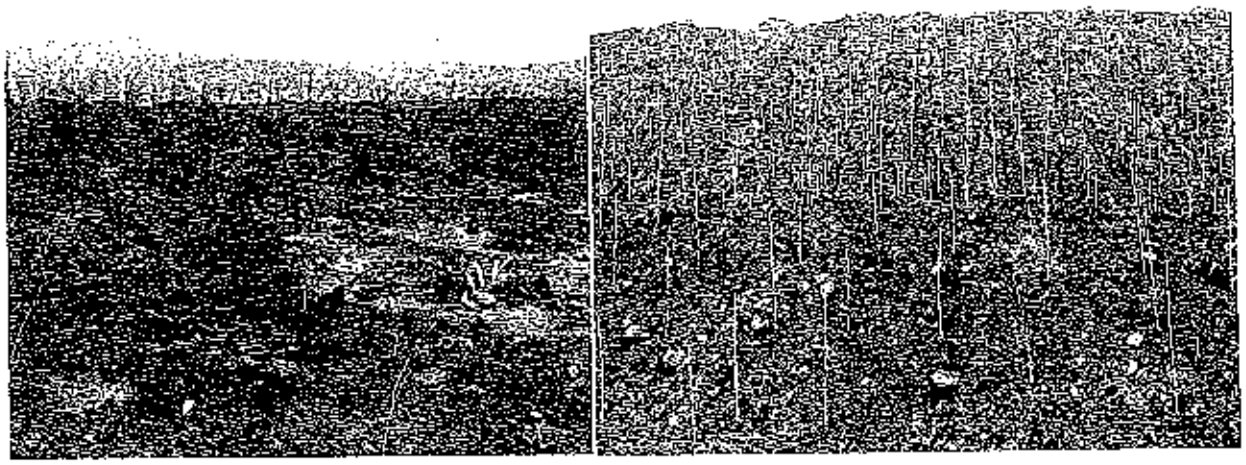


Fig: Plantation made on dump during 2020-21

4. iii. <u>Preventing fall of animals:</u> As the wild animals are likely to come to the edge of the deep mining pits and fall into the same either killing or critically injuring themselves, entire pit should be encircled with 5 strand photo-voltaic (solar) fences, except the entry points. There should be a tree line 5m wide on the outer side of such fence to prevent their approach to the wires and to muffle the noise from blasting besides providing screening against dust.

4. iv. <u>Soil and moisture conservation:</u> All gullies should be treated from their origin down-wards with masonry, rubble or vegetative check-dams at regular intervals, so that they do not only stop developing further they retain moisture and help recharge ground water. They can also provide water for small animals and birds for a longer time. Wherever there is no soil cover, staggered trenches of 0.5m x 0.5m x 5.0m can be dug across the slope and planted with erosion resisting grasses and shrubs like Sabai, Khaskhas, Lemon grass, Agave and even Atundi, which is being planted by OMC on O.B. dumps with good amount of success. Atundi climber is widely used for basket making for domestic use by the villagers.

Also as a part of mining activities OMC has already constructed garland drain, retaining wall and settling pond in different parts of mining lease.



Fig:Garland Drain - Leading to Settling Pond



Fig: Stabilized Vegetated OB Dumps



Fig: Dump Retaining Wall with Wire Mesh

4. v. <u>Monitoring of wild animals:</u> In order to monitor the wild animals for anti-poaching and anti-depredation work, one Bolero including maintenance over 10 years will be provided to DFO, Cuttack.

4. vi Awareness: All the people including mining staff either living inside the lease premises or coming there should be made aware of need for conservation of wildlife and forest and their role in the same. This can be done through organizing different conservation related functions, lectures, publication of folders, posters, film/slide shows or visit to zoo/ natural history museums or sanctuaries etc. Senior mining staff should be targeted first as they can sensitize others.

4. vii Activities to be taken up within the ML area

The activities proposed to be taken up inside the mining lease hold area are to be executed by the User agency under the supervision and monitoring of DFO, Cuttack Forest Division.

Sl. No.	Description of work	Revised amount proposed for approval (Rs. in lakhs)
1	Maintenance of 39947 no. of plants already planted during 2019-20 and 2020-21.	28.4350
2	Prevention of fire including wages of 4 fire watchers Rs. 9102 x 4 x 5 x 10 including fire line, equipments etc.	18.2040
3	Solar fence.	16.5125
4	Soil & Moisture conservation measures.	22.5000
5	One hired Bolero to be supplied to DFO, Cuttack for anti-poaching and anti-depredation work including maintenance over 10 years.	55.2000
6	Awareness promotion.	10.0000
Total		**150.8515**
Add 20% escalation		**30.1703**
Grand Total		**181.0218**

Approved

Principal Chief Conservator of Forests
(Wildlife) & Chief Wildlife Warden
Odisha, Bhubaneswar

Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

Divisional Forest Officer
Cuttack Forest Division

Table No.1: Annual Work Programme

YEAR WISE FLOW OF FUNDS TOWARDS PROPOSED INTERVENTIONS IN THE ML AREA

Sl. No.	Para Ref	Type of interventions	Rupees in lakhs										
			y1	y2	y3	y4	y5	y6	y7	y8	y9	y10	Total
1	4.i	Maintenance of 39947 no. of plants already planted during 2019-20 and 2020-21.	15.709	12.726	-	-	-	-	-	-	-	-	**28.4350**
2	4.ii	Prevention of fire including wages of 4 fire watchers Rs. 9102 x 4 x 5 x 10 including fire line, equipments etc.	1.8204	1.8204	1.8204	1.8204	1.8204	1.8204	1.8204	1.8204	1.8204	1.8204	**18.2040**
3	4.iii	Solar fence.	3.3025	3.3025	3.3025	3.3025	3.3025	-	-	-	-	-	**16.5125**
4	4.iv	Soil & Moisture conservation measures.	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	2.25	**22.5000**
7	4.v	One Jeep for anti-poaching and anti-depredation work including maintenance over 10 years.	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	5.520	**55.2000**
10	4.vi	Awareness promotion.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	**10.0000**
Total			**29.6019**	**26.6189**	**13.8929**	**13.8929**	**13.8929**	**10.5904**	**10.5904**	**10.5904**	**10.5904**	**10.5904**	**150.8515**
Add 20% escalation			**5.9204**	**5.3238**	**2.7786**	**2.7786**	**2.7786**	**2.1181**	**2.1181**	**2.1181**	**2.1181**	**2.1181**	**30.1703**
Grand Total			**35.5223**	**31.9427**	**16.6715**	**16.6715**	**16.6715**	**12.7085**	**12.7085**	**12.7085**	**12.7085**	**12.7085**	**181.0218**

CHAPTER-5

PROPOSED MANAGEMENT STRATEGIES WITHIN THE PROJECT IMPACT AREA

A cluster of mines are operating within the project impact area. Hence it is difficult to assess the impact of each mine on the area. All of them together shall influence the area. Hence, it is necessary that corrective measures should be initiated jointly with financial support from all the lessees. Forest Department should apportion areas for each lease or treat the entire project impact area with funds collected from all lessees. This shall prevent duplication or wasteful expenditure and ensure optimum result.

The following amount has been spent by the state forest Department as per the earlier proposal:

Table No.5.1: Status of implementation by DFO, Cuttack in Project Impact Area

Sl. No.	Approved description of work	Amount approved (Rs in lakhs)	Amount allotted during APO 2020-21 (Rs in lakhs)	Amount spent in lakhs as on Sept, 2020
1	Protection of habitat: wages of 1 Bana Sahayak with uniform, equipment & mobility Rs. 5000/- x 12 x 20 Anti-poaching/anti-depredation squads with daily wage watchers/temporary drivers for vehicle/ POL /other infrastructure etc for 10 years.	20.00	19.42	7,50,588.00
2	Plantation of 50 Ha @ Rs. 30,000/- ha for 5 Years	20.00	17.1888	-
3	Man-Animal Conflict: a) Solar lighting b) Storage of grains c) Training of VSS equipments incentive etc.	10.00	10.00	-
4	Fire line creation/incentive to VSS/fire prevention equipments/fire watchers etc.	7.00	1.00	-
5	Soil & moisture conservation.	3.00	3.00	-
6	Alternative livelihood for people	5.00	0.50	-
7	Cattle immunization	3.00	0.50	-
8	Prevention of accident-signage etc.	2.00	1.00	-
9	Farm forestry-distribution of seedlings	5.00	2.00	2.00
10	Corpus fund for paying compensation at the time of exigencies on man wild animal conflict	5.00	-	-
11	Development of communication network/GIS based maps Satellite maps on GIS domain should be procured every year to know the changing	7.00	-	-

	profile of the project area in both dry season and wet season for 10 years preferably using the GIS lab of PCCF (WL), Orissa.			
12	Pollution levels monitoring mechanism to be developed in consultation with State Pollution Control Board to assess pollution of water streams, forest areas etc.	3.00	-	-
13	Awareness creation	3.00	0.30	-
14	Other unforeseen expenses	5.00	0.50	0.08
	Total	**98.00**	**55.408**	**9.58588**

After review of the earlier implemented proposal and considering the present situation it has been suggested to implement activities so as to achieve the objectives of this conservation plan.

- To improve habitat such as shelter, availability of water for animals, reptiles birds as required for *Mellivora Carpensis* (Ratel); *Panthera Pardus* (leopard), *Melurs usursinus* (Sloth Bear); *Elephas maximus* (Indian elephant); *Moschiola indica* (Mouse Deer); *Manis crassicaudata* (Pangolin); *Canis lupus pallipes* (Wolf); *Varanus bengalensis* (Bengal Monitor Lizard); *Python molures* (Python) and *Pavo cristatus* (Peacock).
- Increase availability of fodder.
- Increase surveillance.

The following measures are required to be taken within the impact area.

5. i. Protection of wildlife habitat: In order to keep a vigilant watch on movement of animals with particular reference to elephant, manpower at the hands of local Range Officer is essential. As regular Forest Guards are not available in adequate number persons on daily wage basis are being engaged by the local forest officials. So to protect the forest area and wild animal in the impact area one anti depredation squad of 10 persons may be formed. The anti depredation squad may be provided with hired vehicles, cost of mobile charges, medicine and uniform. Unique habitats like cliffs, Talus, caves, cracks and crevices which provides physical protection and shelter to a variety of wildlife like birds, mammals, snakes, frogs, toads, lizards, bats, bees and insects should be protected. No roads or paths should be laid near such sites.

5. ii. Habitat improvement: The wild animals need adequate cover to protect from vagaries of weather, predators and enemies. The management interventions are aimed at enhancing the cover. Most of forest of Cuttack

Division is in a degraded state; hence prescriptions are given in Rehabilitation working circle for more soil and moisture conservation measures, gap planting with mixed, indigenous species etc. In selection working circle areas it has been prescribed that the felling should not create any permanent gaps in the cover, so that it will not affect the shelter for wild animals.

Plantation in forest area also increases food availability in a habitat change with the season. Herbivores depend on plant materials like leaves, barks, twigs, flowers, fruits and seeds like *Mallotus philippinensis, Dendrocalamus strictus, Adina cordifolia, Albizzia lebbek, Aegle marmelos, Cassia fistula, Ficus bengalensis, Ougeinia ougenesis, Shorea robusta, Syzygium cumini, Terminalia alata, Terminalia belerica, Zizyphus mauritiana, Bombax ceiba* etc.

Daitari and Mahagiri hill ranges and many other forest patches including planted areas lie within the project impact area. Protection and improvement of these patches can improve the habitat for wildlife. But major chunk of forest is being mined now or is subjected to other activities. Hence, the balance portions, the safety zones, village forests and revenue forests need protection. Around 50 ha of Block plantation has been carried out during 2020-21. The maintenance of already planted work will be carried out for further period of nine years. The cost norm for maintenance of plantation is enclosed as **Annexure-IV.**

5. iii. Showing of seed for elephant fodder: Elephant depredation is a constant problem in this division. There are several reports of killings and injury of the human beings, damage to the crops in the division. The man-animal conflict is mainly due to degradation of habitat of Wild elephants, encroachments etc, as a result of which they strayed into human habitation causing damage to life and properties of local inhabitants. Elephants in this division mainly move to the paddy fields due non-availability of sufficient amount of food in their natural habitats. So, inorder to provide food to elephants in their natural habitats it has been proposed to drop 100 nos. of Bamboo seed ball per year for a period of 10 years in different part of the project impact area.

5. iv. Man-Animal conflict: According to survey by Dr. Sar and Dr. Lahiri Choudhury a herd of elephant living in Mahagiri DPF and other herds including one all male herd do visit from Keonjhar side. Of course, there have been only 1 human kill and no poaching of elephants. Crop raiding does take place due to elephants and wild bears. Though it is not very alarming, steps may be taken in few villages which are facing meal frequent depredation to prevent the same. Methods like solar fence on the approach from the forest and alternate cropping shall be useful to keep them away from the crop fields. In 10 nos of affected villages where there is no street light, 2 solar lights will be provided to scare the animals and to see them approach during dark nights.

5. v. Creation of water bodies:

Generally, there is no dearth of water from July to December. However, scarcity is felt from January to June, when most of the nallahs and streams dry up. Hence, it is necessary to create waterholes and check dams on the higher slopes across nallahs to improve water availability during summer. Hence specific prescriptions are given in different areas under Rehabilitation Working Circle for enhancing the availability of water. For the wildlife management in different forest blocks, some places are identified for construction of water holes, game tanks etc to enhance the availability of water.

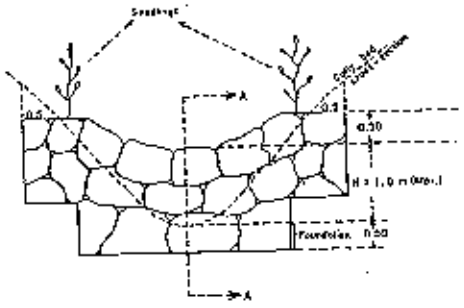
In order to facilitate water to the wild animals during dry season 2 numbers water bodies has been proposed to construct in the project impact area. This will increase the water availability in the forest area.

5. vi. Signages: Fire is a frequent visitor to our forests causing lot of damage to ground flora and regeneration. Replacement of tender fodder species by hardy thorny species resulting food scarcity to herbivores in our forest. So, local awareness among the local people will be created through signage.

There are many State high way passing through the project impact area in which mineral transportation is carried out to the different part of the States. So, people may be aware through signage regarding the animal passing area of the road.

5. vii. Farm Forestry: Wild animals like Deer, Monkey, Langur, Rats and Hare feed on wild fruits of plants like Ficus Species, *Terminalia belerica, Buchanania lanzan, Aegel marmelos, Syzgium cumini, Emblica officinalis, Zizyphus mauritiana, Diospyros melanoxylon, Grewia hirsute* etc. These animals help in dispersal of fruits and seeds in the forests. Also plants like *Tectona grandis* and *Dalbergia sissoo* provide good quality of timber. So, in order to provide food to the animals like Monkey, Langur, Rats etc. and to minimize pressure on the local forests the above trees will be distributed among the local people to promote Agri-silvicultural system. An amount of Rs. 30,000/- will be spent every year for a period of 10 years.

5. viii. Soil Moisture Conservation Measures: Many 1st order and 2nd order streams joined the Damsal Nala to make it a perennial one in this valley. Due to loss of vegetation lot of top soil is being drained to Brahmani River through Damsal Nala. In order to check soil erosion and improve percolation of rain water it is proposed to construct loose boulder check dams (LBCD) on rivulets of Tributaries to Damsal Nala.



While implementing Soil & Moisture conservation measures Stones/Boulders are to be placed in hips and contour trench to be dugout in such a fashion to provide a niche to the Python population & other snakes, reptiles it is suggested to artificially built small caves with stones with 5 feet to 10' long, 1.5' to 2' diameter at least 3' to 4' below the ground in a curved manner and opening on the surface. Stones are to be provided on the periphery of the caves to prevent entering of water to the cave and checking filling of earth in the cave. The slope direction may be up ward/down word depending on terrain.

An amount of Rs. 30,000/- has been proposed to spend each year for a period of ten years.

5.ix. Veterinary support: Village cattle do visit forest areas as there is no practice of stall feeding here. They come in contact with wild herbivores. When they are afflicted by epidemics, they transit the same. Also there is man-animal conflict in the division is in alarming situation particularly with reference to man-elephant conflict in the region. So, in order to provide

health care assistant to the wild animal in the project impact area a veterinary unit has been proposed. An amount of Rs. 6, 00,000/- will be spent per year for a period of 10 years.

5. x: Monitoring wild animals: In order to monitor the movement of wild elephants causing crop and house damage inside the human habitations of the impact zone, its proposed to strengthen the tracking system of elephants and other wild animals and early communication to the villagers elephant protection squad and the local staffs.

It is proposed to construct a watch tower at Nagada for monitoring of wild animals.

FLOW CHART OF INTERVENTIONS OVER 10 YEARS SPAN AND FINANCIAL FORECAST OF THE INTERVENTION IN THE PROJECT IMPACT AREA:

The financial forecast of the interventions in the project impact area along with the flow chart is furnished below.

Sl. No.	Item of work	Amount proposed for approval by CWLW (Rs. in lakhs)
1	Engagement of protection/antidepredation squad (10 persons) for 10 years 10 x Rs. 12319 x 12 x 10 years	1,47,82,800/-
	Hiring charges of vehicle Rs. 3.72 Lakh x 10 years	37,20,000/-
	POL for the vehicle Rs. 1,20,000/- x 10 years	18,00,000/-
	Recharging of mobile sets	1,20,000/-
	Medical expenses @ Rs. 20,000/- per year LS	2,00,000/-
	Uniform and camp equipments	1,47,200/-
	Sub-total	**20770000.00**
2	Maintenance of 50 Ha of Block Plantation planted during 2020-21 for a period of Ten year.	88879.14
3	Bamboo seed ball dropping to enhance the elephant fodder Rs. 15 x 20000 nos.	300000.00
4	Man-Animal Conflict: Installation of Solar street light in 10 villages 10 x 2 x Rs. 0.95 Lakh= Rs 19.00 Lakh	1900000.00
5	Creation of water body 02 nos. @ Rs. 6 Lakh.	1200000.00
6	Signages	100000.00
7	Farm Forestry-Distribution of seedlings	300000.00
8	Soil & Moisture conservation	300000.00
9	Establishment of veterinary Unit in the nearby area to address the health care of the wildlife in the ZOI (Provision of Veterinary Doctor, Vet. Asst., equipments, Medicine etc.)	6000000.00
10	Construction of watch tower at Nagada	2000000.00
	Total	**32958879.14**
	Add 20% escalation	**6591775.83**
	Grand Total	**39550654.97**
	Say Rs.3,95,50,700.00	

Divisional Forest Officer
Cuttack Forest Division

Approved

Principal Chief Conservator of Forests
(Wildlife) & Chief Wildlife Warden
Odisha, Bhubaneswar

...ble No.2 ANNUAL WORK PROGRAM

YEAR WISE FLOW OF FUNDS TOWARDS PROPOSED INTERVENTION IN THE PROJECT IMPACT AREA

Rs in lakhs

Sl. No.	Para Ref	Type of interventions	y1	y2	y3	y4	y5	y6	y7	y8	y9	y10	Total
1	5. i	Engagement of one unit of forest protection squad (10 persons) for 10 years.	14.7828	14.7828	14.7828	14.7828	14.7828	14.7828	14.7828	14.7828	14.7828	14.7828	147.828
		Hiring charges of vehicle Rs. 3.72 Lakh x 10 years	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	3.72	37.2
		POL for the vehicle Rs. 1,20,000/- x 10 years	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	18
		Recharging of mobile sets	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	1.2
		Medical expenses @ Rs. 20,000/- per year LS	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.0
		Uniform and camp equipments	0.1472	0.1472	0.1472	0.1472	0.1472	0.1472	0.1472	0.1472	0.1472	0.1472	1.472
2	5.ii	Maintenance of 50 Ha of Block Plantation planted during 2020-21	0.29108	0.19632	0.05734	0.05734	0.05734	0.05734	0.05734	0.05734	0.05734	0	0.8889
3	5.iii	Bamboo seed ball dropping to enhance the elephant fodder	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.0
4	5.iv	Installation of Solar street light	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	1.90	19.00
5	5.v	Creation of water body: 02 nos. @ Rs. 6 Lakh.	6.00	6.00	0	0	0	0	0	0	0	0	12.00
6	5.vi	Signages	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.00
7	5.vii	Farm Forestry-Distribution of seedlings	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.0
8	5.viii	Soil & Moisture Conservation	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	3.0
9	5.ix	Establishment of veterinary unit	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	60.00
10	5.x	Construction watch tower at Nagada	20.00	0	0	0	0	0	0	0	0	0	20.00

CHAPTER-6

PLATES & ANNEXURE

CHAPTER-6

PLATES AND ANNEXURE

6.1 Plates

1. Plate-I: Map showing project area and project impact area and other mining leases around Sukurangi Chromite Mines on Survey of India topo sheet No. 73G/16.

2.Plate-II: State wildlife map showing distances of protected areas, elephant and tiger reserves, elephant corridors from Sukurangi Chromite Mines of OMC.

3.Plate-III: Map showing interventions of project area of Sukurangi Chromite Mines of OMC Ltd.

4.Plate-IV: Map showing interventions inside project impact area of Sukurangi Chromite Mines of OMC Ltd. on Survey of India topo sheet no. 73G/16.

6.2 ANNEXURE

Annexure-I: Grant order of mining lease.

Annexure-II: Extension of mining lease and copy of the lease deed.

Annexure-III: Abstract of the land schedule.

Annexure-IV: Cost norms for Block plantation @ 1600 plants per ha.

ANNEXURE - II

OFFICE OF THE DIVISIONAL FOREST OFFICER KALAHANDI SOUTH DIVISION

At/Po-Ramnarayanpur Bhawanipatna, Ward No.4 Rly Station Road Dist-Kalahandi, Odisha Pin code-766002
Phone & Fax No:06670-230268 (O) Phone No.06670-230479 (R) E.Mail ID:- dfokldis6@gmail.com

Memo No: 323 /BP (Lease) /2022.
Dated, Bhawanipatna the 19 Jan 2022.

To.

The Divisional Forest Officer,
Cuttack Forest Division, Cuttack.

Sub:- **Revised Scheme for Compensatory Afforestation to be carried out over 156.771 Ha. in Balangi, Barakaudi and Khamarpadar villages of Thuamul Rampur Tahasil under Kalahandi District in lieu of forest land to be diverted for Sukurangi Chromite Mines of Odisha Mining Corporation Ltd. in Jajpur District.**

With reference to the above cited subject and as per the request made by Odisha Mining Corporation Ltd vide his letter No.18428/OMC/F&E/2021 dt.01.12.2021, the CA Scheme over an area of 156.771 Ha. in Balangi, Barakaudi and Khamarpadar villages of Thuamul Rampur Tahasil under Kalahandi District in lieu of forest land to be diverted for Sukurangi Chromite Mines of Odisha Mining Corporation Ltd, Bhubaneswar has been revised basing on the current wage rate @ Rs.315/- per MD and the same has been Technically Approved by the Undersigned. Further, a copy of the approved scheme along with maps etc. forwarded herewith for favour of your information & necessary demand to the User Agency at your end.

Divisional Forest Officer
Kalahandi South Division

Encl:- As above.

Memo No: ____ /BP-Lease Date: ____ ____ /
Copy forwarded to the Principal Chief Conservator of Forests, Forest Diversion & Nodal Officer FC Act, O/o the Principal Chief Conservator of Forests, Bhubaneswar, Odisha for favour of kind information and necessary action.

Divisional Forest Officer
Kalahandi South Division

Memo No: ____ /BP-Lease Date: ____ ____ /
Copy forwarded to the Regional Chief Conservator of Forests, Bhawanipatna Circle, Bhawanipatna & Regional Chief Conservator of Forests, Angul Circle, Angul for favour of their kind information and necessary action.

Divisional Forest Officer
Kalahandi South Division

Memo No: ____ /BP-Lease Date: ____ ____ /
Copy forwarded to the Executive Director, (F&E), Odisha Mining Corporation Ltd. Bhubaneswar for his information and necessary action with reference to his letter No.18428 dt.01.12.2021

Divisional Forest Officer
Kalahandi South Division

SCHEME FOR

SITE SPECIFIC COMPENSATORY AFFORESTATION

OVER

156.771 HA OF NON-FOREST GOVT. LAND

IN VILLAGES

BALANGI (52.395 HA), BARAKAUDI (35.61 HA) AND

KHAMARPADAR (68.766 HA)

UNDER THUAMUL-RAMPUR TAHASIL

IN

KALAHANDI DISTRICT

AGAINST

SUKURANGI CHROMITE MINING LEASE

IN JAJPUR DISTRICT, ODISHA

OF

M/s ODISHA MINING CORPORATION LTD.

(A Govt. of Odisha Undertaking)

OMC HOUSE, POST BOX-34, BHUBANESWAR-1

@ Rs. 315.00/- per Manday

Detailed revised scheme for Compensatory Afforestation to be carried out over 156.771ha in Balangi, Barakaudi and Khamarpadar villages of Thuamul Rampur Tahasil in Kalahandi District in lieu of forestland to be diverted for Sukurangi Chromite Mines of Odisha Mining Corporation Ltd. in Jajpur District.

Sukurangi Chromite mining lease, over an area of 382.709 ha. is held by OMC Ltd with effect from 20.9.1980 for a period of 30 years. Application for renewal of Mining Lease one year before expiry of the lease period has been filed over an area of 382.709 ha, which comprises of 267.21 ha. of forest land and 115.58 ha of non-forest land. MoEF, Govt. of India had approved 104.79 ha of forest land including 80.94 ha of forest area broken prior to 25.10.1980 vide F.No. 8-104/2000-FC Dt. 21.7.2011. Now OMC has submitted a proposal for diversion of balance forest land (considering Sabik and Hal records) over 162.42 ha. Hence the requirement of non-forest Govt. land for compensatory afforestation comes to 156.771 ha. as per the following calculation: -

1	Total forest land in the mining lease	267.21 ha.
2	Forest area approved under Section 2 (ii) of F.C Act by MoEF&CC	104.79 ha
3	Safety Zone	5.65 ha
	Area required for Compensatory Afforestation = (1-2-3)	156.77 ha

Earlier, scheme for Compensatory Afforestation was prepared for non-forest land in Balangi, Barakaudi and Khamarpadar. It was subsequently noticed that the area selected in Khamarpadar, although non-forest as per DSS, has sufficient vegetation and not suitable for Bald Hill plantation. The area of Khamarpadar is suitable for ANR with 400 plants per ha. Now plantation will be taken up in the following sites: -

Sl No	District	Tahasil	Forest Division	Revenue Village	Area in hectare	MDF area	Bald Hill	ANR	Total seedlings to be planted
1.	Kalahandi	Thuamul Rampur	Kalahandi (S) Divn	Balangi	52.395	6.877	45.518	200 plants/ha 6.877 ha	74204
2.	Kalahandi	Thuamul Rampur	Kalahandi (S) Divn	Barakaudi	35.610	Nil	35.610	Nil	56976
3	Kalahandi	Thuamul Rampur	Kalahandi (S) Divn	Khamarpadar	68.766	Nil	Nil	400 plants/ha 68.766 ha	27506
				Total	156.771	6.877	81.128	75.643	158686

Against minimum 156771 seedlings to be planted @ 1000 seedlings per ha. as per MoEF&CC instruction, 158686 plants will be planted or 1012.2 seedlings per hectare will be planted. The present scheme has been revised at current wage of Rs.315.00/- per manday.

1. Details of non-forest land :-

District: Kalahandi

Tahasil: Thuamul Rampur

Village	Khata No	Kisam	Plot No.	Area of the plot (Acr)	Area taken for this project (Acr)
Balangi	122(AAA)	Dangar	205	19.75	19.75
		Dangar	187	13.88	13.88
		Dangar	163	8.25	8.25
		Dangar	353	23.50	23.50
		Dangar	349	2.02	2.02
		Dangar	372	27.15	25.49
		Dangar	197	34.76	34.76
		Dangar	196	29.00	1.82
Sub-Total				**158.31**	**129.47 Ac. Or 52.395 ha**
Barakaudi	115 (AAA)	Dangar	732	46.95	40.00
		Dangar	736	35.15	15.00
		Dangar	903	56.73	16.00
		Dangar	904	57.70	17.00
Sub-Total				**196.53**	**88.00 Ac. Or 35.61 ha.**
Khamarpadar	**13 (AAA)**	Dangar	81	16.08	4.11
		Dangar	82	22.50	13.53
		Dangar	83	30.00	24.19
		Dangar	84	29.93	26.08
		Dangar	85	23.63	21.29
		Dangar	86	19.33	19.33
		Dangar	87	35.50	27.68
		Dangar	88	41.30	9.84
		Dangar	91	30.00	16.02
		Dangar	92	30.00	7.85
Sub-Total				**278.27**	169.92 Ac or 68.766 ha
GRAND TOTAL				**169.92 Ac or 68.766ha**	

The village maps showing the land details for the proposed compensatory afforestation is enclosed as Plate No X of the FDP.

The jointly verified non-forest land by Forest and Revenue authorities is enclosed as **Annexure-(A).**

Key Plan of the Compensatory Afforestation area shown in topo sheet is enclosed as **Annexure-(B).**

G.P.S co-ordinates of survey stations of Compensatory Afforestation area are furnished as **Annexure-(C)**

2. Description of Area

I. **Whether the site selected for Compensatory Afforestation is a land bank or not**: This identified non-forest area is under the control of Revenue Department and classified as 'Dangar'. 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 of Balangi village is at a distance of 100 mtr from Singari RF; Barakaudi is at a distance of 2.8 km from Ranipadar RF and Khamarpadaris at a distance of 7.7 km from Hadsil RF.

IV. **Soil type :** Lateritic soil.

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.

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, Woodfordiafruticosa, Combretumdecandrum.* Root stock of any principal species like Sal is not available.

3. Plantation Model:-

Out of total compensatory afforestation area over 156.771 ha.Bald Hill plantation will be raised over 81.128 ha. A.N.R with 400 plants per ha over 68.766 ha and ANR with 200 plants per ha over 6.877 ha. Maintenance of plantation for 10 years is also required as per F.No. 11-168/2009-FC Date 14.2.2012 of MoEF. Cost norm for Bald Hill plantation is furnished as **Annexure-(D)**, cost norm of ANR with 400 plants per ha is furnished as **Annexure-(E)** and cost norm of ANR with gap plantation of 200 seedlings is furnished as **Annexure-(F).** Revised plantation scheme prepared incorporating planting of 18 months old seedlings along with cost of transportation as per stipulation and new cost normof Principal Chief Conservator of Forests & HoFF, Odisha with enhancement of wage rate from Rs.311/- to Rs.315/-. In case of ANR plantation pit size from 30 Cm^3 enhanced to 45 Cm^3 to accommodate bigger size 18 months old seedlings with (12"x10") polybags properly inside the dugout pit.

4. Schedule of Plantation Programme:-

Detail of year wise break up of requirements of funds is as under:-

Year	Bald Hill plantation			A.N.R with 200 plants/ha			A.N.R with 400 plants/ha		
	Area in Ha.	Rate/Ha.	Amount	Area in Ha.	Rate/Ha.	Amount	Area in Ha.	Rate/Ha.	Amount
Nursery Cost Before 2 years	81.128	89421.20	7254563.11	6.877	11177.67	76868.84	68.766	22355.34	1537287.31
Nursery Cost Before 1 years		8129.21	659506.55		1016.15	6988.06		2032.30	139753.14
0th Year		89302.00	7244892.66		3116.40	21431.48		3150.00	216612.90
1st Year		97812.75	7935352.78		24342.15	167400.97		33749.10	2320790.61
2nd Year		34512.45	2799926.04		8110.20	55773.85		10928.40	751502.35
3rd Year		19183.50	1556318.99		3517.50	24189.85		3969.00	272932.25
4th Year		17529.75	1422153.56		992.25	6823.70		992.25	68233.06
5th Year		17529.75	1422153.56		992.25	6823.70		992.25	68233.06
6th Year		17529.75	1422153.56		992.25	6823.70		992.25	68233.06
7th Year		17529.75	1422153.56		992.25	6823.70		992.25	68233.06
8th Year		17529.75	1422153.56		992.25	6823.70		992.25	68233.06
9th Year		17529.75	1422153.56		992.25	6823.70		992.25	68233.06
10th Year		17529.75	1422153.56		992.25	6823.70		992.25	68233.06
Total		461069.36	37405635.04		58225.82	400418.96		83129.89	5716510.02

5. Technical details:- Technical details of Compensatory Afforestation Scheme are as follows:

a) **General Details :**

Survey & Demarcation of boundary:

The identified area will be surveyed by DGPSand the area will be demarcated with RCC pillars. This work will be done by the User Agency at Project cost.

b) **Fencing:**

To protect the plantation from grazing and other biotic interference, it will be provided with 7 strand barbed wire fencing with RCC pillars, the cost for which will be paid by the User Agency. Since non-forest areas adjoining this site have also been taken for Compensatory Afforestation for other projects and barbed wire fencing will be done around the entire patch, the length of barbed wire fence needed in this project is furnished below.

Sl No	Village	Length of outer periphery of the site in mtr	Length of enclosures if required to be fenced	Length of common fence of adjoining project which need not be fenced	Total length of fence in mtr (3+4-5)
(1)	(2)	(3)	(4)	(5)	(6)
1	Balangi	8264	Nil	965 mtr (with CA Khandabandha)	7299
2	Barakaudi	4646	Nil	Nil	4646
3	Khamarpadar	6767	Nil	Nil	6767
Total		19677		965	18712

Estimate for barbed wire fencing has been provided in **Annexure – (II).**

Planting and post-planting:

c) Bald Hill Plantation shall be taken up with 1600 plants per hectares 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 for Block Plantation. All post planting measures like casualty replacement, soil working, manuring, fire protection etc. will be undertaken. The plantation area should be divided into 4 hectare plots as per Plantation Manual . These plots should be demarcated in the field before digging of pits so that the demarcating line does not cross a plantation row. The 4 ha plots should be shown on map. Cost norm for Bald Hill plantation is furnished as **Annexure (D).**

d) In Khamapadar village ANR with gap planting of 400 plants per ha will be taken up as the area contains some vegetation. Cost norm for ANR with 400 plants per ha is furnished as **Annexure-(E) and** cost norm for ANR plantation with 200 plants per ha. Cost norm for ANR plantation is furnished as **Annexure-(F).**

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

- Care to be taken to raise healthy plantable 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 fertilizer and insecticides 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 go' 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 should be done in time.
- Since the area is provided with barbed wire fence, watch & ward will be easier and the watchers may be engaged in weeding in problematic areas alongwith watch & ward.

e) **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. For success of plantation in interior tribal areas, 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, t following species will be planted

Sl No	Name of species	Common name	Remarks
1	*Azadirachtaindica*	Neem	
2	*Derris indica*	Karanja	
3	*Emblicaofficinalis*	Amla	
4	*Terminaliachebula*	Harida	In lower areas with good soil depth
5	*Terminaliabellirica*	Bahada	In lower areas with good soil depth
6	*Dalbergiasissoo*	Sissoo	In lower areas with good soil depth
7	*Gmelinaarborea*	Gambhari	In lower areas with good soil depth
8	*Dendrocalamusstrictus*	Salia bamboo	In lower areas with good soil depth healthy seedlings from rhizomes may be planted
9	*Cassia siamea*	Chakunda	In lower areas with good soil depth
10	*Tamarindusindica*	Tentuli	In lower areas with good soil depth
11	*Madhucaindica*	Mahul	Two years old seedlings may be planted
12	*Simarubaglauca*	Simaruba	In rocky areas with low soil depth

13	*Zizyphusmauritania*	Ber	In rocky areas with low soil depth
14	*Tectonagrandis*	Teak	Potted seedlings from pre-sprouted healthy stumps will be planted
15	*Mangiferaindica*	Mango	In situ plantation (direct placing of mango stone in planting site) during pre-monsoon may be adopted in few lower areas or where life-saving watering can be done during summer
16	*Caryotaurens*	Salapa	
17	*Terminaliaarjuna*	Arjuna	Planted only on nala bank or near water.
18	*Desmodiumoojeinensis*	Bandhan	
19	*Dilleniaindica*	Ou	Planted in area having good soil depth
20	*Feronialimonia*	Kaitha	
21	*Ficusbenghalensis*	Bara	
22	*Ficusracemosa*	Dimiri,Dumer	
23	*Ficusreligiosa*	Aswaltha	
24	*Acacia auriculiformis*		
25	*Phoenix sylvestris*	Khajuri	
26	*Pithecolobiumdulce*	Simakayau	
27	*Acacia catechu*	Khair	
28	*Acacia nilotica*	Babul	
29	*Artocarpusheterophyllus*	Jack fruit	
30	*Bauhinia variegata*	Kuler	
31	*Boswelliaserrata*	Salai	
32	*Brideliaretusa*	Kasi	
33	*Buchananialanzan*	Char	
34	*Calophylluminophyllum*	Polanga	
35	*Cassia fistula*	Sunari	
36	*Ceibapentandra*	White silk cotton	
37	*Chloroxylonswietiana*	Bheru	
38	*Cleistanthuscollinus*	Karada	
39	*Albizialebbek*	Siris	
40	*Albiziaprocera*	White Siris	

d) Soil and Moisture Conservation Works :-

Since most of the areas are hilly and undulating, staggered trenches should be constructed as provided in cost norm.

In order to achieve 25% cost towards SMC measures of total plantation cost around 1500 meter of loose boulder check dam has been proposed. Estimate for loose boulder check dam has been provided in **Annexure-(G).** The details of plantation and SMC measures proposed are given as under:

Sl. No.	Area in Ha	Plantation model	Cost of Plantation in Rs. per Ha.	Total Plantation cost in Rs.	Cost of SMC Measures in Rs. per Ha.	Total cost SMC measures in Rs.
1	81.128	Baldhill block plantation	4,61,069.360	3,74,05,635.04	1,11,825.00	90,72,138.60

2	6.877	ANR with 200 plants per ha	58225.82	4,00,418.96	8,820.00	60,655.14
3	68.766	ANR with 400 plants per ha	83129.89	57,16,510.01	8,820.00	6,06,516.12
4	1500 meter of loose boulder check dam	-	0	0	3,200.00	48,00,000.00
		Total		**4,35,22,564.01**		**1,45,39,309.86**

So, the cost of SMC measures amounting Rs. 1,45,39,309.86 is 33.40 % of total plantation cost of Rs. 4,35,22,564.01.

e) **Protection of the plantation:** - 7 strand Barbed wire fence with RCC pillars all along the periphery of the plantation will be provided. Few watchers will also be engaged for protection of the plantation.

6. **Proposed Monitoring Mechanism: -** The scheme shall be executed by the Divisional Forest Officer, Kalahandi South 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.

7. **Total cost of the project:** The total cost of the project is **Rs. 7,35,81,700..00 (Rupees Seven crore thirty five lakh eight one thousand seven hundred) only** as detailed in **Annexure-(I)** which shall be payable by the user agency as per demand of the D.F.O, Kalahandi South Division.

Divisional Forests Officer
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division

ANNEXURE-A

OFFICE OF THE COLLECTOR & DISTRICT MAGISTRATE, KALAHANDI

Memo No. Dated

From

To

Sub: Filing of application for Compensatory Afforestation – allocation of non-forest government land.

Ref: Your letter No. 3135 dated 19.12.2018.

Sir,

I am to say that identified Government land measuring to an area of under Th. Rampur Tehasil has been identified and allotted for raising compensatory afforestation in lieu of the forest land pertaining to lease hold area of the [illegible] Laterite & Bauxite Mines of M/S. OMC Ltd.

In this connection you are requested to file necessary requisition before the [illegible] for processing the diversion proposal for sanction of the land in favour of the [illegible].

Yours faithfully,

Collector,
Kalahandi.

Rev. Dte.

Memo No.

Copy forwarded to the Tahasildar, Th.Rampur for information and necessary action. You are requested to process the diversion proposal in favour of the [illegible] Forest Department and obtaining the requisition from the Divisional Forest Officer [illegible].

Collector,
Kalahandi.

Rev. Dte.

Memo No.

Copy forwarded to the [illegible] for information and necessary action.

Collector,
Kalahandi

Rev. Dte.

Memo No.

Copy forwarded to the [illegible], OMC Ltd., Odisha, Bhubaneswar with reference to [illegible] for information and necessary action.

Collector,
Kalahandi

JOINT VERIFICATION REPORT OF NON-FOREST GOVERNMENT LAND IN VILLAGE BALANGI UNDER THUAMUL RAMPUR TAHASIL OF KALAHANDI DISTRICT FOR RAISING COMPENSATORY AFFORESTATION AGAINST SOUTH KAJAPANI & SUKURANGI CHROMITE MINES IN JAJPUR DISTRICT AND KHANDADHANDHA IRON ORE MINES IN KEONJHAR DISTRICT OF M/s ODISHA MINING CORPORATION LIMITED.

Certified that on joint field verification of non-forest Government land belonging to Dangar Kisam in Balangi village of Thuamul Rampur Tahasil of Kalahandi district, it is identified as per the schedule given below covering over an area of 167.65 Acres. The identified land is found to be suitable for Compensatory Afforestation (Block plantation) and it is free from encroachment and other encumbrances.

Name of the mines	Khata No.	Plot No.	Total area of the plot in Acr	Area recommended for Compensatory Afforestation in Ac	Kisam
South Kaliapani	327	302	17.95	11.00	Dangar
		205	19.75	19.75	Dangar
		187	13.88	13.88	Dangar
		163	8.25	8.25	Dangar
		353	23.50	23.50	Dangar
		349	2.07	2.07	Dangar
		377	77.05	25.49	Dangar
		197	34.76	34.76	Dangar
		396	29.00	1.82	Dangar
		196	29.00	27.38	Dangar
Khandadhandha		TOTAL		167.65 Acr	

Revenue Inspector, Thuamul Rampur Section, Thuamul Rampur

Forester, Thuamul Rampur Section

Revenue Supervisor, Thuamul Rampur

Forest Range Officer, Thuamul Rampur, SOUTH Range

Tahasildar, Thuamul Rampur

Divisional Forest Officer, Kalahandi Division, Bhawanipatna

1/p3

OFFICE OF THE COLLECTOR & DISTRICT MAGISTRATE, KALAHANDI

No. 594 /Rev. Date: 26.04.2016

To,

Divisional Forest Officer(South)
Kalahandi, Bhawanipatna

Sub: Allotment of Govt land for Compensatory Afforestation.

Ref: Your letter No.2005 Dated 31.03.2016.

Sir,

I am to say that the enclosed schedule of non-forest Government land measuring Ac. 81.00 equivalent to 98.610 ha in Village-Badkapal under Th.Rampur Tehsil has been identified for allocation in favour of Forest & Environment Deptt. for raising compensatory afforestation in lieu of the forest land proposed which the lessee holds area of the granted mining leases of Sukhrangi Chromite Mines located in Jaher District of Balangir.

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

Encl: as above.

Yours faithfully,
Collector
Kalahandi

Memo No. 595 /Rev. Date: 26.04.2016

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.

Collector
Kalahandi

Memo No. 596 /Rev. Date: 26.04.2016

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

Collector
Kalahandi

Memo No. 594 /Rev. Date: 26.04.2016

Copy to Chairman-cum-Managing Director, Odisha Mining Corporation Ltd, Bhubaneswar for information and necessary action.

Collector
Kalahandi

JOINT VERIFICATION REPORT OF NON-FOREST GOVERNMENT LAND IN VILLAGE BARKAUD! VILLAGE UNDER THRAMPUR TAHASIL OF KALAHANDI DISTRICT FOR RAISING COMPENSATORY AFFORESTATION AGAINST SUKURANGI CHROMITE MINES OF M/S. DIVI & LTD. LOCATED IN THE DISTRICT OF JAJPUR, ODISHA.

Certified that, on joint verification of Non-forest government land in Barkaud! (Kissam-Danger) village of Th.Rampur Tahasil of Kalahandi District, it is found that the schedules wise land mentioned as given under is suitable for Block plantation and are free from encroachment and encumbrances.

Name of the Mines	Name of the Village	Khata No	Plot No	Kissam	Area Recommended (In Acre)	Type of Plantation in Hectares
Sukrangi Chromite Mines	Barkaud'	115 (AAA)	732	Danger	40.00	Block 1600 Plants/Ha
			735	Danger	15.00	
			903	Danger	16.00	
			904	Danger	17.00	
				Total	88.00 Acres Or 35.510ha.	

Forester, Th.Rampur

Range Officer, Range Officer, Th.Rampur South Range

Th.Rampur DFO

Kalahandi Division, Kalahandi South Divi

OFFICE OF THE COLLECTOR & DISTRICT MAGISTRATE KALAHANDI

No. 2318 /Rev- Date: 25.10.18

To,

Divisional Forest Officer (South)
Kalahandi, Bhawanipatna

Sub: Allotment of Govt. land for Compensatory Afforestation.

Ref: Your letter No.4337 dated 09.10.2018.

Sir,

I am to say that the enclosed schedule of non-forest Government land measuring Ac. 169.92 equivalent to 68.766 Ha under Th.Rampur Tahasil has been identified for allocation for raising compensatory afforestation towards diversion of forest land for Mining and Ancillary use against Sukurangi Chromite mining leases located in Jajpur District of M/S O.M.C Ltd., Bhubaneswar.

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

Youre faithfully,

Collector,
Kalahandi

Memo No. 2319 /Rev. Date: 25.10.18

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.

Collector,
Kalahandi

Memo No. 2320 /Rev. Date: 25.10.18

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

Collector,
Kalahandi

Memo No. 2321 /Rev. Date: 25.10.18

Copy to Managing Director, Odisha Mining Corporation Ltd, Bhubaneswar for information and necessary action.

Collector,
Kalahandi

JOINT VERIFICATION REPORT OF NON-FOREST GOVERNMENT LAND IN VILLAGE KHAMARPADAR UNDER TH.RAMPUR TAHASIL OF KALAHANDI DISTRICT FOR RAISING COMPENSATORY AFFORESTATION (ANR PLANTATION) IN LIEU OF THE FOREST LAND PROPOSED FOR DIVERSION FOR MINING AND ANCILLARY USE AGAINST SUKURANGI CHROMITE M.L OF M/s O.M.C.LTD. LOCATED IN THE DISTRICT OF JAJPUR, ODISHA.

Certified that on joint verification of Non forest government land (Kissam – Dangar) in village Khamarpadar of Thuamul Rampur Tahasil of Kalahandi District, it is found that the scheduled wise land mentioned as given under is suitable for ANR Plantation and are free from encroachment and encumbrances, does not comes under DLC land and FR Settlement.

Name of the Mines	Nam of the Village	Plot No.	Khata No.	Kissam	Total area of the plot (Acres)	Area considered in (Acres)	Type of Plantation in Hectares
Sukurangi Chromite M.L	Khamarpadar	81	241 (AJA)	Dangar	16.08	4.11	ANR Plantation 400 Plants /HA
		82			22.50	13.53	
		83			30.00	24.19	
		84			29.93	26.08	
		85			23.63	21.29	
		86			19.33	19.33	
		87			35.50	27.68	
		88			41.30	9.84	
		91			30.00	16.02	
		92			30.00	7.85	
TOTAL						169.92 Acre Or 68.766 Ha	

Revenue Inspector
Juberajpur

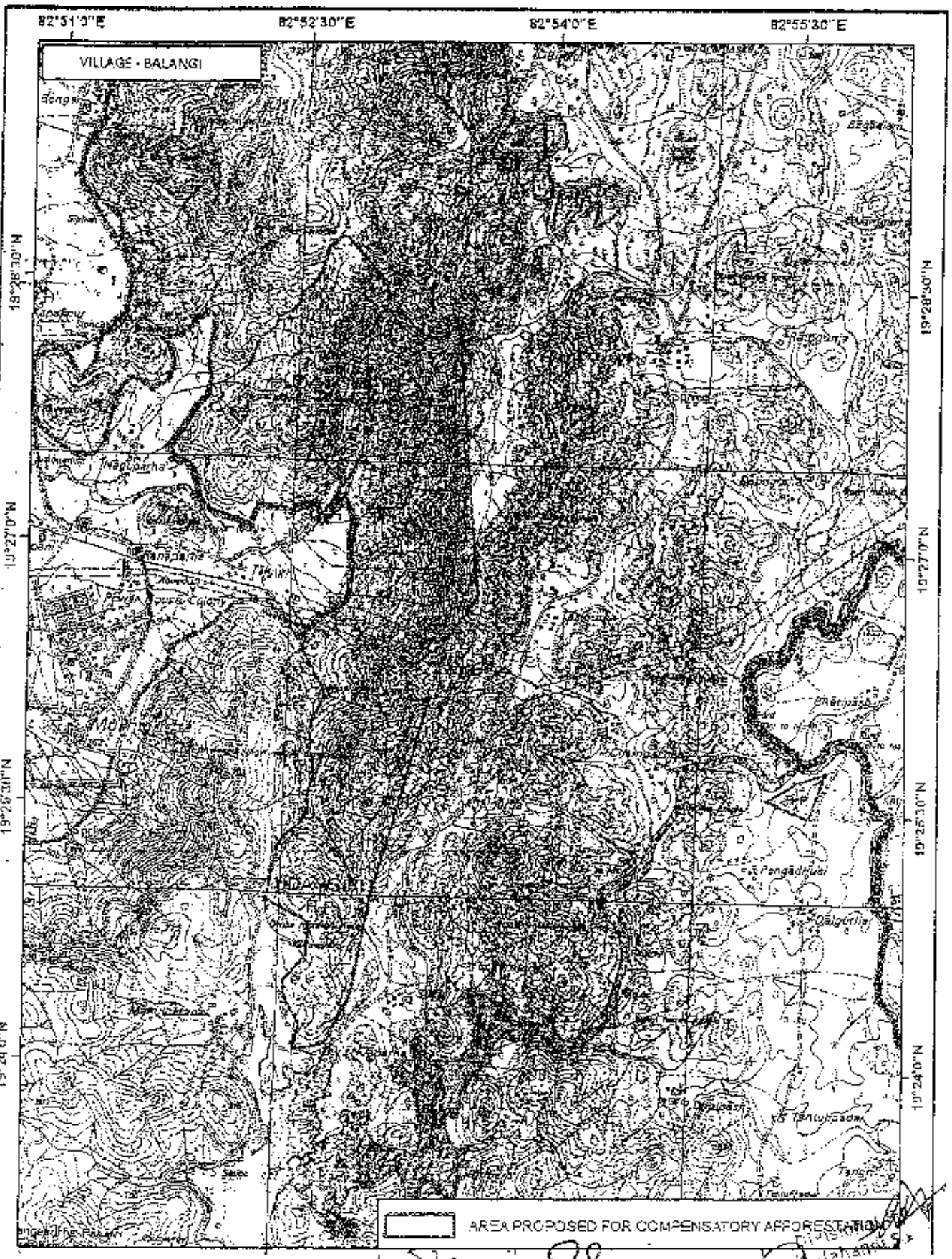
Forester
Forester
Benakhamar Section

Range Officer
Jajpur Range

Tahasildar
Th. Rampur

AN

SCALE:-1:50,000



Revenue Inspector
Badchatrani

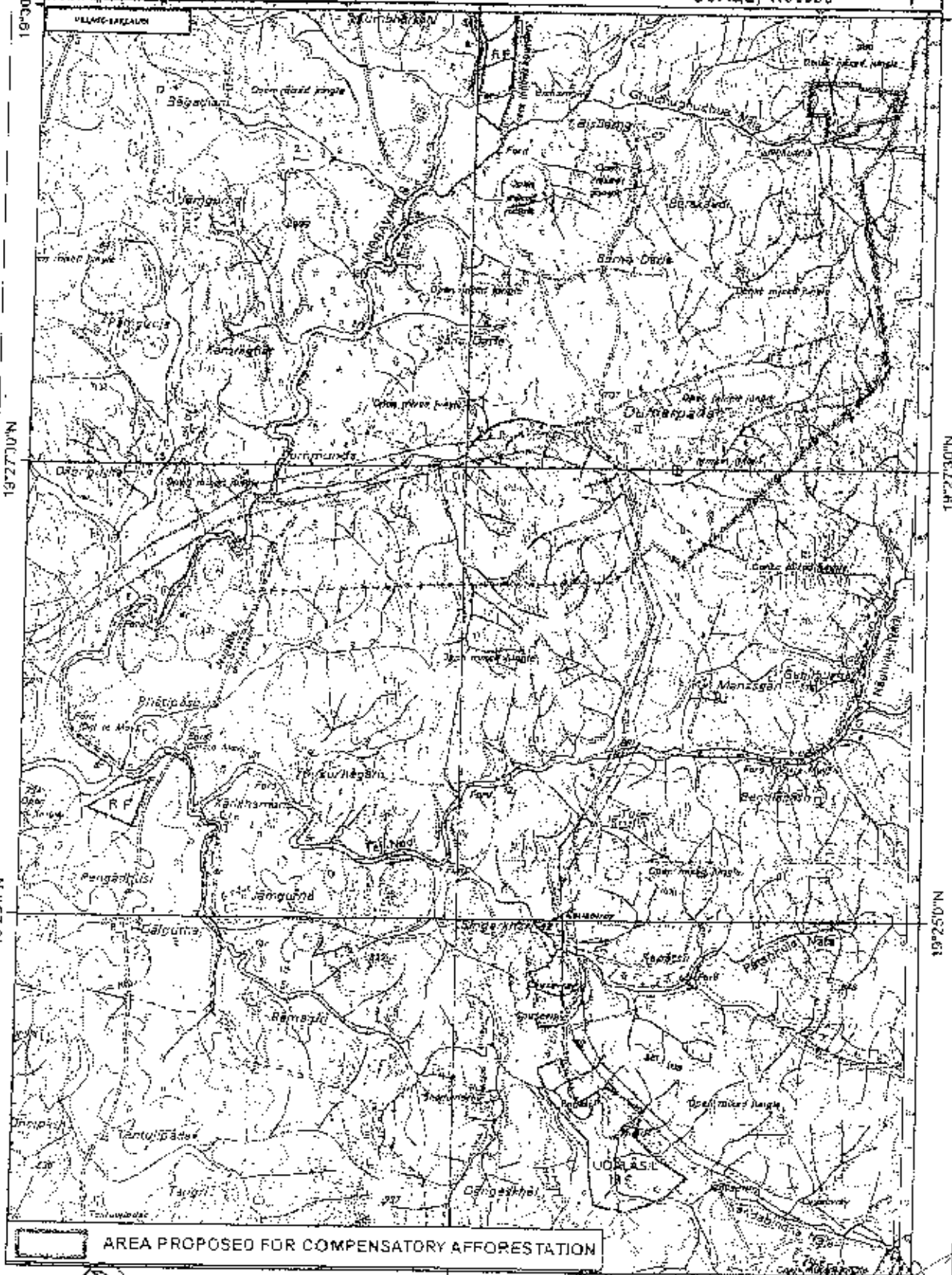
Range Officer
Th.Rampur South Range

FORESTER
THRAMPUR SECTION

KEY PLAN

REF. TOPOSHEET NO - E44E15

SCALE; 1:50000



Revenue Inspector
Badchatrang

Range Officer
Th.Rampur South Range

FORESTER
THRAMPUR SECTION


Divisional Forest Office
Kalahandi South Division
Range Forester

ANNEXURE-C

ANNEXURE-C

DGPS READING ON THE AREA PROPOSED FOR COMPENSATORY AFFORESTATION

A. VILLAGE: BALANGI (52.595ha)

Corner points		Bearing		Distance in mtr	Coordinates by GPS	
From	To	Forward	Backward		Longitude	Latitude
BLOCK-I						
1	2	35°04'00"	215°04'00"	118.52	82°53'38.390"	19°29'20.355"
2	3	35°45'00"	215°45'00"	61.82	82°53'40.714"	19°29'23.895"
3	4	24°59'00"	204°59'00"	129.60	82°53'41.946"	19°29'25.519"
4	5	189°26'00"	03°26'00"	86.85	82°53'43.819"	19°29'29.311"
5	6	97°29'00"	277°29'00"	41.00	82°53'43.692"	19°29'26.522"
6	7	89°40'00"	269°40'00"	41.32	82°53'45.010"	19°29'26.362"
7	8	62°39'00"	242°39'00"	28.38	82°53'46.414"	19°29'25.381"
8	9	151°01'00"	331°01'00"	81.07	82°53'47.272"	19°29'26.808"
9	10	162°22'00"	342°22'00"	61.56	82°53'48.594"	19°29'24.536"
10	11	43°35'00"	223°35'00"	44.40	82°53'49.265"	19°29'22.697"
11	12	25°53'00"	205°53'00"	90.35	82°53'50.275"	19°29'25.688"
12	13	90°02'00"	270°02'00"	108.30	82°53'51.636"	19°29'26.309"
13	14	359°31'00"	179°31'00"	43.26	82°53'55.316"	19°29'26.338"
14	15	25°32'00"	205°32'00"	37.83	82°53'45.117"	19°29'16.503"
15	16	42°07'00"	222°07'00"	24.11	82°53'55.308"	19°29'27.729"
16	17	93°43'00"	273°43'00"	72.22	82°53'55.866"	19°29'28.831"
17	18	74°18'00"	254°18'00"	39.82	82°53'56.417"	19°29'29.411"
18	19	156°54'00"	336°54'00"	45.31	82°53'58.866"	19°29'29.282"
19	20	197°09'00"	07°09'00"	43.15	82°54'00.262"	19°29'29.587"
20	21	125°34'00"	305°34'00"	38.11	82°54'00.769"	19°29'28.304"
21	22	80°41'00"	260°41'00"	19.25	82°54'00.582"	19°29'26.923"
22	23	162°44'00"	342°44'00"	14.10	82°54'01.533"	19°29'26.221"
23	24	182°49'00"	02°49'00"	34.42	82°54'02.279"	19°29'26.327"
24	25	166°50'00"	346°50'00"	141.38	82°54'02.418"	19°29'25.301"
25	26	202°38'00"	22°38'00"	76.00	82°54'02.356"	19°29'24.795"
26	27	262°22'00"	82°22'00"	41.26	82°54'03.435"	19°29'20.378"
27	28	236°29'00"	56°29'00"	49.56	82°54'02.436"	19°29'18.115"
28	29	229°23'00"	49°23'00"	95.32	82°54'01.048"	19°29'17.927"
29	30	327°57'00"	147°57'00"	53.35	82°53'59.812"	19°29'17.143"
30	31	278°02'00"	98°02'00"	17.51	82°53'57.347"	19°29'15.126"
31	32	241°20'00"	61°20'00"	12.70	82°53'55.748"	19°29'16.030"
32	33	156°16'00"	336°16'00"	21.50	82°53'56.359"	19°29'16.104"

11

Revenue Inspector
Badchhatrang

Tahasildar
Jha Rampur

Divisional Forest Officer
Balabangi South Division

33	34	291°08'00"	111°08'00"	13.13	82°53'55.780"	19°29'15.905"
34	35	213°15'00"	33°15'00"	14.76	82°53'56.072"	19°29'15.274"
35	36	215°38'00"	35°38'00"	32.20	82°53'55.557"	19°29'15.423"
36	37	158°32'00"	338°32'00"	39.76	82°53'55.380"	19°29'15.023"
37	38	188°32'00"	08°32'00"	20.17	82°53'54.740"	19°29'14.175"
38	39	95°40'00"	275°40'00"	61.07	82°53'55.231"	19°29'12.595"
39	40	159°27'00"	339°27'00"	16.34	82°53'55.128"	19°29'12.345"
40	41	204°13'00"	24°13'00"	60.74	82°53'57.187"	19°29'12.172"
41	42	153°31'00"	333°31'00"	83.72	82°53'57.434"	19°29'11.704"
42	43	128°41'00"	308°41'00"	46.30	82°53'58.562"	19°29'09.915"
43	44	180°32'00"	0°32'00"	92.81	82°53'57.842"	19°29'07.515"
44	45	190°14'00"	10°14'00"	40.48	82°53'55.058"	19°29'06.595"
45	46	164°59'00"	344°59'00"	80.23	82°53'59.029"	19°29'03.611"
46	47	247°28'00"	67°28'00"	50.78	82°53'58.866"	19°29'01.964"
47	48	265°28'00"	85°28'00"	85.80	82°53'53.995"	19°29'01.136"
48	49	314°55'00"	134°55'00"	26.10	82°53'57.085"	19°29'00.370"
49	50	260°53'00"	80°53'00"	27.32	82°53'54.179"	19°29'00.128"
50	51	346°46'00"	166°46'00"	85.65	82°53'53.505"	19°29'00.765"
51	52	0°0'00"	180°0'00"	212.21	82°55'52.599"	19°29'00.608"
52	53	90°40'00"	270°40'00"	77.45	82°53'51.954"	19°29'10.094"
53	54	357°43'00"	177°43'00"	202.65	82°53'54.651"	19°29'10.110"
54	55	269°43'00"	89°43'00"	271.28	82°53'54.304"	19°29'16.600"
55	56	179°55'00"	359°55'00"	271.76	82°55'45.105"	19°29'10.014"
56	57	270°11'00"	90°11'00"	98.70	82°53'41.752"	19°29'09.994"
57	58	357°37'00"	177°37'00"	50.90	82°53'41.711"	19°29'08.520"
58	59	263°43'00"	83°43'00"	41.17	82°53'40.316"	19°29'10.080"
59	60	08°05'00"	188°05'00"	55.40	82°53'40.423"	19°29'12.667"
60	61	22°57'00"	202°57'00"	27.80	82°53'40.739"	19°29'13.486"
61	62	34°50'00"	214°50'00"	52.00	82°53'42.591"	19°29'15.995"
62	63	295°11'00"	115°11'00"	20.82	82°53'41.952"	19°29'16.811"
63	64	218°11'00"	38°11'00"	98.00	82°53'39.881"	19°29'18.471"
64	65	310°12'00"	130°12'00"	8.27	82°53'39.667"	19°29'18.867"
65	66	351°26'00"	171°26'00"	9.25	82°53'39.621"	19°29'19.171"
66	67	298°09'00"	118°09'00"	7.34	82°53'39.402"	19°29'19.053"
67	68	04°57'00"	184°57'00"	11.55	82°53'39.457"	19°29'18.653"
68	69	279°22'00"	99°22'00"	20.82	82°53'39.731"	19°29'18.459"
69	70	212°49'00"	32°49'00"	39.84	82°53'38.107"	19°29'17.534"
70	71	124°34'00"	304°34'00"	33.96	82°53'38.546"	19°29'16.285"

10	11	12°26'00"	192°26'00"	20.75	82°54'11.472"	19°28'55.648"
11	12	331°41'00"	151°41'00"	18.54	82°54'11.626"	19°28'56.301"
12	15	81°21'00"	261°21'00"	7.44	82°54'11.329"	19°28'56.823"
13	14	34°46'00"	214°46'00"	100.89	82°54'11.579"	19°28'56.861"
14	15	302°23'00"	122°23'00"	29.65	82°54'13.543"	19°28'59.543"
15	16	339°53'00"	159°53'00"	52.28	82°54'12.694"	19°29'00.047"
16	17	286°52'00"	106°52'00"	28.14	82°54'12.088"	19°29'01.620"
17	18	330°36'00"	150°36'00"	54.00	82°54'11.174"	19°29'01.875"
18	19	28°08'00"	208°08'00"	58.20	82°54'10.278"	19°29'03.381"
19	20	85°47'00"	265°47'00"	50.00	82°54'11.216"	19°29'05.039"
20	21	41°53'00"	221°53'00"	18.90	82°54'12.911"	19°29'05.171"
21	22	96°42'00"	276°42'00"	71.60	82°54'13.342"	19°29'05.628"
22	23	190°01'00"	10°01'00"	78.14	82°54'15.757"	19°29'05.380"
23	24	125°24'00"	305°24'00"	53.08	82°54'15.303"	19°29'02.985"
24	25	30°13'00"	210°13'00"	82.40	82°54'16.824"	19°29'02.038"
25	26	37°27'00"	217°27'00"	62.46	82°54'18.171"	19°29'04.228"
26	27	75°32'00"	255°32'00"	20.20	82°54'19.467"	19°29'05.834"
27	28	92°31'00"	272°31'00"	57.87	82°54'20.132"	19°29'06.001"
28	29	199°08'00"	19°08'00"	40.60	82°54'22.096"	19°29'05.937"
29	30	124°51'00"	304°51'00"	64.76	82°54'22.096"	19°29'05.937"
30	31	107°06'00"	287°06'00"	98.44	82°54'21.640"	19°29'04.699"
31	32	171°57'00"	351°57'00"	71.62	82°54'23.442"	19°29'03.524"
32	33	242°03'00"	62°03'00"	117.33	82°54'26.695"	19°29'02.620"
33	34	195°26'00"	15°26'00"	65.65	82°54'26.968"	19°29'00.342"
34	35	221°41'00"	41°15'00"	104.76	82°54'23.477"	19°28'58.498"
35	36	263°23'00"	83°23'00"	48.31	82°54'22.922"	19°28'56.542"
36	1	232°03'00"	52°03'00"	140.16	82°54'20.425"	19°28'53.980"
Perimeter: 2.174 km						
Total perimeter for fencing (Block-1,2 & 3): 3.514 + 1.611 + 2.174 = 7.299 km or 7.3 km						
B. VILLAGE: BARAKAUDI (35.61 ha)						
1	2	187°09'6.48"	7°09'6.48"	89.772	82°59'51.43"	19°29'30.54"
2	3	256°49'45.48"	76°49'49.48"	450.756	82°59'51.01"	19°29'27.65"
3	4	182°12'44.28"	2°12'44.28"	71.968	82°59'36.59"	19°29'24.61"
4	5	252°03'1.44"	72°05'1.44"	314.264	82°59'36.47"	19°29'22.28"
5	6	1°19'9.84"	181°19'9.84"	262.319	82°59'26.18"	19°29'19.24"
6	7	268°14'41.64"	88°14'41.64"	145.134	82°59'26.49"	19°29'27.76"
7	8	2°23'31.56"	182°23'31.56"	10.646	82°59'21.51"	19°29'27.67"
8	9	269°42'8.64"	89°42'8.64"	30.55	82°59'21.59"	19°29'28.02"

9	10	181°09'28.44"	1°09'28.44"	6.305	82°59'20.48"	19°29'26.03"
10	11	265°49'3.00"	85°49'3.00"	23.256	82°59'20.48"	19°29'27.80"
11	12	1°36'44.64"	181°36'44.64"	324.527	82°59'19.68"	19°29'27.79"
12	13	89°52'5.52"	269°52'5.52"	493.755	82°59'20.12"	19°29'38.33"
13	14	179°52'5.52"	259°52'5.52"	45.047	82°59'37.05"	19°29'38.18"
14	15	94°25'42.96"	274°25'42.96"	455.207	82°59'37.04"	19°29'56.72"
15	1	192°01'25.32"	12°01'25.32"	153.424	82°59'52.58"	19°29'35.40"
Perimeter: 2.85 km						

Revenue Inspector
Badrchatrang

Extension Officer
Fa. Rajapur

Divisional Forest Officer
Kalahandi South Division

CO-ORDINATES OF THE BOUNDARY POINTS

POINTS		GEOGRAPHIC CO-ORDINATES		BEARING		DISTANCE IN
FROM	TO	LONGITUDE	LATITUDE	FORWARD	BACKWARD	METER
1	2	82°48'00.03"	19°24'13.56"	251°31'39"	71°32'39"	289.97
2	3	82°48'50.57"	19°24'10.67"	250°42'58"	70°42'58"	208.81
3	4	82°48'48.79"	19°24'08.45"	200°54'16"	20°54'16"	289.41
4	5	82°48'40.15"	19°23'59.74"	200°42'46"	20°42'46"	114.6
5	6	82°48'38.73"	19°23'55.27"	191°46'31"	11°46'31"	91.86
6	7	82°48'38.05"	19°23'53.35"	204°26'09"	24°26'09"	134.44
7	8	82°48'36.10"	19°23'49.39"	119°20'39"	299°20'39"	145.65
8	9	82°48'40.43"	19°23'47.02"	221°57'06"	41°57'06"	94.99
9	10	82°48'38.23"	19°23'44.75"	306°36'34"	126°36'34"	120.12
10	11	82°48'34.95"	19°23'47.11"	287°25'14"	27°25'14"	47.27
11	12	82°48'34.18"	19°23'45.74"	140°49'35"	320°49'35"	119.61
12	13	82°48'36.73"	19°23'42.70"	238°40'17"	58°40'17"	128.23
13	14	82°48'32.86"	19°23'40.57"	133°51'50"	313°51'50"	198.17
14	15	82°48'37.80"	19°23'36.05"	217°32'22"	37°32'22"	95.1
15	16	82°48'35.79"	19°23'33.62"	311°02'57"	131°02'57"	392.53
16	17	82°48'25.74"	19°23'42.10"	226°02'57"	46°02'57"	70.8
17	18	82°48'23.97"	19°23'40.52"	137°01'02"	317°01'02"	126.49
18	19	82°48'26.90"	19°23'37.48"	230°53'26"	50°53'26"	120.9
19	20	82°48'25.65"	19°23'35.04"	180°06'58"	0°06'58"	197.97
20	21	82°48'23.57"	19°23'28.60"	35°56'57"	215°56'57"	111.6
21	22	82°48'25.85"	19°23'31.51"	107°04'30"	287°04'30"	442.02
22	23	82°48'40.28"	19°23'27.15"	47°33'51"	227°33'51"	71.49
23	24	82°48'42.11"	19°23'28.70"	121°52'40"	301°52'40"	81.73
24	25	82°48'44.47"	19°23'27.27"	36°13'04"	216°13'04"	198.59
25	26	82°48'48.55"	19°23'32.44"	127°34'07"	307°34'07"	68.43
26	27	82°48'50.42"	19°23'31.05"	42°44'47"	222°44'47"	173.86
27	28	82°48'54.51"	19°23'35.18"	81°18'56"	261°18'56"	114.59
28	29	82°48'58.40"	19°23'35.68"	359°46'07"	179°46'07"	83.92
29	30	82°48'58.41"	19°23'36.41"	288°20'38"	108°20'38"	125.42
30	31	82°48'54.35"	19°23'39.74"	339°51'22"	159°31'22"	108.76
31	32	82°48'58.08"	19°23'43.05"	86°25'25"	266°25'25"	133.79
32	33	82°48'57.66"	19°23'43.29"	2°57'39"	182°57'39"	69.72
33	34	82°48'57.81"	19°23'45.52"	268°13'30"	89°13'30"	294.38
34	35	82°48'47.73"	19°23'45.49"	359°55'07"	179°55'07"	331.16
35	36	82°48'47.83"	19°23'56.26"	90°41'40"	270°41'40"	87.32
36	37	83°48'50.82"	19°23'56.20"	24°18'16"	204°18'16"	90
37	38	82°48'52.42"	19°23'58.85"	103°59'20"	283°59'20"	155.42
38	39	82°48'57.27"	19°23'57.58"	12°17'55"	192°17'55"	114.28
39	40	82°48'58.15"	19°24'01.20"	305°32'42"	125°32'42"	204.62
40	41	82°48'52.49"	19°24'05.47"	51°55'48"	231°55'48"	102.34
41	42	82°48'55.27"	19°24'07.15"	124°16'10"	304°16'10"	195.94
42	43	82°49'00.78"	19°24'03.51"	57°49'56"	237°49'56"	128.58
43	44	82°49'04.53"	19°24'05.69"	339°55'54"	159°55'54"	234.16
44	1	82°49'01.86"	19°24'12.87"	290°58'37"	110°58'37"	57.41

AREA : 63.766 HA & PERIMETER : 6766.75

Divisional Forest Officer
Kalahandi South Division

Forest Inspector
Jeypore

Forest Range Officer
Jaipatna Range

Forester.
Beriahamer Section

ANNEXURE-(D)

COST NORM FOR BALD HILL PLANTATION @ 1600 PLANTS PER HECTARE

(Labour cost @Rs 315.00 per manday)

Sl No	Item of Work	Preferable Period of execution	Manday	Labour Cost (Rs)	Material Cost (Rs)	Total Cost in (Rs)
	NURSERY COST					
1	**Cost Of raising 18 months old seedling including 10% casualty @1760 seedling per hectare.**	**Before 2(two) year of achievement year**	**219.12**	**69022.80**	**20398.40**	**89421.20**
2	**Cost of 18 months old seedling for Casualty Replacement @160 plants per hectare.**	**Before 01 year of achievement year**	**19.92**	**6274.80**	**1854.41**	**8129.21**
	Total		**239.04**	**75297.60**	**22252.81**	**97550.41**
	PREPARATORY OPERATION (0TH YEAR)					
1	Survey and demarcation	June	2	630.00	0	630.00
2	Pitting (1600 per ha) each pit-45 cm^3	Nov-Dec	128	40320.00	0.00	40320.00
3	**Soil and water conservation measures** (a) Staggered trench along the contour @ 300 per ha (2.5mx0.5 m x0.5m); digging of percolation pits @ 600 per ha in lieu of staggered trenches, gully plugging and Drainage line treatment, half moon trench on the uphill side of each planting pit (100 MD for staggered trench / percolation pits and 30 MD for gully plugging, drainage line treatment and half moon trench).	Sep-Nov	130	40950.00	0.00	40950.00
	(b) Site clearance- 8 MD, alignment and staking of contour lines on ground, planting pits, contour trenches / percolation pits and check dam sites, etc.- 2 MD	July-Aug	10	3150.00	0.00	3150.00
	TOTAL 0th year		**270**	**85050.00**	**0.0**	**85050.0**
4	Monitoring & Supervision charge 5% of the total cost			0.00	0.0	4252.50
	GRAND TOTAL		**270**	**85050.00**	**0.0**	**89302.50**
	PLANTING OPERATION (1ST YEAR)					
1	**Transportation of 18 months old polythin bag seedling in hired truck/tractor from the permanent/mega nursery to planting site including loading and un loading (average lead of 10 Rkm) and stacking the seedling @Rs.6/- per seedling (1760 nos.)**	**July-Aug**	**0**	**0**	**10560**	**10560**
2	Freshening of pits -64 MD, filling with fertile soil and farm yard manure (FYM)-24 MD, application of insecticide and planting of 60 cm tall saplings including carriage of plants- 21 MD	Jun-Jul	109	34335	0	34335
3	Cost of Fertile Soil 0.25 cft @ Rs.8 per cft/FYM 0.25 cft @ Rs.15 per cft per pit		0	0	9200	9200

4	Sowing of seeds on dug out earth of trench	June	6	1890	200	2090
5	Carriage-6MD,Planting including Casualty replacement-6 MD, fertilizer application-5 MD, 1st weeding-7 MD, 2nd weeding -5 MD, soil working- 7 MD	Jul-Aug	36	11340	0	11340
6	Cost of fertilizer and insecticide (Granular Insecticide @ 5 gms/plant @ Rs.80/- per kg=Rs.640.00, NPK 100 gms/plant in two doses @ Rs.24 per kg= 3840		0	0	4480	4480
7	Maintenance of soil and Moisture Conservation measures (20% of cost)	Oct-Dec	26	8190	0	8190
8	Closure to grazing fire and other biotic interference by engaging watch & ward	Apr-Mar	30	9450	0	9450
9	Fire tracing and control, display board construction, painting / writing, other miscellaneous cost	Jan-Feb	10	3150	360	3510
	TOTAL (1st Year)		**217**	**68355**	**24800**	**93155**
10	Monitoring & Supervision charge 5% of the total cost			0.00	0	4657.75
	GRAND TOTAL		**217**	**68355.00**	**24800.00**	**97812.75**
	MAINTENANCE OPERATION (2ND YEAR)					
1	**Transportation of 18 months old polythene bag seedling in hired truck/tractor from the permanent/mega nursery to planting site including loading and un loading (average lead of 10 Rkm) and stacking the seedling @Rs.6/- per seedling (160 nos.)**	**July**	**0**	**0**	**960**	**960**
2	**Casualty replacement 6 MD**	**Jun-July**	**6**	**1890**	**0**	**1890**
3	Soil working- 7 MD, 1st weeding-6 MD, 2nd weeding -6 MD and fertilizer application -4 MD	Aug-Oct	23	7245	0	7245
4	Cost of fertilizer @ 50 gms NPK per plant @ Rs.24/- per kg for 1600 plants =Rs.1920.00 Insecticide @ 5 gm per plant for 160 nos. of plants @ Rs. 80 per KG = Rs. 64.00		0	0	1984	1984
5	Maintenance of Soil and Moisture Conservation measures (20% of cost)	Aug-Oct	26	8190	0	8190
6	Fire tracing and control and other miscellaneous cost	Feb-Mar	10	3150	0	3150
7	Closure to grazing, fire and other biotic interference by engaging watch and ward	Apr-Mar	30	9450	0	9450
	TOTAL 2nd Year		**95**	**29925**	**2944**	**32869**
8	Monitoring & Supervision charge 5% of the total cost			0.00		1643.45
	GRAND TOTAL		**95**	**29925.00**	**2944.00**	**34512.45**
	MAINTENANCE OPERATION (3RD YEAR)					
1	SMC Measures (Renovation)-26 MD and Maintenance of plantation-14 MD as per requirement	Apr-Mar	40	12600.00	0	12600.00
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	Apr-Mar	18	5670.00	0	5670.00

	TOTAL 3rd Year		**58**	18270.00	**0**	**18270.00**
	Monitoring & Supervision charge 5% of the total cost			0.00		**913.50**
	GRAND TOTAL		**58**	18270.00	**0**	**19183.50**
	MAINTENANCE OPERATION (4TH YEAR)					
1	SMC Measures 21 MD and Maintenance of plantation 14 MD.	Apr-Mar	35	11025.00	0	11025.00
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	Apr-Mar	18	5670.00	0	5670.00
	TOTAL 4th Year		**53**	16695.00	**0**	**16695.00**
	Monitoring & Supervision charge 5% of the total cost			0.00		**834.75**
	GRAND TOTAL		**53**	16695.00	**0**	**17529.75**
	MAINTENANCE OPERATION (5TH YEAR)					
1	SMC Measures- 21 MD and Maintenance of plantation-14 MD.	Apr-Mar	35	11025.00	0	11025.00
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	Apr-Mar	18	5670.00	0	5670.00
	TOTAL 5th Year		**53**	16695.00	**0**	**16695.00**
	Monitoring & Supervision charge 5% of the total cost			0.00		**834.75**
	GRAND TOTAL		**53**	16695.00	**0**	**17529.75**
	MAINTENANCE OPERATION (6TH YEAR)					
1	SMC Measures- 21 MD and Maintenance of plantation-14 MD.	Apr-Mar	35	11025.00	0	11025.00
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	Apr-Mar	18	5670.00	0	5670.00
	TOTAL 6th Year		**53**	16695.00	**0**	**16695.00**
	Monitoring & Supervision charge 5% of the total cost			0.00		**834.75**
	GRAND TOTAL		**53**	16695.00	**0**	**17529.75**
	MAINTENANCE OPERATION (7TH YEAR)					
1	SMC Measures- 21 MD and Maintenance of plantation-14 MD.	Apr-Mar	35	11025.00	0	11025.00
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	Apr-Mar	18	5670.00	0	5670.00
	TOTAL 7th Year		**53**	16695.00	**0**	**16695.00**
	Monitoring & Supervision charge 5% of the total cost			0.00		**834.75**
	GRAND TOTAL		**53**	16695.00	**0**	**17529.75**
	MAINTENANCE OPERATION (8TH YEAR)					
1	SMC Measures- 21 MD and Maintenance of plantation-14 MD.	Apr-Mar	35	11025.00	0	11025.00
2	Closure to grazing, fire and other biotic interference by engaging watch and ward	Apr-Mar	18	5670.00	0	5670.00
	TOTAL 8th Year		**53**	16695.00	**0**	**16695.00**
	Monitoring & Supervision charge 5% of the total cost			0.00		**834.75**
	GRAND TOTAL		**53**	16695.00	**0**	**17529.75**
	MAINTENANCE OPERATION (9TH YEAR)					
1	SMC Measures- 21 MD and Maintenance of plantation-14 MD.	Apr-Mar	35	11025.00	0	11025.00

2	Closure to grazing, fire and other biotic interference by engaging watch and werd	Apr-Mar	18	5670.00	0	5670.00
	TOTAL 9th Year		**53**	16695.00	**0**	**16695.00**
	Monitoring & Supervision charge 5% of the total cost			0.00		**834.75**
	GRAND TOTAL		**53**	16695.00	**0**	**17529.75**
	MAINTENANCE OPERATION (10TH YEAR)					
1	SMC Measures- 21 MD and Maintenance of plantation-14 MD.	Apr-Mar	35	11025.00	0	11025.00
2	Closure to grazing, fire end other biotic interference by engaging watch and ward	Apr-Mar	18	5670.00	0	5670.00
	TOTAL 10th Year		**53**	16695.00	**0**	**16695.00**
2	Monitoring & Supervision charge 5% of the total cost			0.00		**834.75**
	GRAND TOTAL		**53**	16695.00	**0**	**17529.75**

ABSTRACT

Sl. No.	Year	No. Person Day	Labour cost @ Rs 315.00 per day	Material cost (Rs)	Monitoring & Supervision charge 5% of the total cost	Total cost in (Rs)
1	(-2) years	219.12	69022.80	20398.40	0	89421.20
2	(-1) years	19.92	6274.80	1854.41	0	8129.21
3	0th Year	270	85050.0	0	4252.50	89302.00
4	1st Year	217	68355.0	24800.0	4657.75	97812.75
5	2nd Year	95	29925.0	2944.0	1643.45	34512.45
6	3rd Year	58	18270.00	0	913.50	19183.50
7	4th Year	53	16695.00	0	834.75	17529.75
8	5th Year	53	16695.00	0	834.75	17529.75
9	6th Year	53	16695.00	0	834.75	17529.75
10	7th Year	53	16695.00	0	834.75	17529.75
11	8th Year	53	16695.00	0	834.75	17529.75
12	9th Year	53	16695.00	0	834.75	17529.75
13	10th Year	53	16695.00	0	834.75	17529.75
	Total	**1250.040**	**393762.600**	**49996.810**	**17310.450**	**461069.360**

Divisional Forests Officer
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division

Annexure-(E)

COST NORM FOR ANR PLANTATION @ 400 PLANTS PER HECTARE
WAGE RATE Rs. 315.00/- PER MD-DAY
A. ESTIMATE OF COST FOR 1.00 HA. UNDER ANR PLANTATION MODEL

0th year (Advance work) Pre-planting operation.

Sl No	Item of work	Preferable period of execution	person days	Labour (Rs)	Material (Rs)	Total (Rs)
	NURSERY COST					
1	**Cost Of raising 18 months old seedling including 10% casualty @440 seedling per hectare.**	**Before 2(two) year of achievement year**	54.78	17255.70	5099.64	22355.34
2	**Cost of 18 months old seedling for Casualty Replacement @40 plants per hectare.**	**Before 01 year of achievement year**	4.98	1568.70	463.60	2032.30
	Total		59.76	18824.40	5563.24	24387.64
	0th year					
1	Survey demarcation and pillar posting, GPS reading with mapping	Nov/Dec	2	630.0	0	630.0
2	Site Preparation	Nov/Dec	2	630.0	0	630.0
3	Silviculture Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots etc.	Jan/Feb	5	1575.0	0	1575.0
4	Contingency and unforeseen expenditure		0	0	165.00	165.00
	Sub Total		9	2835.00	165.00	3000.00
5	Monitoring & supervision charges 5% of the total cost					150.00
	Total		9	2835.00	165.00	3150.00
	1st year					
1	**Transportation of 18 months old polythin bag seedling in hired truck/tractor from the permanent/mega nursery to planting site including loading and un loading (average lead of 10 Rkm) and stacking the seedling @Rs.6/- per seedling (440 nos.)**	**July-Aug**	0	0	2640.0	2640.0
2	Pitting 45 cm cube size	Feb/Mar	18	5670.00	0	5670.00
3	Carriage and planting including casualty replacement	Jul/Aug	10	3150.0	0	3150.0
4	Complete weeding, Soilworking, manuring	Aug/Sep	12	3780.0	0	3780.0
5	Cost of vermicompost @200gms/plant @Rs. 20/- per kg=Rs. 1600.00 and Granular insecticide 5 gms/ plant @ Rs. 80 per kg=Rs.160.00	Aug/Sep	0	0	1760.00	1760.00
6	Cost of chemical fertilizer (a) Urea 70 gms/plant in two subsequent doses @ Rs.6 per kg =Rs 168.00 (b) NPK 50 gms/plant @ Rs. 24/- per kg= Rs. 480.00 as basal dose		0	0	648.00	648.00

7	Silvicultural operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct	15	4725.0	0	4725.0
8	Soil Conservation Measures (Staggered trenches of dimension 2 m x o.5 mx 0.5 m@ 60 nos per ha) or its equivalent	Sep/Oct	20	6300.0	0	6300.0
9	Fireline Tracing and inspection path	Feb/Mar	3	945.0	0	945.0
10	Watch & ward	Aug-Mar	7	2205.0	0	2205.0
11	Contingency and unforeseen expenditure		0	0	319.00	319.00
	Sub Total		**85**	**26775.00**	**5367.00**	**32142.00**
	Monitoring & supervision charges 5% of the total cost					1607.10
	Total		**85**	**26775.00**	**5367.00**	**33749.10**
	2nd year					
1	**Transportation of 18 months old polythene bag seedling in hired truck/tractor from the permanent/mega nursery to planting site including loading and un loading (average lead of 10 Rkm) and stacking the seedling @Rs.6/- per seedling (40 nos.)**	**July**	**0**	**0**	**240.0**	**240.0**
2	**Casualty replacement 2 MD**	**July-Aug**	**2**	**630.0**	**0**	**630.0**
2	Complete weeding and cultural operations	Sep/Oct	4	1260.0	0	1260.0
3	Soil working and manuring	Sep/Oct	4	1260.0	0	1260.0
4	Cost of fertilizer and insecticide (a) Vermicompost 200 gms/plant @ Rs. 20/ per kg=Rs.1600 (b) Granular insecticide 5 gms/plant for 40 plants 200gms @ Rs. 80/- per kg=Rs.16.00	Sep/Oct	0	0	1616.00	1616.0
5	Fireline Tracing and inspection path	Feb/Mar	1	315.00	0	315.00
6	Soil conservation Measures (Renovation of staggered trenches etc.)	Sep/Oct	8	2520.00	0	2520.00
7	Watch & ward (whole year)	Apr-Mar	7	2205.00	0	2205.00
8	Contingency and unforeseen expenditure		0	0	362.00	362.00
	Sub Total		**26**	**8190.00**	**2218.00**	**10408.00**
	Monitoring & supervision charges 5% of the total cost					520.40
	Total		**26**	**8190.00**	**2218.00**	**10928.40**
	3rd Year					
1	Complete weeding and cultural operations	Aug/Sep	2	630.0	0	630.0
2	Soil working	Aug/Sep	2	630.0	0	630.0
3	Fireline Tracing and inspection path	Feb/Mar	1	315.0	0	315.0
4	Watch & ward (whole year)	Apr-Mar	7	2205.0	0	2205.0
	Sub Total		**12**	**3780.0**	**0**	**3780.0**
	Monitoring & supervision charges 5% of the total cost					189.00
	Total		**12**	**3780.00**	**0**	**3969.00**
	4th year					
1	Fireline Tracing and inspection path	Feb/Mar	1	315.0	0	315.0
2	Watch & ward and cultural operation	Apr-Mar	2	630.0	0	630.0
	Sub-Total		**3**	**945.00**	**0**	**945.00**

Monitoring & supervision charges 5% of the total cost					47.25
Total			945.00	0	992.25
5th year					
1 Fireline Tracing and inspection path	Feb/Mar	1	315.0	0	315.0
2 Watch & ward and cultural operation	Apr-Mar	2	630.0	0	630.0
Sub-Total		**3**	**945.00**	**0**	**945.00**
Monitoring & supervision charges 5% of the total cost					47.25
Total		3	945.00	0	992.25
6th year					
1 Fireline Tracing and inspection path	Feb/Mar	1	315.0	0	315.0
2 Watch & ward and cultural operation	Apr-Mar	2	630.0	0	630.0
Sub-Total		**3**	**945.00**	**0**	**945.00**
Monitoring & supervision charges 5% of the total cost					47.25
Total		3	945.00	0	992.25
7th year					
1 Fireline Tracing and inspection path	Feb/Mar	1	315.0	0	315.0
2 Watch & ward and cultural operation	Apr-Mar	2	630.0	0	630.0
Sub-Total		**3**	**945.00**	**0**	**945.00**
Monitoring & supervision charges 5% of the total cost					47.25
Total		3	945.00	0	992.25
8th year					
1 Fireline Tracing and inspection path	Feb/Mar	1	315.0	0	315.0
2 Watch & ward and cultural operation	Apr-Mar	2	630.0	0	630.0
Sub-Total		**3**	**945.00**	**0**	**945.00**
Monitoring & supervision charges 5% of the total cost					47.25
Total		3	945.00	0	992.25
9th year					
1 Fireline Tracing and inspection path	Feb/Mar	1	315.0	0	315.0
2 Watch & ward and cultural operation	Apr-Mar	2	630.0	0	630.0
Sub-Total		**3**	**945.00**	**0**	**945.00**
Monitoring & supervision charges 5% of the total cost					47.25
Total		3	945.00	0	992.25
10th year					
1 Fireline Tracing and inspection path	Feb/Mar	1	315.0	0	315.0
2 Watch & ward and cultural operation	Apr-Mar	2	630.0	0	630.0
Sub-Total		**3**	**945.00**	**0**	**945.00**
Monitoring & supervision charges 5% of the total cost					47.25
Total		3	945.00	0	992.25

ABSTRACT

Sl. No.	Year	No. Person Day	Labour cost @ Rs 315.00 per day	Material cost (Rs)	Monitoring & Supervision charge 5% of the total cost	Total cost in (Rs)
1	(-2) years	54.78	17255.70	5099.64	0	22355.34
2	(-1) years	4.98	1568.70	463.60	0	2032.30
3	0th Year	9	2835.00	165.00	150.00	3150.00
4	1st Year	85	26775.00	5367.00	1607.10	33749.10
5	2nd Year	26	8190.00	2218.00	520.40	10928.40
6	3rd Year	12	3780.00	0	189.00	3969.00
7	4th Year	3	945.00	0	47.25	992.25
8	5th Year	3	945.00	0	47.25	992.25
9	6th Year	3	945.00	0	47.25	992.25
10	7th Year	3	945.00	0	47.25	992.25
11	8th Year	3	945.00	0	47.25	992.25
12	9th Year	3	945.00	0	47.25	992.25
13	10th Year	3	945.00	0	47.25	992.25
	Total	**212.76**	**67019.40**	**13313.24**	**2797.25**	**83129.89**

Divisional Forests Officer
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division

Annexure-(F)

COST NORM FOR AIDED NATURAL REGENERATION (ANR) @ 200 PLANTS PER HECTARE

Wage rate Rs. 315.00/Day.

Sl. No.	Item of Work	Preferable period of Execution	Labour in Mandays	Lobour Cost (Rs)	Material Cost (Rs)	Total Cost in (Rs)
	NURSERY COST					
1	Cost Of raising 18 months old seedling including 10% casualty @220 seedling per hectare.	Before 2(two) year of achievement year	27.39	8627.85	2549.82	11177.67
2	Cost of 18 months old seedling for Casualty Replacement @20 plants per hectare.	Before 01 year of achievement year	2.49	784.35	231.80	1016.15
	Total		29.88	9412.20	2781.62	12193.82
	0TH YEAR					
1	Survey, Demarcation and Pillar Posting, GPS Reading with mapping	Nov/Dec	2	630.0	0	630.0
2	Site Preparation	Nov/Dec	2	630.0	0	630.0
3	Silvicultural Operation including clearance of weed, climber cutting, high stump cutting, singling of shoots etc.	Jan/Feb	5	1575.0	0	1575.0
5	Contingency and Unforeseen Expenditures		0	0	133	133
	SUB TOTAL		9	2835.0	133.0	2968.00
6	Monitoring & Supervision charge 5% of the total cost					148.40
	GRAND TOTAL		9	2835.0	133.0	3116.40
	1ST YEAR OPERATION					
1	**Transportation of 18 months old polythene bag seedling in hired truck/tractor from the permanent/mega nursery to planting site including loading and un loading (average lead of 10 Rkm) and stacking the seedling @Rs.6/- per seedling (200 nos.)**	**July**	**0**	**0**	**1200.0**	**1200.0**
2	Pitting 45 cm cube size	Feb/Mar	9	2835.00	0	2835.00
3	Carriage and planting including casualty replacement	Jul/Aug	5	1575.0	0	1575.0
4	Complete weeding, Soil working, Manuring	Aug/Sep	6	1890.0	0	1890.0
5	Cost of Vermi compost @200 gms/plant @ Rs.20/- per kg = Rs.800.00 and Granular Insecticide 5 gms/plant @ Rs.80/- per kg. =Rs.80.00	Aug/Sep	0	0	880.0	880.0

6	Cost of Chemical fertiliser (a) Urea 70 gms/plant in two subsequent doses @ Rs.6/- per kg =Rs.84.00 (b) NPK 50 gms/plant @ Rs.24/- per kg=Rs.240.00 as basal dose	Jul/Aug	0	0	324.0	324.0
7	Silvicultural Operation involving clearance of weeds, cutting of climbers, singling of shoots etc.	Sep/Oct	15	4725.0	0	4725.0
8	Soil Conservation Measures (Staggered trenches of dimension 2 m X 0.5 m X 0.5 m @ 60 nos per ha) or its equivalent	Sep/Oct	20	6300.0	0	6300.0
9	Fireline Tracing and Inspection Path	Feb/Mar	3	945.0	0	945.0
10	Watch & ward	Aug-Mar	7	2205.0	0	2205.0
11	Contingency and Unforeseen Expenditures		0	0	304.0	304.0
	SUB TOTAL		**65**	**20475.00**	**2708.0**	**23183.00**
12	Monitoring & Supervision charge 5% of the total cost					1159.15
	GRAND TOTAL		**65**	**20475.00**	**2708.0**	**24342.15**
	2ND YEAR OPERATION					
1	**Transportation of 18 months old polythene bag seedling in hired truck/tractor from the permanent/mega , nursery to planting site including loading and un loading (average lead of 10 Rkm) and stacking the seedling @Rs.6/- per seedling (20 nos.)**	Jul/Aug	0	0	120.0	120.0
	Casualty replacement 1 MD		1	315.0	0	315.00
2	Complete weeding and cultural operations	Sep/Oct	2	630.0	0	630.0
3	Soil working and manuring	Sep/Oct	2	630.0	0	630.0
4	Cost of Fertiliserand insecticide (a) Vermicompost 200gms/plant @ Rs.20/- per kg=Rs.800.00 (b) Granular Insecticides 5 gms/plant for 20 plants 100 gms @ Rs.80/- per kg=Rs.8.00	Sep/Oct	0	0	808.0	808.0
5	Soil Conservation Measures (Renovation of staggered trenches etc.)	Sep/Oct	8	2520.0	0	2520.0
6	Fireline Tracing and Inspection Path	Feb/Mar	1	315.0	0	315.0
7	Watch & ward (whole year)	Apr-Mar	7	2205.0	0	2205.0
8	Contingency and Unforeseen Expenditures		0	0	181.0	181.0
	SUB TOTAL		**21**	**6615.0**	**1109.0**	**7724.0**
9	Monitoring & Supervision charge 5% of the total cost					386.20
	GRAND TOTAL		**21**	**6615.0**	**1109.0**	**8110.20**

3RD YEAR OPERATION						
1	Complete weeding and cultural operations	Aug/Sep	1	315.0	0	315.0
2	Soil working	Aug/Sep	1	315.0	0	315.0
3	Fireline Tracing and Inspection Path	Feb/Mar	1	315.0	0	315.0
4	Watch & ward (whole year)	Apr-Mar	7	2205.0	0	2205.0
5	Contingency		0	0	200.0	200.00
	SUB TOTAL		**10**	**3150.0**	**200.0**	**3350.0**
6	Monitoring & Supervision charge 5% of the total cost					167.50
	GRAND TOTAL		**10**	**3150.0**	**200.0**	**3517.50**
4TH YEAR OPERATION						
1	Fireline Tracing and Inspection Path	Feb/Mar	1	315.0	0	315.0
2	Watch & ward and cultural operations	Apr-Mar	2	630.0	0	630.0
	SUB TOTAL		**3**	**945.0**	**0**	**945.0**
3	Monitoring & Supervision charge 5% of the total cost					47.25
	GRAND TOTAL		**3**	**945.0**	**0**	**992.25**
5TH YEAR OPERATION						
1	Fireline Tracing and Inspection Path	Feb/Mar	1	315.0	0	315.0
2	Watch & ward and cultural operations	Apr-Mar	2	630.0	0	630.0
	SUB TOTAL		**3**	**945.0**	**0**	**945.0**
3	Monitoring & Supervision charge 5% of the total cost					47.25
	GRAND TOTAL		**3**	**945.0**	**0**	**992.25**
6TH YEAR OPERATION						
1	Fireline Tracing and Inspection Path	Feb/Mar	1	315.0	0	315.0
2	Watch & ward and cultural operations	Apr-Mar	2	630.0	0	630.0
	SUB TOTAL		**3**	**945.0**	**0**	**945.0**
3	Monitoring & Supervision charge 5% of the total cost					47.25
	GRAND TOTAL		**3**	**945.0**	**0**	**992.25**
7TH YEAR OPERATION						
1	Fireline Tracing and Inspection Path	Feb/Mar	1	315.0	0	315.0
2	Watch & ward and cultural operations	Apr-Mar	2	630.0	0	630.0
	SUB TOTAL		**3**	**945.0**	**0**	**945.0**
3	Monitoring & Supervision charge 5% of the total cost					47.25
	GRAND TOTAL		**3**	**945.0**	**0**	**992.25**
8TH YEAR OPERATION						
1	Fireline Tracing and Inspection Path	Feb/Mar	1	315.0	0	315.0
2	Watch & ward and cultural operations	Apr-Mar	2	630.0	0	630.0

	SUB TOTAL		3	945.0	0	945.0
3	Monitoring & Supervision charge 5% of the total cost					47.25
	GRAND TOTAL		3	945.0	0	992.25
	9TH YEAR OPERATION					
1	Fireline Tracing and Inspection Path	Feb/Mar	1	315.0	0	315.0
2	Watch & ward and cultural operations	Apr-Mar	2	630.0	0	630.0
	SUB TOTAL		3	945.0	0	945.0
3	Monitoring & Supervision charge 5% of the total cost					47.25
	GRAND TOTAL		3	945.0	0	992.25
	10TH YEAR OPERATION					
1	Fireline Tracing and Inspection Path	Feb/Mar	1	315.0	0	315.0
2	Watch & ward and cultural operations	Apr-Mar	2	630.0	0	630.0
	SUB TOTAL		3	945.0	0	945.0
3	Monitoring & Supervision charge 5% of the total cost					47.25
	GRAND TOTAL		3	945.0	0	992.25

ABSTRACT

SL. No.	Item of Work	No. Person Day	Labour cost @ Rs 315.00/- per day	Material cost (Rs)	Monitoring & Supervision charge 5% of the total cost	Total cost in (Rs)
1	(-2) years	27.39	8627.85	2549.82	0.0	11177.67
2	(-1) years	2.49	784.35	231.80	0.0	1016.15
3	0th Year operation	9	2835.00	133.00	148.40	3116.40
4	1st Year operation	65	20475.00	2708.0	1159.15	24342.15
5	2nd Year operation	21	6615.00	1109.00	386.20	8110.20
6	3rd Year operation	10	3150.00	200.00	167.50	3517.50
7	4th Year operation	3	945.00	0	47.25	992.25
8	5th Year operation	3	945.00	0	47.25	992.25
9	6th Year operation	3	945.00	0	47.25	992.25
10	7th Year operation	3	945.00	0	47.25	992.25
11	8th Year operation	3	945.00	0	47.25	992.25
12	9th Year operation	3	945.00	0	47.25	992.25
13	10th Year operation	3	945.00	0	47.25	992.25
	TOTAL	155.88	49102.20	6931.62	2192.00	58225.82

Divisional Forests Officer
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division

Annexure-(G)

Estimate for Loose Boulder Check Dam of length 2.5 mtr

Foundation and apron 25 cm thick.
Top width 60 cm
Height of check dam above the foundation is 90 cm.
Uphill side width 90 cm.
Downhill side width should be 180 cm.
Uphill side apron 30 cm and downhill side apron 90 cm.

Analysis of Rate

Particulars of work	No./ Quantity	Rate	Amount
Earth work in hard or gravelly soil within 50m. Initial lead and 1.5m. Initial lift including rough dressing of clods to maximum 5 cm. to 7 cm and laying in layers not exceeding 0.3 m. in depth (per 100 cum.)	43	315.00	13545.00
Mulia			270.90
2% sundries and T & P etc.	Total		13815.90
Rough stone dry packing in aprons and revetments with hard granite stones (15 to 30 cm size) per cum	1	507.96	507.96
Granite broken stone 1 cum.	0.17	465.00	79.05
Mason (Special)	0.35	355.00	124.25
Stone packer	1.04	315.00	327.60
Mulia			20.78
2% sundries, T & P etc.	Total		1059.64

Estimate for construction of Loose Boulder Check Dam
Length of Loose Boulder Check Dam 2.5 Mtr

Particulars of work	Volume	Rate in Rupees	Total amount in Rupees
Earth work in hard or gravelly soil within 50m. Initial lead and 1.5m. Initial lift including rough dressing of clods to maximum 5 cm. to 7 cm and laying in layers not exceeding 0.3 m. in depth Dressing the side of banks and foundation on L.S	L.S	200.00	200.00
Rough stone dry packing in aprons and revetments with hard granite stones (15 to 30 cm size) per cum Rough stone dry packing in aprons and revetments with hard granite stones (15 to 30 cm size) per cum			
Foundation 4.5 mtr x 0.25 mtr = 1.125 sq.m Super structure(3.3mx0.6m)/2x 0.9m=1.755 sq.m 1.755 sq. mtr + 1.125 sq.mtr = 2.88 sq.mtr Volume = 2.88 sq.mtr x 2.5 mtr = 7.2 cu.m	7.2 cu.m	1059.64	7629.41
Total			7829.41

Cost per running meter of L.B.C.D of 90 cm height = Rs 7829.41/2.5= Rs. 3131.764 or say **Rs.3200/-**

Divisional Forests Officer
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division

Annexure-(H)

ESTIMATE FOR BARBED WIRE FENCE

7 strands straight + 2 diagonal strands of 2 ply barbed wire on RCC posts fixed at 2.5 mtr intervals.

Two struts at every 10th pillar

Fence post size Length-8ft,Bottom width 6"x6", Top width-4"x4"Reinforced with 6mm rods

Minimum wage rate Rs. 315.00 per day for unskilled labourer

ANALYSIS OF RATE

1	Earth work in hard or gravelly soil within 50m. Initial lead and 1.5m. initial lift including rough dressing of clods to maximum 5 cm. to 7 cm and laying in layers not exceeding 0.3 m. in depth (per 100 cum.)			
	Mulia	43	315.00	13545.00
	2% sundries and T & P etc.			270.90
		Total		**13815.90**
2	Cement concrete (1:4:8) with 4 cm hard granite metal including lying, compacting, curing with all cost, conveyance, royalty of materials etc. (per 1 cum)			
	HG metal	0.96 cum	Rs 1223.40	1174.64
	Sand	0.48 cum	Rs 443.00	212.62
	Cement	1.72 qtl	Rs 630.00	1083.60
	Mason 2nd Class	0.18	Rs 355.00	63.90
	Man mulia	1.80	Rs 315.00	567.00
	Woman mulia	1.40	Rs 315.00	441.00
	Man mulia	0.70	Rs 315.00	220.50
		Total		**3763.26**
3	Cement Concrete (1:2:4) with 12 mm size C.B.H.G chips including cost, carriage & royalty etc complete			
	HG chips 12 mm	0.96 cum	Rs 1581.40	1518.14
	Sand	0.45 cum	Rs 443.42	199.53
	Cement	3.23 qtl	Rs 630.00	2034.90
	Mason 2nd Class	0.60	Rs 355.00	213.00
	Mulia	4.6	Rs 315.00	1449.00
		Total		**5414.57**
4	Cutting, bending, binding, straightening and tying the grills and placing in position including cost of M.S Tor Steel and binding wire etc (Ref-A/R-2006 item No. 9 Page 52). Taking output for 1 quintal			
	Cost & carriage of HYSD Steel including 5% for wastage & overlapping	1.05 qtl	Rs 5500.00	5775.00
	Binding wire	8 kg	Rs 80/kg	640.00
	Labour for cutting, bending, shifting to site, tying & placing in position Mate	0.44	405.00	178.20
	Blacksmith Special	4	465.00	1860.00
	Semiskilled mulia	8	355.00	2840.00
		Total		**11293.20**

1.	02 ply barbed wire (5 Rmt per kg) 7 straight strand x 1000 Mt =7000Mt 2 Diagonal strand = $2 \times \sqrt{(6.5')^2 + (8.2')^2}$ =21.00 ft x 400 nos=8400 ft or Total	= 2 x 10.50 ft =2560Mt =9560Mt
	Cost per KM=9560/5=1912 Kg @ Rs.80/Kg	**Rs.1, 52,960.00**
2.	Construction of RCC pillars of size- Length—8ft, Bottom width 6"x6", Top width-4"x4" Reinforced with 6mm rods with proper curing $\{8' \times \frac{6"+4"}{2}\} \times \frac{6"+4}{2}$ = 1.34 cft or 0.038 cum	
	i) Cost of c.c. work 1:2:4=0.038 cum @**5414.57**/cum	= 205.75
	ii) Cost of rod including cutting, bending & binding 0.038x0.9qtl=0.0342 qtl@ Rs. **11293.20**/qtl.	= 386.23
	iv) Contingency (15%) including Curing, stacking, provision of hooks etc.	= 88.80 Rs.680.78
	Requirement of pillars per KM- Spacing=2.5mtx2.5mt Requirement=1000mt/2.5mt Strut pillar in every 10th pillar = (400/10)x2	= 400 = 80 480 Nos
	Cost of pillars per Kilometer= 480@ Rs 680.78	**Rs.3, 26,774.40**
3.	Fitting fixing of RCC pillars in position with hbg metal (4cm) in C.M (1:4:8) i) Digging of pits 1.5'x1.5'x1.5'=3.375cft/pit for 480 pits, 480x3, 375=1620 cft or 45.86 cum @ Rs. **13815.90**/100cum	=Rs 6335.97
	ii) Fixing of pillars with 4cm hbg metals in C.M 1:4:8 pit size-1.5'x1.5'x1.5'	=3.375 cft
	Deduct 1/3rd of butt of pillar i.e.3.375/3	= (-) 1.125 cft
	Total c.c. work per pillar	2.25cft
	For 480 pillars=480x2.25=1080cft or 30.577 cum @ Rs. **3763.26**/cum	= Rs.1,15,069.20
4.	Labour for straightening the barbed wire and fixing & clipping with pillars 70M.d per km@ Rs 315.00 per manday	= Rs.22050.00
5.	Carriage of Barbed wire & pillars to work site @Rs.1000/tl. and cost of loading & unloading within 5 km distance Approximately 10 tld @ 800/tld	= Rs.18, 000.00
6.	Provision of one Iron Gate of size (4' x 5') on LS	= Rs. 7,500.00
	Total	= Rs. 6, 48,689.57
	Labour Cess 1%	= Rs. 6486.89
	Expenditure per 1 km of barbed wire fencing	= Rs.6, 55,176.46
7.	Expenditure towards maintenance for 3 years (3rd, 6th & 9th year) @ 2% of cost per rkm = 3 x 2% x Rs. 6,55,176.46	= Rs.39,310.59
	Expenditure per 1 km of barbed wire fencing including maintenance	= Rs.6,94,487.05 Or Say Rs 6,94,500.00

Divisional Forests Officer
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division

ANNEXURE-(I)

TOTAL COST OF THE COMPENSATORY AFFORESTATION SCHEME

Sl. No.	Item of Work	Total Estimated cost in Rs.
1	Barbed wire fence around plantation sites of Balangi, Barakaudi & KhamarpadarRs 694500 X 18.712 km	1,29,95,484.00
2	Bald Hill plantation over 81.128 ha. X Rs. 4,61,069.360	3,74,05,635.04
3	ANR with 200 plants/ha in MDF over 6.877 ha @ Rs. 58225.82 per ha.	4,00,418.96
4	ANR with 400 plants/ha in Khamarpadar over 68.766 ha @ 83129.89/ha	57,16,510.01
5	Loose boulder check dam over 1500 meter @ Rs. 3200.00 per meter	48,00,000.00
	Total	**6,13,18,048.01**
	Add 20% for escalation of cost in future	1,22,63,609.60
	Grand Total	7,35,81,657.61 or say **7,35,81,700.00**

(Rupees Seven crore thirty five lakh eight one thousand seven hundred only).

Divisional Forest Officer,
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division

Checked by me

Asst. Conservator of Forest
Kalahandi (South) Division

Technically Approved

Divisional Forest Officer,
Kalahandi South Division
Divisional Forest Officer
Kalahandi South Division

ମୌଜା ବଲାଙ୍ଗି, ସିଟ ନଂ୩

ଥାନା ଥୁଆମୁଲରାମପୁର ନଂ୩୩

ତହସିଲ୍ ଥୁଆମୁଲରାମପୁର୍ ନଂ୩୩

BALANGI, SHEET No3

Thana ThuamulRampur No33

ଜିଲ୍ଲା କଳାହାଣ୍ଡି

ସ୍କେଲ୍ ୧୬"=୧ମାଇଲ୍ Scale 16"=1Mile

ସନ ୧୯୯୨-୯୩ Year 1992-93

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Scale of CHAINS METRES

ଗୋଦରମପଲ୍ଲୀ ନଂ୩୫

ଚିରିକୋଟ ନଂ୩୪

ପୁରୁଆନ ନଂ୩୨

ବିଜୁଳି ପ୍ରବାହିତ କରାଯାଇ

BLOCK-1

BLOCK-2

BLOCK-3

ପୁରୁଣା

୧-ତ୍ରିକୋଣାକାର...

୨-ଗୋଲାକାରୀ...

୩-ଗୁରୁତ୍ୱାର୍ଦ୍ଦିଷ୍ଟସ୍ଥଳ...

୪-ପ୍ରାଚୀରଘେରା...

୫-ଘରବାରି...

୬-ଆରମ୍ଭ ଓଶେଷ...

୭-ରେଳଲାଇନ୍...

୮-ଗଡିବା...

୯-ପକ୍କାରାସ୍ତା...

୧୦-ରାସ୍ତାଘାଟ...

Name of the Tahasil	Name of the Village	Khata No.	Plot No.	Total area of the plot (Ac)	Area considered (Ac)	Kissam	Boundary Description				Remarks (Full/Part)
							North	South	East	West	
THUAMULRAMPUR	BALANGI	122 (Abada Ajogya Anabadi)	205	19.75	19.75	Dangar	206	192,195	207	197	Full
			187	13.88	13.88	Dangar	196,189	184	188	186,196	Full
			163	8.25	8.25	Dangar	197	167	196	Sukasan	Full
			353	23.50	23.50	Dangar	230	235(Road)	335,351	233,234	Full
			349	2.02	2.02	Dangar	372	336,337	348	350	Full
			372	27.45	25.49	Dangar	357,365,366	344,345,346	370,371,373	354,355	Part
			197	34.76	34.76	Dangar	198	163,196	205	Singari RF	Full
			196	29.00	1.82	Dangar	197	171,186	187,189	163,167	Part
Total: 129.47 Acr or 52.395 Hs											

AREA PROPOSED FOR COMPENSATORY AFFORESTATION

PLAN SHOWING NON-FOREST GOVERNMENT LAND PROPOSED FOR RAISING COMPENSATORY AFFORESTATION IN VILLAGE BALANGI UNDER THUAMULRAMPUR TAHASIL OF KALAHANDI DISTRICT IN LIEU OF THE FOREST LAND PROPOSED FOR DIVERSION PERTAINING TO SUKURANGI CHROMITE MINES LOCATED IN JAJPUR DISTRICT OF M/s OMC LTD.

1. Certified that the non-forest Government land is in compact patches and in continuity fit for compensatory plantation and are more than 4.0 ha area patch.
2. Certified that these lands are not coming under reserve category like Gochar, Smasana, village forest etc.
3. These areas have adequate soil depth to sustain plantation and area manageable from silvicultural point of view.
4. Certified that the Government land are found suitable for plantation
5. Certified that these lands are free from encroachment and encumbrances.
6. Certified that the land is not covered under Section 4 (1) notification and do not come under any forest block.
7. Certified that the above land is not coming under DLC land and any forest land classification.
8. Certified that the above land is not allotted to any agency previously.
9. These lands can be given to OMC Ltd for using the same towards Compensatory Afforestation.

S.K. Das
Dy. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar-751001

Revenue Inspector Thuamul Rampur

Revenue Supervisor Thuamul Rampur

Forester Thuamul Rampur

Forest Range Officer Thuamul Rampur

Tahasildar Thuamul Rampur

Divisional Forest Officer Kalahandi (S) Division

Divisional Forest Officer
Kalahandi South Division

PLATE NO. : X(A)

PLATE NO:- X(B)

PLAN SHOWING NON-FOREST GOVERNMENT LAND FOR RAISING COMPENSATORY AFFORESTATION IN LIEU OF THE FOREST LAND PROPOSED FOR DIVERSION FOR MINING AND ANCILLARY USE AGAINST SUKURANGI CHROMITE ML LOCATED IN JAJPUR DISTRICT OF M/S ODISHA MINING CORPORATION LIMITED.

SCALE : 16"=1Mile

Tahasil	Village	Khata No	Plot No	Total area of the plot (Acres)	Area considered (Acres)	Kissam	Boundary description				Remarks
							North	South	East		
Th. Rampur	Barkauli	115 (AAA)	732	46.95	40.00	Dangar	903	733,737	904,736	712,730	Part
			736	35.15	15.00	Dangar	904	733,895	Krishna-Kaberi	732	Part
			903	56.73	16.00	Dangar	Talajhabi	732	904	902,712	Part
			904	57.70	17.00	Dangar	Talajhabi, Uper Jhabi	736	Krishna-Kaberi	903,732	Part

TOTAL AREA CONSIDERED-88.00 Ac or 35.610 ha

1. Certified that the above non-forest Government land is in compact patches and in continuity fit for compensatory plantation and are more than 4.0 ha area patch.
2. Certified that these lands are not coming under reserve category like Gochar, Smasana (burning ghat), village forest etc.
3. These areas have adequate soil depth to sustain plantation and area manageable from silvicultural point of view.
4. Certified that the Government land are found suitable for plantation
5. Certified that these lands are free from encroachment and encumbrances.
6. Certified that the above land is not covered under Section 4 (1) notification and do not come under any forest block.
7. Certified that the above land are not coming under DLC land and forest land classification.
8. Certified that the above land are not allotted to any agency previously.
9. These lands can be given to Odisha Mining Corporation Limited for using the same towards Compensatory Afforestation.
10. RoR is as per the land record available as on 25.10.1980.

Revenue Inspector — Forester — Range Officer — Tahasildar — Divisional Forest Officer

Divisional Forest Officer
Kalahandi South Division

S.K. Das
Dy. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar-751001

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SCALE OF METRES

INDEX

BONDARY LINE

Certified that this map has been Finally framed and a copy of it has been Finally published in accordance with rule 29 read with rule 69 of O.S.S.R. rules, 1962 on 15th. OCT. 1990.

Settlement Officer

PRINTED AT S. & M. P. O., ORISSA

ମୌଜା ଖମାରପଦର, ସିଟ ନମ୍ବର ୩

ଥାନା ଥୁଆମୂଳରାମପୁର ନଂ ୪୬
ତହସିଲ୍ ଥୁଆମୂଳରାମପୁର ନଂ ୪୬

KHAMÁRAPADAR, SHEET No 3
Thana Thuamul Rampur No 47

ଜିଲ୍ଲା କଳାହାଣ୍ଡି

ସ୍କେଲ୍ ୧୬"=୧ମାଇଲ୍ Scale 16"=1 Mile
ସନ ୧୯୯୬-୯୭ Year 1996-97

82°48'30"E

82°49'0"E

19°24'0"N

19°23'30"N

ଜୁନାପାଣି
ଜିଲ୍ଲା କୋରାପୁଟ
ଜିଲ୍ଲା କଳାହାଣ୍ଡି

ଟିକିଲିପଦର ନଂ ୪୬

ଚପାଡ଼ାପଦର ନଂ ୧୦୨

ଚୁଡିବଡ଼ଗୁଡ଼ା
ଜିଲ୍ଲା କୋରାପୁଟ
ଚୁଡାବାଡୁ ଗୁଡ଼ା
ଜିଲ୍ଲା - କଳାହାଣ୍ଡି

INDEX

- AREA PROPOSED FOR CA
- CORNER POINTS

PLAN SHOWING NON-FOREST GOVERNMENT LAND FOR RAISING COMPENSATORY AFFORESTATION IN VILLAGE KHAMARPADAR UNDER THUAMULRAMPUR TAHASIL IN LIEU OF THE FOREST LAND PROPOSED FOR DIVERSION FOR MINING AND ANCILLARY USE AGAINST SUKURANGI CHROMITE M.L. LOCATED IN JAJPUR DISTRICT OF M/S ODISHA MINING CORPORATION LIMITED.

SCALE : 16"=1Mile

Tahasil	Village	Khata	Plot No	Total area of the plot (Ac)	Area considered (Ac)	Kissam	Boundary description				Remarks
							North	South	East	West	
THUAMULRAMPUR	KHAMARPADAR	208 (ATA)	81	16.08	4.11	Dungar	Chatibadgarh	82	84	80	PART
			82	22.50	13.53	Dungar	81	749	83	79	PART
			83	30.00	24.19	Dungar	84	100, 749	92	82	PART
			84	29.93	26.08	Dungar	85	83	91	51 & Chatibadgarh	PART
			85	23.63	21.29	Dungar	86	84	90	Chatibadgarh	PART
			86	19.33	19.33	Dungar	Jamjoni	85	87	Chatibadgarh & Jamjoni	FULL
			87	35.50	27.68	Dungar	Jamjoni	90	88	89	PART
			88	41.30	9.84	Dungar	Jamjoni & Tikilipadar	89, 90	Poilapadar	87	PART
			91	30.00	16.02	Dungar	90	92	94	54	PART
			92	30.00	7.85	Dungar	91	99, 100	93	53	PART

TOTAL AREA CONSIDERED: 169.92 Ac or 68.766 ha

1. Certified that the above non-forest Government land is in compact patches and in continuity fit for compensatory plantation and are more than 4.0 ha area patch.
2. Certified that these lands are not coming under reserve category like Gochar, Smasana (burning ghat), village forest etc.
3. These areas have adequate soil depth to sustain plantation and area manageable from silvicultural point of view.
4. Certified that the Government land are found suitable for plantation
5. Certified that these lands are free from encroachment and encumbrances.
6. Certified that the above land is not covered under Section 4 (1) notification and do not come under any forest block.
7. Certified that the above land are not coming under ROLC land and forest land classification.
8. Certified that the above land are not allotted to any agency previously.
9. These lands can be given to Odisha Mining Corporation Limited for using the same towards Compensatory Afforestation.
10. RoR is as per the land record available as on 25.10.1980.

Rovenue Inspector
Thuamulrampur

Clerk
Peshkar
Bonakhamar Section

Asst. Range Officer
Jaipur Range

Tahasildar
Thuamulrampur

Divisional Forest Officer
Kalahandi South Division

ANNEXURE - C

MAP SHOWING NON-FOREST GOVT. LAND ALLOTED FORCOMPENSATORY AFFORESTATION IN VILLAGES BALANGI , BARKAUDI & KHAMARPADAR UNDER THUAMUL RAMPUR TAHASIL AGAINST SUKURANGI CHROMITE MINES OF OMC LTD LOCATED IN JAJPUR DISTRICT, ODISHA

निर्यात के लिए नहीं NOT FOR EXPORT

OPEN SERIES MAP

No. E44E15

Scale 1:50,000

E44E10	E44E14 Kalāhāndi ORISSA	E44F2
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E44E12	E44E16 Koraput ORISSA	E44F4

भारतीय सर्वेक्षण विभाग SURVEY OF INDIA

1st Edition 2009. PRICE ₹ 94/- Price : Rs. 50 /-

CONVENTIONAL SYMBOLS

Express highway: with toll; with bridge; with distance stone
Roads, metalled: according to importance
Roads, double carriageway: according to importance
Unmetalled road. Cart-track. Pack-track with pass. Foot-path
Streams: with track in bed; undefined. Canal
Dams: masonry or rock-filled; earthwork. Weir
River: dry with water channels; with island & rocks. Tidal river
Submerged rocks. Shoal. Swamp. Reeds
Wells: lined; unlined. Tube-well. Spring. Tank: perennial; dry
Embankments: road or rail; tank. Broken ground
Railways, broad gauge; double; single with station; under construction
Railways, other gauges: double; single with distance stone; do
Mineral line or tramway. Kiln. Cutting with tunnel
Contours with auto-features. Rocky slopes. Cliffs
Sand features: (1) flat, (2) sand hills (permanent), (3) dunes (shifting)
Towns or Villages: inhabited; deserted. Fort
Huts: permanent; temporary. Tower. Antiquities
Temple. Church. Mosque. Idgāh. Tomb. Graves
Lighthouse. Lightship. Buoys: lighted; unlighted. Anchorage
Mine. Vine on trellis. Grass. Scrub
Palms: palmyra; other. Plantain. Conifer. Bamboo. Other trees
Areas: cultivated; wooded. Surveyed tree
Boundary, international
- state: demarcated; undemarcated
- district; subdivision, tahsil or taluk; forest
Boundary pillars: surveyed; unidentified
Heights, triangulated: station; point; approximate
Bench-mark: geodetic; tertiary; canal
Post office. Telegraph office. Overhead line
Rest house or Inspection bungalow. Circuit house. Police station
Camping ground. Forest: reserved; protected
Spaced names: administrative; locality or tribal
Hospital: Dispensary. Veterinary hospital
Aerodrome. Heliped. Tourist site
Power line: with pylons surveyed; with pylons unsurveyed

AREA ALLOTED FOR COMPENSATORY AFFORESTATION

NOTES :-

Heights are in metres and above Indian mean sea level.
Contours are approximate.
A relative height, e.g., 80, represents the approximate height in metres between the top and bottom of a steep slope.
The forest boundaries have been surveyed as pointed out by the forest officials on the ground, but have not been verified by the forest authorities.
Jhum or temporarily cultivated areas occur throughout the jungle, they are normally abandoned after 2-3 years and are not shown.
Hand Pump is shown thus

COMPILATION INDEX

A. Compiled from 1:25,000 survey 1981-82.
Updated for major details during 2004-05.

Projection – UTM Datum – WGS 84

Magnetic Variation from True North about 1° West in 2005.
(Annual change negligible).

500 m to 1 cm 1:50,000 2 cm to 1 km

Metres 1000 500 0 1 2 3 Kilometres

CONTOUR INTERVAL 20 METRES

For further details about this map, please contact

Director
Orissa Geo-Spatial Data Centre
Survey of India
Survey Bhawan, PO R R Laboratory
Bhubaneshwar.
Fax : 0674 - 2301416

WEBSITE – www.surveyofindia.gov.in

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REG. No. 8250 SPC D '09 (Orissa GDC-1:50,000)-10'S.

भारत के सर्वेक्षक के निदेश से प्रकाशित,
Published under the direction of Surveyor General of India,
Survey of India, Hāthibarkala Estate, Post Box No. 37, Dehra Dūn-248001 (Uttarākhand),
Department of Science & Technology, Government of India.

PRINTED AT THE SOUTHERN PRINTING GROUP OF SURVEY OF INDIA.

Divisional Forest Officer
Kalahandi South Division

ANNEXURE - VIII/192

Schedule I—Form No. 33-A (Revised)

ଖତିଆନ

ମୌଜା ଜାଡ଼ୁକୋଣ୍ଡି
ଥାନା ଖୁଦାପୁକୁନ୍ଦାପୁର
ଥାନା ନମ୍ବର ୮୩

ତହସିଲ ଖୁଦାପୁକୁନ୍ଦାପୁର
ତହସିଲ ନମ୍ବର ୮୩
ଜିଲ୍ଲା ଗଞ୍ଜାମ

ଜମିଦାରଙ୍କ ନାମ ଓ ଖେୱାଟ ବା ଖତିଆନ ନମ୍ବର } ଓଡ଼ିଶା ସରକାର

୧ । ଖତିଅଂଶର କ୍ରମିକ ନମ୍ବର } ୧୧୫/୧

୨ । ପ୍ରଜାଙ୍କ ନାମ, ପିତାଙ୍କ ନାମ, ଜାତି ଓ ବାସସ୍ଥାନ } ନିଲ୍ଲାକାଣ୍ଡ ଓ ଅନ୍ୟମାନେ ଜମିଦାର ଅଫିସ୍ ଖୁଦାପୁକୁନ୍ଦାପୁର, ନିଲ୍ଲାକାଣ୍ଡି ଜମିଦାର ଜମିଦାର

୩ । ସ୍ୱତ୍ୱ }

	କବଳର	ଘରଣା	ସେସ୍	ନିସ୍ତାର ସେସ୍ ଓ ଅନ୍ୟାନ୍ୟ ସେସ୍ ଯଦି କିଛି ଥାଏ	ମୋଟ	୪ । ଭୋଗଦଖଲକାରଙ୍କ ଖତରାର ବିବରଣୀ
୪ । ହେୟ						

୬ । ବିଶେଷ ଅନୁସଚି, ଯଦି କିଛି ଥାଏ }

BLANK SPACE FOR STAMPING

ଏହି କେସ୍ ନଂ ୨୬/୧୯ ଓ ୨-୧୦-୨୦୧୯ ତାରିଖରେ ଆଦେଶ ଦିଆଯାଇଥିବା ୧୧୫ ନଂ ଖତିଆନ, ୫୩ ନଂ ଖତିଆନ, ୫୩ ନଂ ଖତିଆନ ଏବଂ ୫୩ ନଂ ଖତିଆନକୁ ବାତିଲ କରି ୧୧୫/୧ ନୂଆ ଖତିଆନ ଖୋଲାଯାଇଛି (ଯୁକ୍ତାନୁଯାୟୀ ଜମିଦାରଙ୍କ ଅଂଶ ଅନୁଯାୟୀ ଖତିଆନ ଖୋଲାଯାଇଛି)

ତାରିଖ ୨୩/୧୦/୨୦୧୯

COURT OF TAHASILDAR TH. RAMPUR

Tahasildar
Th. Rampur

Binding Space

ପ୍ଲଟ ନମ୍ବର ଓ ଚତୁଃସୀମା	କିସମ	ବିବରଣୀ ବିସ୍ତାରିତ ବିବରଣୀ ଓ ଚୌହଦ୍ଦି	ଜରିପ				ମନ୍ତବ୍ୟ
			ଖେ.	ପ. ମି.	ଏକର	ଡେସିମିଲ	
୨			୧୦		୧୧		୧୨
୭୩୨/୨୮୫	ଉଚ୍ଚଜମି				୪୦	୦୦	
୭୩୫/୨୮୭	ଉଚ୍ଚଜମି 2				୧୫	୦୦	
୭୩୨/୨୮୮	ଉଚ୍ଚଜମି				୧୫	୦୦	
୭୩୨/୨୮୪	ଉଚ୍ଚଜମି				୧୭	୦୦	
୭୩୨/୨୮୨	ଉଚ୍ଚଜମି				୧୧	୦୦	
୭							

ଦସ୍ତଖତ/ଟିପଚିହ୍ନ

ଗୋଟିଏ ଜମିରେ ଦୁଇଟି, ଦୁଇଟି ଜମିରେ ତିନୋଟି ଲେଖାଏଁ ଦାଗ ନମ୍ବର ଲେଖିବେ

Binding Space

CGP(Forms) CTP--85--8,00,000--08-01-2018

Schedule (— Form No. 38-A

ଖତିଆନ

ତହସିଲ :- କୁଜଙ୍ଗ / ତାଲୁକ :- କୁଜଙ୍ଗ ଟାଉନ, ଏନ୍.ଏ.ସି.
ଥାନା ନମ୍ବର :- ୩୫୩ / ଜିଲ୍ଲା :- ଜଗତସିଂହପୁର

୧ । ଦରିଦ୍ରଙ୍କର ନାମ ଓ ସେମାନଙ୍କ ପିତାଙ୍କ ନାମ	ଶ୍ରୀମତୀ ଲିଲା ମହାନ୍ତି, ସ୍ୱ: ଶ୍ରୀ ଗୋପାଳ ମହାନ୍ତି
୨ । ଖତିୟାନର କ୍ରମିକ ନମ୍ବର	୧୨୨/୫
୩ । ଦୁଆର ସାନ, ସିଆର ନାମ, ଜାତି ଓ ସାକିନ୍ଥାନ	ଦିଲ୍ଲୀପ୍ ଓ ଅନ୍ୟାନ୍ୟ ୫ ଜଣଙ୍କ ସହିତ ଏକାନ୍ନବର୍ତ୍ତୀ ହୋଇଥିବା, ଜାତିରେ କୁମ୍ଭାର

୪ । ଜମି

୫ । ଦରିଦ୍ରଙ୍କଙ୍କର ଜମିର ସିକସ୍ତୀ	ମନ୍ତବ୍ୟ	ଜମିର ପରିମାଣ ଓ ଜମାବନ୍ଦୀ ଅନୁସାରେ ଜମି ଥିବା ଗ୍ରାମ	ଜମିର ଜରିପ	ଜମିର ଶ୍ରେଣୀ

୬ । ଦରିଦ୍ରଙ୍କ ଅନୁପସ୍ଥିତରେ ଜମି ଥିବା ଗ୍ରାମ

BLANK SPACE FOR STAMPING

Binding Space

୧	୨	୩	୪୦		୪୨	୪୫
ପ୍ରାପ୍ତ ଅଙ୍କର ଓ ଦେୟ ଦାନ	ବିବରଣ	ବିଭାଗର ବିଭାଗୀୟ ହିସାବରକ୍ଷୀ ଓ ଅଫିସିଆଲ	ଟଙ୍କା		ଅଣ୍ଡା	ମନ୍ତବ୍ୟ
			ଟ.	ପ.		
୧୦୫୨	ଦେଖାଯାଉ		୪୧	୫୩		
୩୫୫	ଦେଖାଯାଉ		୨୫	୭୫		
୧୪୩୭	ଦେଖାଯାଉ		୫୩	୫୮		
୪୫୩	ଦେଖାଯାଉ		୮.	୨୫		
୩୫୩୫	ଦେଖାଯାଉ		୨୩.	୫୦		
୨୪୩୫	ଦେଖାଯାଉ		୨.	୫୨		
୫୫୩୫	ଦେଖାଯାଉ		୨୫	୪୮		
୨୫୩୫	ଦେଖାଯାଉ		୩୫	୫୫		
୨୫୩୫	ଦେଖାଯାଉ		୫	୩୨		
	ଦେଖାଯାଉ		୨୩	୫୮		
			୪୨୩	୫୫		

ଅଫିସର

Schedule I— Form No. 39-A

ଜରିପ୍ଛାପ

ଜିଲ୍ଲା :- ମୟୂରଭଞ୍ଜ
ଥାନା :- ବି. ଶ୍ରୀନିବାସପୁର
ଥାନା ନମ୍ବର :- ୪୩

ମୌଜା :- ବି. ଶ୍ରୀନିବାସପୁର
ହାଲିସହର ନମ୍ବର :- ୫୩
ଖିଲ୍ଲା :- ଜଳୁଦାପଡ଼ି

ଜରିପଛାପର ନମ୍ବର ଓ ଛେଚାଙ୍କ ବା ଜରିପାଛଡ଼ା ନମ୍ବର	ଚଉରିଶା ଅଞ୍ଚଳାଂଶ ୧
୨ । ଜରିପାଛଡ଼ା ପୂରିକ ନମ୍ବର	୬୫୬/୧
୩ । ଗୁଆରି ନାମ, ପିଲାଗ ନାମ, ଜାତି ଓ ବାସସ୍ଥାନ	ଚିକାଣ୍ଡି ଓ ପଦୀଜେମ କିଣିବା ସାଥିରେ ଜମିଖଣ୍ଡ ଦେଖାଶୁଣି, ଜାଞ୍ଚିବାକୁ ଯାଇଥିଲେ ।
୪ । ଗୁଡ଼ିଏ	

	ଉତ୍ତରରେ	ପଶ୍ଚିମରେ	ଦକ୍ଷିଣରେ	ନିଆଯାଇଥିବା ଅଂଶର ଚତୁଃସୀମାରେ ଥିବା ଜିନିଷ ଆଦି	ମନ୍ତବ୍ୟ	୫ । ଦୃଶ୍ୟମାନ ଜିନିଷଗୁଡ଼ିକର ଜରିପ ସମୟର ବିବରଣୀ
୪ । ଚତୁଃସୀମା						

୬ । ଚିତ୍ରରେ ଅନୁସରଣ କରି ଜିନିଷ ଆଦି

BLANK SPACE FOR STAMPING

Binding Space

Schedule I-Form No. 39-B (Revised)

Binding Space

ANNEXURE - VI

Received F&E Dept. Odisha

Government of Odisha
Forest & Environment Department
*****

NOTIFICATION

No. 10F (Cons) 05/2020 1307 /F&E dated. 12-01-2020

In exercise of the powers conferred under Section 33 of the Orissa Forest Act 1972 (Orissa Act 14 of 1972), the State Government do hereby declare that the following land situated in Village-**Barakaudi** under Thuamul Rampur Tahasil in the District of Kalahandi mutated and transferred in favour of Forest & Environment Department for raising compensatory afforestation purpose thereon against the proposed diversion of 162.42ha. of forest land for Chromite Ore Mining & Ancillary Activities in Sukrangi Mining Lease in Jajpur district, Odisha by Odisha Mining Corporation Ltd. vide in-principle approval order No.8-22/2016-FC dtd.14.09.2017 of Government of India, Ministry of Environment, Forests & Climate Change under Section 2 of the forest (Conservation) Act, 1980, the limits of which are specified below and the area of which is 35.61ha (88.00 acres), shall be Protected Forests with effect from the date of issue of the Notification and shall be known as "**Barakaudi Protected Forest**".

Forest Block:

Name of the Protected Forest	:	Barakaudi Protected Forest
Area in Ha	:	35.61 ha
Area in acres	:	88.00 Ac.
Name of the Village	:	Barakaudi
Name of the Police Station	:	Thuamul Rampur
Name of the Tahasil	:	Thuamul Rampur
Name of the Sub-Division	:	Bhawanipatna
Name of the District	:	Kalahandi

Land Schedule:

Village	Khata No.	Plot No.	Kissam	Total area in Ac.	Boundary description			
					North	South	East	West
Barakaudi	115/1	732/ 986	Danger	40.00	Plot No. 732/ 903/ 988	Plot No. 732 (P), 730, 731 & 712	Plot No. 736/ 987, 736 (P), 736/904 /989	Plot No. 712
		736/ 987		15.00	Plot No. 736/ 904/ 989	Plot No. 736 (P)	Village-Krishna Kabedi	Plot No. 732/986
		732/ 903/ 988		16.00	Plot No. 903 (P)	Plot No. 732/986	Plot No. 736/904/ 989 & 904 (P)	Plot No. 712 & 902
		736/ 904/ 989		17.00	Plot No. 904 (P)	Plot No. 736/987	Village-Krishna Kabedi	Plot No. 732/ 986 & 732/ 903/ 988
			Total	88.00 Ac (35.61ha)				

By Order of the Governor

16/1

(DR. MONA SHARMA)
Additional Chief Secretary to Government

Dept (F&E)
15/1/2020

17/1/2020

20/1/2020

By e.mail: deputydirectorgpi@rediffmail.com
Memo No. 1308 /F&E Date 17-01-2020

Copy forwarded to the Director of Printing, Stationery and Publication, Odisha Cuttack for publication in an extra-ordinary issue of the Odisha Gazette and supply 10 copies of printed notification each to F&E Deptt./Director of Land Records and Surveys, Odisha, Cuttack/ Collector, Kalahandi/ D.F.O., Kalahandi South Division/Tahasildar-Thuamul Rampur, Dist-Kalahandi.

2. The Notification is statutory and may be assigned SRO number.

16/01/2020
Special Secretary to Government

Memo No. 1309 /F&E Date 17-01-2020

Copy forwarded to the Assistant Inspector General of Forests, Govt. of India, Ministry of Environment & Forest and Climate Change, (F.C. Division), Indira Paryavaran Bhawan, Jor Bagh, Aliganj Road, New Delhi-110003/ Additional Director General of Forests (Central), Govt. of India, MoEF&CC, Eastern Regional Office, A/3, Chandrasekharpur, Bhubaneswar-23 for information and necessary action.

16/01/2020
Special Secretary to Government

Memo No. 1310 /F&E Date 17-01-2020

Copy forwarded to the Revenue & Disaster Management Deptt./ Director of Land Records and Survey, Odisha, Cuttack/ R.D.C.(S.D) Berahampur, Dist-Ganjam/ Collector, Kalahandi/ Tahasildar-Thuamul Rampur, Dist-Kalahandi for information and necessary action.

16/01/2020
Special Secretary to Government

Memo No. 1311 /F&E Date 17-01-2020

Copy forwarded to the Principal Chief Conservator of Forests, Odisha Bhubaneswar/ Principal Chief Conservator of Forests (Forest Diversion) & Nodal Officer, FC Act O/o the PCCF, Odisha/ Regional Chief Conservator of Forests, Bhawanipatna Circle/ D.F.O., Kalahandi (South) Division for information and necessary action.

16/01/2020
Special Secretary to Government

Memo No. 1312 /F&E Date 17-01-2020

Copy forwarded to the O.I.C., State Portal, N.I.C., I.T. Department, Odisha Secretariat, Bhubaneswar for information and necessary action/ (5 spare copies for G.F).

16/01/2020
Special Secretary to Government

Memo No. 1313 /F&E Date 17-01-2020

Copy forwarded to the Under Secretary to Government, Office Establishment Section, F&E Department for information and necessary action with reference to their letter No.21646/F&E Dt. 22.11.2016.

16/01/2020
Special Secretary to Government

Received F&E OMC

Government of Odisha
Forest & Environment Department
*****

NOTIFICATION

No. 10F (Cons) 05/2020 1350 / F&E dated 17-01-2020

In exercise of the powers conferred under Section 33 of the Orissa Forest Act 1972 (Orissa Act 14 of 1972), the State Government do hereby declare that the following land situated in Village-Balangi under Thuamul Rampur Tahasil in the District of Kalahandi mutated and transferred in favour of Forest & Environment Department for raising compensatory afforestation purpose thereon against the proposed diversion of 162.42ha. of forest land for Chromite Ore Mining & Ancillary Activities in Sukrangi Mining Lease in Jajpur district, Odisha by Odisha Mining Corporation Ltd. vide in-principle approval order No.8-22/2016-FC dtd.14.09.2017 of Government of India, Ministry of Environment, Forests & Climate Change under Section 2 of the forest (Conservation) Act, 1980, the limits of which are specified below and the area of which is 52.395ha (129.47 acres), shall be Protected Forests with effect from the date of issue of the Notification and shall be known as "**Balangi Protected Forest**".

Forest Block:

Name of the Protected Forest	:	Balangi Protected Forest
Area in Ha	:	52.395 ha
Area in acres	:	129.47 Ac.
Name of the Village	:	Balangi
Name of the Police Station	:	Thuamul Rampur
Name of the Tahasil	:	Thuamul Rampur
Name of the Sub-Division	:	Bhawanipatna
Name of the District	:	Kalahandi

Land Schedule:

Village	Khata No.	Plot No.	Kissam	Total area in Ac.	Boundary description			
					North	South	East	West
Balangi	122/1	163	Dangar	8.25	Plot No. 197	Plot No. 167, 164, 165, 161, 162, 160, 158, 159	Plot No. 196	Village-Sukasan
		187		13.88	Plot No. 196/1225,& 196(P)	Plot No 184, 185	Plot No. 188, 189	Plot No. 186, 196
		196/1225		1.82	Plot No. 197	Plot No. 187	Plot No. 189, 194, 205	Plot No. 196(P)
		197		34.76	Plot No. 198, 204	Plot No. 163, 196(P), 196/1225	Plot No.205	Village – Sukasan & Singeri RF

DCF(Cons&E) 17/1/2020 17/1/2020 17/1/2020

		205		19.75	Plot No. 202 & 206	Plot No. 192, 194 & 195	Plot No. 207 & 208	Plot No. 196/122[illegible] 197 & 2[illegible]
		353		23.5	Plot No. 230	Plot No. 236, 332 & 333	Plot No. 334, 335, 352, 351, 354 & 355	Plot No. 231, 233, 234 & 235 (Road)
		349		2.02	Plot No. 372/1224	Plot No. 347 & 336	Plot No. 372/ 1224 & 348	Plot No. 350 & 351
		372/ 1224		25.49	Plot No. 372 (P), 356, 357 & 365	Plot No. 372 (P) & 345	Plot No. 366 & 372 (P)	Plot No. 346, 347, 348, 349, 350, 351, 354 & 355
			Total	**129.47 Ac (52.395ha)**				

By Order of the Governor

Mona Sharma 16/1/2020

(DR. MONA SHARMA)
Additional Chief Secretary to Government

By e:mail: deputydirectorpp@rediffmail.com
Memo No. 1301 /F&E Date 17-01-2020

Copy forwarded to the Director of Printing, Stationery and Publication, Odisha Cuttack for publication in an extra-ordinary issue of the Odisha Gazette and supply 10 copies of printed notification each to F&E Deptt./Director of Land Records and Surveys, Odisha, Cuttack/ Collector, Kalahandi/ D.F.O., Kalahandi South Division/Tahasildar-Thuamul Rampur, Dist-Kalahandi.

2. The Notification is statutory and may be assigned SRO number.

16/01/2020
Special Secretary to Government

Memo No. 1302 /F&E Date 17-01-2020

Copy forwarded to the Assistant Inspector General of Forests, Govt. of India, Ministry of Environment & Forest and Climate Change, (F.C. Division), Indira Paryavaran Bhawan, Jor Bagh, Aliganj Road, New Delhi-110003/ Additional Director General of Forests (Central), Govt. of India, MoEF&CC, Eastern Regional Office, A/3, Chandrasekharpur, Bhubaneswar-23 for information and necessary action.

16/01/2020
Special Secretary to Government

Memo No. 1303 /F&E Date 17-01-2020

Copy forwarded to the Revenue & Disaster Management Deptt./ Director of Land Records and Survey, Odisha, Cuttack/ R.D.C.(S.D) Berahampur, Dist-Ganjam/ Collector, Kalahandi/ Tahasildar-Thuamul Rampur, Dist-Kalahandi for information and necessary action.

16/01/2020
Special Secretary to Government

Memo No. 1304 /F&E Date 17-01-2020

Copy forwarded to the Principal Chief Conservator of Forests, Odisha Bhubaneswar/ Principal Chief Conservator of Forests (Forest Diversion) & Nodal Officer, FC Act O/o the PCCF, Odisha/ Regional Chief Conservator of Forests, Bhawanipatna Circle/ D.F.O., Kalahandi (South) Division for information and necessary action.

19/01/2020
Special Secretary to Government

Memo No. 1305 /F&E Date 17-01-2020

Copy forwarded to the O.I.C., State Portal, N.I.C., I.T. Department, Odisha Secretariat, Bhubaneswar for information and necessary action/ (5 spare copies for G.F).

19/01/2020
Special Secretary to Government

Memo No. 1306 /F&E Date 17-01-2020

Copy forwarded to the Under Secretary to Government, Office Establishment Section, F&E Department for information and necessary action with reference to their letter No.21646/F&E Dt. 22.11.2016.

19/01/2020
Special Secretary to Government

Received
F&E
DMO

(8-0)

Government of Odisha
Forest & Environment Department
*****

NOTIFICATION

No. 10F (Cons) 05/2020 1293 / F&E dated. 17-01-2020

In exercise of the powers conferred under Section 33 of the Orissa Forest Act 1972 (Orissa Act 14 of 1972), the State Government do hereby declare that the following land situated in Village–**Khamarpadar** under Thuamul Rampur Tahasil in the District of Kalahandi mutated and transferred in favour of Forest & Environment Department for raising compensatory afforestation purpose thereon against the proposed diversion of 162.42ha. of forest land for Chromite Ore Mining & Ancillary Activities in Sukrangi Mining Lease in Jajpur district, Odisha by Odisha Mining Corporation Ltd. vide in-principle approval order No.8-22/2016-FC dtd.14.09.2017 of Government of India, Ministry of Environment, Forests & Climate Change under Section 2 of the forest (Conservation) Act, 1980, the limits of which are specified below and the area of which is 68.766ha (169.92 acres), shall be Protected Forests with effect from the date of issue of the Notification and shall be known as "**Khamarpadar Protected Forest**".

Forest Block:

Name of the Protected Forest	:	Khamarpadar Protected Forest
Area in Ha	:	68.766 ha
Area in acres	:	169.92 Ac.
Name of the Village	:	Khamarpadar
Name of the Police Station	:	Thuamul Rampur
Name of the Tahasil	:	Thuamul Rampur
Name of the Sub-Division	:	Bhawanipatna
Name of the District	:	Kalahandi

Land Schedule:

Village	Khata No.	Plot No.	Kissam	Total area in Ac.	Boundary description			
					North	South	East	West
Khamarpadar	242/1	81/ 1678	Dangar	4.11	Plot No. 81(P)	Plot No. 82/1679 & 82(P)	Plot No. 81(P)	Plot No. 81(P)
		82/ 1679		13.53	Plot No. 81/1678 , 81(P) & 82(P)	Plot No. 82(P)	Plot No. 83/1680 & 83(P)	Plot No. 79
		83/ 1680		24.19	Plot No. 84/1681 & 83(P)	Plot No. 83(P) & 100	Plot No. 92/1686 & 92(P)	Plot No. 82/1679 & 82(P)
		84/ 1681		26.08	Plot No. 85/1682, 84(P) & 85(P)	Plot No. 83/1680 & 83(P)	Plot No. 91/1685 & 91(P)	Village-Chata Banduguda, Plot No. 84(P) &81(P)

DD(F&CF-EE) 17/1/2020 17/1/2020

		85/ 1682		21.29	Plot No. 86	Plot No. 84/1681 &85(P)	Plot No. 90	Village- Chata Banduguda
		86		19.33	Village Junapani	Plot No. 85/1682	Plot No. 87/ 1683	Village- Chata Banduguda & Junapani Village
		87/ 1683		27.68	Village Junapani	Plot No.90 & 87 (P)	Plot No.88 /1684, 87 (P) & 88 (P)	Plot No.86
		88/ 1684		9.84	Village Junapani	Plot No.88 (P)	Plot No. 88 (P)	Plot No.87/ 1683, 87 (P)
		91/ 1685		16.02	Plot No.91 (P)	Plot No.92/ 1686	Plot No.91 (P)	Plot No.84/ 1681
		92/ 1686		7.85	Plot No.91/ 1685	Plot No.92 (P)	Plot No.92 (P)	Plot No.83/ 1680
			Total	169.92 Ac (68.766ha)				

By Order of the Governor

Mona Sharma 17/1/2020

(DR. MONA SHARMA)
Additional Chief Secretary to Government

By e.mail: deputydirectorpp@rediffmail.com
Memo No. 1294 /F&E Date 17-01-2020

Copy forwarded to the Director of Printing, Stationery and Publication, Odisha Cuttack for publication in an extra-ordinary issue of the Odisha Gazette and supply 10 copies of printed notification each to F&E Deptt./Director of Land Records and Surveys, Odisha, Cuttack/ Collector, Kalahandi/ D.F.O., Kalahandi South Division/Tahasildar-Thuamul Rampur, Dist-Kalahandi.

2. The Notification is statutory and may be assigned SRO number.

16/01/2020
Special Secretary to Government

Memo No. 1295 /F&E Date 17-01-2020

Copy forwarded to the Assistant Inspector General of Forests, Govt. of India, Ministry of Environment & Forest and Climate Change, (F.C. Division), Indira Paryavaran Bhawan, Jor Bagh, Aliganj Road, New Delhi-110003/ Additional Director General of Forests (Central), Govt. of India, MoEF&CC, Eastern Regional Office, A/3, Chandrasekharpur, Bhubaneswar-23 for information and necessary action.

16/01/2020
Special Secretary to Government

Memo No. 1296 /F&E Date 17-01-2020

Copy forwarded to the Revenue & Disaster Management Deptt./ Director of Land Records and Survey, Odisha, Cuttack/ R.D.C.(S.D) Berahampur, Dist-Ganjam/ Collector, Kalahandi/ Tahasildar-Thuamul Rampur, Dist-Kalahandi for information and necessary action.

16/01/2020
Special Secretary to Government

Memo No. 1297 /F&E Date 17-01-2020

Copy forwarded to the Principal Chief Conservator of Forests, Odisha Bhubaneswar/ Principal Chief Conservator of Forests (Forest Diversion) & Nodal Officer, FC Act O/o the PCCF, Odisha/ Regional Chief Conservator of Forests, Bhawanipatna Circle/ D.F.O., Kalahandi (South) Division for information and necessary action.

16/01/2020
Special Secretary to Government

Memo No. 1298 /F&E Date 17-01-2020

Copy forwarded to the O.I.C., State Portal, N.I.C., I.T. Department, Odisha Secretariat, Bhubaneswar for information and necessary action/ (5 spare copies for G.F).

16/01/2020
Special Secretary to Government

Memo No. 1299 /F&E Date 17-01-2020

Copy forwarded to the Under Secretary to Government, Office Establishment Section, F&E Department for information and necessary action with reference to their letter No.21646/F&E Dt. 22.11.2016.

16/01/2020
Special Secretary to Government

ANNEXURE - VII (Letter S1)

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
AT:- GHATAKULA, NUAPADA, CUTTAK 753010
Tel:- 0671-2340443 FAX:- 0671-2347611 Email:- dfo.cuttackforest division@yahoo.com

No 173 /5F(Misc) /2017
Dated, Cuttack the 06 th January, 2020

To

The Executive Director (F & E),
OMC Ltd, Bhubaneswar.

Sub:- Revised Scheme for Compensatory Afforestation to be carried over 156.771 ha in Balangi, Barakandi and Khamarpadar villages of Thuamul-Rampur Tahasil in Kalahandi District in lieu of forest land to be diverted for Sukurangi Chromite Mines of M/s OMC Ltd. in Jajpur District.

Ref:- Memo No.107 dtd.02.01.2020 of Principal Chief Conservator of Forest, Forest Diversion & Nodal Officer, F.C. Act to your address.

Sir,

With reference to the memo cited above on the captioned subject, it is to inform that Principal Chief Conservator of Forests, Forest Diversion & Nodal Officer, F.C. Act has approved the revised financial outlay for Compensatory Afforestation scheme over an area of 156.771 ha of non-forest land identified in Balangi Tahasil in Kalahandi District under Kalahandi(South) Forest Diversion for Rs.5,55,47,800/- as per wage rate of Rs.298/- per manday with 10 years maintenance.

Hence, it is requested to make arrangement for payment of Rs.5,55,47,800/-(Rupees Five Crore fifty five lakhs forty seven thousand eight hundred) only with the Adhoc Body of CAMPA through e-payment module & submit required evidence in respect of the payment to this office for reference and onward transmission.

Yours faithfully,

Divisional Forest Officer
Cuttack Forest Division

Memo No _____ Date.
Copy submitted to the Principal Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o the PCCF, Odisha, Bhubaneswer for favour of kind information and necessary action with reference to his Memo No.104 dtd.02.01.2020.

Divisional Forest Officer
Cuttack Forest Division

Memo No. dt.
Copy submitted to the Regional Chief Conservator of Forests, Angul Circle, Angul for favour of kind information & necessary action with reference to this office Memo No.7572 dtd.01.10.2019.

Divisional Forest Officer,
Cuttack Forest Division

Memo No. dt.
Copy forwarded to the Division Forest Officer, Kalahandi South Division for information & necessary action.

Divisional Forest Officer,
Cuttack Forest Division

16-01-2020

Scanned

17/1/2020 NEFT RTGS CHALLAN 738

45972/2020/F & E

AGENCY COPY	
NEFT / RTGS CHALLAN for Ad-HOC CAMPA	
Date : 17-01-2020	
Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5884710267
MoEF/SG File No.	8-22/2016-FC
Location.	ORRISA
Address.	OMC HouseKhordha
Amount(in Rs)	55547800/-

Amount in Words :Five Crore Fifty-Five Lakh Forty-Seven Thousand Eight Hundred Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	CORP0000371
Pay to Account No.	150825884710267 Valid only for this challan amount.
Bank Name & Address:	Corporation Bank Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only
- This challan is valid only for seven days.

BANK COPY	
NEFT / RTGS CHALLAN for Ad-HOC CAMPA	
Date : 17-01-2020	
Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5884710267
MoEF/SG File No.	8-22/2016-FC
Location.	ORRISA
Address:	OMC House Khordha
Amount(in Rs)	55547800/-

Amount in Words :Five Crore Fifty-Five Lakh Forty-Seven Thousand Eight Hundred Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	CORP0000371
Pay to Account No.	150825884710267 Valid only for this challan amount.
Bank Name & Address:	Corporation Bank Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only
- This challan is valid only for seven days.

After making successful payment, User Agencies may send a line of confirmation through Email: helpdeskcampa@corpbank.co.in

UTR NO- ANDBH20020730430 Dt. 20-01-20

Sr. Manager (Finance)
The Odisha Mining Corporation Ltd.
Shubaneswar

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
AT:- GHATAKULA, NUAPADA, CUTTAK 753010
Tel:- 0671-2340443 FAX:- 0671-2347611 Email:- dfo.cuttackforest.division@yahoo.com

No. 8629 /SF(Forest Diversion) 529/2018
Dated, Cuttack the 18 th September, 2020

To
The Executive Director (F & E),
Odisha Mining Corporation Ltd.,
OMC House, Bhubaneswar-751001

Sub:- Revised Scheme for Compensatory Afforestation to be carried over 156.771 Ha. in Balangi, Barakeudi & Khamarpadar villages of Thuamul- Rampur Tahasil in Kalahandi District in lieu of forest land diverted for Sukurangi Chromite Mines of M/S OMC Ltd. in Jajpur District.

Ref:- Memo No. 16283 dt. 16.09.2020 of the PCCF, FD & NO. FC Act.

Sir,

In inviting a kind reference to the Memo cited above on the captioned subject, this is to inform that, the Principal Chief Conservator of Forests, Forest Diversion & Nodal Officer, FC Act , O/o the PCCF, Odisha has approved, the revised financial outlay of CA Scheme for Rs. 5,63,07,500/- at current wage rate @303.40/- per manday with 10 years maintenance. Previously you have already deposited Rs. 5,55,47,800/- towards CA as per the demand raised vide this office letter No. 173 dt.06.01.2020.

In view of above, it is requested to make arrangement to deposit the balance amount Rs. 7,59,700.00 (5,63,07,500.00 – 5,55,47,800.00) with the Adhoc body of Compensatory Afforestation Fund Management & Planning Authority (CAMPA) through e-payment module & submit the receipt of the deposition to this office for ready reference.

Yours faithfully,

Divisional Forest Officer,
Cuttack Forest Division

Memo No. 8630 dt. 18.09.2020
Copy submitted to the Principal Chief Conservator of Forests (Forest Diversion & Nodal Officer, FC Act), O/o- the Principal Chief Conservator of Forests, Odisha, Bhubaneswar for favour of kind information & necessary action with reference to his Memo No. 16280 dt. 16.09.2020.

Divisional Forest Officer,
Cuttack Forest Division

Memo No. 8631 dt. 18.09.2020
Copy submitted to the Regional Chief Conservator of Forests, Angul Circle, Angul for favour of kind information & necessary action with reference to Memo No. 16281 dt. 16.09.2020.

Divisional Forest Officer,
Cuttack Forest Division

57827/2020/F & E

AGENCY COPY

NEFT / RTGS CHALLAN for Ad-HOC CAMPA

Date : 26-09-2020

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5884710303
MoEF/SG File No.	8-22/2016-FC
Location.	ORRISA
Address.	OMC HouseKhordha
Amount(in Rs)	759700/-

Amount in Words :Seven La'kh Fifty-Nine Thousand Seven Hundred Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	CORP0000371
Pay to Account No.	150825884710303 Valid only for this challan amount.
Bank Name & Address:	Corporation Bank Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

NEFT / RTGS CHALLAN for Ad-HOC CAMPA

Date : 26-09-2020

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5884710303
MoEF/SG File No.	8-22/2016-FC
Location.	ORRISA
Address:	OMC House Khordha
Amount(in Rs)	759700/-

Amount in Words :Seven La'kh Fifty-Nine Thousand Seven Hundred Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	CORP0000371
Pay to Account No.	150825884710303 Valid only for this challan amount.
Bank Name & Address:	Corporation Bank Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

After making successful payment, User Agencies may send a line of confirmation through Email: helpdeskcampa@corpbank.co.in

RTGS UTR NO-ANDBR52020093000442378

Dtd - 30-09-2020

Sri Ekanta Mohapatra
Sr. Manager (Finance)
The Odisha Mining Corporation Ltd.
Bhubaneswar



OFFICE OF THE DIVISIONAL FOREST OFFICER, CUTTACK FOREST DIVISION
AT:- GHATAKULA, NUAPADA, CUTTAK-753010
Tel:-0671-2340443,FAX:- 0671-2347611 Email:- dfo.cuttackforestdivision@yahoo.com

No. 233 /5F(Forest Diversion) 523/2018
Dated, Cuttack the 24th January 2022

To,

The Executive Director (F & E),
Odisha Mining Corporation Ltd.
OMC House, Bhubaneswar-751001.

Sub:- Revised Scheme for Compensatory Afforestation to be carried out over 156.771 ha. in Balangi, Barakaudi and Khamarpadar villages of Thuamul Rampur Tahasil under Kalahandi District in lieu of forest land to be diverted for Sukuraingi Chromite Mines of Odisha Mining Corporation Ltd. in Jajpur District-Demand on CA Scheme reg.

Ref:- Memo. No.523/3F(Lease)/2022 dt.19.01.2022 of the DFO, Kalahandi South Division.

Sir,

In inviting a reference to the Memo cited above on the captioned subject, this is to inform that the Principal Chief Conservator of Forests, Forest Diversion & Nodal Officer, FC Act, O/o the PCCF, Odisha had approved the revised financial outlay of CA Scheme for Rs. 5,73,64,600.00/- at the wage rate @311/- per manday with 10 years maintenance.

In pursuance to Memo No. 21393 dt.13.12.2021 of the Principal Chief Conservator of Forests & HoFF, Odisha, the Divisional Forest Officer, Kalahandi South Division has revised the CA scheme at the current wage rate @315/- per manday with provision of planting of 18 months old seedling. The revised financial outlay of the CA scheme is Rs.7, 35, 81,700.00 (rupees seven Crore Thirty-five lakh Eighty-one thousand Seven hundred) only. Previously, you have already deposited Rs. 5, 63, 07,500.00/- towards CA as per the demand raised vide this office letter No. 173 dt.06.01.2020.

In view of above, it is requested to make arrangement to deposit the balance amount of Rs.1, 72, 74,200 (rupees One Crore Seventy-two Lakh Seventy four thousand two hundred) only (7, 35, 81,700.00 – 5, 63, 07,500.00) with the Adhoc body of Compensatory Afforestation Fund Management & Planning Authority (CAMPA) through e- payment module & submit the receipt of the deposition to this office for ready reference.

Yours faithfully,

Divisional Forest Officer,
Cuttack Forest Division

Copy for kind information to:-

(i)The Principal Chief Conservator of Forests, Forest Diversion & Nodal Officer, FC Act, O/o- the Principal Chief Conservator of Forests & HoFF, Odisha, Bhubaneswar.
(ii)The Regional Chief Conservator of Forests, Angul Circle.
(iii)The DFO, Kalahandi South Division.

OFFICE OF THEDIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
AT:- GHATAKULA: NUAPADA: CUTTACK-753010
E.Mail:dfo.cuttackforestdivision@yahoo.com

No. 954 /5F (Forest Diversion) 523/2018
Dated, Cuttack the 09 th February, 2022.

To

The Executive Director (F &E)
M/S Odisha Mining Corporation Ltd
OMC House,
Bhubaneswar-751001.

Sub: Diversion of balance forest land 162.42 ha including 24.150 ha of forest land to be maintained as safety zone (as per SABIK settlement record as on 25.10.1980 and after 25.10.1980) excluding the 104.79 ha forest land already diverted pertaining to total ML area of 382.709 ha of Sukurangi Chromite Mines of M/s Odisha Mining Corporation Limited spread over villages like Kamarda, Ostapal, Saruabil, Sukurangi, Tailangi & Forest Block No. 27 of Mahagiri DPF in Sukinda Tahasil of Jajpur district (under Cuttack Forest Division), Odisha during extended period of Mining lease up to 31.03.2020 as per MMDR Amendment Act, 2015.

Ref: 1. Memo No. 2606 dt. 08.02.2022 of the Nodal Officer, O/o the PCCF & HoFF, Odisha.

2. This office letter No. 633 dt. 27.01.2022.

Sir,

With reference to the memo cited above on the captioned subject, it is to inform that Principal Chief Conservator of Forests, Forest Diversion & Nodal Officer, FC Act, O/o the PCCF & HoFF, Odisha has technically approved the financial out lay of Rs 7,98,90,200/- (Rupees Seven Crore ninety-eight lakhs ninety thousand two hundred) only towards compensatory afforestation scheme over an area of 156.771 ha of non-forest land identified in village Balangi (52.395 Ha), Barakaudi (35.61 Ha.) & Khamarpadar (68.766 Ha.) under Thuamul Rampur Tahasil in Kalahandi District under Kalahandi (South) Forest Division against Sukurangi Chromite Mines of M/S OMC Ltd. as per wage rate of Rs. 315/- per manday with 10 years maintenance.

Hence you are requested to make arrangement for payment of differential amount of Rs.2,35,82,700/- rupees Two Crore thirty-five Lakh eighty-two thousand seven hundred (Rs7,98,90,200/- - Rs5,63,07,500/-) only with the Adhoc Body of CAMPA through the e-payment module and submit required evidence in respect of the payment to this office for reference and onward transmission.

Yours faithfully,

Divisional Forest Officer 09/02/2022
Cuttack Forest Division.

PTO

AGENCY COPY

यूनियन बैंक Union Bank of India

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 14-02-2022

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5884710589
MoEF/SG File No.	8-22/2016-FC
Location.	ORRISA
Address.	OMC HouseKhordha ,
Amount(in Rs)	23582700/-

Amount in Words :Two Crore Thirty-Five Lakh Eighty-Two Thousand Seven Hundred Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay to Account No.	150825884710589 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

यूनियन बैंक Union Bank of India

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 14-02-2022

Agency Name.	ODISHA MINING CORPORATION LTD
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Bank Name & Address:	Union Bank Of India Lodhi Complex Branch, Block 11,CGO Complex, Phase I, Lodhi Road, New Delhi -110003

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

After making successful payment, User Agencies may send a line of confirmation through Email: helpdeskcampa@corpbank.co.in

Note:After making the required payment through challan, if the payment status has not been updated even after 7 working days, then kindly mail a copy of your challan with transaction date to Email: cb0371@unionbankofindia.com

C/S

14/02/2022

DR. Swidhya Mishra
Addl. G.M.(F&E)
OMC Ltd.

14/02/2022

S. Mohapatra
Dy. General Manager (Fin)

UBING 220450 34748

Scanned with CamScanner

ANNEXURE - VIII Series

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
GHATAKULA: NUAPARA: CUTTACK

Memo No. 28503
Dated, Cuttack 28th July'2006

7631
7/8/06

To

The Managing Director, of
M/S O.M.C Ltd. Bhubaneswar.

The General Manager (F & E)
M/S O.M.C Ltd. Bhubaneswar.

Deputy General Manager (M)
Jajpur Road, M/S O.M.C Ltd,
At/Po:-Jajpur Road, Dist:-Jajpur.

Sub:- Deposit of funds towards N.P.V, Compensatory Afforestation etc. for diversion of 104.79 ha. Forest Land for Chromites mining in Sukurangi Chromites Mines of M/S O.M.C Ltd. in Dist.-Jajpur, Orissa.

Ref:- These Office memo no.2643(3) Dt.11.07.2006.

Sir,

In continuation to this Office memo under reference it is to inform you that as per memo no.18072/9F (CAF) Dt.17.07.2006 of the Conservator of Forest Nodal, O/O Pr.C.C.F Orissa Bhubaneswar you are requested to deposit the Net present value (N.P.V) in respect of Sukurangi Chromites Mines amounting to Rs.6,07,78,200/- (Six crores seven lakhs seventy eight thousand two hundred) through Account payee Bank draft in favour of "Compensatory Afforestation Fund (CAF)-Orissa, Account No.CA1285 in Corporation Bank, Lodhi Road, New Delhi" and submit the same to this Office for further followup actions.

Yours Faithfully,

DIVISIONAL FOREST OFFICER,
CUTTACK FOREST DIVISION

Cable: ORMINCORP, Bhubaneswar
Tel. +0674 2393431, 2395689, 2393389 (EPABX), 2392747 (Dir)
Fax: 0674-2391629, 2396889, 2394772

The Orissa Mining Corporation Ltd.

(A Government of Orissa Undertaking)
OMC HOUSE, BHUBANESWAR –751001

No 16298 /OMC/F&E/06 Dt. 14-8-06

To,

The Divisional Forest Officer,
Cuttack Forest Division,
Cuttack.

Sub: Payment of NPV to-wards diversion of 104.79 hects. of forest land in Sukrangi Chromite Ore Mining Lease of Jajpur District of OMC Ltd.

Ref: Your office letter Memo No. 2850(3) dtd:28/07/06.

Sir,

In inviting a reference to the above cited letter, we are depositing herewith a sum of Rs.6,07,78,200/- (Rupees six crores seven lakhs seventy eight thousand two hundred) only towards Net Present Value (NPV) for diversion of 104.79 hects of forest land in respect of Sukrangi Chromite Mining Lease of Jajpur District of OMC Ltd. under reference :

a) Issuing Branch :- Andhra Bank, BBSR
b) Drawee Branch :- Corporation Bank of India, Lodhi Road, New Delhi(A/c No.1585)
c) Amount :- Total Rs. 6,07,78,200/- (Rupees six crores seven lakhs seventy eight thousand two hundred) only.
d) Demand Draft No.:- 717005 to 717065 (Rs.9,90,000/-each) & 717066 (Rs.3,88,200/-) dt.08/08/06.

You are requested to acknowledge the same and send the treasury challan to the undersigned for office record.

Yours faithfully,

Encl: Drafts in original No. 717005 to 717066 dt.08/08/06 , of Corporation Bank, Lodhi Road, New Delhi

Sd/-
Dy.General Manager(C)F&E

Memo No 16299 /OMC/F&E/06 Date 14.8.06

Copy to the Regional Manager, OMC Ltd., Jajpur Road for information and necessary action.

Copy to the Dy.Manager (A/C), HO, Bhubaneswar for information.

Received 62 (Sixty two) nos of Bank draft for Rs 6,07,78,200/- (Rupees Six crores Seven lakhs, Seventy eight thousand & two hundred) only alongwith this letter as below:

① Rs.9,90,000/- × 61 = Rs.6,03,90,000/-
② Rs.3,88,200/- × 1 = Rs. 3,88,200/-
Total = 62 = Rs.6,07,78,200/-

Dy.General Manager(C)F&E 16/8/06

16/8/06
Divisional Forest Officer
Cuttack Forest Division
Cuttack

4314 Dt 6/7/2010

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
CHATAKULA: NIAPARA: CUTTACK

16 JUN 2010

Memo No. 3122 /SP (Misc.)
Dated, Cuttack, the 21-6-10

To

The Dy. General Manager (G) F&E;
M/S. OMC Ltd., OMC House, [redacted],
Bhubaneswar.

Sub:- Diversion of Forest land for Chromite mining in Sukrangi Chromite Mines of M/S. OMC Ltd. in Sukinda Tehsil of Jajpur District.- Payment of differential amount of N.P.V. at revised rate.

Ref:- Memo No.3235,Dt.19.05.2009 of Pr.C.C.F, Orissa, circular No.21687/F&B Dt.22.12.2009 of Govt. of Orissa and Letter No.9803 /F&B Dt.28.05.2010 of the Govt. of Orissa & this office memo no. 3119 dt.08.06.2010.

In continuation to this office memo cited above it is to inform you that the amount of N.P.V to be paid in respect Chromite Mining lease of Sukrangi Chromite Mines of M/S. OMC Ltd. in Jajpur District of Orissa has been revised as below, you are requested to make arrangement for payment of Net Present Value (N.P.V.) as calculated below:

(I)	Eco-Value Class-I Open Forest (canopy Density below 03% i.e. below 0.4) Rate of N.P.V 7,30,000/-	= Rs. 129761800.00
(II)	Hence 177.750 ha. x 7,30,000/-	= Rs. 60778200.00
(III)	Already paid earlier	= Rs. 68986600.00
(IV)	Balance amount to be paid	

You are therefore requested to make arrangement for payment of the balance amount of Rs.06,89,86,600/- (Rupees Six Crore Eighty Nine Lakh Eighty Six Thousand Six Hundred) only through A/C payee Demand Draft in favour of "Compensatory Afforestation Fund (CAF) Orissa Account No. CA-1585 in Corporation Bank- Lodhi Road, New Delhi". The Bank Draft for the above amount required to be submitted to this office within the dateline mentioned in this office memo under reference positively failing which the mining operation will not be allowed to continue till the payment alongwith the interest at the rate to be decided is deposited.

Yours Faithfully,

21/6/2010

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

MEMO NO._____/DT.
Copy submitted to the Regional Chief Conservator of Forests, Angul Circle, Angul for favour of information and necessary action in continuation to this office memo no. 3120 dt.08.06.2010.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

MEMO NO._____/DT.
Copy submitted to the Principal Chief Conservator of Forests, Orissa, Bhubaneswar for favour of information and necessary action in continuation to this office memo no. 3121 dt.08.06.2010.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

114

90

Cable: ORMINCORP, Bhubaneswar

Tel: +0674 2393431, 2395689, 2393389 (EPABX), 2392747(Dir)
Fax: 0674-2391620, 2396889, 2394772

The Orissa Mining Corporation Ltd.
(A Mining Corporation Ltd.dertaking)
OMC HOUSE, BHUBANESWAR -751001

No. 13235 /OMC/F&E/10

Date.08.07.2010

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub: Payment of NPV in respect of Sukurangi Chromite Mines of O.M.C.Ltd.

Ref: Memo No.3327/5F (Misc), dt 21.06.2010.

Sir

In inviting a reference to the letter and subject cited above we are enclosing herewith a demand draft amounting Rs 06,89,86,600.00, bearing No.649753/ dt 07.07.2010 drawn in favour of Compensatory Afforestation Fund (CAF) Orissa, Account No.CA-1585 in Corporation Bank, Lodhi Road New Delhi.

An undertaking to pay the differential amount in case of upward revision of NPV duly signed is enclosed for necessary action. Further we may be allowed to continue mining operation in broken up non-forest area included in the ML area of Sukurangi.

This for favour of kind information and necessary action.

Encl. DD bearing No. 649753/ dt 07.07.2010

Yours faithfully,

Sd/-
Dy.General Manager (Geo)
Power of Attorney Holder
Orissa Mining Corporation Ltd.

Memo No...../OMC/F&E/10, dt 08.07.2010.

Copy forwarded to the Regional Manager, J.K.Road for kind information and necessary action.

Dy.General Manager (Geo)

OFFICE OF THE
DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
GHATAKULA, NUAPADA, MADHUPATNA, CUTTACK-753010.
E-mail Id-dfo.cuttackforestdivision@yahoo.com, Fax-0671-2347611

No. 776 /SF(Misc.)/2016
Dated, Cuttack the 25th January, 2016.

To

The Dy. General Manager (Geo)
Power of Attorney Holder,
Orissa Mining Corporation Ltd.
OMC House, Post Box NO.34,
Bhubaneswar-751001.

Sub:- Payment of NPV in respect of Sukurangi Chromite Mines of M/s OMC Ltd.

Ref:- Letter No.F.No.11-309/2014 –FC dt.01.04.2015 of Govt. of India, MoEF &CC.

Sir,

1. Whereas the total area held by OMC under ML is 382.709 ha, out of which 267.21 ha is forest land (due to addition of 50.71 ha of non-forest land recorded as forest after 25.10.1980) as per the following classification:

   i. Revenue Forest: 252.601 ha
   ii. Mahagiri DPP: 14.609 ha.
   Total:-267.210 ha.

2. Whereas the Apex Court on the recommendation of the Central Empowered Committee have issued order for payment of NPV for the entire forest area in the lease deducting the area for which the NPV has already been paid

3. Whereas the Divisional Forest Officer is vested with the authority by the Apex Court (dt. 26.09.2005) to issue demand by 24th June 2010 at the appropriate rate depending on the Eco-value class and the canopy density of the forest area in question.

4. Whereas the Govt. of India accorded final approval over 104.79 ha of forest land vide MoEF Letter No. 8-104/2000-FC dt. 21.07.2011 and whereas the lessee has paid an amount of Rs. 6,07,78,200.00 on dt 08.08.2006 towards cost of NPV against the approved area over 104.79ha.

5. Whereas the lessee further paid Rs. 6,89,86,600.00 towards NPV demand for balance area over 177.760 ha of forest land on dt 07.07.2010 at the rate of Rs. 7,30,000/- per ha (density less than 0.4). Thus the total NPV paid by Lessee comes to Rs.12, 97, 64,800.00.

Contd....P/2

6. Whereas, Principal Chief Conservator of Foresrs, Odisha vide Memo No. 15685/9F (Misc) 60/10(Pt) dt. 29.09.2010 informed that the rate structure of raising demand of NPV has been revised by the State Govt. with effect from 28.03.2008. Hence accordingly excess amount of Rs. 1,57,18,500.00 was paid by the Lessee as mentioned under:

a.	NPV paid for approved forest area over 104.79 ha prior to 28.03.2008	= Rs. 6,07,78,200.00
b.	NPV paid for the balance forest area over 177.760 ha. (including differential amount + @ 7,30,3000/- per ha.	= Rs. 6,89,86,600.00
c.	NPV required to be paid after 28.03.2008 for area over 72.97 ha (177.76-104.79) @Rs. 7,30,000 per ha	= Rs. 5,32,68,100.00
d.	Excess amount of NPV paid	=Rs.6,89,86,600.000 -Rs.5,32,68,100.00 = Rs.1,57,18,500.00

7. Whereas the forest area in question falls under Eco-value class-I and 0.4 canopy density for which the NPV for Rs. 4,95,80,000.00 (Rupees Four crores ninety five lakhs eighty thousand) only is due as per the following calculation:

a.	NPV to be paid for area over 89.45ha (267.21-177.760) @Rs. 7,30,000 per ha	= Rs. 6,52,98,500.00
b.	Excess amount of NPV already paid	= Rs. 1,57,18,500.00
c.	Balance amount to be paid	= Rs. 4,95,80,000.00

8. Now therefore the undersigned by the virtue of authority vested by the Apex Court hereby issue demand notice for payment of Rs. 4,95,80,000.00 (Rupees Four crores ninety five lakhs eighty thousand) only towards NPV within 30 days of issue of this order. The amount should be deposited through RTGS/NEFT mode either in Compensatory Afforestation Fund (CAF), Orissa SB Accounts No. SB01025222, IFSC No. CORP0000371 of Corporation Bank, CGO Complex, Lodhi Road, New Delhi or in SB Account No. 344902010105428, Union Bank of India, Sundar Nagar, New Delhi and the proof/evidence of the deposit of fund be submitted for taking further necessary action.

9. It is further ordered that in the event of upward revisions of NPV, an Undertaking to pay the differential is to be submitted by the Lessee.

10. You may note that in case of non-deposit of NPV within the time period interest will be charged as per law and action will be taken as deemed proper.

Yours faithfully,

Divisional Forest Officer
Cuttack Forest Division

Contd...3

//3//

Memo No. 777 dt. 25-01-2016
Copy forwarded to the Regional Chief Conservator of Forests, Angul Circle, Angul for information and necessary action.

Divisional Forest Officer
Cuttack Forest Division

Memo No. 778 dt. 25-01-16
Copy forwarded to the Addl. Pr. Chief Conservator of Forests, Forest Diversion and Nodal Officer, FC Act, O/o-the PCCF, Odisha for information and necessary action.

Divisional Forest Officer,
Cuttack Forest Division.

Memo No. 779 dt. 25-01-16
Copy forwarded to the Range Officer, Sukinda Range for information and necessary action.

Divisional Forest Officer,
Cuttack Forest Division.

OMC

ISO: 9001: 2000 Certified

Cable: ORMINCORP, Bhubaneswar Tel: +0674-2377470(Dir), (EPABX) 2393431, 2395689, 2393389

The Odisha Mining Corporation Ltd.

(A Government of Odisha Undertaking)

OMC HOUSE, BHUBANESWAR-751001

RTGS FUNDS TRANSFER APPLICATION FORM

Date: 15.02.2016

Andhra Bank, OMC Campus Branch.

Applicant (Remitter) Details:

Account Title	ODISHA MINING CORPORATION LIMITED,BHUBANESWAR
Debit Account No.	105911011000001
Account Type	CURRENT ACCOUNT

Beneficiary Details:

Beneficiary Name	COMPENSATORY AFFORESTATION FUND MANAGEMENT AND PLANNING AUTHORITY (CAMPA)
Credit Account No.	344902010105428
Centre(Location)	NEW DELHI
Bank	UNION BANK OF INDIA
Branch	SUNDER NAGAR
Account Type	SB
IFSC Code	UBIN0534498
Contact No.	9437444309

Remittance Details:

Amount(in figures)	Rs.4,95,80,000.00
Amount (in words)	Rupees FOUR CRORE NINETY FIVE LAKH EIGHTY THOUSAND only
Remarks/narration	Immediate transfer of fund vide Ch. No. 191178 DT.15.02.2016 ON AB,OMC

Please remit the amount as per the aforesaid details, by debiting my/our Account for the amount of remittance plus your charges.

I/we declare that I/we are authorized to request for the Andhra Bank RTGS facility and all the persons authorized to operate the above mentioned Accounts are also authorized, as per the present mode of operation, to present the RTGS Funds Transfer Application Form to Andhra Bank, OMC Campus Branch, Bhubaneswar.

I/we undertake to keep AB OMC Campus Branch informed of any changes in the mode of operation of any of the above Accounts.

I/we hereby confirmed having read the terms and conditions pertaining to Andhra Bank RTGS facility on http://www.andhrabank.com/wholesale/sme/popup_rtg.htm (hereinafter the "Terms and Conditions") and agree that OMC LTD,Bhubaneswar (entity's name) use of the Andhra Bank RTGS facility shall be subject to and be governed by the Terms and Conditions.

I/we are aware of the fees and/or other charges which are currently to be levied by Andhra Bank for providing access to or allowing the use of the Andhra Bank RTGS facility. I/we further, undertake to keep ourselves aware of any revision made by Andhra Bank of the fees and/or other charges levied for providing access to or allowing the use of the Andhra Bank RTGS facility. I/we are aware that the same shall be notified to us by hosting the same on http://www.andhrabank.com/wholesale/sme/real_time_gross_settlement_fees.htm.

Yours sincerely,

ANDBH 160463195

Stamp and signature of Authorized Signatory

For Banks Use Only

Account Debited by	
Debit authorized by	
Entered into RTGS	
Authorized into RTGS	

ANNEXURE - IX

Office of the Regional Chief Conservator of Forests, Angul

Memo No. 5717/ SE.FC-I-82/2020. Dated. 09-12-21

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub:- Diversion of balance forest land of 162.42ha including 24.150 ha of forest land to be maintained as safety zone (as per Sabik Settlement records as on 25.10.1980 and after 25.10.1980) in respect of Sukurangi Chromite Mines of M/s. OMC Ltd.- Approval of schemes.

Ref:- Your Memo No. 8414 dated 03.12.2021.

The following schemes submitted vide your Memo under reference are approved by the undersigned at the wage rate of Rs.315/- per man-day and returned herewith in one set of the approved scheme for needful action .

Sl. No.	Condition No	Name of the scheme	Financial outlay. (Rs.)
1	xii(a)	Mitigative measures to minimize soil erosion and checking of streams.	12,80,000/-
	Xii(b)	Planting adequate draught hardy plant species and sowing of seeds.	05,29,500/-
2.	Xii(c)	Construction of Check Dam, retention /toe walls to arrest sliding down of the excavated material along the contour	41,33,200/-
	Xii(d)	Stabilize overburden dump by grading/benching so as to ensure the angles of repose at any given plance is less than 28.	2,39,72,000/-
3.	xii(e)	Management of top soil at Sukurangi Chromite Mines.	03,39,86,500/-
4.	xxix	De-silting of existing water and other water bodies within 5 Km from ML boundary.	77,26,300/-
	xxx	Plantation up to 100 meters on either side from the bank of river on either side in Sukrangi Chromite Mines	90,53,500/-
5.	Addl. Condition 'D'	Construction of a RCC wall along Damsal Nala.	02,19,81,100/-

You are requested to submit point-wise compliance on the stipulated condition imposed in stage-I approval order to this office immediately for further action.

Encl: As above.

Regional Chief Conservator of Forests
Angul

Memo No. 5478 dated. 09.12.21

Copy along with copy of the above approval scheme each in one set forwarded to the Addl. Principal Chief Conservator of Forests (Forest Diversion and Nodal Officer, FC Act), Office of the Principal Chief Conservator of Forests & HoFF, Odisha for favour of information and necessary action with reference to Memo No.8414 dated 03.12.2021 of the DFO, Cuttack Division.

Encl: As above.

Regional Chief Conservator of Forests
Angul.

Memo No. 5479 dated. 09.12.21

Copy forwarded to the Managing Director, OMC Ltd. OMC House, Bhubaneswar for information and necessary action.

Regional Chief Conservator of Forests
Angul

SCHEME FOR

MITIGATIVE MEASURES TO MINIMIZE SOIL EROSION AND CHOKING OF STREAMS

IN

SUKURANGI CHROMITE MINING LEASE

UNDER CUTTACK FOREST DIVISION

OF

M/s ODISHA MINING CORPORATION LTD.

(A GOVT.OF ODISHA UNDERTAKING)
OMC HOUSE, BHUBANESWAR-751001.

(As per condition No. (xi) (a) of the stage-I Forest clearance granted by MoEF & CC, Govt. of India vide F. No. 8-22/2016-FC Dated 14.09.2017)

(@ Rs 315.00 per manday)

SCHEME FOR MITIGATIVE MEASURES TO MINIMIZE SOIL EROSION AND CHOKING OF STREAMS IN SUKURANGI CHROMITE MINE OF O.M.C.LTD UNDER CUTTACK FOREST DIVISION.

(As per condition No.(xi) (a) of the stage-I forest clearance granted by MoEF & CC, Govt. of India vide F. No. 8-22/2016-FC Dated 14.09.2017)

Stage-I approval for diversion of 162.42 ha of forest land for non-forest purpose for Sukurangi Chromite mine has been accorded vide F. No. 8-22/2016-FC Dated 14.09.2017 of Ministry of Environment, Forests & Climate Change subject to fulfillment of certain conditions.

As per condition No. (xi) (a) of the Stage-I approval, the User Agency shall take up *"Mitigative measures to minimize soil erosion and choking of stream shall be implemented within a period of three years with effect from the issue of Stage-II clearance in accordance with the approved plan in consultation with the State Forest Department"* at the project cost.

In compliance with this condition, a comprehensive scheme is prepared for implementation of the same in 162.42 ha. area of the said mining lease. Earlier a scheme for mitigative measures to minimizes soil erosion and choking streams has been approved by RCCF, Angul @ Rs. 213.50 per man day, @ Rs. 298.00 per man day, @ Rs. 303.40 per man day, @ Rs. 308.00 per man day and @ Rs. 311 per manday. Labour Commissioner of Odisha letter no. 5639/LC dt. 02.11.2021 has revised the minimum wage rate to Rs. 315.00/- per man day. In this context the scheme has been revised @ Rs. 315.00/- per man day.

The said ML area finds place within the Latitudes: 210 02' 18.851" (ML Boundary pillar No. 47)-210 03' 46.022" (ML Boundary pillar No. 5) North and Longitudes: 850 47' 43.770" (ML Boundary pillar No. 1)–850 49' 21.744" (ML Boundary pillar No. 32) East in the Survey of India Topo Sheet bearing No. 73 G/16. The area exhibits an undulated topography with varying elevations from 130 meters to 254 meters above Mean Sea Level (AMSL). The ML area bears a common boundary with South-Kaliapani Chromite ML area (552.457 ha) of OMC Ltd towards south-east, Kaliapani ML area (971.245 ha) of OMC to North West, Saruabil-Sukurnagi ML (23.243 ha) & Balipadia-Mahagiri ML (185.81 ha) of OMC to east and virgin Mahagiri Hill Ranges towards south of the ML area. Evacuation of minerals can happen independently without entering in to any other lease. Tomka-Mangalpur public road passes through the northern part of the ML and is the only road through which entire mineral of Sukinda valley is transported to different destinations.

The mining and ancillary activities will convert this area prone to intensive soil erosion by creating reels and gullies on mined out pit benches, on the shoulder of haul roads, on the surface of the surface-soil deposit and on the bank of the natural streams. Such gullies eventually may widen and occupy large tract of the slope and cause heavy soil loss and flooding the valley bottom with heavy siltation. During rains, the exposed soil will not allow percolation of rainwater to charge the ground water table. Consequently the seasonal streams will be dried up. Therefore, it is essential to treat the area with strategic soil and moisture conservation measures to mitigate the adverse impact of mining.
In addition to the engineering structures, the vegetative cover in barren areas proves to be very effective in preventing soil erosion.

FACTORS RESPONSIBLE FOR SOIL EROSION AND CHOKING OF STREAMS

The mining activities, sub grade dumps and overburden dumps are the major factors impacting adversely to any drainage system in the mining areas. The forms of erosion observed in this region include mainly rill and gully erosion. The storm water runoffs from the hills, mine faces, sub grade dumps and OB dump slope areas carry substantial amounts of solids in the lower order streamlets and choke the higher order streams. These lower order streamlets and gullies have high erosion capacity due to steep gradient and transportation of rock fragments with high velocity of the stream and deposition of same in the connecting high order streams due to velocity drop. Streams can also erode by undercutting their banks resulting in mass-wasting processes like slumps or slides. When the undercut material falls into the stream, the fragments are transported and deposited in the stream bed. The other mode of sediment transportation is very nominal.

1. OBJECTIVE OF THE SCHEME:

The objectives of the proposed scheme are as follows:

a) To meet the requirement of condition No. 2vi (a) of the Stage – I approval of GoI, MoEF.

b) Prevention of erosion of loose materials from OB dump & erosion of top soil in non- working area which will be chance to chocking the natural streams as well as the effect in agriculture.

c) Prevention of obstruction of natural water sources.

d) Proper Management of overburden materials so as to prevent siltation in the streams

e) Prevention of overflow of eroded soils from the mining areas to the cultivable lands, natural streams and inhabitations.

f) Prevention of overflow of eroded soils from the mining areas to the cultivable lands, natural streams and inhabitations.

2. PROPOSED METHODOLOGY

To achieve the above objectives it has been proposed to take up both biological and structural works for soil and water conservation. The vegetative measures are to be adopted mostly in the upper reaches & around O.B dumping sites whereas the structural works are suggested in the lower reaches such as in the drain & critical points around O.B. dumps. As per the current practice, check dams are constructed across the contour seasonal streams arising from the up-slope areas to arrest the sediment load to prevent choking of streams followed by de-silting before monsoon.

The following activities are proposed to be taken up to mitigate soil erosion and choking of streams:

a) There are no seasonal streams inside the M.L boundary except two very small streams on the northern portion of M.L area. These streams will be damaged during mining. However adequate soil conservation measures will be taken up in all streams outside the M.L area. Separate schemes have been prepared for this purpose.

b) Erosion from O.B. dump slope areas will be controlled by providing retaining wall, garland drain, loose boulders structures, settling tanks etc. The main purpose of the works is to control soil erosion from OB dump and minerals stock piles etc. and prevent chocking of natural stream flow. Separate scheme has been prepared for this purpose.

In addition to the engineering structures, the vegetative cover on areas susceptible to erosion proves to be very effective in preventing soil erosion.

Separate schemes to protect and regenerate Safety Zone, to plant drought hardy species within ML area to arrest soil erosion, for construction of check dam, retention/toe walls to arrest sliding down of excavated material, and to stabilize OB dump have been prepared. There is no more blank area suitable for plantation inside the mining lease. Only Soil & Moisture Conservation Measures will be done by constructing Loose Boulder Check Dams in the gullies and small streams in the mining lease area.

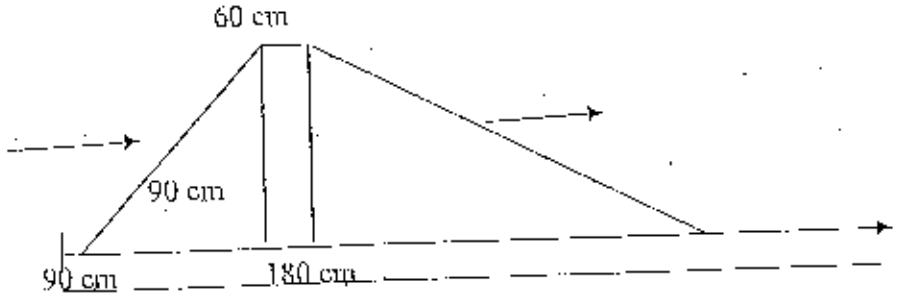
Since Loose Boulder Check Dams will be of varying length depending upon the size of gully/stream, estimate has been prepared to arrive at average cost per metre of Loose Boulder Check Dam. Estimate for Loose Boulder Check Dam is enclosed as Annexure-1.

Loose Boulder Check Dams in gullies:

Loose Boulder Check Dams should be constructed on the following principles: -

- Height of the dam should be the height of the bank or 90 cm whichever is higher.
- Series of check dams should be constructed on the gullies. Bottom level of Check Dam situated on higher slope and top level of the Check Dam located downstream should be same.
- Check Dam or any Soil Conservation Measure should start from the top where the erosion starts and move downwards.
- Check Dam should be constructed where the gully or nala is narrowest and the bank is strong. The tendency of constructing big check dams at wide and accessible points should be avoided.
- For construction of loose boulder check dams as big stones as possible to fit the design should be used and small stones may be used to fill interstices to make the structure stable.
- If possible the construction of loose boulder check dams should be done before plantation is taken up in the area to prevent damage of planted seedlings.

The following simple design should be followed for loose boulder check dams.



- Volume of stone work will be Cross section of check dam is sq.mtr x length of check dam in mtr. For example, as per the drawing shown above, the volume calculation for a 2.5 mtr long check dam will be: -

Cross section:

Foundation 4.5 mtr x 0.25 mtr = 1.125 sq.mtr

Super structure (3.3m x 0.6 m)/2 x 0.9m= 1.755 sq.mtr

1.755 mtr + 1.125 sq.mtr = 2.88 sq.mtr

Volume = 2.88 sq.mtr x 2.5 mtr = 7.2 cu.m

Volume of stone for a 2.5 mtr long loose boulder check dam is 7.2 cu.m.

Volume of check dams of different lengths can be calculated accordingly.

Estimate of a standard loose boulder check dam is furnished at **Annexure-I**

INSPECTION, MONITORING AND EVALUATION

For successful implementation of the above mitigative measures, intensive inspection and technical guidance from concerned technical wing of the User Agency is required. The work will also be inspected and evaluated by officers of Forest Department and MoEF & CC.

3. EXECUTING AGENCY

The works in the present Scheme shall be executed by the User Agency as per the condition of MoEF & CC.

4. REQUIREMENT OF FUNDS

The total cost of the implementation of mitigative measures will be Rs 12, 80,000.00 (Rupees Twelve lakh eighty thousand) only as shown in Annexure-II for implementation of the above mitigation measures.

Divisional Forest Officer
Cuttack Forest Division

Approved for Rs. 12,80,000/-

Regional Chief Conservator
of Forests, Angul Circle,

Estimate for Loose Boulder Check Dam of length 2.5 mtr

Foundation and apron 25 cm thick.
Top width 60 cm
Height of check dam above the foundation is 90 cm.
Uphill side width 90 cm.
Downhill side width should be 180 cm.
Uphill side apron 30 cm and downhill side apron 90 cm.

Analysis of Rate

Particulars of work	No./ Quantity	Rate	Amount
Earth work in hard or gravelly soil within 50m. Initial lead and 1.5m. Initial lift including rough dressing of clods to maximum 5 cm. to 7 cm and laying in layers not exceeding 0.3 m. in depth (per 100 cum.)	43	315.00	13545.00
Mulia			270.90
2% sundries and T & P etc.	Total		13815.90
Rough stone dry packing in aprons and revetments with hard granite stones (15 to 30 cm size) per cum	1	507.96	507.96
Granite broken stone 1 cum.	0.17	465.00	79.05
Mason (Special)	0.35	355.00	124.25
Stone packer	1.04	315.00	327.60
Mulia			20.78
2% sundries, T & P etc.	Total		1059.64

Estimate for construction of Loose Boulder Check Dam

Length of Loose Boulder Check Dam 2.5 Mtr

Particulars of work	Volume	Rate in Rupees	Total amount in Rupees
Earth work in hard or gravelly soil within 50m. Initial lead and 1.5m. Initial lift including rough dressing of clods to maximum 5 cm. to 7 cm and laying in layers not exceeding 0.3 m. in depth			
Dressing the side of banks and foundation on L.S	L.S	200.00	200.00
Rough stone dry packing in aprons and revetments with hard granite stones (15 to 30 cm size) per cum Rough stone dry packing in aprons and revetments with hard granite stones (15 to 30 cm size) per cum			
Foundation 4.5 mtr x 0.25 mtr = 1.125 sq.m Super structure (3.3mx0.6m)/2x 0.9m=1.755 sq.m 1.755 sq. mtr + 1.125 sq.mtr =2.88 sq.mtr Volume = 2.88 sq.mtr x 2.5 mtr = 7.2 cu.m	7.2 cu.m	1059.64	7629.41
Total			7829.41

Cost per running metre of L.B.C.D of 90 cm height = Rs 7829.41/2.5= Rs. 3131.764 or say Rs.3200/-

Annexure-II

TOTAL COST OF THE PROJECT

Description of the Work	Fund Required (in Rs.)
Loose Boulder Check Dams over 400 Running Metres in gullies and streams within the mining lease area @ Rs 3200.00 per metre.	12,80,000.00
Total	**12,80,000.00**
Rupees Twelve lakh eighty thousand only	

ANNEXURE - X

Office of the Regional Chief Conservator of Forests, Angul

Memo No. 5747/ SF.FC-I-82/2020, Dated. 07-12-21

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub:- Diversion of balance forest land of 162.42ha including 24.150 ha of forest land to be maintained as safety zone (as per Sabik Settlement records as on 25.10.1980 and after 25.10.1980) in respect of Sukurangi Chromite Mines of M/s. OMC Ltd.- Approval of schemes.

Ref:- Your Memo No. 8414 dated 03.12.2021.

The following schemes submitted vide your Memo under reference are approved by the undersigned at the wage rate of Rs.315/- per man-day and returned herewith in one set of the approved scheme for needful action.

Sl. No.	Condition No	Nature of the scheme	Financial outlay. (Rs.)
1	xii(a)	Mitigative measures to minimize soil erosion and checking of streames.	12,80,000/-
	Xii(b)	Planting adequate draught hardy plant species and sowing of seeds.	05,29,500/-
2.	Xii(c)	Construction of Check Dam, retention /toe walls to arrest sliding down of the excavated material along the contour	41,33,200/-
	Xii(d)	Stabilize overburden dump by grading/benching so as to ensure the angles of repose at any given plance is less than 28.	2,39,72,000/-
3.	xii(e)	Management of top soil at Sukurangi Chromite Mines.	03,39,86,500/-
4.	xxix	De-silting of existing water and other water bodies within 5 Km from ML boundary.	77,26,300/-
	xxx	Plantation up to 100 meters on either side from the bank of river on either side in Sukrangi Chromite Mines	90,53,500/-
5.	Addl Condition 'D'	Construction of a RCC wall along Damsal Nala.	02,19,81,100/-

You are requested to submit point-wise compliance on the stipulated condition imposed in stage-I approval order to this office immediately for further action.

Encl: As above.

Regional Chief Conservator of Forests
Angul

Memo No. 5748 dated. 09-12-21

Copy along with copy of the above approved scheme each in one set forwarded to the Addl. Principal Chief Conservator of Forests (Forest Diversion and Nodal Officer, FC Act), Office of the Principal Chief Conservator of Forests & HoFF, Odisha for favour of information and necessary action with reference to Memo No.8414 dated 03.12.2021, of the DFO, Cuttack Division.

Encl: As above.

Regional Chief Conservator of Forests
Angul.

Memo No. 5749 dated. 09-12-21

Copy forwarded to the Managing Director, OMC Ltd. OMC House, Bhubaneswar for information and necessary action.

Regional Chief Conservator of Forests
Angul

SCHEME FOR

PLANTING OF DROUGHT HARDY PLANT SPECIES AND SOWING OF SEEDS IN THE APPROPRIATE AREA WITHIN THE MINING LEASE TO ARREST SOIL EROSION

WITHIN SUKURANGI CHROMITE MINING LEASE

UNDER CUTTACK FOREST DIVISION

OF

M/s ODISHA MINING CORPORATION LTD.

(A GOVT.OF ODISHA UNDERTAKING)
OMC HOUSE, BHUBANESWAR-751001

(As per condition No. (xii) (b) of the stage-I Forest clearance granted by MoEF & CC, Govt. of India vide F.No.8-22/2016-FC dt 14.9.2017)

(@ Rs 315.00 per manday)

SCHEME FOR

PLANTING OF DROUGHT HARDY PLANT SPECIES AND SOWING OF SEEDS IN THE APPROPRIATE AREA WITHIN THE MINING LEASE TO ARREST SOIL EROSION.

(As per condition No. (xii) (b) of the stage-I forest clearance granted by MoEF & CC, Govt. of India vide F.No.8-22/2016-FC dt 14.9.2017)

1. INTRODUCTION

Stage-I approval for diversion of balance forest land 162.42 ha for non-forest purpose for Sukurangi Chromite mine of OMC Ltd has been accorded vide F.No.8-22/2016-FC Dt. 14.09.2017 of Ministry of Environment, Forests & Climate Change subject to fulfillment of certain conditions. As per condition No. (xii) (b) of the Stage-I approval, the User Agency shall take up *"Planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the mining lease to arrest soil erosion in accordance with the approved scheme"* at the project cost. In compliance, a comprehensive scheme is prepared for implementation of the same over the entire area of the said mining lease. Earlier a scheme for planting adequate drought hardy plant species and sowing of seeds by RCCP, Angul @ Rs. 213.50 per man day, @ Rs. 298.00 per man day, @ Rs. 303.40 per man day, Rs. 308.00 per man day and Rs. 311 per man day. Labour Commissioner of Odisha vide letter no. 5639/LC dt. 02.11.2021 has revised the minimum wage rate to Rs. 315.00 per man day. In this context the scheme has been revised @ Rs. 315.00 per man day.

The said ML area finds place within the Latitudes: 21^0 02' 18.851" (ML Boundary pillar No. 47)–21^0 03' 46.022" (ML Boundary pillar No. 5) North and Longitudes: 85^0 47' 43.770". (ML Boundary pillar No. 1)–85^0 49' 21.744" (ML Boundary pillar No. 32) East in the Survey of India Topo Sheet bearing No. 73 G/16. The area exhibits an undulated topography with varying elevations from 130 meters to 254 meters above Mean Sea Level (AMSL). The ML area bears a common boundary with South-Kaliapani Chromite ML area (552.457 ha) of OMC Ltd towards south-east, Kaliapani ML area (971.245 ha) of OMC to North West, Saruabil-Sukurangi ML (23.243 ha) & Balipadia-Mahagiri ML (185.81 ha) of OMC to east and virgin Mahagiri Hill Ranges towards south of the ML area. Evacuation of minerals can happen independently without entering in to any other lease. Tomka-Mangalpur public road passes through the northern part of the ML and is the only road through which entire mineral of Sukinda valley is transported to different destinations.

The mining and ancillary activities will convert this area prone to intensive soil erosion by creating rocks and gullies on mined out pit benches, on the surface of O.B. dump, on the shoulder of haul roads, on the surface of the surface-soil deposit and on the bank of the natural streams. Such gullies eventually may widen and occupy large tract of the slope and cause heavy soil loss and flooding

the valley bottom with heavy siltation. This results the virgin forest area prone to soil erosion. During rains, the exposed soil will not allow percolation of rainwater to charge the groundwater table. Consequently the seasonal streams will be dried up. Therefore, it is essential to treat the area with strategic soil and moisture conservation measures to mitigate the adverse impact of mining.

In addition to the engineering structures, the vegetative cover on areas susceptible to erosion proves to be very effective in preventing soil erosion.

Separate scheme has been prepared for plantation in safety zone. Action will be taken to protect the sub-grade ore dumps from soil erosion. Since most of the areas will be utilized for mining and ancillary purposes, there is no scope for raising plantation in surplus area. Plantation will be taken up during reclamation of worked out areas. Hence there is only scope for taking up block plantation over an area of 1.69 ha on a part of inactive dump.

Map of the proposed plantation area is given as Plate-I.

Species selected for plantation shall be drought hardy, fast growing in nature. The species selected will be from among the following:

Common Name	Scientific name	Family
Neem	*Azadirachta indica*	Meliaceae
Aula	*Emblica officinalis*	Euphorbiaceae
Bela	*Aegle marmelos*	Rutaceae
Karanja	*Pongamia pinnata*	Fabaceae
Dhamana	*Grewia tilifolia*	Tiliaceae
Barakoli	*Zizyphus mauritania*	Rhamnaceae
Acacia	*Acacia auriculiformis*	Mimisaceae
Chakunda	*Cassia siamea*	Caesalpiniaceae
Simarouba	*Simarouba glauca*	

Pre-planting, planting and post planting operations shall be carried out as per silvicultural practices enumerated in the Govt. approved cost norms. Pit size of 45 cm X 45 cm X 45 cm will be dug out to carry out plantation. Since the work will be done on the dump of a Chromite mine, cost norm of Bald Hill plantation is provided.

Cost norm for plantation is given at Annexure-I.

There is no appropriate area inside the mining lease area for sowing of seeds.

Execution of work:

Since the work will be done within mining lease area, it will be executed by the User Agency.

Financial outlay:

The total financial outlay for proposed plantation of drought hardy species comes to Rs (5,27,800.00) (Rupees five lakhs twenty seven thousand eight hundred) only as shown in Annexure-II.

5,29,500/-

Approved for Rs. 5,29,500/--

Divisional Forest Officer
Cuttack Division

Regional Chief Conservator
of Forests, Angul Circle.

BASE COST NORM FOR COMPENSATORY AFFORESTATION (BLOCK PLANTATION)
@ 1600 PLANTS PER HECTARE (18 months old seedling)

Sl. No.	Items of work	Preferable Period of Execution	No. of Mandays	Labour Cost (in Rs.)	Material Cost (in Rs.)	Total Cost (in Rs.)
1	2	3	4	5	6	7
	0th Year (Advance Work) Pre-Planting Operation					
1.	Survey, demarcation and Pillar posting	Nov/Dec	2	630	0	630
2.	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	315	100	415
3.	Site preparation (Cleaning & removal of debrises)	Nov/Dec	12	3780	0	3780
4.	Creation of 4.00 mt. wide Inspection Path	Feb/Mar	1	315	0	315
5.	Alignment and stacking	Feb/Mar	2	630	0	630
6.	Digging of pits (45 cm x 45 cm x 45 cm) in hard and gravelly soil	Feb/Mar	64	20160	0	20160
7.	Construction of Temporary Labour Shed, Drinking water facility and First-Aid etc.	Jan/Mar	0	0	3500	3500
	Total		82	25830	3600	29430
	1st Year / Planting Year					
1.	Refilling of pits by altering the dug-out soil of the pits, application of Organic compounds/ CDM/ FYM & mixing the same properly.	Jun/Jul	12	3780	8000	11780
2.	Transportation of 18 months old polypot seedlings in hired truck/ tractor from the permanent/ Mega nursery to planting site including Loading & unloading. (Average lead of 10 Rkm) & Stacking the seedling @ Rs. 6/- per Seedling. (1760 nos.)	Jul/Aug	0	0	10560	10560
3.	Watering the polypot seedlings at planting site	Jul/Aug	3	945	0	945
4.	Conveyance of polypot seedlings on head load from the stacking site to individual dugout pits within the planting site, applying insecticide, fertilizers & planting after scooping the soil with other applied materials & pressing the soil properly around the planted seedlings.	Jul/Aug	36	11340	0	11340
5.	**Cost of Fertilizer & Insecticide** (a) NPK/ Bio-fertilizer @ 50 gms/ plant as basal dose = 80 kg @ Rs. 30/- per kg = Rs. 2400.00 (b) Urea/ Vermicompost/ Mo Khata/ any other fertilizer in two subsequent doses @ Rs. 1,200.00 (c) Insecticide/ Bio-pesticide @ 5 gms/ plant = 8 kg @ Rs. 150/- per kg = Rs. 1200.00	Jul/Aug	0	0	4800	4800
6.	Casualty Replacement @ 10% (160 nos.)	Jul/Aug	4	1260	0	1260
7.	1st weeding & Manuring	Aug/Sept	15	4725		4725
8.	2nd Weeding, Soil working (1mt. diameter around the plants) and Manuring.	Oct/Nov	20	6300	0	6300
9.	Fire line tracing (2m. wide fire line over 400 m long) including maintenance of Inspection path.	Feb/Mar	3	945	0	945
10.	Watch & Ward including watering as per requirement	Aug-Mar	12	3780	0	3780
	TOTAL		105	33075	23360	56435
	2nd Year Maintenance					
1.	Transportation of 160 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs. 6/- per seedlings	Jul	0	0	960	960
2.	Causality replacement- 10%	Jul	4	1260	0	1260
3.	**Cost of Fertilizer & Insecticide** A) Cost of Insecticide/ Bio-pesticide @ 5	Aug/Sept	0	0	4606	4606

	gms/plant :: 0.8 Kg @ Rs. 150/- per kg = Rs. 120/- B) Urea/ NPK/ Bio-fertilizer/ Vermi compost/ Mo Khata/ any other fertilizer @ Rs. 4486/-					
4.	Weeding (Complete weeding), Manuring & Soil working (1mt. diameter around the plants)	Sept/Oct	20	6300	0	6300
5.	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	945	0	945
6.	Watch & Ward including watering as per requirement	Apr-Mar	18	5670	0	5670
7.	Maintenance of Temporary Labour Shed, Drinking water facility and First-Aid etc.				1000	1000
	Total		45	14175	6566	20741
	3rd Year Maintenance					
7	Cost of Fertilizer Urea/ NPK/ Bio-fertilizer/ Vermicompost/ Mo Khata/ any other fertilizer	Sept/Oct	0	0	4486	4486
8	Weeding, Manuring & Soil working (1mt. diameter around the plants)	Sept/Oct	20	6300	0	6300
9	Fire line tracing (2 m wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	945	0	945
10	Watch & Ward including watering as per requirement	Apr/Mar	18	5670	0	5670
11	Maintenance of Temporary Labour Shed, Drinking water facility and First-Aid etc.	Apr/Mar			1000	1000
	Total		41	12915	5486	18401
	4th Year Maintenance					
1.	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615
	5th Year Maintenance					
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
2	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
	6th Year Maintenance					
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945.0
2.	Pruning of branches, Singling out of multiple shoots	Jan/Mar	5	1575.00	0	1575.0
3.	Watch & Ward	Apr-Mar	18	5670.00	0	5670.0
	Total		26	8190	0	8190.0
	7th Year Maintenance					
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
2.	Watch & Ward	Apr Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
	8th Year Maintenance					
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
2.	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
	9th Year Maintenance					
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
2.	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
	10th Year Maintenance					
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
2.	Watch & Ward	Apr/Mar	18	5670.00	0	5670
	Total		21	6615	0	6615

Year wise Abstract of Cost Norm (Showing seedling cost separately)

Sl. No.	Year	No. person days	Labour Cost @ Rs. 315/- per day	Material Cost	Monitoring Evaluation, Learning, Documentation and Other Contingency (5%) of (4+5)	Cost of Seedlings @ Rs. 50.81 per seedlings	TOTAL COST
1.	0th Year	82	25830	3600	1470	0	30900
2.	1st Year	105	33075	70360	7822	08546	147803
3.	2nd Year	45	14175	6566	1037	8050	29828
4.	3rd Year	41	12915	5416	920	0	19321
5.	4th Year	21	6615	0	331	0	6946
6.	5th Year	21	6615	0	331	0	6946
7.	6th Year	26	8190	0	410	0	8600
8.	7th Year	21	6615	0	331	0	6946
9.	8th Year	21	6615	0	331	0	6946
10.	9th Year	21	6615	0	331	0	6946
11.	10th Year	21	6615	0	331	0	6946
	Total	425	133875	39012	8643	97556	278126.00

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

Sl. No.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost (10 Years)
Base Norm		30900	147803	29828	39321	6946	6946	8600	6946	6946	6946	6946											278128
1	2021-22	30900	155199	32885	22366	8443	8865	11525	9774	10262	10776	11314	11880											312309
2	2022-23		32445	162953	34530	23485	8865	9308	12105	10262	10776	11314	11880	12474										344515
3	2023-24			34067	171100	36256	24659	9308	9774	12706	10776	11314	11880	12474	13098									360531
4	2024-25				35771	179655	38069	25892	9774	10262	13241	11314	11880	12474	13098	13753								375607
5	2025-26					37559	188638	39973	27187	10262	10776	14008	11880	12474	13098	13753	14440							398587
6	2026-27						39437	198070	41971	28546	10776	11314	14709	12474	13098	13753	14440	15162						418517
7	2027-28							41409	207974	44079	29975	11314	11880	15444	13098	13753	14440	15162	15920					429442
8	2028-29								42479	218372	46273	37472	11880	12474	16217	13753	14440	15162	15920	16716				461415
9	2029-30									45653	229291	48587	53045	12474	13098	17027	14440	15162	15920	16716	17552			484496
10	2030-31										47936	240756	51016	34698	13098	13753	17879	15162	15920	16716	17552			

DIVISIONAL FOREST OFFICER,
CUTTACK FOREST DIVISION.

Annexure-II

TOTAL COST OF THE PROJECT

Sl. No.	Description of the Work	Fund Required (in Rs.)
A	Block Plantation @ 1600 Plants per ha over 1.69 ha. @ Rs.312304.00 per ha. ₹ 3,13,313.50	5,27,793.76 5,29,500/-
	OR say	
	Rs.5,27,800.00 (Rupees five lakhs twenty seven thousand eight hundred) only	

ANNEXURE - XI

Office of the Regional Chief Conservator of Forests, Angul

Memo No. 5747/ SE.FC-1-82/2020, Dated. 07-12-21

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub:- Diversion of balance forest land of 162.42ha including 24.150 ha of forest land to be maintained as safety zone (as per Sabik Settlement records as on 25.10.1980 and after 25.10.1980) in respect of Sukurangi Chromite Mines of M/s. OMC Ltd.- Approval of schemes.

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Sl. No.	Condition No	Name of the scheme	Financial outlay. (Rs.)
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	Xii(b)	Planting, adequate draught hardy plant species and sowing of seeds.	05,29,500/-
2.	Xii(c)	Construction of Check Dam, retention /toe walls to arrest sliding down of the excavated material along the contour	41,33,200/-
	Xii(d)	Stabilize overburden dump by grading/benching so as to ensure the angles of repose at any given plance is less than 28.	2,39,72,000/-
3.	xii(e)	Management of top soil at Sukurangi Chromite Mines.	03,39,86,500/-
4.	xxix	De-silting of existing water and other water bodies wilhin 5 Km from ML boundary.	77,26,300/-
	xxx	Plantation up to 100 meters on either side from the bank of river on either side in Sukrangi Chromite Mines	90,53,500/-
5.	Addl. Condition 'D'	Construction of a RCC wall along Damsal Nala.	02,19,81,100/-

You are requested to submit point-wise compliance on the stipulated condition imposed in stage-I approval order to this office immediately for further action.

Encl: As above.

Regional Chief Conservator of Forests
Angul

Memo No. 5718 dated. 09-12-21

Copy along with copy of the above approved scheme each in one set forwarded to the Addl. Principal Chief Conservator of Forests (Forest Diversion and Nodal Officer, PC Act), Office of the Principal Chief Conservator of Forests & HoFF, Odisha for favour of information and necessary action with reference to Memo No.8414 dated 03.12.2021, of the DFO, Cuttack Division.

Encl: As above.

Regional Chief Conservator of Forests
Angul.

Memo No. 5719 dated. 09-12-21

Copy forwarded to the Managing Director, OMC Ltd. OMC House, Bhubaneswar for information and necessary action.

Regional Chief Conservator of Forests
Angul

SCHEME FOR

CONSTRUCTION OF CHECK DAMS, RETENTION/TOE WALLS TO ARREST SLIDING DOWN OF THE EXCAVATED MATERIAL ALONG THE CONTOUR

IN

SUKURANGI CHROMITE ORE MINES UNDER CUTTACK FOREST DIVISION

OF

M/S ODISHA MINING CORPORATION LTD.

(A GOVT.OF ODISHA UNDERTAKING)

OMC HOUSE, BHUBANESWAR-751001

(As per condition No.(xii)(c) of the stage-I forest clearance granted by MoEF&CC, Govt.of India vide F. No.-8-22/2016-FC Dt. 14.9.2017)

(@ Rs. 315/- per manday)

SITE SPECIFIC SCHEME FOR CONSTRUCTION OF CHECK DAMS, RETENTION/TOE WALLS TO ARREST SLIDING DOWN OF THE EXCAVATED MATERIAL ALONG THE CONTOUR WITHIN SUKURANGI CHROMITE MINING LEASE OF O.M.C LTD IN JAJPUR DISTRICT UNDER CUTTACK FOREST DIVISION.

1. INTRODUCTION

Stage-I approval for diversion of balance forest land over 162.42 ha. for non-forest purpose for Sukurangi Chromite Mines of OMC Ltd. has been accorded vide F.No.8-22/2016-FC Dt. 14.9.2017 of Ministry of Environment, Forests & Climate Change subject to fulfillment of certain conditions.

As per condition No. (xii) (c) of the Stage-I approval, the User Agency shall take up *"Construction of check dams, retention/toe walls to arrest sliding down of the excavated material along the contour in accordance with the approved scheme"* at project cost.

In compliance with this condition, a comprehensive scheme is prepared for implementation of the same in the entire area of the said mining lease. Earlier a scheme was prepared which has been approved by RCCF, Angul. Labour commissioner of Odisha vide letter no. 5639/LC dt. 02.11.2021 has revised the minimum wage rate from Rs. 311.00 to Rs. 315.00 per man day. In this context, the scheme has been revised at current wage rate of Rs. 315.00 per man day.

Dumping of overburden is done in retreating method. Since the material is loose it is highly susceptible to erosion. The natural slope being very steep it will contaminate the streams down the hill with sediments by rain. In order to protect the dump, it is designed in such a manner that the washout is minimum. Tiers of 20 mts height with 28^0 slopes are very effective. Garland drain and retaining wall at the toe of the dump is planned and constructed to minimise the erosion. The drain is planned to be maintained every year. It is planned in addition to the engineering design, vegetative protection of the dump surface by plantation once the dump is declared dead. At the conceptual stage the dumping yard becomes stable and good forest growth over it resembles the original vegetative cover.

Retaining Wall

The waste dump inside the mining lease is likely to be stored for a long time. This is the reason why the stacks are required to be maintained with retaining wall at the toe to prevent wash out of the mineral. A total of 47.28 Million Cum of mine wastes will be generated from entire Sukurangi Mining Lease. Out of which 3.43 Cum of mine wastes will be generated during the first five years period. The waste generated during the course of mining operations will be stacked as external dumps. The downward contour of the dump will be provided with the retaining wall and garland drain. The details are as follows:

(i) It has been proposed to construct 944 mtr of crated boulder masonry around the proposed OB dump. The masonry will be constructed by using wire mesh and small size R.R. Stones. The height of the masonry structure will be 1mt, and the width 1m. The work will be executed with an estimated cost of Rs. 37,24,800.00 (Annexure-I). This will prevent pollution of water flowing in the nala adjoining to the village.

(ii) The overburden is being stacked over an area of 65.08 ha till the plan period. During heavy rain the over burden will be washed out and over flow to the valley, through the seasonal nalas, posing problems in the human habitations and their cultivated lands. Therefore dump stabilization is to be done immediately on priority basis. It is proposed to construct garland drains of size 2 m x 1.5m around the proposed OB dump over a length of about 992 meter on the outer side of the crate masonry structure. The estimated cost of excavation of garland drain has been proposed to be Rs 3,92,100.00 (Annexure-II).

Excavation of settling ponds near the toe of proposed OB dump: It is also proposed to excavate 1 nos of settling pond near the toe of proposed OB dump with dry masonry wall to receive the silt laden water from the garland drains for sedimentation of residues and percolation of water to the ground. The size of the pond will be 10 m long, 3 m width and 2 mts in depth. These ponds are proposed to be cleaned once annually. The sketch of plan and cross section of the settling ponds are shown below. The proposed ponds are to be dug out by the side of garland drain. The cost estimate for the work has been proposed to be Rs 16,300.00 (Annexure-III).

FINANCIAL FORECAST

Sl. No.	Particulars of interventions	Quantity	Financial involvement (Rs)
1	Development of crated boulder masonry wall.	944 mtr	37,24,800.00
2	Excavation of garland drain.	992 mtr	3,92,100.00
3	Excavation of settling ponds.	1 No	16,300.00
	Total		41,33,200.00

The above item of works amounting Rs 41,33,200.00 shall be taken up to safeguard sliding down material from the dump and protect the water bodies.

Divisional Forest Officer
Cuttack Division

Approved for Rs. 41,33,200/-

Regional Chief Conservator
of Forests, Angul Circle.

Development of crate boulder masonry near proposed OB dump
(Length of the wall = 944 mtr.)

1) E/W excavation by mechanical means.
Qty. 944 m x 2m.x 0.3 = 566 Cum
Taking Qty. 80% = 453 Cum @ Rs. 66.39 = Rs. 30,074.67

2) Blasting.
Taking 20% of Qty item (1) =113.00 Cum @ Rs. 430.26 = Rs. 48619.38

3) Providing crate boulder.
Bottom layer: 944m x 1.5m x1.00 = 1416.00Cum
Second layer: 944m x 1.00m x 1.00m = 944.00Cum
2360.00 Cum
@ Rs. 1544.94/Cum = Rs. 36,46,058.40
Rs. 37,24,752.45
Say Rs. 37,24,800.00

Excavation of Earthen drain (Garland drain) near proposed OB dump at Sukurangi.

1) E/W excavation by mechanical means.
992 m x 2.00 x 1.5 = 2976.00 Cum
Taking 80% of above = 2381.00 Cum @ Rs. 57.13/lm = Rs. 1,36,026.53

2) Blasting. 20% of Item (1) = 595.00 Cum @ Rs. 430.26/Cum = Rs. 2,56,004.70
Rs. 3,92,031.23
Say Rs. 3,92,100.00

Excavation of settling pond near Toe of Proposed OB dump.

1) E/W excavation by mechanical means.
10m x 2 m x 3m = 60.00 Cum
Taking 80% of above = 48.00 Cum @ Rs. 57.13/Cum = Rs. 2742.24

2) Balasting. 20% of Item-1(i) = 12.00 Cum @ Rs. 430.26/Cum= Rs. 5163.12

3) Dry masonry wall. 1 nos. x 6.00 x (1.60+1.00)/2 x 2 =15.6 Cum
@ Rs. 535.48/Cum = Rs. 8353.49
Rs. 16258.85
Say Rs. 16300.00

Grand Total: Rs. 37,24,800.00 + Rs.3,92,100.00 + Rs. 16,300.00= Rs. 41,33,200.00 (Rupees forty one lakhs thirty three thousand two hundred) only.

ANNEXURE - XI

Office of the Regional Chief Conservator of Forests, Angul

Memo No. 5107/ SF.FC-I-82/2020. Dated. 09-12-21

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub:- Diversion of balance forest land of 162.42ha including 24.150 ha of forest land to be maintained as safety zone (as per Sabik Settlement records as on 25.10.1980 and after 25.10.1980) in respect of Sukurangi Chromite Mines of M/s. OMC Ltd.- Approval of schemes.

Ref:- Your Memo No. 8414 dated 03.12.2021.

The following schemes submitted vide your Memo under reference are approved by the undersigned at the wage rate of Rs.315/- per man-day and returned herewith in one set of the approved scheme for needful action .

Sl. No.	Condition No	Name of the scheme	Financial outlay. (Rs.)
1	xii(a)	Mitigative measures to minimize soil erosion and checking of streams.	12,80,000/-
	Xii(b)	Planting adequate drought hardy plant species and sowing of seeds.	05,29,500/-
2.	Xii(c)	Construction of Check Dam, retention /toe walls to arrest sliding down of the excavated material along the contour	41,33,200/-
	Xii(d)	Stabilize overburden dump by grading/benching so as to ensure the angles of repose at any given plance is less than 28.	2,39,72,000/-
3.	xii(e)	Management of top soil at Sukurangi Chromite Mines.	03,39,86,500/-
4.	xxix	De-silting of existing water and other water bodies within 5 Km from ML boundary.	77,26,300/-
	xxx	Plantation up to 100 meters on either side from the bank of river on either side in Sukrangi Chromite Mines	90,53,500/-
5.	Addl. Condition 'D'	Construction of a RCC wall along Damsal Nala.	02,19,81,100/-

You are requested to submit point-wise compliance on the stipulated condition imposed in stage-I approval order to this office immediately for further action.

Encl: As above.

Regional Chief Conservator of Forests
Angul

Memo No. 5748 dated. 09.12.21

Copy along with copy of the above approved scheme each in one set forwarded to the Addl. Principal Chief Conservator of Forests (Forest Diversion and Nodal Officer, FC Act), Office of the Principal Chief Conservator of Forests & HoFF, Odisha for favour of information and necessary action with reference to Memo No.8414 dated 03.12.2021. of the DFO, Cuttack Division.

Encl: As above.

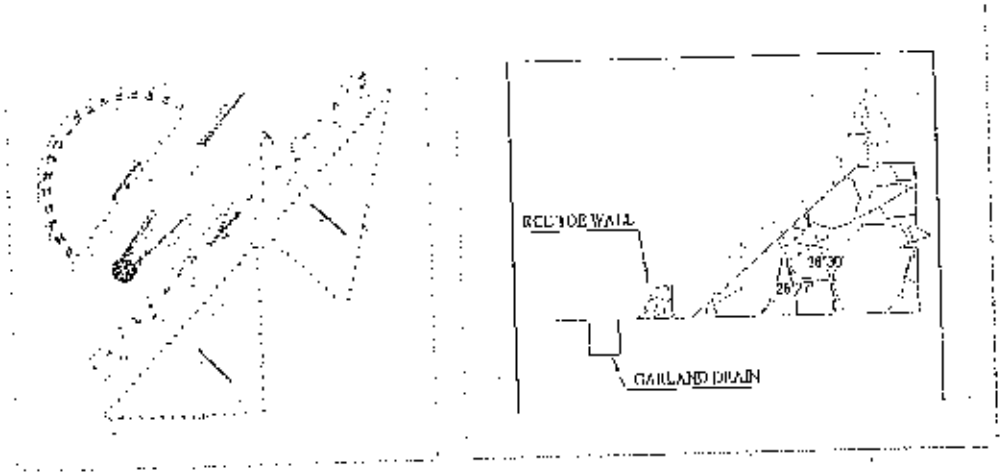
Regional Chief Conservator of Forests
Angul.

Memo No. 5749 dated. 09.12.21

Copy forwarded to the Managing Director, OMC Ltd. OMC House, Bhubaneswar for information and necessary action.

Regional Chief Conservator of Forests
Angul

SCHEME TO STABILIZE OVERBURDEN DUMP BY GRADING & BENCHING IN SUKURANGI CHROMITE MINES OF M/S OMC LTD, AGAINST DIVERSION OF 162.42 HECTARE OF FOREST LAND IN CUTTACK FOREST DIVISION.



Compliance to:

Condition no. (xii) (d) of in-principle Approval of MoEF & CC, Govt.of India vide letter no Vide F-8-72/2016-FC Dt.14.09.2017)

(@ Rs. 315.00 per manday)

STABILIZE OVERBURDEN DUMP BY APPROPRIATE GRADING & BENCHING.

(As per condition no (xii) (d) of in-principle Approval of MoEF & CC, Govt. of India vide letter No. 8-22/2016-FC Dt.14.09.2017)

1. INTRODUCTION

Stage-I approval for diversion of balance 162.42 ha. of forest land for non-forest purpose for Sukurangi Chromite Mines has been accorded vide F.No. 8-22/2016-FC Dt.14.09.2017 of Ministry of Environment, Forests & Climate Change subject to fulfillment of certain conditions.

As per condition No. (xii) (d) of the Stage-I approval, the User Agency shall take up steps to *"Stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place is less than 28°".*

In compliance, a comprehensive scheme is prepared for implementation of the same in 382.709 ha of ML area of the said mining lease.

Earlier a scheme for planting adequate drought hardy plant species and sowing of seeds by RCCF, Angul @ Rs. 213.50 per man day, @ Rs. 298.00 per man day and @ Rs. 303.40 per man day, @ Rs. 308.00 per manday and @ Rs. 311. Labour Commissioner of Odisha vide letter no. 5639/LC dt. 02.11.2021 has revised the minimum wage rate to Rs. 315.00 per man day. In this context the scheme has been revised @ Rs. 315.00 per man day.

2. PRESENT SCENARIO:

The Mining activities are being carried out in accordance with the Scheme of Mining approved by Regional Controller of Mines, Indian Bureau of Mines, Bhubaneswar, vide their letter no-MS/FM/37-ORI/BHU/2018-19/2461 dt 23.01.2019.

A total of 4, 42, 35,409 m^3 waste will be generated from the Sukurangi Chromite Mines up to conceptual stage. Out of 44.235 million cubic meters of waste proposed to be generated from the Sukurangi lease upto conceptual stage, only 17.85 million cubic meter can be accommodated inside the Sukurangi Lease. The balance 26.385 million cubic meter needs to be further accommodated outside the lease hold area of Sukurangi lease during the conceptual period.

3. SALIENT POINTS OF WASTE MANAGEMENT

- For the management of dump it is suggested to have terrace at every 20 m height from the floor at same contour.
- Ultimate height 80m

➢ Inward slope is to be provided so that rain water will move towards dump side. It will prevent of rain water flow from terrace to lower contour through the walls of the dump and forming gullies / rain cuts and rolling down of waste materials.

➢ Towards the inner side of terrace, half concrete open pipe are installed to collect rainwater and not allowing penetrating to inside the dump.

➢ Crated Boulder Retaining wall of 2m height (0.5m below ground + 1.5m above the ground) X 1.0m wide will be constructed around the dump.

➢ It aims to check any roll down waste from the dump.

➢ At regular intervals clear openings are provided at the bottom to allow water to pass out and join the Garland drains.

➢ Constructed guard wall is of loose boulders.

➢ Garland drains around the dump will be constructed.

➢ At the end of the garland drain settling tanks of 15mx10mx1m deep is constructed to allow settling of carried materials.

➢ Slope of each terrace to be maintained $<37^0$.

➢ Over all slope shall be $<28^0$.

Anticipated fallout.

A. Failure of Dumps:

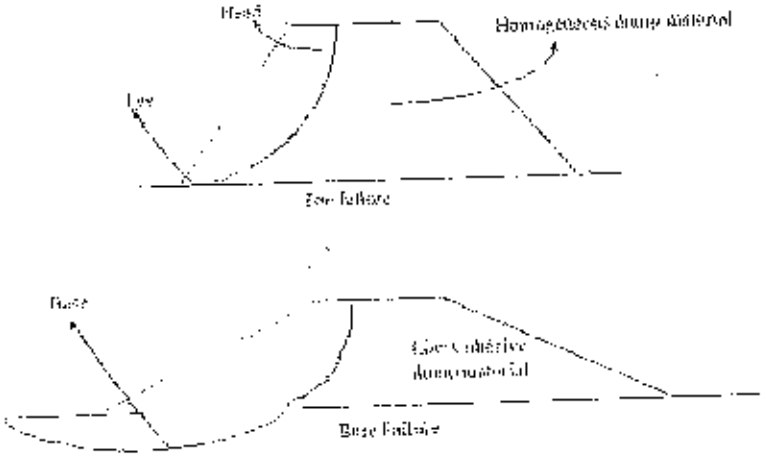
Three types of Dump Failure may occur in the present type of dump. These are

➢ Slope Failure.

➢ Toe failure

➢ Base failure.

(These are shown in the diagram)



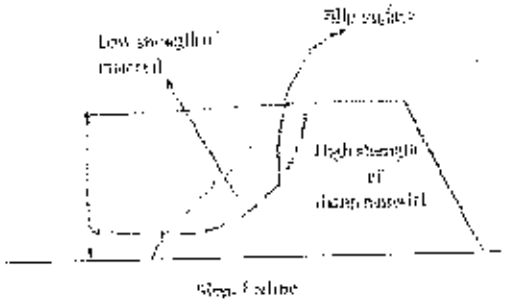


Figure 1 Dump failure line of slip.

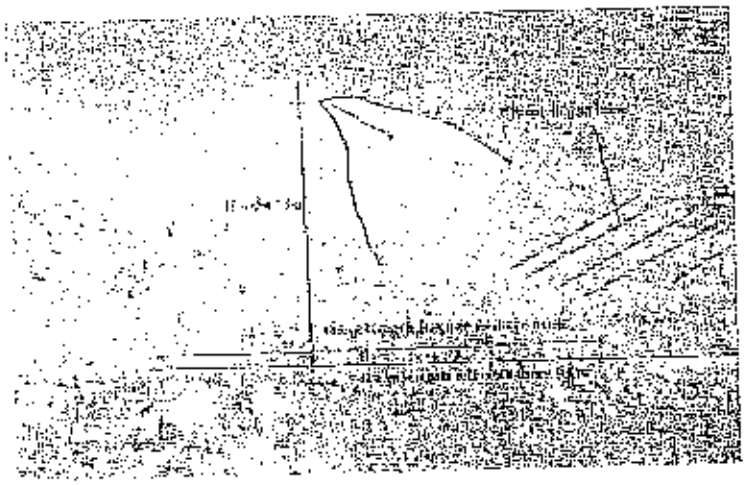


Figure 4 DUMP FAILURE SITUATION.

Reosons for failure.

i. Ground water and surface water flow condition plays a critical role on the stability of dump slope. Frictional strength is reduced as the height of dump is raised, due to presence of water. The pore water pressure reduces the normal stress acting on material. The cohesive strength of weak geo-material will be further reduced due to presence of pore water pressure. waste dump placed in a loose state, shear failure is often followed by static static liquefaction which is complete loss of strength. The flow of water may enhance the seepage force, leading to formation and migration of tension crack.

ii. Erosion also plays an important role in affecting the stability by surface weathering, ground water or surface water seepage, toe erosion and slope modification, ground water or surface runoff. Erosion changes the waste dump slope geometry and morphological character. The weathering and attrition of material at the toe of a potential slide reduce the restraining force that may destabilize the slope Erosion of void filling materials, or zone of percolation can efficiently decrease cohesion among grain boundaries. The cohesion strength notable reduce the rock mass shear strength. The decrease in shear strength may allow movement of dump slope along weak

plane. In addition localized erosion may also result in increase permeability and ground water flow along the slope. This may lead to failure due to formation of gully and deep flow channels in dump.

iii. Other affecting parameters are

- Gradient of the Seam,
- Ground Water Regime
- Nature of Over burden Rock
- Presence of clay and Soil layers and their properties.
- Angle of Repose of the broken Over burden rock
- Cohesion of the Over burden Rock materials
- Height of OB Dump in one stretch
- Ultimate Height and Slope of Waste Dump
- Dump Stability Parameters Strip/Cut Width and Depth.

B. Dust pollution due to wind / whorl wind.

The average wind speed as noticed in post monsoon is 2.25m/s with a maximum speed of 6.13m/s. In winter the average speed is 1.31m/s with a maximum speed of 5.61m/s. This wind speed has a capacity to pick up heavy dust from dry surface of dump, ore stack & sub grade stack.

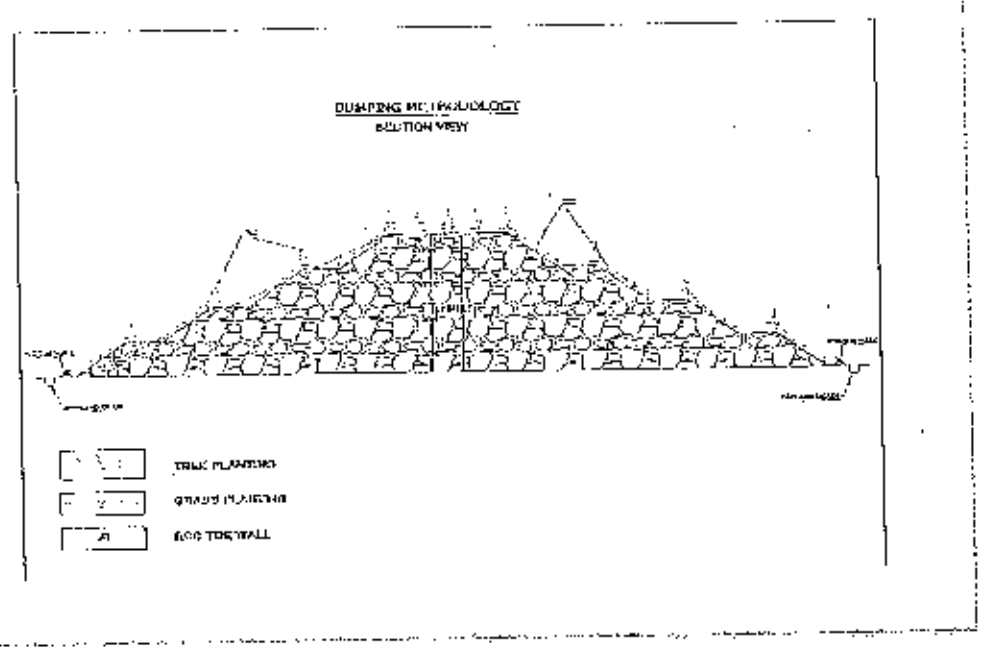
C. Loss of life & property.

Failure of dump may cause loss of life & property. May put occupational hazards to workman.

Summary of prescription on Benching & Grading:

- Bench height: 20m,
- Bench Width: 20m
- Number of Benches: 4
- Over all slope: $<28^0$.
- Slope of each terrace: $<37^0$.

Keeping these parameters in view the dump has been plotted and keeping bench slope 36.5^0 ($<37^0$), it is seen that over all slope comes to $25^027'$ which is within the prescribed parameter.



Besides the above parameters, while dumping the overburden it should be well compacted by using mechanical means. Stabilizing dump through Coir mating is also suggested.

4.0 Stabilization of Over Burden Dump:

After the declaration of dead of the Over Burden dump, the same shall be covered by means of plantation.

4.1.1 Planting & post-planting operations: Block Plantation over 22.00 ha will be carried out @ 1600 plants/Ha. All planting &post planting measures like casualty replacement, soil working, manuring, fire protection etc. will be undertaken as given in Cost norm for Block plantation with 1600 seedlings furnished as Annexure-V.

While taking up plantation, the following vital 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 should not be delayed.

- Basal dose of 50 grams of NPK and 5 grams of Chlorpyriphos 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 fertiliser.
- 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 50 gms NPK/plant should be done in time

Since the area is provided with barbed wire fence, watch & ward will be easier. Watchers may be engaged in weeding in problematic areas alongwith watch & ward.

4.1.2 Spacing: The spacing adopted for the plantation in gaps is 2.5 mtr X 2.5 mtr. 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.

4.1.3 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. Considering the topography, soil and moisture availability of the plantation area, the following species will be planted.

Name of species	Common name	Remarks
Acacia auriculiformis	Acacia	In rocky exposed areas
Azadirachta indica	Neem	In well drained soil
Derris indica	Karanja	In area with good soil depth
Emblica officinalis	Amla	In area with soil depth
Cassia siamea	Chakunda	In rocky and exposed areas
Dalbergia sissoo	Sissoo	In lower areas with good soil depth
Gmelina arborea	Gambhari	In lower areas with good soil depth
Dendrocalamus strictus	Salia bamboo	In lower areas with good soil depth healthy seedlings from rhizomes may be planted
Ziziphus mauritania	Ber	In rocky areas with low soil depth
Simaruba glauca	Simaruba	In rocky areas with low soil depth

5.0 FINANCIAL FORECAST

Financial Forest for the measures like Terracing of OB dump, earthen drain within the slope of OB dump, construction of retaining wall, garland drain and plantation on OB dump area has been proposed in this scheme. The detail of financial forecast for scheme of "Stabilize the overburden dumps by appropriate grading/benching so as to ensure that the angles of repose at any given place is less than 28°" is given as below:

Financial Forecast

Sl. No.	Particulars of interventions	Financial involvement (Rs)
1	Terracing of OB dump over a length of 20000 sqm @ Rs.357/running meter (Annexure-I)	71,40,000.00
2	Excavation of concrete drain of 400 cum over a slope length of 1000 mtr in every 50 meter within the slope of proposed OB dump (Annexure-II)	1,73,534.00
3	Retaining wall over a length of 1165 meters (Annexure-III).	45,96,700.00
4	Garland drain over a length of 1179 meters (Annexure-IV).	4,65,900.00
	Sub-Total:	1,23,76,134.00
	Inspection, monitoring and evaluation @15% of the total project cost	1856420.10
	Sub-Total:	1,42,32,554.10
	Price escalation @20%	28,46,510.82
	Total:	1,70,79,064.92
5	Block-plantation (1600 plants/ha) over 22.00 ha of OB dump area @ Rs. 31230/-Ha (Annexure-V).	68,70,688.00 (68,72,697)
	Grand Total	2,39,49,752.92 Or Say 2,39,49,800.00

(Rupees Two Crore Thirty nine Lakh Forty nine Thousand Eight Hundred) only

2,39,72,000/--

6. Implementing Agency.

This prescription is to be implemented by the user agency.

7. Monitoring & Evaluation.

The implementation & its maintenance will be evaluated by the authority of the User Agency regularly. The Divisional Forest Officer, Cuttack Forest Division may be kept informed from time to time as required.

Divisional Forest Officer
Cuttack Forest Division

Approved @ Rs. 2,39,72,000/--

Regional Chief Conservator
of Forests, Angul Circle.

Annexure-I

Engagement of HEMM (Heavy earth mining machineries) in dump slope for terracing

1. Location- over burden dump- work efficiency of HEMM machine per hour-3.5 Sqm on the dump.
   (Average height of the terrace-20 mt)
2. Rate of engagement of HEMM Machine Rs. 1250/hr
3. Terracing cost at OB dump/sqm - Rs. 1250/3.5=Rs.357.14 or Say 357.00
4. In our OB dump average slope length=1000 mtr
5. Average height of terrace 20 mt.
6. Total terrace area in sqm= 1000 x 20=20,000sqm

Annexure-II

Excavation of earthen drain in every 50 meter within the slope of proposed OB dump

A: E/W Excavation by Mechanical Means

1. In our OB dump average slope length=1000 mtr
2. Total no. of drain required within 1000 mtr slope length= 1000/50=20 nos.
3. Average height of terrace 20 mt.
4. E/W excavation by mechanical means for one drain= 20m x 1m x 1 m=20 Cum.
5. Total volume to be excavated for 30 nos. of drain=230 x 20=400 cum
6. Taking Rs. 47.60/Cum, total cost for excavation of 400 cum of earthen material= Rs. 19040.00/-.

B: Providing crate boulder

1. Crate boulder pitching within earthen drain: 400 x 0.5 x 0.5= 100 Cum
2. Considering Rs. 1544.94/Cum, the cost of boulder pitching within earthen drain=100 x 1544.94=154494.00

   Total Cost- 19040+154494=1,73,534.00

Annexure-III

Development of retaining wall near OB dump
(Length of the wall = 1165 mtr.)

1) E/W excavation by mechanical means.
Qty. 1165 m x 2m x 0.3 = 699 Cum
Taking Qty. 80% = 560 Cum @ Rs. 66.39 = Rs. 37,178.40

2) Blasting.
Taking 20% of Qty item (1) =139 Cum @ Rs. 430.26 = Rs. 59,806.14

3) Providing crate boulder.
Bottom layer: 1165 m x 1.5m x1.00 =1747.50 Cum
Second layer: 1165 m x 1.00m x 1.00m = 1165.00Cum
2912.50 Cum
@ Rs. 1544.94/Cum = Rs. 44,99,637.75
Rs. 45,96,622.29
Say Rs. 45,96,700.00

Annexure-IV

Excavation of Earthen drain (Garland drain) near OB dump at Suknarugi.

1) E/W excavation by mechanical means.
1179 m x 2.00 x 1.5 = 3537.00 Cum
Taking 80% of above = 2830 Cum @ Rs. 57.13/Cum = Rs. 161677.90

2) Blasting. 20% of Item (1) = 707 Cum @ Rs. 430.26/Cum = Rs. 304193.82
Rs. 465871.72
Say Rs. 4,65,900.00

BASE COST NORM FOR COMPENSATORY AFFORESTATION (BLOCK PLANTATION) @ 1600 PLANTS PER HECTARE (18 months old seedling)

Sl. No.	Items of work	Preferable Period of Execution	No. of Mandays	Labour Cost (in Rs.)	Material Cost (in Rs.)	Total Cost (in Rs.)
1	2	3	4	5	6	7
	0th Year (Advance Work) Pre-Planting Operation					
	Survey, demarcation and Pillar posting	Nov/Dec	2	630	0	630
	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	315	100	415
	Site preparation (Cleaning & removal of debrises)	Nov/Dec	12	3780	0	3780
	Creation of 4.00 mt. wide Inspection Path	Feb/Mar	1	315	0	315
	Alignment and stacking	Feb/Mar	2	630	0	630
	Digging of pits (45 cm x 45 cm x 45 cm) in hard and gravelly soil	Feb/Mar	64	20160	0	20160
	Construction of Temporary Labour Shed, Drinking water facility and First Aid etc.	Jan/Mar	0	0	3500	3500
	Total		82	25830	3600	29430
	1st Year/ Planting Year					
	Refilling of pits by altering the dug-out soil of the pits, application of Organic compounds/ CDM/ FYM & mixing the same properly.	Jun/Jul	12	3780	8000	11780
	Transportation of 18 months old polypot seedlings in hired truck/ tractor from the permanent/ Mega nursery to planting site including Loading & unloading. (Average lead of 10 Rkm) & Stacking the seedling @ Rs. 6/- per Seedling. (1760 nos.)	Jul/Aug	0	0	10560	10560
	Watering the polypot seedlings at planting site	Jul/Aug	3	945	0	945
	Conveyance of polypot seedlings on head load from the stacking site to individual dugout pits within the planting site, applying insecticide, fertilizers & planting after scooping the soil with other applied materials & pressing the soil properly around the planted seedlings.	Jul/Aug	36	11340	0	11340
	<u>Cost of Fertilizer & Insecticide</u> (a) NPK/ Bio-fertilizer @ 50 gms/ plant as basal dose = 80 kg @ Rs. 30/- per kg = Rs. 2400.00 (b) Urea/ Vermicompost/ Mo Khata/ any other fertilizer in two subsequent doses @ Rs. 1,200.00 (c) Insecticide/ Bio pesticide @ 5 gms/ plant = 8 kg @ Rs. 150/- per kg = Rs. 1200.00	Jul/Aug	0	0	4800	4800
	Casualty Replacement @ 10% (160 nos.)	Jul/Aug	4	1260	0	1260
	1st weeding & Manuring	Aug/Sept	15	4725		4725
	2nd Weeding, Soil working (1mt. diameter around the plants) and Manuring.	Oct/Nov	20	6300	0	6300

1st weeding & Manureing	Aug/Sept	15	4725		4725
2nd Weeding, Soil working (1mt. diameter around the plants) and Manuring.	Oct/Nov	20	6300	0	6300
Fire line tracing (2m. wide fire line over 400 m long) including maintenance of inspection path.	Feb/Mar	3	945	0	945
Watch & Ward including watering as per requirement	Aug-Mar	12	3780	0	3780
TOTAL		105	33075	23360	56435
2nd Year Maintenance					
Transportation of 160 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs. 6/- per seedlings .	Jul	0	0	960	960
Causality replacement - 10%	Jul	4	1760	0	1760
Cost of Fertilizer & Insecticide A) Cost of Insecticide/ Bio-pesticide @ 5 gms/plant = 0.8 Kg @ Rs. 150/- per kg = Rs. 120/- B) Urea/ NPK/ Bio-fertilizer/ Vermi compost/ Mo Khata/ any other fertilizer @ Rs. 4486/-	Aug/Sept	0	0	4606	4606
Weeding (Complete weeding), Manuring & Soil working (1mt. diameter around the plants)	Sept/Oct	20	6300	0	6300
Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	945	0	945
Watch & Ward including watering as per requirement	Apr-Mar	18	5670	0	5670
Maintenance of Temporary Labour Shed, Drinking water facility and First-Aid etc.				1000	1000
Total		45	14175	6566	20741
3rd Year Maintenance					
Cost of Fertilizer Urea/ NPK/ Bio-fertilizer/ Vermi compost/ Mo Khata/ any other fertilizer	Sept/Oct	0	0	4486	4486
Weeding, Manuring & Soil working (1mt. diameter around the plants)	Sept/Oct	20	6300	0	6300
Fire line tracing (2 m wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	945	0	945
Watch & Ward including watering as per requirement	Apr/Mar	18	5670	0	5670
Maintenance of Temporary Labour Shed, Drinking water facility and First-Aid etc.	Apr/Mar			1000	1000
Total		41	12915	5486	18401
4th Year Maintenance					
Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	945	0	945
Watch & Ward	Apr-Mar	18	5670	0	5670
Total		21	6615	0	6615
5th Year Maintenance					
Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
Watch & Ward	Apr-Mar	18	5670.00	0	5670
Total		21	6615	0	6615

6th Year Maintenance						
	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945.0
	Pruning of branches, Singling out of multiple shoots	Jan/Mar	5	1575.00	0	1575.0
	Watch & Ward	Apr-Mar	18	5670.00	0	5670.0
	Total		26	8190	0	8190.0
7th Year Maintenance						
	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
8th Year Maintenance						
	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
9th Year Maintenance						
	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
10th Year Maintenance						
	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
	Watch & Ward	Apr/Mar	18	5670.00	0	5670
	Total		21	6615	0	6615

Year wise Abstract of Cost Norm (Showing seedling cost separately)

Sl. No.	Year	No. person days	Labour Cost @ Rs. 315/- per day	Material Cost	Monitoring Evaluation, Learning, Documentation and Other Contingency (5%) of (4+5)	Cost of Seedlings @ Rs. 50.31 per seedlings	TOTAL COST
1.	0th Year	82	25830	3600	1470	0	30900
2.	1st Year	105	33075	23360	2822	88546	147803
3.	2nd Year	45	14175	6566	1037	8050	29820
4.	3rd Year	41	12915	5486	970	0	19321
5.	4th Year	21	6615	0	331	0	6946
6.	5th Year	21	6615	0	331	0	6946
7.	6th Year	26	8190	0	410	0	8600
8.	7th Year	21	6615	0	331	0	6946
9.	8th Year	21	6615	0	331	0	6946
10.	9th Year	21	6615	0	331	0	6946
11.	10th Year	21	6615	0	331	0	6946
	Total	425	133875	39012	8643	96596	278126.00

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

Sl. No.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost (10 Years)
Base Near		30900	147803	29828	19321	6946	6946	8600	6946	6946	6946	6946											273128
1	2022-23	30900	155193	32885	22366	8442	8565	11525	9774	10262	10776	11314	11880										313304
2	2023-24		32345	162953	34330	23435	8565	9303	12101	10262	10776	11314	11880	12474									327915
3	2024-25			34067	171100	36255	24659	9503	9774	13706	10776	11314	11880	12474	13098								344315
4	2025-26				35772	179655	36069	25892	9774	10262	13541	11814	11880	12474	13098	13753							361531
5	2026-27					37559	188638	39972	27187	10262	10776	14008	11880	12474	13098	13753	14440						379607
6	2027-28						39437	198070	41972	28546	10776	11814	14709	12474	13098	13753	14440	15162					398587
7	2028-29							41409	207974	44070	29975	11314	11880	15444	13098	13753	14440	15162	15920				418517
8	2029-30								43479	276572	46273	31472	11880	12474	16217	13753	14440	15162	15920	16716			439448
9	2030-31									45553	229291	48587	33045	12474	13098	17027	14440	15162	15920	16716	17552		46 .415
10	2030-31										47936	249756	51018	34698	13098	13753	17879	15162	15920	16716	17552		48.4456

DIVISIONAL FOREST OFFICER,
CUTTACK FOREST DIVISION.

ANNEXURE -XIII

Office of the Regional Chief Conservator of Forests, Angul

Memo No. 5141 /SF.CC-I-82/2020, Dated. 09-12-21

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub:- Diversion of balance forest land of 162.42ha including 24.150 ha of forest land to be maintained as safety zone (as per Sabik Settlement records as on 25.10.1980 and after 25.10.1980) in respect of Sukurangi Chromite Mines of M/s. OMC Ltd.- Approval of schemes.

Ref:- Your Memo No. 8414 dated 03.12.2021.

The following schemes submitted vide your Memo under reference are approved by the undersigned at the wage rate of Rs.315/- per man-day and returned herewith in one set of the approved scheme for needful action .

Sl. No.	Condition No	Name of the scheme	Financial outlay. (Rs.)
1	xii(a)	Mitigative measures to minimize soil erosion and checking of streams.	12,80,000/-
	Xii(b)	Planting adequate draught hardy plant species and sowing of seeds.	05,29,500/-
2.	Xii(c)	Construction of Check Dam, retention /toe walls to arrest sliding down of the excavated material along the contour	41,33,200/-
	Xii(d)	Stabilize overburden dump by grading/benching so as to ensure the angles of repose at any given plance is less than 28.	2,39,72,000/-
3.	xii(e)	Management of top soil at Sukurangi Chromite Mines.	03,39,86,500/-
4.	xxix	De-silting of existing water and other water bodies within 5 Km from ML boundary.	77,26,300/-
	xxx	Plantation up to 100 meters on either side from the bank of river on either side in Sukrangi Chromite Mines	90,53,500/-
5.	Addl. Condition 'D'	Construction of a RCC wall along Damsal Nala.	02,19,81,100/-

You are requested to submit point-wise compliance on the stipulated condition imposed in stage-I approval order to this office immediately for further action.

Encl: As above.

Regional Chief Conservator of Forests
Angul

Memo No. 5718 dated. 09.12.21

Copy along with copy of the above approval scheme each in one set forwarded to the Addl. Principal Chief Conservator of Forests (Forest Diversion and Nodal Officer, FC Act), Office of the Principal Chief Conservator of Forests & HoFF, Odisha for favour of information and necessary action with reference to Memo No.8414 dated 03.12.2021 of the DFO, Cuttack Division.

Encl: As above.

Regional Chief Conservator of Forests
Angul.

Memo No. 5719 dated. 09.12.21

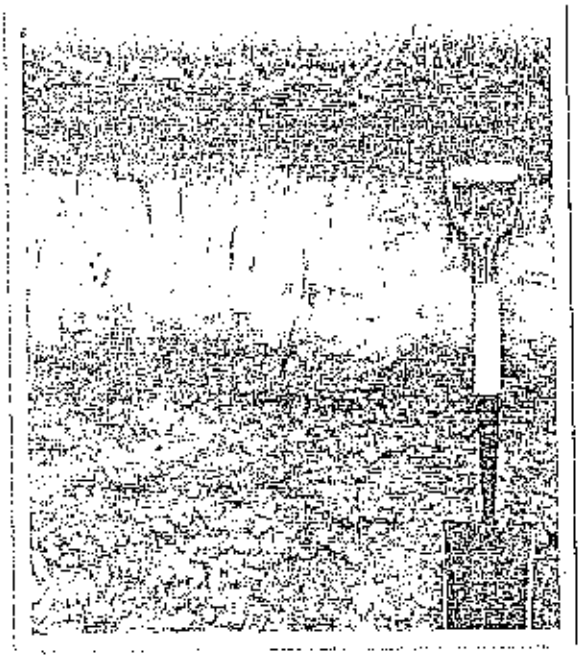
Copy forwarded to the Managing Director, OMC Ltd. OMC House, Bhubaneswar for information and necessary action.

Regional Chief Conservator of Forests
Angul

SCHEME FOR

MANAGEMENT OF TOP SOIL AT SUKURANGI CHROMITE MINE OF M/S ODISHA MINING CORPORATION LTD.

(Pertains to diversion of 162.42 hectare of Forest Land)



Compliance to:

Condition No (xii) (c) of "in principle approval" order vide F.No.8-22/2016-FC dt 14.09.2017 of MoEF & CC, Govt. of India.

(@ Rs. 315.00 per manday)

SCHEME FOR MANAGEMENT OF TOP SOIL AT SUKURANGI CHROMITE MINES OF M/S ODISHA MINING CORPORATION LTD.

(As per condition No. (xii) (e) of the "in principle approval" order of MoEF & CC, Govt. of India vide F.No.8-22/2016-FC dt 14.09.2017)

1. INTRODUCTION

Stage-I approval for diversion of balance forest land over 162.42 ha of forest land for non-forest purpose pertaining to Sukurangi Chromite mines has been accorded vide F.No.8-22/2016-FC dt 14.09.2017 of Ministry of Environment, Forests & Climate Change, subject to fulfillment of certain conditions. The condition No. (xii)(e) of the Stage-I approval is given as under:

"No damage shall be caused to the top soil and the user agency will follow the top soil management plan".

In compliance to this condition a plan for management of top soil is prepared:

The purpose of this scheme is to prescribe methods to manage fertile top soil/sub soil effectively so as to preserve & conserve precious natural resources which has been formed after years of natural process.

Earlier a scheme for planting adequate drought hardy plant species and sowing of seeds by RCCF, Angul @ Rs. 213.50 per man day, @ Rs. 298.00 per man day, @Rs. 303.40 per man day, @Rs. 308.00 per man day and @ Rs. 311.00 per manday. Labour Commissioner of Odisha vide letter no. 5639/LC dt. 02.11.2021 has revised the minimum wage rate to Rs. 315.00 per man day. In this context the scheme has been revised @ Rs. 315.00 per man day.

2. Top Soil management.

In order to manage the top soil the following suggestions are put forth and to be practiced.

- ✓ Top soil likely to be generated is to be dumped at earmarked place not affected by mining operation.
- ✓ Dump may have a slope less than 28^0.
- ✓ Provision of retaining wall and garland will be made all around the top soil storge dump.
- ✓ Cover the top soil with a tarp/coir mat.
- ✓ Broadcast grass seed over the top soil.
- ✓ During reclamation the top soil may be utilized to cover the top after filling and covered the area under tree planting.
- ✓ Bring the soil under tree planting as soon as possible and covered with mulch to prevent the soil from washing or blowing away.

✓ Generation of Top Soil & its utilization will be recorded in a measurement book and copy of the same to be provided to reviewing authorities annually.

3. Present Scenario:

As per approved mining plan, about 342953 cu.m top soil will be generated till conceptual period. Top soil produced will be utilized in plantation for reclamation of mine pit after mineral is exhausted. The stock register for production and utilization of top soil will be maintained by the User Agency.

This quantity will be generated in course of mining activities mostly during expansion of mining area. Due to low shelf life of the top soil, it shall be used for concurrent reclamation/ rehabilitation of the backfilled voids & also for avenue plantation due to very low shelf life of the lateritic soil.

4. Plan for top soil management:

The topsoil management plan provides description of the soil stripping and stockpiling procedures to minimize top soil degradation and maximum availability of suitable soil for future rehabilitation within mining lease of Sukurangi Mines of M/s OMC Ltd. Topsoil is to be stripped in areas proposed to be distributed. A comprehensive top soil management plan has been prepared keeping in view of the conservation, regeneration and afforestation in and around the site where top soil will be stored.

In non-mineralized area also there is existence of very thin layers of top soil say 5 cm to 10 cm varying from site to site, which is very difficult to slice down and will be stored separately for use during future reclamation.

The top soil inside the Mining Lease area is scanty and present in extremely thin layer. The topsoil will be utilized for concurrent plantation works in the mine as per this plan. It is proposed to use the top soil generated during the mining operation within a period of six months due to its low shelf-life. Some of the top soil will be stored temporarily until it can be used for plantation works & dump plantation. The details of collection of top soil are given below:

Dimension of the top soil stock yard: 100 mt x 100 mt = 1.0 ha

Volume to be stacked=100 mt x 100 mt x 10 mt= 0.1 million Cum.

5. Inspection, Monitoring and evaluation

Intensive inspection and technical guidance from concerned technical wing is required for successful implementation of above top soil management. Sufficient fuel/conveyance charges

for technical experts shall be provided by the user agency for proper execution of these programmes. Budgetary provision of 15% of the total project cost has been earmarked on this score.

6. Budgetary provision.

Top soil removal / dumping will be as per mining plan and the soil will be utilized for taking up plantations in backfill and other areas. The total cost of the project is given as below.

Sl No.	Description of the work	Funds Required
1	Virgin forest area from where top soil can be collected. Stripping cost 0.5ha/hr@ 1800.00. Therefore 83.0706 ha cost=227.58 hrs Total hrs x Rs. 1800-=409644/- Loading & transporting cost from the site to top soil stockpiles comes to be : 342951 x (tonnage factor)1.8= 617312 ton 617312 ton x Rs. 36/- (Loading & Transportation @ Rs. 36/ton) = Rs. 2,22,23,232/- Cost of leveling with 4800 manpower @315.00/- Rs. 311.00 x 4800=Rs. 15,12,000/-	Rs. 2,41,14,876.00
2	Cost for sowing of grass seeds over 1.0 ha @Rs 26095.00/-ha (Annexure-I).	Rs. 26095.00
3	Maintenance of grass seed @ (3 mandays weekly for period of six month) Total 72 mandays for six months 72 x Rs. 315.00 = 22680.00	Rs. 22680.00
4	Retaining wall over a length of 100 meters (Annexure-II).	Rs. 3,94,600.00
5	Garland drain over a length of 100 meters (Annexure-III).	Rs. 39,600.00
	Sub-total	Rs. 2,46,27,851.00
6	Inspection, monitoring & evaluation @15% of the total project cost	Rs. 36,94,177.65
	Total	Rs. 2,83,22,028.65
7	Price escalation @20%	Rs. 56,64,405.73
	Grand Total	Rs. 3,39,86,434.38 say Rs. 3,39,86,500.00

(Rupees three Crore thirty nine lakh eighty six thousand five hundred) only

The total cost of the implementation of Top soil management scheme will be Rs. 3,39,86,500/- (Rupees three Crore thirty nine lakh eighty six thousand five hundred) only as detailed above which will be borne by User Agency at their project cost. The cost of the scheme may subject to increase in amount considering the increase in materials and labour charges which will also be borne by the User Agency.

7. Execution.

This prescription is to be implemented by the user agency.

8. Monitoring & Evaluation.

The execution will be monitored & evaluated by field & managerial staffs of M/s Odisha Mining Corporation Ltd periodically.

Divisional Forest Officer
Cuttack Forest Division

Approved for Rs. 3,39,86,500/-

Regional Chief Conservator
of Forests, Angul Circle.

Annexure-I

Estimate for sowing of grass seeds per ha.

Cost of broadcasting of grass seeds per ha. Labour rate Rs.315.00/- per day				
Sl No.	Purpose	No. of Labour/quantity of materials	Rate (in Rs.)	Amount in Rs.
1	Spreading of good top soil	03 Nos	315.00/- Labour	945.00
2	Adding FYM and good earth	2 TL FYM 2TL Good earth	500/TL FYM 500/TL Good earth	2000.00
3	Cost of grass seed 500 Kg/per ha		40/Kg	20000.00
4	Broad casting	10 nos	315.00/-Labour	3150.00
			Total	26095.00

Annexure-II

Development of retaining wall near proposed Top soil dump
(Length of the wall = 100 mtr.)

1) E/W excavation by mechanical means.
Qty. 100 m x 2m x 0.3 = 60 Cum
Taking Qty. 80% = 48 Cum @ Rs. 66.39= Rs. 3186.72

2) Blasting.
Taking 20% of Qty item (1) =12 Cum @ Rs. 430.26 = Rs. 5163.12

3) Providing crate boulder.
Bottom layer: 100 m x 1.5m x1.00 =150 Cum
Second layer: 100 m x 1.00m x 1.00m = 100 Cum
250 Cum
@ Rs. 1544.94/Cum = Rs. 386235.00
Rs. 394584.84
Say Rs. 3,94,600.00

Annexure-III

Excavation of Earthen drain (Garland drain) near proposed Top soil dump at Sukuarngi.

1) E/W excavation by mechanical means.
100 m x 2.00 x 1.5 = 300.00 Cum
Taking 80% of above = 240.00 Cum @ Rs. 57.13/Cum = Rs. 13711.20

2) Blasting. 20% of Item (1) = 60 Cum @ Rs. 430.26/Cum = Rs. 25815.60
Rs. 39526.80
Say Rs. 39,600.00

ANNEXURE - XIV

OFFICE OF THE DIVISIONAL FOREST OFFICER, CUTTACK FOREST DIVISION
GHATAKULA NUAPARA, CUTTACK
Phone No.0671-2340443, FAX NO.0671-2347611,
E-Mail ID- dfo.cuttackforestdivision@yahoo.com

Memo No. 3584 /
Dated, Cuttack, the 15th April, 2013.

To

The General Manager (F&E)
M/S OMC Ltd, Bhubaneswar.

Sub:- Diversion of 104 Ha. (Originally proposed 132.94 Ha.) of forest land for Chromite mining in Sukrangi Chromite Mines M/S OMC Ltd. District- Jajpur , Odisha -payment of cost of Safety Zone and 1.5 times Safety Zone Scheme.

Ref:- This office memo no. 6205 dt.23.11.2010, 1175 dt.04.03.2011 and memo no. 5878 dt.20.09.2011.

Sir,

Please refer to this office memo and subject cited above wherein you were requested for resubmission of the revalidated Bank Drafts amounting to Rs.31,89,058/- which were returned to you. But the same has not been received in this office till date. In the mean time instruction has been received for deposition of amount payable by User Agencies through NEFT/RTGS. So you are requested to deposit the amount of Rs. 31,89,058/-(Rupees Thirty One Lakh Eighty Nine Thousand Fifty Eight) only through RTGS(Real Time Gross Settlement / NEFT- National Electronic Funds Transfer mode in the State Specific Compensatory Afforestation Fund (CAF) Account maintained by MoEF, Government of India in either of the Banks mentioned below and submit proof/evidence of the deposition to this office immediately for onward transmission:

1. Union Bank of India, Sundar Nagar, New Delhi-110003 (RTGS/IFSC No. UBIN0534498).
2. Corporation Bank, Lodhi Complex Branch, New Delhi-110003 (RTGS/IFSC No. CORP0000371). (A/C No. 037100201001585).

This is URGENT.

Yours Faithfully,

Divisional Forest Officer,
Cuttack Forest Division

Memo No._____/Dt.
Copy forwarded to the Regional Chief Conservator of Forests, Angul circle, Angul, for favour of kind information and necessary action .

Divisional Forest Officer,
Cuttack Forest Division

Memo No. _____/Dt.
Copy forwarded to the Chief Conservator of Forests, Forest Diversion & Nodal Officer, F.C. Act,O/O the Principal chief Conservator of Forests, Odisha, Bhubaneswar for favour of kind information and necessary action in continuation to his office memo no. 6206 dt. 23.11.2010 & memo no. 1176 dt. 04.03.2011

Divisional Forest Officer,
Cuttack Forest Division

Cable: ORMINCORP, Bhubaneswar

Tel: 0674 2393431, 2395689, 2393389 (EPABX), 2392747(Dir)
Fax: 0674-2391629 , 2396889, 2394772

The Odisha Mining Corporation Ltd.

(A GOLD CATEGORY STATE PSU)
(A Government of Odisha Undertaking)
OMC HOUSE, BHUBANESWAR-751001

No. 5363 /OMC/F&E/2013

Date 26.04.2013

To

The Divisional Forest Officer

Cuttack Forest Division

Sub: Diversion of 104 Ha (Originally proposed 132.94 Ha) of forest land for chromite mining in Sukurangi Chromite Mines of M/s OMC Ltd in District-Jajpur, Odisha-payment of cost of safety zone and 1.5 times safety zone scheme.

Ref: Your Memo No.3854 dt 15.04.2013.

Sir

In in inviting a reference to the letter and subject cited above OMC has deposited an amount of Rs 31, 89,058.00 through RTGS mode in the State specific Compensatory Afforestation Fund (CAF), Odisha in Corporation Bank. Lodhi Complex Branch (IFSC Code: CORP0000371) on 26.04.2013. The original receipt of the deposit in support of the proof/evidence of deposition is enclosed for necessary action.

Yours faithfully

(S.K.Das)
Sr.Manager (Geo)
Power of attorney holder.

Encl.as.above

Memo No. 5364 /OMC/F&E/13 dt 26.04.2013

Copy along with a copy of the enclosure is submitted to CCF (Nodal) for kind information and necessary action.

(S.K.Das)
Sr.Manager (Geo)
Power of attorney holder.

OMC

ISO: 9001: 2000 Certified

Cable: ORMINCORP, Bhubaneswar

Tel: +0674-2535324(Dir), (EPABX) 2393431, 2395689, 2393389
Fax (:0674) 2535324, 2391629, 2396889, 2390972, 2394772

The Orissa Mining Corporation Ltd.

(A Government of Orissa Undertaking)

OMC HOUSE, BHUBANESWAR-751001

RTGS FUNDS TRANSFER APPLICATION FORM

Date: 26.04.2013

Andhra Bank, OMC Campus Branch.

Applicant (Remitter) Details:

Account Title	ORISSA MINING CORPORATION LIMITED,BHUBANESWAR
Debit Account No.	105911011000001
Account Type	CURRENT ACCOUNT

Beneficiary Details:

Beneficiary Name	COMPENSATORY AFFORESTATION FUND(CAF),ODISHA
Credit Account No.	037100201001585
Centre(Location)	NEW DELHI
Bank	CORPORATION BANK
Branch	LODHI COMPLEX BRANCH
Account Type	
IFSC Code	CORP0000371
Contact No.	

Remittance Details:

Amount(in figures)	Rs.31,89,058/-
Amount (in words)	Rupees Thirty one lac eighty nine thousand fifty eight only
Remarks/narration	Immediate transfer of fund vide Ch. No. 180923DT 26.04.2013 on AB,OMC

Please remit the amount as per the aforesaid details, by debiting my/our Account for the amount of remittance plus your charges.

I/we declare that I/we are authorized to request for the Andhra Bank RTGS facility and all the persons authorized to operate the above mentioned Accounts are also authorized, as per the present mode of operation, to present the RTGS Funds Transfer Application Form to Andhra Bank, OMC Campus Branch, Bhubaneswar.

I/we undertake to keep AB OMC Campus Branch informed of any changes in the mode of operation of any of the above Accounts.

I/we hereby confirmed having read the terms and conditions pertaining to Andhra Bank RTGS facility on http://www.andhrabank.com/wholesale/sme/popup_rtg.htm (hereinafter the "Terms and Conditions") and agree that OMC LTD,Bhubaneswar (entity's name) use of the Andhra Bank RTGS facility shall be subject to and be governed by the Terms and Conditions.

I/we are aware of the fees and/or other charges which are currently to be levied by Andhra Bank for providing access to or allowing the use of the Andhra Bank RTGS facility. I/we further, undertake to keep ourselves aware of any revision made by Andhra Bank of the fees and/or other charges levied for providing access to or allowing the use of the Andhra Bank RTGS facility. I/we are aware that the same shall be notified to us by hosting the same on http://www.andhrabank.com/wholesale/sme/real_time_gross_settlement_fees.htm.

Yours sincerely,

Manager (Finance)

The Odisha Mining Corporation Ltd.

Stamp and signature of Authorized Signatory

Bhubaneswar

ANDB H B116820310

For Banks Use Only	
Account Debited by	
Debit authorized by	
Entered into RTGS	
Authorized into RTGS	

ANNEXURE - XV

INDIA NON JUDICIAL

Government of Odisha

e-Stamp

सत्यमेव जयते

Certificate No.	: IN-OD08855993146775
Certificate Issued Date	: 30-Mar-2020 01:45 PM
Account Reference	: SHCIL (FI)/ odshcil01/ BOUPUR/ OD-JPR
Unique Doc. Reference	: SUBIN-ODODSHCIL0101f265595208102S
Purchased by	: THE OMC LTD REP BY POA TILOTTAMA BASA
Description of Document	: Article IA-35 Lease Deed
Property Description	: SUKURANGI MINING LEASE FOR CHROMITE OF OMC LTD IN VILLAGE SUKURANGI FOREST BLOCK 27AND ETC OF JAJPUR
Consideration Price (Rs.)	: 121,75,21,369 (One Hundred Twenty One Crore Seventy Five Lakh Twenty One Thousand Three Hundred And Sixty only)
First Party	: GOVERNOR OF ODISHA
Second Party	: THE OMC LTD REP BY POA TILOTTAMA BASA
Stamp Duty Paid By	: THE OMC LTD REP BY POA TILOTTAMA BASA
Stamp Duty Amount(Rs.)	: 6,08,76,100 (Six Crore Eight Lakh Seventy Six Thousand One Hundred only)

Please write or type below this line

31.3.20

T. Basa
Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

31/3/2020
COLLECTOR
JAJPUR

0001181451

Statutory Alert:
1. The authenticity of this Stamp Certificate should be verified at 'www.shcilestamp.com'. Any discrepancy in the details on this Certificate and as available on the website renders it invalid.
2. The onus of checking the legitimacy is on the users of the certificate.
3. In case of any discrepancy please inform the Competent Authority.

WHEREAS the lessee have executed a mining lease deed on date 20th day of September 1980, registered vide No. 7288(Original) dated 31.12.1980 in accordance with the Mineral Concession Rules, 1960 (hereinafter referred to as the said Rules), in respect of the land described in Part I of the schedule of the said lease of 7288 (Original), which has been registered vide registered lease deed No 7288 (Original) in the office of Sub-Registrar, Cuttack on 31.12.1980. (Hereinafter referred to as the said lease);

AND WHEREAS the period of the said lease deed was valid from 20th September, 1980 to 19th September, 2000.

AND WHEREAS after expiry of the validity period of the said lease deed, the lessee had continued to conduct mining operations in the said lease under the deemed extension provisions of section 8 of the Mines and Minerals (Development and Regulations) Act, 1957 (hereinafter referred as the MMDR Act) with the permission of the party of the first part.

AND WHEREAS the MMDR Act has been amended with effect from 12.01.2015 and section 8A has been inserted in the said Act, providing for extension of validity period of lease granted in the past under the provisions of the said Act, subject to fulfillment of conditions provided therein.

AND, WHEREAS the Government of Odisha extended the validity period of the lease up to 31st March, 2020, vide order No. III (CR) SM-10/2006/2745/SM, Dtd. 26.03.2015, Department of Steel & Mines, Govt. of Odisha and supplementary lease deed was executed on dt. 03.10.2015 & registered on dt. 06.10.2015 at District Registrar Office, Jajapur Vide Document No.11871500003, Book No-1, Volume No.1, for the year-2015, date 06.10.2015.

T. Basa

LESSEE

T. Basa.
Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

COLLECTOR
JAJPUR

COLLECTOR
JAJPUR

SUPPLEMENTARY LEASE DEED

This indenture made this --31st day of March --2020- between the Governor of Odisha (hereinafter referred to as the "State Government" which expression shall where the context so admits be deemed to include the successors and assigns) of the one part.

And

M/s Odisha Mining Corporation Ltd, a company registered under Indian Companies Act, 1956 (Act under which incorporated) and having its registered office at post Box No. 34, OMC House, Bhubaneswar-751001 being represented through their power of Attorney Holder Smt. Tilottama Basa, Additional General Manager(Geology), Odisha Mining Corporation Ltd., (hereinafter referred to as "the lessee" which expression shall where context so admits be deemed to include his successors and permitted assigns) of the other part.

Basa

LESSEE 31.3.20

T. Basa
Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

COLLECTOR
JAJPUR 31/3/2020

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JAJPUR

AND, WHEREAS Mineral (Mining by Govt. Company) Rules, 2015 have been notified by Ministry of Mines, Govt. of India on 03.12.2015. In terms of Rule 3(1) & 3(2) of Mineral (Mining by Govt. Company) Rules 2015, the original lease period of said lease is deemed to be granted for 50 years i.e. 20.09.1980 to 19.09.2030.

AND, WHEREAS Govt. of Odisha has extended the validity period of the lease for further period from 1.4.2020 to 19.09.2030 vide order No.- III(CR)SM-10/2006/296/SM, dtd. 08.01.2020 of Steel & Mines Dept., Govt. of Odisha, subject to all the conditions of the said lease and subject to the following additional conditions as described here in below at paragraphs 1 to 8 and it is hereby mutually agreed between the parties that.

AND, WHEREAS this supplementary lease deed is a part and parcel of the said deed and the terms & conditions are in furtherance to the terms and conditions in addition to the terms and conditions agreed to in the said lease deed..

1. The lessee will furnish an undertaking that he will make the payment for the demand raised or to be raised under section 21(5) of the MMDR Act in accordance to the judgment of Hon'ble Supreme Court passed in W.P.(C) No 114/2014. This undertaking will also form part of the supplementary mining lease deed as a Special Condition.

T. Basa

LESSEE

COLLECTOR
JAJPUR

COLLECTOR
JAJPUR

T. Basa
Addl. Ge... Major (Geo)
Power of ... Number
Odisha Mini... Corporation Ltd.
Bhuba...

UNDERTAKING

Smt. Tilottama Basa, Additional General Manager (Geology) Odisha Mining Corporation (the power of Attorney holder) being the lessee of Sukarangi Mining Lease of M/s OMC Ltd. do hereby undertake that I/we will make the payment of demand raised or to be raised under section 21(5) of the MMDR Act, in accordance with the directions of Hon'ble Supreme Court (applicable for Fe. Ore)/competent forum within 60 days of passing of such order/directions or such disposal or such other time as may be decided by the Hon'ble Court or the competent forum, as the case may be.

Smt. T. Basa
Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar
(The power of Attorney holder of the Lessee)

2. The extension of validity is without prejudice to ongoing proceedings, if any, for lapsing or determination of lease which have been initiated or may be initiated in accordance with the provisions of MMDR Act, 1957 or rules framed there under.

3. The extension of validity is without prejudice to any action to be initiated/ already initiated under the provisions of the Environment (Protection) Act, Odisha Forest Act or any other law, being in force in the relevant time in respect of any violations committed by the lessee during the original period of lease or the period of deemed extension till the date of extension of validity period of lease.

4. The extension of validity period of lease is subject to the final result/outcome of the Writ Petition (Civil) 114/2014 (Common Cause vrs Union of India and others) pending in Hon'ble Supreme Court of India.

LESSEE.

T. Basa
Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

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JAJPUR

5. The extension is subject to condition that any terms and conditions of the original lease, if not complied so far, shall be complied by the lessee within such period as may be specified by a competent authority and the lessee shall furnish an undertaking to such effect.

UNDERTAKING

Smt. Tilottama Basa, Additional General Manager (Geology) Odisha Mining Corporation, (the power of Attorney holder) being the Lessee of Sukarangi Mining Lease for chromite of M/s O.M.C. Ltd. do hereby undertake that, any terms and conditions of the original lease if not complied so far, shall be complied by us within such period as may be specified by the competent authority.

T. Basa
Addl. General Manager (Geology)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

Smt. Tilottama Basa
Addl. General Manager (Geology)
Odisha Mining Corporation
(The power of Attorney holder of the Lessee)

6. The lease is subject to condition that the lessee shall not enter upon any Forest of any category to which the provisions of the Forest (Conservation) Act, 1980 are applicable without previous sanction of the Competent Authority, not fell, cut and use any timber or trees without obtaining the sanction of that Authority nor otherwise than in accordance with such conditions as the State Government may prescribe.

7. The lessee/ lessees shall not undertake mining operation except under and in accordance to the approvals under the Forest (Conservation) Act, 1980 and the Environment (Protection) Act, 1986 and rules framed there under.

LESSEE

T. Basa
Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

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8. The lessee shall complete the prospecting operation in accordance with the provisions contained in letter dated 23.12.2010, of Ministry of Mines , Govt. of India within the time period specified there in and subsequent instructions, Rules and regulations if any issued or that may be issued prescribing the time line.

9. Additional condition as per Letter No: 9179/DM Dt.21.10.2014 and letter No. 11329/DM, dated 14.12.2016 of Director of Mines , Bhubaneswar.

i) The Lessee shall abide by the outcome of final orders of Honorable High Court of Odisha in the writ petitions relating to Indian Stamp (Odisha) Amendment Act' 2013 and Indian Stamp (Odisha) Amendment Rules, 2013 pending before Honorable High Court of Odisha and accordingly shall pay the differential stamp duty , if any.

ii) The lessee shall obtain all statutory clearances within a specific period as will be stipulated by the competent authority concerned.

iii) The differential amount of stamp duty, if any, arising out of the modification in statutory clearances, if any, or any other valid reason, is liable to be paid by the lessee forthwith.

10. The lessee shall, after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to their mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.

LESSEE

T. Basa
Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

COLLECTOR
JAJPUR

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JAJPUR

UNDERTAKING

Smt. Tilottama Basa, Additional General Manager (Geology) Odisha Mining Corporation, (the power of Attorney holder) being the Lessee of Sukarangi Mining Lease for chromite of M/s O.M.C. Ltd. do hereby undertake that, after ceasing mining operations we shall undertake re-grassing the mining area and any other area which may have been disturbed due to our mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.

T Basa

Smt. Tilottama Basa
Addl. General Manager Geology
Odisha Mining Corporation
(The power of Attorney Holder of the Lessee)

T. Basa
Addl. General Manager (Geo)
Power of Attorney Holder of the Lessee
Odisha Mining Corporation Ltd.
Bhubaneswar

AND, WHEREAS, the party of the second part has agreed to all these terms and conditions and has agreed to execute a supplementary lease deed accepting the extension of the validity period of lease.

NOW, THEREFORE the period of validity of the said lease deed is hereby extended and deemed to have been extended up to 19th September 2030, subject to all terms and conditions of the said lease and the further terms and conditions of this supplementary lease deed.

For the purpose of stamp duty the highest anticipated royalty per annum from the demised land is Rs.60,80,88,000/- (Rupees sixty crore eighty lakhs eighty-eight thousand) only, preliminary expenses is Rs. 1,000/- (Rupees one thousand) only, security deposit is Rs. 10000/- (Rupees Ten thousand) only, Annual Surface rent is Rs.6,67,680/- (Rupees six lakh sixty seven thousand six hundred eighty) only and annual dead rent payable is Rs.15,30,836/-(Rupees fifteen lakh thirty thousand eight hundred thirty six only.) only per year for chromite ore.

T Basa

LESSEE

T. Basa
Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

COLLECTOR
JAJPUR

COLLECTOR
JAJPUR

IN WITNESS

WHERE OF these presents have been executed in the manner hereunder appearing the day and year first above written.

Signed by

COLLECTOR, JAJPUR
For and behalf of the Collector of Odisha

COLLECTOR
JAJPUR

In the presence of witnesses

1.

I/C Deputy Director Mines
Jajpur Road Circle, Jajpur Road

2.

Mining Officer
o/o- DMG, Jajpur Road

Smt. Tilottama Basa
Addl. General Manager Geology
Odisha Mining Corporation Ltd
Bhubaneswar
(The power of Attorney holder of the Lessee)

In the presence of witnesses

1.

Regional Manager
Odisha Mining Corporation Ltd
Jajpur Road

2.

Annexure--XV

PROFORMA FOR VERIFICATION OF DEPOSITS IN COMPENSATORY AFFORESTATION FUND

1.	Name of Office		Bhubaneswar
2.	State/District/Forest Division to which the proposal relates		Odisha/ Jajpur/ Cuttack Forest Division
3.	Name of User Agency, nature of proposal		M/s Odisha Mining Corporation Limited (A Govt. of Odisha Undertaking),
4.	Nature and category of proposal		Mining
5.	Proposal number		Sukurangi Chromite Mines
6.	Extent of forest area involved		162.42 Hectare
7.	Whether original or extension		Extension
8.	If extension of lease, please clarify if proposal involves additional forest area and if so, specify		104.79 ha of part forest area approved vide No. 8-104/2000-FC dt. 21.07.2011
9.	Date of 1st Stage clearance		-
10.	**Extent of CAMPA charges, head wise viz.:**		
	(a) Compensatory Afforestation		Rs. 7,35,81,700/- (5,55,47,800/- +7,59,700/- + 2,35,82,700/-)
	(b) Additional Compensatory Afforestation		Nil
	(c) Penal Compensatory Afforestation		Nil
	(d) Catchment Area Treatment		Nil
	(e) Wildlife Management Plan		
	i) Site Specific Wildlife Conservation Plan		Rs. 5,76,52,880/- (98,00,000/- + 1,45,42,942/-+ 3,33,09,938/-)
	ii) Regional Wildlife Management Plan		Rs.76,54,180/-
	(f) Additional charges for diversion of area failing under notified/protected areas		Nil
	(g) Net Present Value		Rs. 17,93,44,800/- (6,07,78,200/- + 6,89,86,600/- + 4,95,80,000/-)
	(h) Any other charges/levies (Please specify)		
	i)	Penal NPV	Nil
	ii)	Safety Zone	Rs. 22,49,260/-
	iii)	1.5 times Safety Zone	Rs. 9,39,793/-
	iv)	Scheme on mitigative measures to minimize soil erosion and choking of streams	-
	v)	Scheme on gap planting and SMC measures	-
	vi)	Scheme on planting adequate drought hardy plant species and showing of seeds to arrest soil erosion	-
	Total		**Rs. 32,14,22,693.00**
11.	Whether payment made through challan or otherwise. In case of online payment, details of challan.		
12.	Details of deposits		

Sl No.	Type of deposit (NPV/CA/ IWMP/ Others (specify))	Whether by RTGS/DD/ NEFT (Specify)	UTR/ DD No.	Amount deposited (Rs.)	Date of deposit	Name Bank from which amount transferred to account of CAF	Bank Account of CAF managed by CAMPA in which fund deposited
i)	NPV	DD	(DD No. 717005 to 717065 (Rs.9,90,000/- each) + DD No. 717066 (Rs. 3,88,200/-)	Rs. 6,07,78,200/-	08.08.2006	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- CA-1585, Corporation Bank, Lodhi Road, New Delhi.
		DD	649753	Rs. 6,89,86,600/-	07.07.2010	State Bank of India, Bhubaneswar Main Branch. (Code No.00041)	A/c. No.- CA-1585, Corporation Bank, Lodhi Road, New Delhi.
		RTGS	ANDBH16046319514	Rs. 4,95,80,000/-	15.02.2016	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- 344902010105428, Union Bank of India, Sundar Nagar, New Delhi, IFSC Code-UBIN0534498
ii)	Compensatory Afforestation	Online Payment	ANDBH20020730430	Rs. 5,55,47,800/-	20.01.2020	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- 150825884710267, Corporation Bank, Lodhi Complex Branch, Block 11, CGO Complex, Phase I, Lodhi Road, New Delhi-110003.
		Online Payment	ANDBR52020093000 442378	Rs. 7,59,700/-	30.09.2020	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- 150825884710303, Corporation Bank, Lodhi Complex Branch, Block 11, CGO Complex, Phase I, Lodhi Road, New Delhi-110003.
		Online Payment	UBINJ22045034748	Rs. 2,35,82,700/-	14.02.2022	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- 150825884710589, Corporation Bank, Lodhi Complex Branch, Block 11, CGO Complex, Phase I, Lodhi Road, New Delhi-110003.
iii)	Safety zone	RTGS	ANDBH13116850310 (Rs. Rs. 31,89,058/- has been deposited which includes Rs. 22,49,260/- towards SZ)	Rs. 22,49,260/-	26.04.2013	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- 037100201001585, Corporation Bank, Lodhi Complex Branch, New Delhi. IFSC Code-CORP0000371
iv)	1.5 Times Safety zone	RTGS	ANDBH13116850310 Rs. Rs. 31,89,058/- has been deposited which includes Rs. 9,39,793/- towards 1.5 times SZ)	Rs. 9,39,793/-	26.04.2013	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- 037100201001585. Corporation Bank, Lodhi Complex Branch, New Delhi. IFSC Code-CORP0000371
vii)	SSWLCP	DD	495472	Rs. 98,00,000/-	26.08.2009	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- CA-1585, Corporation Bank, Lodhi Road, New Delhi.
			ANDBH17313741863	Rs. 1,45,42,942/-	21.10.2017	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- 150821098471201436?, Corporation Bank, FCS Bangalore

			UBINJ213581[illegible]	Rs. 3,33,09,938/-	24.12.2021	A/c. N[illegible] 059110110000001 of Andhra [illegible]nk, OMC Campus Branch, Bhubaneswar	A/c. No.- 150825884710701, Corporation Bank, Lodhi Complex Branch, Block 11, CGO Complex, Phase I, Lodhi Road, New Delhi-110003.
viii)	RWLMP	DD	(DD No. 495385 to 495392- Rs. 9,00,000/- each) + (DD No. 495393- Rs. 4,54,180/-)	76,54,180/-	04.07.2009	A/c. No. 105911011000001 of Andhra Bank, OMC Campus Branch, Bhubaneswar	A/c. No.- CA-1685, Corporation Bank, Lodhi Road, New Delhi.

Date:
Place:

Divisional Forest Officer
Cuttack Forest Division

Pr. Chief Conservator of Forests (Nodal)
Odisha

ANNEXURE - XVII

F. No. J-11015/348/2015-IA. II (M)
Government of India
Ministry of Environment, Forest and Climate Change
IA Division
***

3rd Floor, Vayu Block,
Indira Paryavaran Bhawan,
Jor Bagh Road, Aliganj,
New Delhi-110003

Dated: 30th July, 2020

To,

M/s Odisha Mining Corporation Ltd.
OMC House, Bhubneswar-751001
Email:

Subject: Expansion of production capacity from 0.13 MTPA to 0.3 MTPA of Sukurangi Chromite Ore Mining Project [ML Area 382.709 Ha] located at village (s) Sukrangi, Saruabli and village limits of Ostapal, Kamarda and Talangi, Teshil - Sukinda, District-Jajpur, Odisha by M/s Odisha Mining Corporation Ltd.–EC Regarding

Ref: Online application No: IA/OR/MIN/8903/2007

Sir,
This has reference to your online application for Environmental Clearance (EC) for Expansion of production capacity from 0.13 MTPA to 0.3 MTPA of Sukurangi Chromite Ore Mining Project [ML Area 382.709 Ha] located at village (s) Sukrangi, Saruabli and village limits of Ostapal, Kamarda and Talangi, Teshil - Sukinda, District-Jajpur, Odisha. The latitude and longitude of the mine lease area lie between 21°02'18.85" N to 21°03'46.98" N and 85°47'43.77" E to 85°49'21.74" E and the Survey of India Toposheet number is 73 G/16, 73H/9 & 73H/13.

2. The project falls under Schedule 1(a) of mining and is a Category- "A" project as per EIA notification 14th September 2006 (as amended) as the mining lease area is 382.709 Ha. PP submitted that previously the Environmental Clearance for expansion of Sukurangi Chromite Mining Project of M/s The Orissa Mining Corporation Ltd. for the capacity of 0.13 MTPA was granted by MoEF vide Letter No. J-11015/409/2008-IA. II(M) dated 18th February, 2010.

3. The Project Proponent applied online for grant of TOR for expansion in chromite production from 0.13 MTPA to 0.3 MTPA vide proposal No IA/OR/MIN/30726/2015 on 18.09.2015 and submitted Form-1 and Pre-Feasibility Report. The proposal was considered in 38thEAC meeting held on October 26-28, 2015 wherein the committee recommended for grant of TOR. Ministry granted the TOR Vide letter no. J-11015/348/2015-IA. II (M), dated 30.11.2015. Further, Project Proponent requested the

extension of Validity of TOR as the Public Hearing for the Project was delayed. The Proposal was considered in the EAC in its meeting held during 23-24 October, 2018 wherein the EAC granted the extension of validity of TOR for one year i.e. from 30.11.2018 to 29.11.2019. The extension in validity of ToR was issued vide letter No. J-11015/348/2015-IA. II (M) dated 13.11.2018.

4. The Project Proponent applied online vide proposal no. IA/OR/MIN/8903/2015 on 27th April 2019 for grant of EC and submitted EIA/EMP Report after conducting public hearing and the proposal was placed in EAC meeting held during May 29-30, 2019 wherein the committee deferred the proposal due to some shortcomings. The PP submitted the information on 13.11.2019 as sought by EAC/Ministry. Accordingly, the proposal was considered in the EAC in its meeting held during 19-20 December, 2019 wherein the Committee recommended the proposal for grant of EC. The proposal examined in the Ministry and project was sent for re-consideration by EAC and the proposal is placed in EAC meeting held during 28-29 May 2020 & 1st June, 2020 wherein the Committee recommended the proposal for grant of EC and prescribed the specific conditions for the project.

5. PP submitted that the Sukurangi **Mining Lease** was granted and executed in favor of M/s Sirajuddin & Co. for a period of 20 years from 26.03.1959 to 26.03.1979. After 4 years of operations, it was determined on 05.04.1963, Odisha Mining Corporation (OMC) was then allowed by the State Government vide their letter no. III(G) M, 13/70-5592-MG, dated 20.07.1970 to operate the said lease to OMC in 1971 by expanding the area broken by M/s Sirajuddin & Co. Govt. of Odisha in their erstwhile Mining & Geology Dept. Proceeding No. III (G)-MG-10/78-7924 dated 05.08.1978 granted a Mining Lease for exploration of Chromites in Sukurangi chromites mines over an area of 382.709 Ha for a period of 20 years. The mining lease was executed on 20.09.1980 for a period of 20 years and the application for renewal of the mining lease was made on 19.09.1999. Subsequently, as per MMDR Amendment Act 2015, the lease period has been extended upto 31.03.2020 by steel and Mines Department, Govt. of Odisha vide letter No. III(CR) SM-10/2006/SM Bhubaneswar dated 26.03.2015 and the supplementary lease deed has been executed for the same on 03.10.2015. Further PP submitted that the validity of the lease has been extended from 20.09.1980 to 19.09.2030. PP in its reply dated 13.11.2019 submitted the letter No. III(CR) SM-10/2006-296/SM. Bhubaneswar, dated 08.01.2020 issued by the Steel & Mines Department, Government of Odisha stating that the lease has been extended from 20.09.1980 to 19.09.2030. PP submitted the State Government made OMC as agent to operate the mine vide order letter No. III(G)M, 13/70-5592-MG, dated 20.07.1970 and granted formal lease vide Proceeding No. III (G)- MG-10/78-7924 dated 05.08.1978.

6. The PP submitted the **Scheme of Mining** was approved by IBM vide letter No. MS/FM/31-ORI/BHU/2013-14 dated 22.08.2014. Modification in review of mining plan with progressive mine closure plan for the period from 01.04.2018 to 31.03.2019 under rule 17(3) of MCR 2016 & 23 of MCDR 2017 has been approved vide letter MPM/FM/08-ORI/BHU/2018-19/583 dated 04.06.2018 and valid until 31.03.2019. Followed by the Review of Mining plan for Sukurangi Chromite mines along with progressive mine closure plan was approved by IBM vide letter No. Ms/FM/37-ORI/BHU/2018-19 dated 23.01.2019 and valid until 31.03.2024. As per Modification in

review of mining plan the Mining operations are carried out by fully mechanized open cast method, utilizing Heavy Earth Moving Equipment (HEME) with drilling and blasting. PP submitted that ground water is not likely to be encountered during the present mining scheme period as the ultimate pit limit at the end of the present scheme period shall be at 146 m AMSL. PP reported that the around 3,45,515m^3 of Top Soil will be generated from the freshly broken area which will be utilized for current afforestation over the dumps & also for the avenue plantation. PP vide its letter dated 29.05.2020 submitted that the mining lease over 382.709 ha has been executed on 20.09.1980 in favour of OMC to produce chromite ore. The total mineable reserve of chromite ore as per the Modification of Review of Mining Plan (RMP) approved by IBM on 23.01.2019 is estimated at 6.55 million tons and the average stripping ratio is computed to be 1:6.18 (tonne/cu.m). Therefore, in order to produce the total mineable reserve of chromite ore the quantity of overburden to be generated from Sukurangi ML area as per the RMP approved by IBM shall be [OB generation (2019 - 2024) = 9.270 Mm^3; 2024 -Conceptual = 34.965 Mm^3; Total OB generation = 44.235 Mm^3]. 17.85 Mm3 can be accommodated inside Sukurangi ML. **The remaining 26.385 Mm3 of waste will be hauled out of the quarries to the designated external dumping areas, located in a non-mineralized zone outside the ML.** Regarding dumping of waste outside the ML area, the Ministry of Mines, Govt. of India has given clarification vide their letter No.16/67/2016-M.VI dt 25.05.2016 and subsequently advised by the Department of Steel & Mines, Govt. of Odisha vide letter No.5042/SM dt 16.06.2016. In accordance with the orders of Supreme Court of India, OMC has initiated the process for amalgamation of the earmarked dump area over 168.948 ha with its adjoining SouthKaliapani and Sukurangi chromite ML vide letter No.5675/OMC/2010 dt 16.05.2020. The dump area will receive the overburden to be generated from both the mining leases. To comply the pre-condition of amalgamation, OMC has obtained Stage-I forest clearance over 168.948 ha of forest land as a first step and the conditions stipulated therein are under compliance by OMC and State Forest Department for grant of stage-II forest clearance. Considering the average stripping ratio, dumping of waste inside Sukurangi ML can be accommodated up to FY 2026-27 (i.e. during next plan period 2024-2029). Thus, hauling of 26.385 Mm^3 of overburden from Sukurangi ML to the earmarked dump site (now outside the ML) will be needed after FY 2026-27. The amalgamation is expected within this period to continue the operation. After amalgamation, all statutory clearances shall be obtained for continuation of mining operations from the composite amalgamated ML. Further, as per Hon'ble Supreme Court's order dated 8.01.2020 in W.P. (Civil) No 114/2014 and subsequent O.M. No 22-34/2018-IA.III dated 16.01.2020 by MoEF & CC the condition of re-grassing the mining area and restore the land to a condition which is fit for growth of fodder, flora, fauna etc. shall be undertaken by OMC. An undertaking by OMC to abide by the order of Hon'ble Supreme Court of India and Ministry's Office Memorandum dt 16.01.2020 is also submitted. Chromite ore body as per the exploration results continues even up to a depth of more than 1000 m. Mining by opencast method is not economically and technically feasible due to incompetent strata. The ore is not getting exhausted as a result of which IBM is not permitting any backfilling. The page No.91 of the RMP document approved vide letter No. MS/ FM/37-0RI/ BHU/2018-19 dt 23.01.2019 may kindly be referred for clarity. PP in its reply dated 29.05.2020 submitted that the Modified Review of Mining Plan (MRMP) for the plan period 2018-19 approved by IBM on 04.06.2018 was placed before the Public Hearing meeting conducted on 09.11.2018. In any Mining Plan the land use is approved till the

conceptual period and at every five-year span there is a scheme of mining duly approved by IBM. In our case the Review of Mining plan (RMP) for Sukurangi Chromite mines along with Progressive Mine Closure Plan was approved by IBM vide letter No. Ms/FM/37-0RI/BHU/2018-19 dated 23.01.2019 for the period of 2019-24. In both the cases the land use in conceptual stage remains unchanged.

7. PP submitted that there is no National Park, Wildlife Sanctuary, Biosphere Reserve, Wildlife Corridors, Tiger/Elephant Reserves within 10 Km radius of the mine site. PP submitted that ML area comprises of 267.21 ha of forest land out of which permission for diversion of 104.79 ha of forest land has already been accorded by MoEFCC vide letter No. letter No F.NO.-8-104/2000-FC dated 21.7.2011. The stage-1 forest clearance for remaining forest area of 162.42 ha of forest land was obtained vide letter no. F.NO.-8-22/2016-FC dated 14.09.2017. The PP submitted the list of Flora and fauna obtained by the Office of the Divisional Forest Officer Cuttack that there are 10 schedule-1 species viz. Mellivora Carpensis (Ratel), Panthera Pardus (leopard), Melursus ursinus (Sloth Bear), Elephasmaximus (Indian elephant), Moschiolaindica Synonym Tragulusmeminna (Mouse Deer), Maniscrassicaudata (Pangolin), Canis lupus pallipes (Wolf), Varanusbengalensis (Bengal Monitor Lizard), Python molures (Python), and Pavocristatus (Peacock) is present in the study area. The PP has submitted memo no. 4415/1WL-C-FC-270/09 dated 21.07.2009 issued by the Principle Chief Conservator of Forests (Wildlife) thereby submitting the authenticated map and conservation plan to MoEF&CC. PP submitted the wild life conservation plan approved in 2009. As the conservation plan is not include all the schedule-1 species the PP vide letter dated submitted an undertaking to prepare and submit the same for the approval of chief wildlife warden.

8. PP submitted that the average **Water Consumption** for domestic and industrial use is 249 m^3/day (peak 353 m^3/day) whereas 60 m^3/day (peak 80 m^3/day) for drinking water, 70 m^3/day (peak 115 m^3/day) for Drilling and spraying, 20 m^3/day for equipment/vehicle washing, 59 m^3/day for Pit head bath and 40 m^3/day (peak 54 m^3/day) for Green belt. PP submitted the NOC vide letter no CGWA/NOC/MIN/ORIG/2017/2840 dated 20.11.2017 from CGWA, Odisha for ground water withdrawal for 60 m3/day(and not exceeding 21900 m3/year) of ground water through one existing and one proposed bore well and 1000 m3/day through dewatering of mine seepage. The NOC is valid from 02.11.2017 till 01.11.2019. Further PP submitted the application has been submitted for the renewal of NOC to dewater ground water vides application no 21-4/1156/OR/MIN/2017 dated 04.09.2019. PP submitted that the Damsal Nala (within the ML) is nearest streams/river/water body. PP has applied for NOC from CGWA on 04.09.2019 and it is yet to be obtained.

9. PP submitted that the total area of the **green belt** or green areas in project area (including waste dump site, mining benches, safety zones) and camp area will be about 281.287 ha. (i.e.~75% of the ML area). Out of which only 4.660 ha has been afforested till now and remaining 276.627 Ha plantation is proposed on 7.5m along the ML boundary & 10 m on either side of the road (7.8 Ha), 100m on either side of Damsal nala (32.30 Ha) , Area kept as additional safety zone in southern side of the ML

(12.757 Ha), Upper benches of exhausted quarries (141.090 ha), Mineral storage (18.910) and 64.32 ha on dumps. In order to supply seedlings for the proposed green belt and green cover development a small nursery will be developed with the help of the state forest department. In this nursery, saplings will be developed from seeds or seedlings collected from nearby forest areas / other nurseries. PP proposed that in the next 5 years (2019-24) proposed block plantation on 12.269 ha with the budget of Rs 1, 33,397 Rs. /ha, Plantation as ANR (Assisted Natural Regeneration) with gap plantation (200 plant/ha) on 12.875 Ha of with the budget of 36,974 Rs./ha and plantation as ANR(Assisted Natural Regeneration) with gap plantation (200 plant/ha) 28.163 ha with the budget of 24,486 Rs./ha. The Committee prescribed the specific condition for early plantation.

10. PP reported that the baseline data on Air, Water, Noise and Soil quality in the core and buffer zones of the defined study area was carried out for one full season covering three months of winter, 2015-16 (December-2015, January-16 and February-16). PP in its reply dated 13.11.20199 submitted that Additional one Month AAQ was collected in June 2019 and compared with the results of AAQ monitoring data collected during Dec-Jan-Feb 2015 and results are, the results when compared with National Ambient Air Quality Standards (NAAQS) of Central Pollution Control Board (CPCB) indicate that air quality is within norms for all of the monitoring locations. AAQ stations A1 and A2 have recorded maximum values of PM_{10} however the same is within norms the increment may be the AAQ stations are located in the core zone of the mining site. A large number of heavy goods carrier ply in large volume from the mining site. The free silica was noted in the range of 1.5-2.5 µg/m3 and PM2.5 results have been included from the regular monitoring/analysis was carried out during Dec 2015-Feb 2016. The results of metals show that for Lead, Arsenic and Nickel the observed values are well within the National Ambient Air Quality Standards, 2009. Where as in June 2019 the AAQ values in all the stations are less than that of the data collected during winter season 2015-16. PP also submitted that though the above data cannot be compared as both seasons since the base line data was collected in two different seasons, however, when compared with National Ambient Air Quality Standards (NAAQS) of Central Pollution Control Board (CPCB), the data indicates that air quality during June 2019 is within norms for all of the monitoring locations. PP also carried out the air quality modeling. PP submitted the test results conducted on 1.07.2019 for presence of Cr^{+6} in PM_{10} and $PM_{2.5}$ which is < 0.3 µg/m3 & <0.2 µg/m3 respectively.

11. The Project Proponent reported that the Odisha State Pollution Control Board conducted **Public consultation/hearing** for the proposed project of M/s. Orissa Corporation Ltd for chromite ore from 0.13 MTPA to 0.3 MTPA from Sukurangi Chromite [ML Area 382.709 Ha] located at village (s) Sukrangi, Saruabli and village limits of Ostapal, Kamarda and Talangi, Teshil - Sukinda, District-Jajpur, Odisha on 09.11.2018 at 10.00 AM at Kaliapani, Khata No.55, Plot No. 736, patharabani in Mining Conference Hall in Jajpur District . The advertisement for public hearing was published in "Times of India (English)" & "Sambad (Odiya) " on 05-10-2018 and 06-10-2018. The Public hearing was conducted under the chairmanship of Shri Santosh Kumar Mishra, ADM, Kalinganagar, District. The issues raised during public hearing were also deliberated during the meeting which includes employment, Environment, Education, skill development, health care, infrastructure facility, employment to local people, vocational

training, waste water treatment, pollution control, etc. The PP earmarked a budget of ₹ 2130 Lakh (Capital) &₹ 190 Lakh (recurring/annum) under EMP, ₹ 32.02 Lakhs under CER, Rs 4.0 (Capital) & Rs 3 Lakh (Recurring) for Occupational Health.

12. PP submitted the Environmental Clearance compliance report submitted by Regional Office vide letter No 101-280/07/EPE/84 dated 15.04.2019. PP in its reply dated 13.11.2019 submitted the compliance of EC conditions with photographs.

13. The Project Proponent reported that the mine was in operation upto January 2010 without prior EC. In this regard, demand notice was served by DDM, Jajpur, Govt. of Odhisa, vide letter dated 15.12.2012 of Rs. 26,38,5,073/- against 100271.399 tonnes of chromite ore raised in excess of the approved quantity of mining plan/ scheme, EC & OSPCB under section 21(5) of the MMDR Act, 1957. Followed by demand notice for Rs.3,90,64,416/- against 15474.096 tonnes of Chromite ore raised by DDM, Jajpur, Govt. of Odisha vide letter No. 547 dated 10.04.2018 in excess of the approved quantity of EC under section 21(5) of MMDR Act, 1957. PP further submitted that the said demand notice raised by DDM was stayed by the Revisionary Authority (RA), Ministry of Mines on 10.05.2018. The case was further heard before RA on 06.03.2019, wherein it has been directed to the Lessee to file re-joinder and till such period the interim order was directed to be continued. PP also submitted the past production details from Directorate of Mines, Odisha, Bhubaneswar vide letter no. III(s) 17/1999/6806/DM dated 05.10.2018 which reveals that PP did not enhance the production beyond the EC capacity. Further, reply of the State Government in the above RA was submitted to the Ministry of Mines vide memo no. 4654/SM, Bhubaneswar dated 03.07.2019.

14. The Consultant submitted a declaration that they are fully accountable for any misleading information in EIA/EMP Report. PP submitted the undertaking by way of affidavit on 9th August 2018 as per the Ministry's OM dated 30.05.2018. PP has undertaken that the OMC shall comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated 2nd August 2017 in the matter of Common Cause Vs Union of India & Ors in Writ Petition (Civil) No. 114 of 2014. PP vide letter No. 6877/OMC/F&E/2020 dated 9th June 2020 submitted an undertaking wherein it has mentioned that i) To prepare the revised Site Specific Wildlife Conservation Plan with inclusion of the entire Schedule-I species as mentioned by the DFO, Cuttack in his letter dt.19.02.2018 along with their conservation plan and shall be submitted to Principal Chief Conservator of Forest (WL) & Chief Wildlife Warden, Odisha for approval, ii) The information provided by OMC in EIA/EMP report and other submission made to the EAC & Ministry is factually correct, iii) No mining has been carried out in the forest area without obtaining the Forest Clearance, iv) Any change in land use pattern in future will be reported to MoEF & CC and necessary amendment will be obtained in EC, v) In case at any stage if any information provided by Project Proponent is found to be incorrect or misleading then the EC granted may be revoked forthwith at the risk & cost of OMC, and Ministry may take necessary action as per law.

15. PP reported that the total Project Cost is 32.02 Crore and shall give direct employment to 308 persons (108 permanent & 200 contractual). In addition to this PP also provided the composition of Environmental Management Cell.

16. Based on the discussion held and document submitted the Committee **recommended** the proposal of M/s. Orissa Corporation Ltd for grant of Environmental Clearance for enhancement of production capacity of chromite ore from 0.13 MTPA to 0.3 MTPA Sukurangi Chromite Ore Mining Project (ML Area 382.709 Ha) located at village(s) Sukrangi, Saruabli and village limits of Ostapal, Kamarda and Talangi, Teshil - Sukinda, District-Jajpur, Odisha subject to submission of i) undertaking as proposed above and submission of conservation plan for all schedule-1 species with proof of submission to chief wildlife warden. In addition Standard EC conditions in pursuant to Ministry's O.M No. No. 22-34/2018-IA.III dated 08.01.2019 & 16.01.2020 (Sl. No. 17 B) the Committee also prescribed the following Specific conditions (Sl. No. 17 A) for this project:

17. The Ministry of Environment, Forest & Climate Change has examined the proposal in accordance with the Environmental Impact Assessment Notification, 2006 and further amendments thereto and hereby **accords the Environmental Clearance** under the provisions thereof to the above mentioned proposal of M/s. Orissa Corporation Ltd for enhancement of production capacity of chromite ore from 0.13 MTPA to 0.3 MTPA Sukurangi Chromite Ore Mining Project (ML Area 382.709 Ha) located at village(s) Sukrangi, Saruabli and village limits of Ostapal, Kamarda and Talangi, Teshil - Sukinda, District-Jajpur, Odisha subject to compliance of the terms & conditions and the environmental safeguards mentioned below: -

A. **Specific Conditions:**

1) Waste should be dumped on the earmarked sites within the mining lease area and no waste should be dumped outside the lease area. The quantity of waste to be dumped inside the mining lease area should not be more that 17.85 million M3. In case due to change in stripping ratio or any other reason, if sufficient space remains available within the mining lease area on non-mineralized zone, then PP may obtain amendment in EC for dumping waste quantity above 17.85 Million M^3 or PP may apply afresh after amalgamation of mining lease for grant of EC.

2) PP shall start the planation and cover at least 50% of the proposed area (i.e.111.66 Ha) under plantation in the next 5 years. The density of the plantation should not be less than 2500 saplings/Ha. The species to be selected for the plantation should be in consultation with local forest department or any other expert agency engaged for the same. The PP shall keep the record of saplings planted, survival rate, area covered under plantation, location etc. In addition to this gap filling needs to be done to as and when require for maintaining the density of plantation. The PP shall submit the drone images of area before and after the plantation. PP shall carry out pilot study for phytoremediation of hexavalent chromium through IMMT, CSIR, Bhubaneswar. The budget earmarked for the plantation shall be kept in separate bank account and audited annually. PP shall submit the detail such as photographs (before & after with geo-location date & time), details of expert agency engaged, details of species planted, number of species planted, survival rate, density of plantation and

outcome of the pilot study etc. to the Regional Office of MoEF&CC before 1st July of every year for the activities carried out during previous year.

3) Approval/permission of CGWA/SGWA shall be obtained before drawing ground water for the project activities. State Pollution Control Board (SPCB) concerned shall not issue Consent to Operate (CTO) till the project proponent obtains such permission.

4) PP shall fulfill the Commitment made during PH within next 5 years which includes i) providing direct & indirect employment as per requirement in phased wise manner (budget Rs 2.5 lakh), ii) Batches of 20-30 persons will be trained on regular interval (budget Rs 2.5 Lakh), iii) construct the Model schools as per the CBSE standard + 2 college with the budget of 4 crore, iii) scholarship programmes shall be taken up in regular basis (budget Rs 2.4 Lakh), iv) Arranging specialist doctor to the local CHC (Budget Rs 5.0 Lakh), v) 2% of profit will be spent under CSR for peripheral development, vi) development of local market (budget Rs 8 Lakh), vii) increasing frequency of water spraying in Tomka-Mangalpur road (budget Rs 10 Lakh), Plantation activities (Budget 54.73 Lakh), Solar Street lighting and distribution of LED bulbs to villages (Budget Rs 5.0 Lakh), Drinking water and mobile toilet facility for truck drivers (Budget Rs 5.0 Lakh), to build a sport complex for youth (budget 71.25 Lakh) and Nodel village will be established at Kaliapani and Sukrangi (227.02 Lakh).

5) Budget proposed for **Corporate Environment Responsibility (CER)** shall be ₹ 32.02 Lakhs, which includes a) ₹ 2.5 Lakhs for Employment to locals (₹ 0.5 Lakh from 2019-20 to 2023-24) , b) ₹ 2.50 Lakhs for Skill development for local SHGs (₹ 0.5 Lakh from 2019-20 to 2023-24), c) ₹ 2.50 Lakhs for Computer training, Scholarships (₹ 0.5 Lakh from 2019-20 to 2023-24), d) ₹ 4.50 Lakhs for Creation of employment opportunity (₹ 1.0 Lakh from 2019-20 to 2022-23 &₹ 0.5 Lakh for 2023-24), e) ₹ 5.0 Lakhs for Health care services Medical camps, ambulance (₹ 1.0 Lakh from 2019-20 to 2023-24), f) ₹ 2.50 Lakhs for Pollution Control (₹ 0.5 Lakh from 2019-20 to 2023-24), g) ₹ 2.50 Lakhs for Plantation (₹ 0.5 Lakh from 2019-20 to 2023-24), h) ₹ 2.50 Lakhs for Solar Street lighting, distribution of LED, bulbs to villagers (₹ 0.5 Lakh from 2019-20 to 2023-24), i) ₹ 2.50 for Drinking Water & sanitation (₹ 0.5 Lakh from 2019-20 to 2023-24), and j) ₹ 5.02 for Peripheral development (₹ 1.0 Lakh from 2019-20 to 2022-23 &₹ 1.02 Lakh for 2023-24). The amount proposed under this head should be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and details of implementation of CER activities along with proof of activities viz. photographs (before & after with geo-location date & time), purchase documents, photographs & Geo-location of the infrastructures/facilities developed, etc. to the Regional Office of MoEF&CC before 1st July of every year for the activities carried out during previous year.

6) Budget proposed under **Environmental Management Plan (EMP)** shall be ₹ 2130 Lakh (Capital) &₹ 190 Lakh (recurring/annum) which includes i) Rs 25.0 Lakh (Capital) & Rs 30.0 Lakh (recurring) for Surface drainage (garland drains, settling its, retaining wall etc.) & dust suppression system (timeline 1st year), ii)

Rs 7.0 Lakh (recurring) for Environment Monitoring, iii) Rs 4 Lakh (Capital) (time line 1 year) & Rs 3 Lakh (recurring) for **Occupational safety which includes Procurement of safety appliances**, iv) Rs 4 Lakh (recurring) for Green Belt Development, v) Rs 1794 (Capital) for Net Present Value (NPV) Payment, vi) Rs 153.0 Lakh (Capital) for Compensatory Afforestation, vii) Rs 154.0 Lakh (capital) (timeline 10 years) Wildlife Conservation Plan, and viii) Rs 146.0 Lakh (Recurring cost) for Socio-economic welfare measures in nearby village which is likely to be revised every year. The amount (except occupational health) proposed under this head should be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and detailed environment monitoring report along with proof of activities viz. photographs (before & after with geo-location date & time), purchase documents, sampling reports, photographs& Geo-location of the infrastructures/facilities developed, details of persons engaged in Environment Management Cell etc. to the Regional Office of MoEF&CC before 1st July of every year for the activities carried out during previous year.

7) Budget earmarked under **Occupational Health plan** is Rs 4.0 (Capital) & Rs 3 Lakh (Recurring) which includes Procurement of safety appliances. The amount proposed under this head should be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and detailed environment monitoring report along with proof of activities viz. photographs (before & after with geo-location date & time), purchase documents, sampling reports, photographs& Geo-location of the infrastructures/facilities developed, details of persons engaged in Environment Management Cell etc. to the Regional Office of MoEF&CC before 1st July of every year for the activities carried out during previous year.

8) PP shall set up an Environmental Management Cell comprises of persons having qualification and experience in the field of environment along with supporting staff. The details of the same needs to be submitted to the Ministry within 3 months of the grant of EC.

9) The project proponent shall give an undertaking by way of affidavit to comply with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2ndAugust 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors. before grant of ToR/ EC. The undertaking inter-alia include commitment of the PP not to repeat any such violation in future.

10) In case of violation of above undertaking, the ToR/Environmental Clearance shall be liable to be terminated forthwith.

11) The Environmental Clearance will not be operational till such time the Project Proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.

12) State Government concerned shall ensure that mining operation shall not commence till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of judgment of Hon'ble Supreme Court dated the 2nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.

13) The PP shall implement the short term and long term measures proposed to be taken in order to get rid from the adversity of Cr (VI) contamination, needs to be implemented and status report of the same along with benefit occurred needs to be submitted to Regional Office of MoEF&CC annually.

14) Budget earmarked for **Corporate Environment Responsibility (CER)** shall be ₹ 28.7 Lakhs, which includes a) ₹ 1.20 Lakhs for construction of rainwater harvesting structures at shallow areas of village Kannnappakunta (4pit) and Kamalapuram (2 pits) [time line 1st year], b) ₹ 4.5 Lakh for repairing & deepening of the non-working bore wells and construction of bore well to the nearby village as per their requirement (budget ₹ 2.00 Lakhs; time line 1st year & ₹ 2.50 Lakhs time line 2nd year), c) ₹ 15.00 Lakh for strengthening of road (connecting Kannnappakunta and Kamalapuram-3.5 km) [timeline ₹ 3.00 Lakhs/annum 1st to 4th year and ₹ 2.00 Lakhs during 5th year], d) ₹ 3.00 Lakhs for distillation of village ponds, providing bus shelter [budget ₹ 1.00 Lakhs/annum; time line 1st-3rd year], e) ₹ 5.0 Lakh for provision of computer to the school [Budget ₹ 1.0 Lakh/annum; time line 1st to 5th year] and g) ₹ 1.00 Lakhs for supporting sanitary needs for girls students (napkins) [budget ₹ 0.2 Lakh/annum, timeline 1st to 5th year]. The amount proposed under these heads should be kept in a separate bank account and should be audited annually. PP should annually submit the audited statement along with proof of activities carried to the Regional Office of MoEF&CC before 1st July of every year for the activities carried out during previous year.

15) Total budget for implementation of **Environmental Management Plan (EMP)** shall be ₹ 19.9 Lakh (capital) and ₹ 15.50 Lakh (recurring) which includes a) ₹ 11.0 Lakhs (Capital) & ₹ 4.0 Lakh (recurring) for deploying of water tanker for dust suppression- 5 kl capacity, b)₹ 1.05 Lakh (Capital) & ₹0.85 Lakh (recurring) pre-medical examination of 21 persons, ₹ 0.63 Lakh (Capital) & ₹ 0.65 Lakh (recurring) for providing personnel protection equipment to 21 persons), ₹ 0.50 Lakh for construction of septic tank followed by soak pit (3 kl capacity), and ₹ 0.12 Lakh for rainwater harvesting pit (storm trenches and pit within ML area), environmental monitoring ₹ 6.28 Lakh/annum (recurring) and ₹ 5.89 (capital) and ₹ 3.72 (recurring) for blast vibration monitoring as per DGMS norms & calibration of equipment. In addition to this budget for plantation & green belt development (@ 2500 sapling/ha) should be at least ₹ 30.81 Lakh (Capital) & Rs 96.96 Lakh (recurring) (₹ 73.956 Lakh for five years and ₹ 23.004 Lakh for remaining period). The location and frequency of monitoring shall be i) for PM_{10}, $PM_{2.5}$, NOx and CO (at 5 locations, once in a month, 60 samples/annum), ii) Ground water (at 3 locations, once in six months, 6 samples/annum), Noise Level (4 locations, once in a month, 48 samples/annum), and vibration study (1 location, 1 sample/year).

Amount proposed under EMP shall be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and detailed report along with proof of activities viz. photographs (before & after with geo-location date & time), purchase documents, sampling reports, photographs& Geo-location of the infrastructures/facilities developed etc. to the Regional Office of MoEF&CC before 1st July of every year for the activities carried out during previous year.

16) PP shall keep a record of each blasting viz. location, number of holes, delay assigned of each hole, explosive quantity of each hole, blasting pattern etc.

17) Capital cost earmarked for **occupation health** shall be ₹ 1.05 Lakh pre-medical examination of 21 persons, 0.63 Lakh providing personnel protection equipment to 21 persons), and recurring cost for occupation health shall be ₹ 0.85 Lakh premedical examination; 0.65 Lakh for wear and tear replacement of personnel protection equipment of 21 persons. The capital cost shall be spent before commencement of mining operation and recurring cost annually. The amount proposed under this head should be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and detailed report along with proof of activities viz. photographs (with geo-location date & time), purchase documents, test reports, photographs & Geo-location of the infrastructures/facilities developed etc. to the Regional Office of MoEF&CC before 1st July of every year for the activities carried out during previous year.

18) PP shall ensure that water required for the mining operations will be sourced from private water tankers suppliers drawing water from legal source during first year of mine operation and from 2nd year of mining operations, the water will be sourced from working pit and also from the proposed water spread area as depicted on Environmental Management Plan.

B: Standard Conditions: (As Ministry's O.M No 22-34/2018-IA.III dated 8.01.2019 &16.01.2020)

I. Statutory compliance

1) This Environmental Clearance (EC) is subject to orders/ judgment of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.

2) The Project Proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated 2nd August,2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India &Ors before commencing the mining operations.

3) The State Govetnment concerned shall ensure that mining operation shall not be commenced till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of Judgment of Hon'ble Supreme Court dated 2nd August,

2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India &Ors.

4) This Environmental Clearance shall become operational only after receiving formal NBWL Clearance from MoEF&CC subsequent to the recommendations of the Standing Committee of National Board for Wildlife, if applicable to the Project.

5) This Environmental Clearance shall become operational only after receiving formal Forest Clearance (FC) under the provision of Forest Conservation Act, 1980, if applicable to the Project.

6) Project Proponent (PP) shall obtain Consent to Operate after grant of EC and effectively implement all the conditions stipulated therein. The mining activity shall not commence prior to obtaining Consent to Establish / Consent to Operate from the concerned State Pollution Control Board/Committee.

7) The PP shall adhere to the provision of the Mines Act, 1952, Mines and Mineral (Development & Regulation), Act, 2015 and rules & regulations made there under. PP shall adhere to various circulars issued by Directorate General Mines Safety (DGMS) and Indian Bureau of Mines from time to time.

8) The Project Proponent shall obtain consents from all the concerned land owners, before start of mining operations, as per the provisions of MMDR Act, 1957 and rules made there under in respect of lands which are not owned by it.

9) The Project Proponent shall follow the mitigation measures provided in MoEFCC's Office Memorandum No. Z-11013/57/2014-IA. II (M), dated 29th October, 2014, titled "Impact of mining activities on Habitations-Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area".

10) The Project Proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and from CGWA for withdrawal of ground water for the project.

11) A copy of EC letter will be marked to concerned Panchayat / local NGO etc. if any, from whom suggestion / representation has been received while processing the proposal.

12) State Pollution Control Board/Committee shall be responsible for display of this EC letter at its Regional office, District Industries Centre and Collector's office/ Tehsildar's Office for 30 days.

13) The Project Authorities should widely advertise about the grant of this EC letter by printing the same in at least two local newspapers, one of which shall be in vernacular language of the concerned area. The advertisement shall be done within 7 days of the issue of the clearance letter mentioning that the instant project has been accorded EC and copy of the EC letter is available with the

State Pollution Control Board/Committee and web site of the Ministry of Environment, Forest and Climate Change (www.parivesh.nic.in). A copy of the advertisement may be forwarded to the concerned MoEFCC Regional Office for compliance and record.

14) The Project Proponent shall inform the MoEF&CC for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred than mining operation shall only be carried out after transfer of EC as per provisions of the para 11 of EIA Notification, 2006 as amended from time to time.

II. Air quality monitoring and preservation

15) The Project Proponent shall install a minimum of 3 (three) online Ambient Air Quality Monitoring Stations with 1 (one) in upwind and 2 (two) in downwind direction based on long term climatological data about wind direction such that an angle of 120° is made between the monitoring locations to monitor critical parameters, relevant for mining operations, of air pollution viz. PM10, PM2.5, NO2, CO and SO2 etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PCI/I, dated 18.11.2009 covering the aspects of transportation and use of heavy machinery in the impact zone. The ambient air quality shall also be monitored at prominent places like office building, canteen etc. as per the site condition to ascertain the exposure characteristics at specific places. The above data shall be digitally displayed within 03 months in front of the main Gate of the mine site.

16) Effective safeguard measures for prevention of dust generation and subsequent suppression (like regular water sprinkling, metalled road construction etc.) shall be carried out in areas prone to air pollution wherein high levels of PM10 and PM2.5 are evident such as haul road, loading and unloading point and transfer points. The Fugitive dust emissions from all sources shall be regularly controlled by installation of required equipments/ machineries and preventive maintenance. Use of suitable water-soluble chemical dust suppressing agents may be explored for better effectiveness of dust control system. It shall be ensured that air pollution level conform to the standards prescribed by the MoEFCC/ Central Pollution Control Board.

III. Water quality monitoring and preservation

17) In case, immediate mining scheme envisages intersection of ground water table, then Environmental Clearance shall become operational only after receiving formal clearance from CGWA. In case, mining operation involves intersection of ground water table at a later stage, then PP shall ensure that prior approval from CGWA and MoEFCC is in place before such mining operations. The permission for intersection of ground water table shall essentially be based on detailed hydro-geological study of the area.

18) Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintain. The natural water bodies and or streams which are flowing in an around the village, should not be disturbed. The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the Project Proponent has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug wall located in village should be incorporated to ascertain the impact of mining over ground water table. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department / State Pollution Control Board.

19) Project Proponent shall regularly monitor and maintain records w.r.t. ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezo-meter installations during the mining operation in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on six-monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department / State Pollution Control Board.

20) The Project Proponent shall undertake regular monitoring of natural water course/ water resources/ springs and perennial nallahs existing/ flowing in and around the mine lease and maintain its records. The project proponent shall undertake regular monitoring of water quality upstream and downstream of water bodies passing within and nearby/ adjacent to the mine lease and maintain its records. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. PP shall carryout regular monitoring w.r.t. pH and included the same in monitoring plan. The parameters to be monitored shall include their water quality vis-à-vis suitability for usage as per CPCB criteria and flow rate. It shall be ensured that no obstruction and/ or alteration be made to water bodies during mining operations without justification and prior approval of MoEFCC. The monitoring of water courses/ bodies existing in lease area shall be carried out four times in a year viz. pre- monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the record of monitored data may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board. Clearly showing the trend analysis on six-monthly basis.

21) Quality of polluted water generated from mining operations which include Chemical Oxygen Demand (COD) in mines run-off; acid mine drainage and metal contamination in runoff shall be monitored along with Total Suspended Solids (TDS), Dissolved Oxygen (DO), pH and Total Suspended Solids (TSS). The monitored data shall be uploaded on the website of the company as well as displayed at the project site in public domain, on a display board, at a suitable location near the main gate of the Company. The circular No. J- 20012/1/2006-

IA.II (M) dated 27.06.2009 issued by Ministry of Environment, Forest and Climate Change may also be referred in this regard.

22) Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment ground water resources in the area in consultation with Central Ground Water Board/ State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office MoEFCC annually.

23) Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through Consent to Operate (CTO) issued by concerned State Pollution Control Board (SPCB). The workshop effluent shall be treated after its initial passage through Oil and grease trap.

24) The water balance/water auditing shall be carried out and measure for reducing the consumption of water shall be taken up and reported to the Regional Office of the MoEF&CC and State Pollution Control Board/Committee.

IV. Noise and vibration monitoring and prevention

25) The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines.

26) The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day /night hours.

27) The Project Proponent shall take measures for control of noise levels below 85 dBA in the work environment. The workers engaged in operations of HEMM, etc. should be provided with ear plugs /muffs. All personnel including laborers working in dusty areas shall be provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects. The PP shall be held responsible in case it has been found that workers/ personals/ laborers are working without personal protective equipment.

V. Mining plan

28) The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, over burden, inter burden and top soil etc.. No change in basic mining proposal like mining

technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management , O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form to Short Term Permit (STP), Query license or any other name.

29) The Project Proponent shall get the Final Mine Closure Plan along with Financial Assurance approved from Indian Bureau of Mines/Department of Mining & Geology as required under the Provision of the MMDR Act, 1957 and Rules/ Guidelines made there under. A copy of approved final mine closure plan shall be submitted within 2 months of the approval of the same from the competent authority to the concerned Regional Office of the Ministry of Environment, Forest and Climate Change for record and verification.

30) The land-use of the mine lease area at various stages of mining scheme as well as at the end-of-life shall be governed as per the approved Mining Plan. The excavation vis-à-vis backfilling in the mine lease area and corresponding afforestation to be raised in the reclaimed area shall be governed as per approved mining plan. PP shall ensure the monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining. The compliance status shall be submitted half-yearly to the MoEFCC and its concerned Regional Office.

VI. Land reclamation

31) The Overburden (O.B.) generated during the mining operations shall be stacked at earmarked OB dump site(s) only and it should not be kept active for a long period of time. The physical parameters of the OB dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by D.G.M.S w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of top soil/OB dumps. The topsoil shall be used for land reclamation and plantation.

32) The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.

33) The reclamation of waste dump sites shall be done in scientific manner as per the Approved Mining Plan cum Progressive Mine Closure Plan.

34) The slope of dumps shall be vegetated in scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface run off. The selection of local species regulates local climatic parameters and help in

adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps. The dump mass should be consolidated with the help of dozer/ compactors thereby ensuring proper filling/ leveling of dump mass. In critical areas, use of geo textiles/ geo-membranes / clay liners / Bentonite etc. shall be undertaken for stabilization of the dump.

35) The Project Proponent shall carry out slope stability study in case the dump height is more than 30 meters. The slope stability report shall be submitted to concerned regional office of MoEF&CC.

36) Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and Top Soil/OB/Waste dumps to prevent run off of water and flow of sediments directly into the water bodies (Nallah/ River/ Pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains/ sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained properly.

37) Check dams of appropriate size, gradient and length shall be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies. A safety margin of 50% shall be kept for designing of sump structures over and above peak rainfall (based on 50 years data) and maximum discharge in the mine and its adjoining area which shall also help in providing adequate retention time period thereby allowing proper settling of sediments/ silt material. The sedimentation pits/ sumps shall be constructed at the corners of the garland drains.

38) The top soil, if any, shall temporarily be stored at earmarked site(s) within the mine lease only and should not be kept unutilized for long. The physical parameters of the top soil dumps like height, width and angle of slope shall be governed as per the approved Mining Plan and as per the guidelines framed by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of dumps. The topsoil shall be used for land reclamation and plantation purpose.

VII. Transportation

39) No Transportation of the minerals shall be allowed in case of roads passing through villages/ habitations. In such cases, PP shall construct a 'bypass' road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load.

The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers.

40) The Main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other areas of dust generation like crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipments like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.

VIII. Green Belt

41) The Project Proponent shall develop greenbelt in 7.5m wide safety zone all along the mine lease boundary as per the guidelines of CPCB in order to arrest pollution emanating from mining operations within the lease. The whole Green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of greenbelt shall be governed as per the EC granted by the Ministry irrespective of the stipulation made in approved mine plan.

42) The Project Proponent shall carryout plantation/ afforestation in backfilled and reclaimed area of mining lease, around water body, along the roadsides, in community areas etc. by planting the native species in consultation with the State Forest Department/ Agriculture Department/ Rural development department/ Tribal Welfare Department/ Gram Panchayat such that only those species be selected which are of use to the local people. The CPCB guidelines in this respect shall also be adhered. The density of the trees should be around 2500 saplings per Hectare. Adequate budgetary provision shall be made for protection and care of trees.

43) The Project Proponent shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease. The development of such grazing land shall be done in consultation with the State Government. In this regard, Project Proponent should essentially implement the directions of the Hon'ble Supreme Court with regard to acquisition of grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded/ protected against felling and plantation of such trees should be promoted.

44) The Project Proponent shall undertake all precautionary measures for conservation and protection of endangered flora and fauna and Schedule-I species during mining operation. A Wildlife Conservation Plan shall be prepared for the same clearly delineating action to be taken for conservation of flora and fauna. The Plan shall be approved by Chief Wild Life Warden of the State Govt.

45) And implemented in consultation with the State Forest and Wildlife Department. A copy of Wildlife Conservation Plan and its implementation status (annual) shall be submitted to the Regional Office of the Ministry.

IX. Public hearing and human health issues

46) The Project Proponent shall appoint an Occupational Health Specialist for Regular as well as Periodical medical examination of the workers engaged in the mining activities, as per the DGMS guidelines. The records shall be maintained properly. PP shall also carryout Occupational health check-ups in respect of workers which are having ailments like BP, diabetes, habitual smoking, etc. The check-ups shall be undertaken once in six months and necessary remedial/ preventive measures be taken. A status report on the same may be sent to MoEFCC Regional Office and DGMS on half-yearly basis.

47) The Project Proponent must demonstrate commitment to work towards 'Zero Harm' from their mining activities and carry out Health Risk Assessment (HRA) for identification workplace hazards and assess their potential risks to health and determine appropriate control measures to protect the health and wellbeing of workers and nearby community. The proponent shall maintain accurate and systematic records of the HRA. The HRA for neighborhood has to focus on Public Health Problems like Malaria, Tuberculosis, HIV, Anaemia, Diarrhoea in children under five, respiratory infections due to bio mass cooking. The proponent shall also create awareness and educate the nearby community and workers for Sanitation, Personal Hygiene, Hand washing, not to defecate in open, Women Health and Hygiene (Providing Sanitary Napkins), hazard of tobacco and alcohol use. The Proponent shall carryout base line HRA for all the category of workers and thereafter every five years.

48) The Proponent shall carry out Occupational health surveillance which be a part of HRA and include Biological Monitoring where practical and feasible; and the tests and investigations relevant to the exposure (e.g. for Dust a X-Ray chest; For Noise Audiometric; for Lead Exposure Blood Lead, For Welders Full Ophthalmologic Assessment; for Manganese Miners a complete Neurological Assessment by a Certified Neurologist, and Manganese (Mn) Estimation in Blood; For Inorganic Chromium- Fortnightly skin Inspection of hands and forearms by a responsible person. Except routine tests all tests would be carried out in a Lab accredited by NABH. Records of Health Surveillance must be kept for 30 years, including the results of and the records of Physical examination and tests. The record of exposure due to materials like Asbestos, Hard Rock Mining, Silica, Gold, Kaolin, Aluminium, Iron, Manganese, Chromium, Lead, Uranium need to be handed over to the Mining Department of the State in case the life of

the mine is less than 30 years. It would be obligatory for the State Mines Departments to make arrangements for the safe and secure storage of the records including X-Ray. Only conventional X-Ray will be accepted for record purposes and not the digital one). X-Ray must meet ILO criteria (17 x14 inches and of good quality).

49) The Proponent shall maintained a record of performance indicators for workers which includes (a) there should not be a significant decline in their Body Mass Index and it should stay between 18.5 -24.9, (b) the Final Chest X-Ray compared with the base line X-Ray should not show any capacities ,(c) At the end of their leaving job there should be no Diminution in their Lung Functions Forced Expiratory Volume in one second (FEV1),Forced Vital Capacity (FVC), and the ratio) unless they are smokers which has to be adjusted, and the effect of age, (d) their hearing should not be affected. As a proof an Audiogram (first and last need to be presented), (e) they should not have developed any Persistent Back Pain, Neck Pain, and the movement of their Hip, Knee and other joints should have normal range of movement, (f) they should not have suffered loss of any body part. The record of the same should be submitted to the Regional Office, MoEFCC annually along with details of the relief and compensation paid to workers having above indications.

50) The Project Proponent shall ensure that Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.

51) Project Proponent shall make provision for the housing for workers/labors or shall construct labor camps within/outside (company owned land) with necessary basic infrastructure/ facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche for kids etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the project related infrastructure. The domestic waste water should be treated with STP in order to avoid contamination of underground water.

52) The activities proposed in Action plan prepared for addressing the issues raised during the Public Hearing shall be completed as per the budgetary provisions mentioned in the Action Plan and within the stipulated time frame. The Status Report on implementation of Action Plan shall be submitted to the concerned Regional Office of the Ministry along with District Administration.

X. Corporate Environment Responsibility (CER)

53) The activities and budget earmarked for Corporate Environmental Responsibility (CER) as per Ministry's O.M No 22-65/2017-IA. II (M) dated 01.05.2018 or as proposed by EAC should be kept in a separate bank account. The activities proposed for CER shall be implemented in a time bound manner and annual report of implementation of the same along with documentary proof viz. photographs, purchase documents, latitude & longitude of infrastructure

developed & road constructed needs to be submitted to Regional Office MoEF&CC annually along with audited statement.

54) Project Proponent shall keep the funds earmarked for environmental protection measures in a separate account and refrain from diverting the same for other purposes. The Year wise expenditure of such funds should be reported to the MoEFCC and its concerned Regional Office.

XI. Miscellaneous

55) The Project Proponent shall prepare digital map (land use & land cover) of the entire lease area once in five years purpose of monitoring land use pattern and submit a report to concerned Regional Office of the MoEFCC.

56) The Project Authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.

57) The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MOEFCC &its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board.

58) A separate 'Environmental Management Cell' with suitable qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall directly report to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEFCC.

59) The concerned Regional Office of the MoEFCC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEFCC officer(s) by furnishing the requisite data / information / monitoring reports.

60) In pursuant to Ministry's O.M No 22-34/2018-IA.III dated 16.01.2020 to comply with the direction made by Hon'ble Supreme Court on 8.01.2020 in W.P. (Civil) No 114/2014 in the matter Common Cause vs Union of India, the mining lease holder shall after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to other mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc.

18. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection.

19. Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may

result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.

20. The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/ High Court and any other Court of Law relating to the subject matter.

21. Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

Yours faithfully,

(Sharath Kumar Palleria)
Director/Scientist 'F'

Copy to:

1) The Secretary, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi.

2) The Secretary, Department of Environment, Government of Odisha, Secretariat, Bhubaneswar.

3) The Secretary, Department of Mines and Geology, Government of Odisha, Secretariat, Bhubaneswar.

4) The Secretary, Department of Forests, Government of Odisha, Secretariat, Bhubaneswar.

5) The Chairman, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.

6) The Additional Principal Chief Conservator of Forests (C), Ministry of Environment, Forest and Climate Change, Regional Office (EZ), A/3, Chandersekharpur, Bhubaneswar – 751023.

7) The Chairman, Odisha State Pollution Control Board, Parivesh Bhawan, A/118 Nilakantha Nagar, Unit-VIII, Bhubaneshwar-751012.

8) The Controller General, Indian Bureau of Mines, Indira Bhavan, Civil Lines, Nagpur-440 001.

9) The Member Secretary, Central Ground Water Authority, 18/11, Jam Nagar House, Man Singh Road, New Delhi-110011.

10) The District Collector, Keonjhar District, State of Odisha.

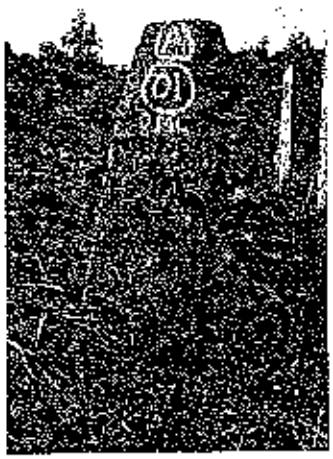
11) Guard File.

12) MoEFCC website (Parivesh Portal)

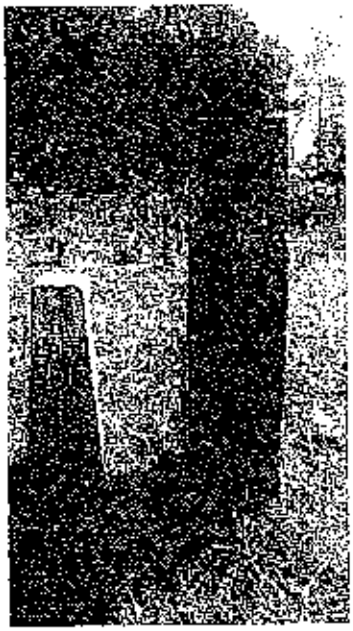
(Sharath Kumar Pallerla)
Director/Scientist 'F'

ANNEXURE - XVIII

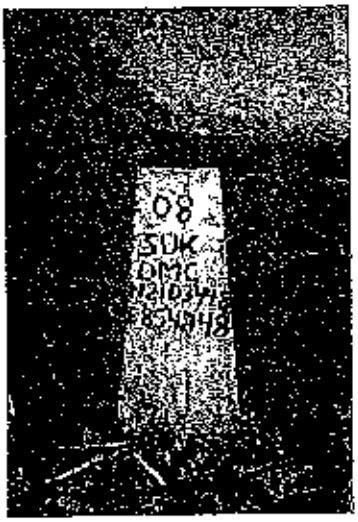
PHOTOGRAPHS SHOWING ML BOUNDARY & SAFETY ZONE PILLARS AT SUKURANGI CHROMITE MINES OF OMC LTD.

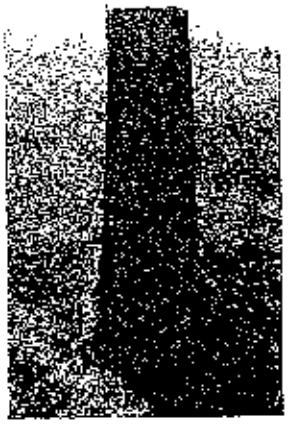












ANNEXURE - XIX

COLLECTORATE : JAJPUR
Ph. 06728-222001 (O), 222330 (R), FAX – 222087
E-mail: dm-lajpur@nic.in, web site: www.jajpur.nic.in
(ST & SC DEV. SECTION)

No. 4371 /Date. 19.12.14

To

The Divisional Forest Officer,
Cuttack Forest Division, Ghatakul,
Nuapara, Cuttack.

Sub:- Issuance of certificate under Forest Rights Act, 2006 in favour of Sukurangi Chromite Mines of OMC Ltd.

Ref:- Your Office Letter No. 6984 Dt. 13.08.2013 & Letter No. 8369 Dt. 22.06.2013 of Chairman-cum-Managing Director, OMC Ltd.

Sir,

With reference to the letters on the subject cited above, I am directed to enclose herewith the model certificate [179.38 hactares] in Form-II for the other than liner project under Forest Rights Act, 2006 alongwith enclosures in favour of Sukurangi Chromite Mines of M/s. OMC Ltd. for taking further action at your end.

Yours faithfully,

19/12/2014

District Welfare Officer,
Jajpur

Encl:- As above.

Memo No. 4380 / Date. 19.12.14

Copy submitted to the Managing Director, Odisha Mining Corporation Limited, Bhubhaneswar, Post Box No. 34, 751001 for information and necessary action.

19/12/2014

District Welfare Officer,
Jajpur

FORM-II

(for projects other than linear projects)

Government of Odisha

Office of the District Collector, Jajpur

No. 4376 Date. 18.12.14

TO WHOMEVER IT MAY CONCERN

In compliance of the Ministry of Environment and Forests (MoEF), Government of India's letter No.11-9/98-FC (pt.) dated 3rd August 2009 wherein the MoEF issued guidelines on submission of evidence for having initiated and completed the process of settlement of rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition Forest Rights) Act, 2006 ('FRA' for short) on the forest land proposed to be diverted for non-forest purposes, it is certified that 179.38 hectares of forest land proposed to be diverted in favour of Sukurangi Chromite Mines of M/s OMC Ltd. for chrome ore mining and ancillary activities in Jajpur district falls within jurisdiction of Ostapal, Saruabil, Sukurangi, Tailangi, Kamarada & Forest Block- 27 (Mahagiri DPF) villages in Sukinda tahsil.

It is further certified that:

(a) the complete process for identification and settlement of rights under the FRA has been carried out for the entire 179.38 hectares of forest land proposed for diversion. A copy of records of all consultation and meetings of Forest Rights Committee, Gram Sabha (s), Sub-Division Level Committee and the District Level Committee are enclosed as Annexure- A.

(b) the proposal for such diversion (with full details of the project and its implementations, in vernacular/local language) have been placed before each concerned Gram Sabha of forest-dwellers, who are eligible under FRA;

(c) the each of concerned Gram Sabhas, has certified that all formalities/processes under the FRA have been carried out, and that they have given their consent to the proposed diversion and the

compensation and ameliorative measures, if any, having understood the purpose and details of proposed diversion. A copy of the certificate issued by the Gram Sabha of Ostapal, Saruabil, Sukurangi, Tailangi, Kamarada & Forest Block- 27 (Mahagiri DPF) village is enclosed (as mentioned above).

(d) the discussion and decisions on such proposals had taken place only when there was a quorum of minimum 50% of the members of the Gram Sabha present;

(j) the diversion of forest land for facilities managed by the Government, as required under section 3 (2) of the FRA have been completed and the Gram Sabhas have given their consent to it;

(f) the rights of Primitive Tribal Groups and Pre-Agricultural Communities, where applicable have been specifically safeguarded as per Section 3 (1) (e) of the FRA.

(Anil Kumar Samal, IAS)
Collector & District Magistrate,
Jajpur

Encl: As above

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Saruabil

Place: Courtyard of Shiba temple, Saruabil

Date: 29.10.2014 Time: 10 AM

A meeting of Gram Sabha/Palli Sabha under Forest Rights Act 2006 was held today on 29.10.2014 at 10 AM as scheduled earlier. Ward Member and Members of Forest Rights Committee of Saruabil Village; Executive Officer of Kansa Gram Panchayat; Officers of Revenue Department & Forest Department; Welfare Extension Officer of Sukinda Block and the undersigned adult villagers of Saruabil attended the meeting. Smt. Ahalya Dehury, Sarapanch, Kansa Gram Panchayat presided the meeting. The President welcomed all participants and requested the Welfare Extension Officer to conduct the meeting. The following discussions were made in the meeting: -

1. Letter No. 2262 Dated 18.09.2014 of the Block Development Officer, Sukinda, was read in the meeting. The Welfare Extension Officer informed in the meeting about the proposal for use of 95.56 hectare forestland of Saruabil Revenue village for non-forest purpose in Sukurangi Chromite mines of Odisha Mining Corporation Ltd. The villagers were appraised about the objectives of the present meeting and legal provisions of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

The proposal of use of 95.56 hectare forestland for non-forest purpose was discussed elaborately in the light of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 and rules framed thereunder. Enquiry report of Revenue Inspector Kankadapal was read in the meeting which revealed that no Scheduled Tribe or Traditional Forest Dwellers are utilizing any land for agriculture or any other purpose for their livelihood within the said forest area of 95.56 hectares. No right has been given to anyone under Forest Rights Act within the proposed forest area. There was no claim for individual or community rights under Forest Rights Act by anybody.

Opinion of the villagers was sought regarding use of 95.56 hectares of forestland in Saruabil village for nonforest purpose. Very few people objected the proposal but majority of villagers demanded developmental work under C.S.R and supported the proposal for use of the said forestland for non-forest purpose.

Hence the proposal of use of 95.56 hectare forestland for nonforest purpose in Sukurangi Chromite Mines of Odisha Mining Corporation Ltd was accepted in the meeting.

The meeting was ended with vote of thanks by the President to the villagers and Government Officers attending the meeting.

Sd/- R.I, Kankadapal	Sd/- Executive Officer Kansa G.P	Sd/- Sarapanch Kansa Grama Panchayat	Sd/- Forester Kansa Section
Sd/- Forest Section Officer Ransol Section	Sd/- Welfare Extension Officer Sukinda Block	Sd/ Sr. Manager, Mining Sukrangi Chromite Mines	

Ahalya Dehury
Sarapanch
Kansa G.P.

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Kamarda Gram Panchayat: Kansa

Place: Courtyard of Club house, Kamarda

Date: 29.10.2014 Time: 2 PM

A meeting of Gram Sabha/Palli Sabha under Forest Rights Act 2006 was held today on 29.10.2014 at 2 PM as scheduled earlier presided by Smt. Ahalya Dehury, Sarapanch, Kansa Gram Panchayat. Ward Member and Members of Forest Rights Committee of Kamarda Village; Officers of Forest Department; Revenue Inspector, Kankadapal; Welfare Extension Officer of Sukinda Block; Executive Officer of Kansa Gram Panchayat attended the meeting. The President welcomed all participants and requested the Welfare Extension Officer to conduct the meeting. The following discussions were made in the meeting: -

1. Letter No. 2262 Dated 18.09.2014 of the Block Development Officer, Sukinda, was read in the meeting by the Welfare Extension Officer. He informed in the meeting about the proposal for use of 23.57 hectare forestland of Kamarda Revenue village for non-forest purpose in Sukurangi Chromite mines of Odisha Mining Corporation Ltd. The villagers were appraised about the objectives of the present meeting and legal provisions of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

Opinion of the villagers present in the meeting was sought. Few people present in the meeting raised demand for some work in Talangi village under CSR. Senior Manager, Sukurangi Chromote Mines, replied that the demands are genuine and attempt will be made to fulfil the demands soon. The proposal of use of 23.57 hectare forestland for non-forest purpose was discussed elaborately in the light of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 and rules framed thereunder. Enquiry report of Revenue Inspector Kankadapal was read in the meeting which revealed that no Scheduled Tribe or Traditional Forest Dwellers are utilizing any land for agriculture or any other purpose for their livelihood within the said forest area. No right has been given to anyone under Forest Rights Act within the proposed forest area. There was no claim for individual or community rights under Forest Rights Act by anybody. The villagers supported the proposal for use of 23.57 ha. forestland for nonforest purpose

Hence the proposal of use of 23.57 hectare forestland for nonforest purpose in Sukurangi Chromite Mines of Odisha Mining Corporation Ltd was accepted in the meeting.

The meeting was ended with vote of thanks by the President to the villagers and Government Officers attending the meeting.

Sd/- R.I, Kankadapal	Sd/- Executive Officer Kansa G.P	Sd/- Sarapanch Kansa Grama Panchayat	Sd/- Forester Kansa Section
Sd/- Forest Section Officer Ransol Section	Sd/- Welfare Extension Officer Sukinda Block	Sd/ Sr. Manager, Mining Sukrangi Chromite Mines	

Ahalya Dehury
Sarapanch
Kansa G.P

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Talangi Gram Panchayat: Kansa

Place: Open ground near Talangi School

Date: 28.10.2014 Time: 3 PM

A meeting of Gram Sabha/Palli Sabha under Forest Rights Act 2006 was held today on 28.10.2014 at 3 PM as scheduled earlier presided by Smt. Ahalya Dehury, Sarapanch, Kansa Gram Panchayat. Welfare Extension Officer of Sukinda Block; Revenue Inspector, Kankadapal; Officers of Forest Department; and villagers attended the meeting. The following discussions were made in the meeting: -

1. Letter No. 2262 Dated 18.09.2014 of the Block Development Officer, Sukinda, was read in the meeting by the Executive Officer. He informed in the meeting about the proposal for use of 2.19 hectare forestland of Kamarda Revenue village for non-forest purpose in Sukurangi Chromite mines of Odisha Mining Corporation Ltd. The villagers were appraised about the objectives of the present meeting and legal provisions of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

The matter regarding use of 2.19 ha forestland for nonforest purpose so far as the provisions of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 is concerned was discussed in detail in the meeting. Enquiry report of Tahasildar Sukinda revealed that no Scheduled Tribe or Traditional Forest Dwellers are utilizing any land for agriculture or any other purpose for their livelihood within the said forest area. No right has been given to anyone under Forest Rights Act within the forest area.

Hence the proposal to use 2.19 ha forestland for nonforest use in Sukurangi Chromite mines of Odisha Mining Corporation Ltd. was approved unanimously in the meeting.

The meeting was ended with vote of thanks by the President to the villagers and Government Officers attending the meeting.

Sd/- Forester Kansa Section	Sd/- R.I, Kankadapal	Sd/- Executive Officer Kansa G.P
Sd/- Sarapanch Kansa Grama Panchayat	Sd/ Sr. Manager, Mining Sukrangi Chromite Mines	Sd/- Welfare Extension Officer Sukinda Block

Ahalya Dehury

Sarapanch
Kansa G.P.

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Sukurangi

Place: Mango grove of Sukurangi

Date: 06.09.2013 Time: 3 PM

A meeting of Gram Sabha/Palli Sabha under Forest Rights Act 2006 was held today on 06.09.2013 at 3 PM as scheduled earlier as per letter no. 1307 Dt. 17.07.2013 of Collector, Jajpur and letter no. 2906 Dt. 1.8.2013 of Block Development Officer, Sukinda, to discuss the Diversion Proposal of Sukurangi mines. Sarapanch Kaliapani G.P, President Forest Rights Committee, Secretary Forest Rights Committee, Members of Forest Rights Committee, other villagers, Welfare Extension Officer, Forester Rausol, Revenue Inspector Sukinda, Revenue Inspector Gobardhanpur, Revenue Inspector Kankadapal, Executive Officer Kaliapani G.P, Sr. Manager South Kaliapani mines, Sr. Manager Sukurangi Mines attended the meeting.

In the meeting the Diversion Proposals for Kaliapani Mines and Sukurangi Mines of Odisha Mining Corporation were discussed in detail so far as the legal provisions of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 were concerned.

1. Discussion in Gram Sabha for South Kaliapani Mines:

The proposal for use of 291.71 acre forest land for nonforest purpose for South Kaliapani Mines of Odisha Mining Corporation Ltd alongwith map of the proposed diversion area was placed before the Gram Sabha.

The Inspection Report of Revenue Inspector Kankadapal about the proposed land under provision of Forest Rights Act was placed before the Gram Sabha. Forest area of 291.71 acre proposed to be diverted for nonforest purpose for South Kaliapani Mines of Odisha Mining Corporation is within Sukurangi Revenue village.

As per report of the Revenue Inspector Kankadapal, there is no habitation in the proposed diversion area.

2. Discussion in Gram Sabha for Sukurangi Mines:

The proposal for use of 6.43 acre Revenue forest land and 36.1 acre in Forest Block-27 (Total 42.53 acres) for nonforest purpose for Sukurangi Mines of Odisha Mining Corporation Ltd alongwith map of the proposed diversion area was placed before the Gram Sabha.

The Inspection Report of Revenue Inspector Kankadapal about the proposed land under provision of Forest Rights Act was placed before the Gram Sabha. Forest area of 6.43 acre proposed to be diverted for nonforest purpose for Sukurangi Mines is within Sukurangi Revenue village and balance 36.1 acre is within Forest Block-27.

As per report of the Revenue Inspector Kankadapal, there is no habitation in the proposed diversion area.

All aspects of diversion of forestland for nonforest purpose in South Kaliapani Mines and Sukurangi Mines were discussed in detail and explained to villagers present in the Gram Sabha. The villagers were of the opinion that they have no objection for diversion of 6.43 acre in Sukurangi village and 36.1 acre in Forest Block-27 for Sukurangi Mines and 291.71 acres forestland from Sukurangi village for South Kaliapani Mines for nonforest use. All villagers present in the meeting supported the proposal and unanimously expressed their desire of expediting mining work in Sukurangi Mines and South Kaliapani Mines.

The meeting was ended with vote of thanks by the President to the villagers, Government officers and Officers of Odisha Mining Corporation Ltd attending the meeting.

Sd/- President Forest Rights Committee	Sd/- Secretary Forest Rights Committee	Sarapanch Kaliapani G.P	Sd/- Revenue Inspector Kankadapal
Sd/- Revenue Inspector Gobardhanpur	Sd/- Revenue Supervisor Sukinda Tahasil	Sd/- Executive Officer Kaliapani G.P	Sd/- Forest Section Officer Ransol Section
Sd/- Manager (Mining) South Kaliapani Chromite Mines	Sd/- Senior Manager Sukurangi Mines	Sd/- Welfare Extension Officer Sukinda Block	

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Ostapal Gram Panchayat: Kansa

Place: Courtyard of Ostapal Primary School

Date: 28.10.2014 Time: 10 AM

A meeting of Gram Sabha/Palli Sabha under Forest Rights Act 2006 was held today on 28.10.2014 at 10 AM as scheduled earlier presided by Smt. Ahalya Dehury, Sarapanch, Kansa Gram Panchayat. All Ward Members and Members of Forest Rights Committee of Ostapal Village; Executive Officer of Kansa Gram Panchayat; Officers of Forest and Revenue Department; Welfare Extension Officer of Sukinda Block; and villagers of Ostapal attended the meeting. The President welcomed all participants and requested the Welfare Extension Officer to conduct the meeting. The following discussions were made in the meeting: -

1. Letter No. 2262 Dated 18.09.2014 of the Block Development Officer, Sukinda, was read in the meeting by the Welfare Extension Officer. He informed in the meeting about the proposal for use of 40.85 hectare forestland of Ostapal Revenue village for non-forest purpose in Sukurangi Chromite mines of Odisha Mining Corporation Ltd. The villagers were appraised about the objectives of the present meeting and legal provisions of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006.

The matter of use of 40.85 hectares forestland for nonforest purpose was discussed in detail in the meeting in view of legal provisions of Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. Enquiry report of Revenue Inspector Kankadapal was read in the meeting which revealed that no Scheduled Tribe or Traditional Forest Dwellers are utilizing any land for agriculture or any other purpose for their livelihood within the said forest area. No right has been given to anyone under Forest Rights Act within the proposed forest area. There was no claim for individual or community rights under Forest Rights Act by anybody.

Opinion of the villagers present in the meeting regarding use of 40.85 ha forestland for nonforest purpose was sought. 3 persons opposed the proposal but majority villagers supported the proposal. The villagers raised demand for works in the village by O.M.C Ltd. under C.S.R and warned about agitation against O.M.C Ltd if the demands are not fulfilled in near future.

Hence the proposal for use of 40.85 hectare forestland for nonforest purpose in Sukurangi Chromite Mines of Odisha Mining Corporation Ltd was accepted in the meeting.

The meeting was ended with vote of thanks by the President to the villagers and Government Officers attending the meeting.

Sd/- R.I, Kankadapal	Sd/- Executive Officer Kansa G.P	Sd/- Sarapanch Kansa Grama Panchayat	Sd/- Forester Kansa Section
Sd/- Forest Section Officer Kansol Section	Sd/- Welfare Extension Officer Sukinda Block	Sd/ Sr. Manager, Mining Sukrangi Chromite Mines	

Ahalya Dehury
Sarapanch
Kansa G.P

ଦାଖଲା ଦେବାକୁ ଆଦେଶ ହେଉ ।

ଆଜ୍ଞାବହ ଦରଖାସ୍ତକାରୀ ଟିକେତକ ଦିବ୍ୟଚରଣ ।

ସାକ୍ଷୀଙ୍କ ନାମ :- ସେବାୟତ ଦାସ

ସ୍ଥାନ :- ଶ୍ରୀଜଗନ୍ନାଥ ମନ୍ଦିର ପ୍ରାଙ୍ଗଣ

ତାରିଖ :- ୨୫.୧୦.୨୪ ସମୟ :- ପୂର୍ବାହ୍ନ ୧୦.୫୦ଟା

ଏମିତି ଯା ଏକ ୫୦-୬୦ଟି ଦୋକାନ ଥିବ ପୂର୍ବରୁ ଏଠି ଏକ ବଡ଼ ଜଙ୍ଗଲ ଥିଲା ଯେଉଁଠି ଆଜି ଏହି ମନ୍ଦିର ଅଛି ସେଇଠି ଏକ ବଡ଼ ଗଛ ଥିଲା ଯାହାର ତଳେ ଜଣେ ସାଧୁ ବାବା ଧ୍ୟାନ କରୁଥିଲେ । ଏହି ଗଛରେ ଅନେକ ଚଢ଼େଇ ବସା କରି ରହୁଥିଲେ । ଏହି ଚଢ଼େଇମାନଙ୍କ ମଧ୍ୟରୁ ଗୋଟେ ଚଢ଼େଇ ଥିଲା ଯାହାର ଗୋଡ଼ ଭଙ୍ଗା ଥିଲା । ସେ ଚଢ଼େଇ ଟି ଉଡ଼ି ପାରୁ ନଥିଲା । ଏହି ଚଢ଼େଇ ଟି ଗଛ ତଳେ ଥିବା ସାଧୁ ବାବାଙ୍କ ଖାଇବା ଖାଇ ଦେଉଥିଲା । ଏହି ଚଢ଼େଇ ଟି ଏତେ ଛୋଟ ଥିଲା ଯେ ଏହାର ଗୋଡ଼ ଭଙ୍ଗା ଥିବା ଜଣା ପଡୁ ନଥିଲା । ଏହି ଚଢ଼େଇ ଟି ଯେତେବେଳେ ଉଡ଼ିବାକୁ ଚେଷ୍ଟା କରୁଥିଲା ସେତେବେଳେ ଏହାର ଗୋଡ଼ ଭଙ୍ଗା ଥିବା ଜଣା ପଡୁଥିଲା । ଏହି ଚଢ଼େଇ ଟି ଉଡ଼ି ପାରୁ ନଥିବାରୁ ସାଧୁ ବାବା ଏହାକୁ ଖାଇବା ଦେଉଥିଲେ । ଏହି ଚଢ଼େଇ ଟି ଏତେ ଛୋଟ ଥିଲା ଯେ ଏହାର ଗୋଡ଼ ଭଙ୍ଗା ଥିବା ଜଣା ପଡୁ ନଥିଲା । ଏହି ଚଢ଼େଇ ଟି ଯେତେବେଳେ ଉଡ଼ିବାକୁ ଚେଷ୍ଟା କରୁଥିଲା ସେତେବେଳେ ଏହାର ଗୋଡ଼ ଭଙ୍ଗା ଥିବା ଜଣା ପଡୁଥିଲା । ଏହି ଚଢ଼େଇ ଟି ଉଡ଼ି ପାରୁ ନଥିବାରୁ ସାଧୁ ବାବା ଏହାକୁ ଖାଇବା ଦେଉଥିଲେ ।

ଏହି ଚଢ଼େଇ ଟି ଏତେ ଛୋଟ ଥିଲା ଯେ ଏହାର ଗୋଡ଼ ଭଙ୍ଗା ଥିବା ଜଣା ପଡୁ ନଥିଲା । ଏହି ଚଢ଼େଇ ଟି ଯେତେବେଳେ ଉଡ଼ିବାକୁ ଚେଷ୍ଟା କରୁଥିଲା ସେତେବେଳେ ଏହାର ଗୋଡ଼ ଭଙ୍ଗା ଥିବା ଜଣା ପଡୁଥିଲା । ଏହି ଚଢ଼େଇ ଟି ଉଡ଼ି ପାରୁ ନଥିବାରୁ ସାଧୁ ବାବା ଏହାକୁ ଖାଇବା ଦେଉଥିଲେ ।

ଏହି ଅଞ୍ଚଳରେ ଏହା ଏକ ଅତି ପ୍ରସିଦ୍ଧ ଉତ୍ସବ ଅଟେ। ଏହି ଉତ୍ସବ ଉପଲକ୍ଷେ ଏଠାରେ ଏକ ବିରାଟ ମେଳା ବସିଥାଏ। ଏହି ମେଳାରେ ଦୂର ଦୂରାନ୍ତରୁ ଅନେକ ଲୋକ ଆସିଥାନ୍ତି। ଏହି ମେଳାରେ ଅନେକ ଦୋକାନ ବସିଥାଏ। ଏଠାରେ ଲୋକମାନେ ଆବଶ୍ୟକ ଜିନିଷପତ୍ର କିଣିଥାନ୍ତି। ଏହି ମେଳାରେ ଅନେକ ଲୋକ ଆସିଥାନ୍ତି। ଏହି ମେଳାରେ ଅନେକ ଲୋକ ଆସିଥାନ୍ତି। ଏହି ମେଳାରେ ଅନେକ ଲୋକ ଆସିଥାନ୍ତି।

ଏହି ଉତ୍ସବରେ ପ୍ରଥମ ଦିନରେ ଗାଁ ଲୋକମାନେ ଏକତ୍ରିତ ହୋଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି।

ଏହି ଉତ୍ସବରେ ଦ୍ୱିତୀୟ ଦିନରେ ଗାଁ ଲୋକମାନେ ଏକତ୍ରିତ ହୋଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି।

ଏହି ଉତ୍ସବରେ ତୃତୀୟ ଦିନରେ ଗାଁ ଲୋକମାନେ ଏକତ୍ରିତ ହୋଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି। ଏହି ଦିନ ସେମାନେ ଏକତ୍ର ଭୋଜି ଖାଇଥାନ୍ତି।

ସାଙ୍କେତିକ ଚାରିପଟ୍ଟ ଜିଲ୍ଲାପାଇଁ ଅନୁଷ୍ଠାନ ପ୍ରସ୍ତାବିତ ହୋଇଛି
ଏହି ଅଞ୍ଚଳରେ ଜଙ୍ଗଲ ଉପରେ ନିର୍ଭରଶୀଳ ଅନେକ ଲୋକ ରହୁଛନ୍ତି ଯାହା-
ଙ୍କର ଜୀବିକା ପାଇଁ ଜଙ୍ଗଲ ଉପରେ ନିର୍ଭରଶୀଳତା ହ୍ରାସ କରିବା ଦିଗରେ
ବିକଳ୍ପ ସୁଯୋଗ ସୃଷ୍ଟି କରିବା ଆବଶ୍ୟକ । ଏହା ସହିତ ଜଙ୍ଗଲ ଉପରେ
ନିର୍ଭରଶୀଳ ଲୋକଙ୍କ ଦକ୍ଷତା ବୃଦ୍ଧି ପାଇଁ ଉପଯୁକ୍ତ ତାଲିମ ବ୍ୟବସ୍ଥା
ଆବଶ୍ୟକ ହୋଇଛି । ଏହି ଅଞ୍ଚଳରେ ଅନେକ ଲୋକ ଜଙ୍ଗଲ ଉପରେ
ନିର୍ଭରଶୀଳ ହୋଇଥିବାରୁ ଏମାନଙ୍କୁ ଜଙ୍ଗଲ ସୁରକ୍ଷା ଓ ପରିଚାଳନା
କାର୍ଯ୍ୟରେ ସାମିଲ କରାଯିବା ଆବଶ୍ୟକ ହୋଇଛି । ଏଥିପାଇଁ ଏମାନଙ୍କୁ
ଉପଯୁକ୍ତ ତାଲିମ ଦିଆଯିବା ଆବଶ୍ୟକ ହୋଇଛି । ଏହି ଅଞ୍ଚଳରେ ଜଙ୍ଗଲ
ଉପରେ ନିର୍ଭରଶୀଳ ଲୋକଙ୍କ ଜୀବିକା ପାଇଁ ବିକଳ୍ପ ସୁଯୋଗ ସୃଷ୍ଟି କରିବା
ଆବଶ୍ୟକ ହୋଇଛି । ଏଥିପାଇଁ ଏମାନଙ୍କୁ ଉପଯୁକ୍ତ ତାଲିମ ଦିଆଯିବା
ଆବଶ୍ୟକ ହୋଇଛି । ଏହି ଅଞ୍ଚଳରେ ଜଙ୍ଗଲ ଉପରେ ନିର୍ଭରଶୀଳ ଲୋକଙ୍କ
ଜୀବିକା ପାଇଁ ବିକଳ୍ପ ସୁଯୋଗ ସୃଷ୍ଟି କରିବା ଆବଶ୍ୟକ ହୋଇଛି । ଏଥି-
ପାଇଁ ଏମାନଙ୍କୁ ଉପଯୁକ୍ତ ତାଲିମ ଦିଆଯିବା ଆବଶ୍ୟକ ହୋଇଛି ।

ଏହି ପ୍ରସ୍ତାବିତ ଜିଲ୍ଲାପାଇଁ ଅନୁଷ୍ଠାନ ପ୍ରସ୍ତାବିତ ହୋଇଛି ।

Abhayadeheury
ସଭାପତି
ଗ୍ରାମ ପଞ୍ଚାୟତ

Secretary
Kanas Grama Panchayat

29/10/14
Kul. Kankadpal

29/X/14
Executive Officer
Kanas G P

29.10.2014
Forest Section Officer
Ranas Section

29.10.2014
FOREST RANGE
SECTION.

29.10.14
Women Extension Of
KUKINDA BLOCK

29/10/2014
Gr. Manager Mining
Kalkrangi Chromite Mines

ନିର୍ଦ୍ଦେଶକ 'ଚାଷୀ ଭାଇ' ମାଧ୍ୟମରେ ଜଣାଉଛି
ଏଜେନ୍ସି/ ସ୍ଥାନୀୟ ...
ସ୍ଥାନୀୟ ନାମ :-- ଅନୁଷ୍ଠାନ ...
ଏତଦ୍ଦ୍ୱାରା ଆପଣଙ୍କୁ ସୂଚନା/ ସୂଚିତ କରାଯାଉଛି, ନିମ୍ନରେ ମାଟି ପରୀକ୍ଷା ପାଇଁ
ଆବେଦନ/ ସୂଚିତ କରିଥିବା ବିଭିନ୍ନ ଚାଷୀଙ୍କ ନାମ ଦିଆଯାଇଛି ...

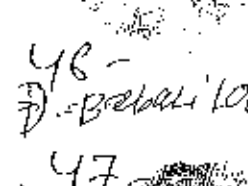
1- Bandhakrushna.
2- Sudarsan Pradhan
3- Sukadeber Bebarta
4- Gopal Hantal
5- Dinesh kumar Sahu
6- ଜଗନ୍ନାଥ ମୁଦୁଲି
7-  ମଧୁସୂଦନ ମଲ୍ଲିକ
8- ଫୁଲମତୀ ମାଝି
9- ଅନୁଗାଧିକାରୀ
10- Bijaya Tiria
11- Chandra Lagun
12- ଜୀତେନ୍ଦ୍ର ଗୁପ୍ତା
13- Sanjukta Palai
14- ଦେବେନ୍ଦ୍ର ମାଝୁରା
15- Durga Imm
16- Pinku Palai
17- Ashis Bhagat
18- ଅମିତ କୁମାର ପାତ୍ର
19- Manoj kumar Patra
20- Babuli Hansda
21-  ବିଦ୍ୟାଧର ପାତ୍ର
22- Pramod
23- ବିଜୟ ପଡିଆଲ
24-  ମାଙ୍ଗୁଦାସ ହେମ୍ବ୍ରମ
25-  ଗୁରୁଚରଣ ମାଝୁରା
26-  ସନାତନ ମିଞ୍ଜ
27- BASANKALA
28- ଅଙ୍କୁଶ ଚନ୍ଦ୍ରଚୂଡ଼ ଗୁରୁ
29- Bulu Banerjee
30- Sabita Mohanta
31- ଚନ୍ଦ୍ରଶେଖର ମହାନ୍ତି
32- ବଳଭଦ୍ର ମିଶ୍ର
33- Dhaneswar Tayenei
34- ଦାଶୋଧର ଦଳାଇ
35- Biranchi Narayan Mallick
36- [illegible]
37- ଶାନ୍ତନୁ ସେଠୀ

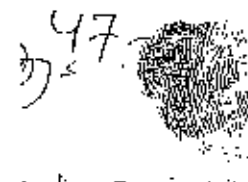
Shantanu Sahoo
Branch Manager
Kalinga Krishi Purchase

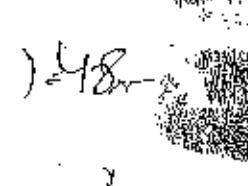




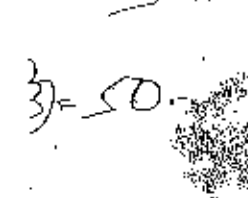


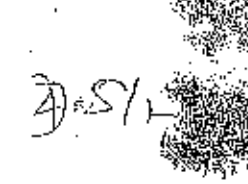




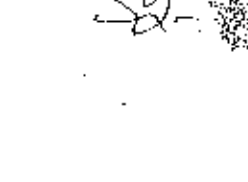












53- Mahesacus Mahaicana

54- ଚାଷୁଆ ଚାଷୁଆ ଗୁଡ଼େ

55- ଚୁଡ଼ିମା ମହାଗୁଡ଼ା

56- ଛୋଟଣୀ ନଦୀତଣ୍ଟୁ

57- ଶିକି ମହାଗୁଡ଼ି

58- ବାଙ୍କି ମହାଗୁଡ଼ା

59- ଚଞ୍ଚୁକୁମାର ମହାଗୁଡ଼ା

60-  ଦନ୍ତୁରିତ ଚକ୍ଷୁ ଅଳିମା ମହାଗୁଡ଼ି

61-  ଅନୁରିତ ଚକ୍ଷୁ ଏକକ ମହାଗୁଡ଼ା

62-  ଦନ୍ତୁରିତ ଚକ୍ଷୁ ସୁନ୍ତା ମହାଗୁଡ଼ା

63- ଗୋଦିଆ ମହାଗୁଡ଼ା

64-  ଅଳ୍ପ ଚିପ ଚକ୍ଷୁ ପାଣ୍ଡୁର ମହାଗୁଡ଼ା

65-  ଦନ୍ତୁରିତ ଚକ୍ଷୁ ଗୁଣ୍ଡି ମହାଗୁଡ଼ା

66-  ଦନ୍ତୁରିତ ଚକ୍ଷୁ ଅଗ୍ରଦନ୍ତୀ ମହାଗୁଡ଼ା

Akaliyab Chaudhury
Assistant Professor
Department of Zoology







Atalya Behura

Radha Madhab Panchayat

LTI : ଅଙ୍ଗୁଠା ଛାପ ୧୩

LTI : ତର୍ଜନୀ ଅଙ୍ଗୁଳି ୧୪

LTI : ମଧ୍ୟମା ଅଙ୍ଗୁଳି ୧୫

LTI : ଅନାମିକା ଅଙ୍ଗୁଳି ୧୬

LTI : କନିଷ୍ଠା ଅଙ୍ଗୁଳି ୧୭

LTI : ବାମ ହସ୍ତ ଅଙ୍ଗୁଠା ୧୮

LTI : ବାମ ହସ୍ତ ତର୍ଜନୀ ୧୯

LTI : ବାମ ହସ୍ତ ମଧ୍ୟମା ୨୦

LTI : ବାମ ହସ୍ତ ଅନାମିକା ୨୧

LTI : ବାମ ହସ୍ତ କନିଷ୍ଠା ୨୨

Abhaya Dewan
Advocate
Distt. Court Paradeep

[redacted]

[redacted]

[redacted]

Joety Pradhan

[illegible] 132

[illegible] 133

[illegible]

[illegible] 134

[illegible]

[illegible]

Mamata Sha 135

[illegible] 136

[illegible] 137

Gouranga Sha. 138

[illegible] 139

B. K. Barua 140

[illegible] 141

[illegible] 142

Dinesh Lal Singh 143

Ruby Singh 144

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Saraswati Palei 146

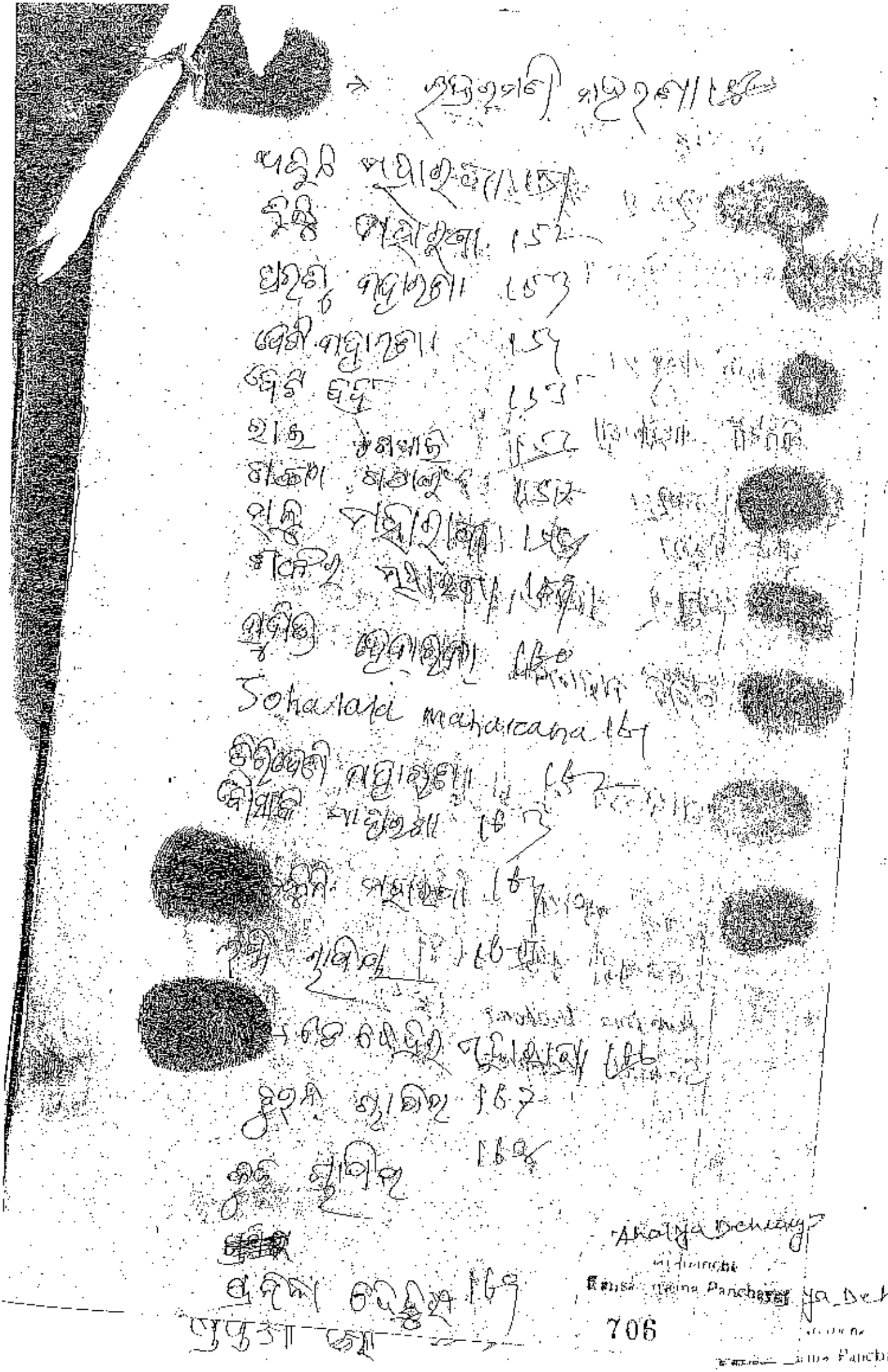
Rinku Palei 147

Smitirekha Palei 148

Satyabhama Palei 149

Akalya Behera

[illegible] Panchayat



Aralya Dehuri
Mahanchi
Kansa Jena Panchayat Jya Dehu

Makiga Champia (F)

















Ainima Bahara

Samaj Bandhab

Dilip Oram

Ahalya Dehuri
Jajpur
Kalia Krishna Panchu

709

Ahalya Baheng



Ashok Prahlad 254

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288 Bhagaban Sahani

289 [illegible]

290 Laxmya Narain Sahu

291 [illegible]

292 Lti Kuntala nayak

293 [illegible]

294 Arabinda Sahoo

295 [illegible]

296 [illegible]

297 [illegible]

298 Sreenata Barik

299 Lalmohan patra

300 [illegible]

301 Kalapada patra

302 Chalan Hansda

303 [illegible]

304 Chandra Sat-pati

305 Nasad Mahadol

306 [illegible]

Adarjyadeswary

Sabapanchayat

Raisa Gram Panchayat

714

3।৫  L.T.I. ଶ୍ରୀମତୀ ବେହୁରା

3।୬  L.T.I. ସୁଲୋଚନା ବେହୁରା

3।୭  L.T.I. ଜେମା ବେହୁରା

3।୫ ସହିତନ୍ତି ଜଣାଇ

3।୯  L.T.I. ଗୁଣିଚାହ ବେହୁରା

3।୦  L.T.I. ଅଞ୍ଜନା ବେହୁରା

3।।  L.T.I. ଗୁଣେଶ୍ୱର ବେହୁରା

3।୨  L.T.I. ଗୁଣେଶ୍ୱର ବେହୁରା

3।୩ Ganeshwar Mahapatra

3।୪ Manashi Mahapatra

3।୫ ଅଞ୍ଜନ ଚନ୍ଦ୍ରନାଥ ଜେନ୍ଦୁହା

3।୬ ଅଜୟ ଓଡ଼ିଆ ଅଧିକାରୀ

3।୭ Mr. Ranjan Kumar Sahu.

3।୫ ଅଧିକାରୀ ପ୍ରାଥମିକ ଶିକ୍ଷା

Ahalya Debhury
Sarpanch
Kusa Gram Panchayat

319 ସୁଶ୍ରୀମିତା ହାଜରା

320 ଅଭ୍ୟୁଦୟ ବେହୁରା

321 ଅଭିଜିତ ବେହୁରା

322 ଝୁମା ଚାରୁ

323 ମନିମା ସୁନ୍ଦି

324 Sanatan Behera

325 ଲୋକନାଥ ବେହେରା

326 ଦିଲ୍ଲୀପ କୁମାର ବେହେରା

327 ଶଙ୍କର ବେହୁରା

328 ସୀମା ରଜସ୍ୱଳା

329 ସୁଦାମ ବେହେରା

330 ରଶ୍ମିରଞ୍ଜନ ବେହେରା

331 ଜ୍ୟୋତିପ୍ରକାଶ

332 ଅଭିଷେକ ବେହେରା

Abhyudaya Behera
Sri Aparna

Parshwa

333  L.T.I ভজহরি মান্ডি

334 ভীমচন্দ্র মান্ডি

335 Kulamani Pradhan

336 Budheswar Mandal

337 কাশীনাথ মুদুলী

338 হরিপদ বেরা

339 Bijoy Barik

340 Ajay Kr Barik

341 সুদর্শন ভৌমিক

342  L.T.I হরি পদাতুরি

343  L.T.I তুলসী পদাতুরি

344  L.T.I বিনয়ন্তি পদাতুরি

345  L.T.I ভুঁলি পদাতুরি

346  L.T.I পদ্মা পদাতুরি

347 Premalata Sahu

348 কমলা কান্ত মাইতি

349  L.T.I কুটাশ্রী চক্রবর্তী

Shaikh D
Majhi Gram Panch

C. 717

3ଏ [redacted] LTI ଶ୍ରୀ ଚାଟାର୍ଜୀ

3ଏ ଝୁଲୁଆ ଲାଏକ

352---Sekhar Kre mehary

3ଏ୩ ଶଙ୍କି ଶତପଥି

3ଏ୪ ବିଜୁ ଶତପଥି

'3ଏ୬-Gokula Nayaka

3ଏ୭ Madhan Mohanty

3ଏ୩- ବିଜୟ ଶତପଥି

'3ଏ୫ Bedaprusha Singh

3ଏ୧ Manakanda Sharma

3ଏ୦ Rama Kanta Nayak

3୬। ଶ୍ରୀଯୁତ ଗୋସ୍ୱାମୀ

362 Suresh Ch. Mohanty

363 Bidat Prabha Mahata

364 Gopabandhu Das

365 Baidar Patra

366 ପ୍ରମିଳା ସାହୁ

367 ଶୈଳବାଳା ସାହୁ ସାହୁ

368 Kanhkeswar Behera

369 ଶ୍ରୀ ଜଗନ୍ନାଥ ସାହୁ

Abdhyabenung
Harapanga
Gausa rama Panchayat

3Re Atula Charana Sahoo
371 Siddhartha Sahoo
372 ପ୍ରକାଶ ଚନ୍ଦ୍ର ସାହୁ
373 K.C Dhala
374 ଗିରିଜା ଶଙ୍କର
375 Sudhakar Behera
376 ଅନନ୍ତ ରାମ Tandi
377 ଦୀନବନ୍ଧୁ ସାହୁ
378  L-TI ଆଦିତ୍ୟ ଦଣ୍ଡି
379  L-TI ଅଗ୍ନିଆଶିନୀ ମାହାଲା
380 ବ୍ରହ୍ମାନନ୍ଦ ଭୋଇ
381  L-TI ପାଣ୍ଡିଲି ଦେହୁରୀ
382  L-TI ଚାରୁଲତା ସାହାଣୀ
383  L-TI ସୁଶାନ୍ତ ଦଳେଇ
384  L-TI ଝୁଲାଣି ଦେହୁରୀ
385  L-TI ଶ୍ରୀତା ମିଞ୍ଜ
386 ଦିମିତା ଦଳେଇ

Abhaya Charan Sahoo
Prasanna Parichha

387  1.7.9. ପ୍ରତାପ ଦେହୁରୀ

388 Pradyap Dehury

389 ଚିତା ମୁଣ୍ଡ ବଦୁଡ଼ୁଳି

390  ୮.୮.୨ ଅଜିତ ବଦୁଡ଼ୁଳୀ

391  ୮.୮.୨ ପାଞ୍ଚିକି ବଦୁଡ଼ୁଳୀ

392 ସୁଜିତ ବେହୁରୀ

393 ଜଗନ୍ନାଥ ମୁଦୁଲି

394 ମଙ୍ଗୁଦେ ଦେଖାଣେ ଟାଣିଆ

395 ମହମ୍ମଦ ଜୁଲୁଖା

396 Mohamad Jamshedh Hossain

397 Nishanad Sand

398 Sudhanshu Sekhar mishra

399 ପାଣ୍ଡିତ ପ୍ରଧାନ

400  ୮.୮.୨ ଶୁଭାଶ୍ରୀ କୁମାରୀ ପ୍ରଧାନ

401 Aswani Kumar Swain

402 Chinmayee Swain

403 ଅମିତ କୁମାର ପ୍ରଧାନ

Amarjyoti Behura

Assistant

Bhagabat Prasad Pandhara

L.T.I

Hari Hara Pradhan

L.T.I

Chandan Pradhan

Bijay Kumar Pradhan

L.T.I

L.T.I

L.T.I

L.T.I

L.T.I

Thakurgarh

Cuttack

417  LTI ବାମହସ୍ତ ତର୍ଜନୀ

418  LTI ବାମହସ୍ତ ମଧ୍ୟମା

419 Nirmal Pradhan

420  LTI ବାମହସ୍ତ ଅନାମିକା

421  LTI ବାମହସ୍ତ କନିଷ୍ଠା

422 ଏ ସାହୁ ଟିପସହି

423  LTI ଦକ୍ଷିଣ ତର୍ଜନୀ

424  LTI ଦକ୍ଷିଣ ମଧ୍ୟମା

425 ବିଜୟ ଟିପସହି

426  LTI ଦକ୍ଷିଣହସ୍ତ ଅନାମିକା

427 ବାମହସ୍ତ ଅଙ୍ଗୁଷ୍ଠ

428  LTI ଦକ୍ଷିଣ କନିଷ୍ଠା

427 Tuna Palei

428 ଶାନ୍ତିଲତା ଗଉଡ଼ିଆ

Ahalya Behera
Signature of the Witness

ଗାଁ ପଞ୍ଚାୟତ ମୌଜା
ଡାକଘର ଥାନା
ଜିଲ୍ଲା ମୋବାଇଲ


L.T.I ଅଙ୍ଗୁଠି ଛାପ


L.T.I ବାମ ହାତ ଅଙ୍ଗୁଠି ଛାପ


L.T.I ଡାହାଣ ହାତ ଅଙ୍ଗୁଠି ଛାପ

ଆବେଦନକାରୀଙ୍କ ସ୍ୱାକ୍ଷର
ଅଙ୍ଗୁଠିଛାପ ସ୍ୱୀକୃତି

ମୁଖ୍ୟ ପଦାଧିକାରୀଙ୍କ ସ୍ୱାକ୍ଷର
Bidadhan Officer


L.T.I ବୁଢ଼ାଙ୍গୁଷ୍ଠ ଛାପ

ପ୍ରାପ୍ତିସ୍ୱୀକାର
Prapthula Sha
Pramadaka Sha
ନିର୍ଦ୍ଦେଶକଙ୍କ ସ୍ୱାକ୍ଷର
ଅଧିକାରୀଙ୍କ ସ୍ୱାକ୍ଷର
Parada PRV Sha
Sabotha Sha
Nirmanya Pradhan ସ୍ୱାକ୍ଷର

Bhagya Dev
Executive
Emisa Grama Panchayat

723

૫૬ સાવરીયા કુંવરબેન

૫૭ Sahariya Kunvarbai Mahmad

૫૮ -- [illegible]

૫૯ Nimavadhra Sureshbhai

૬૦ Madhi Mohan Gupta

૬૧ [illegible]

૬૨ [illegible] Lag of
Hema Pradhan

૬૩ [illegible] Lag of
Gitaben Pathany

૬૪ [illegible] Lag of
Rajendra Pradhan

૬૫ Chaitan Pradhan

૬૬ Jagannath Pradhan

૬૭ [illegible]

૬૮ [illegible]

૬૯ Dilip Diwan.

Ahalya Behera
Sarapanch
Basa Gram Panchayat

/ ৮৭৫ : ২.৮.১. চৈত্র শুক্লা ত্রী

৮৭৬  ৫+৩.
Chaitra Munda.

৮৭৭-  ৫+৩. Bramhare Munda.

৮৭৪- Anil Munda.

৮৭৭  পাতা-পুঁথিতে লেখা

১৫৮৯ খৃষ্টাব্দে লিখিত.

১৫৮ তালপাতার পাণ্ডুলিপি

১৫২ Sandykomare Dass =

১৫৩ হরিবংশ উপাখ্যান

১৫৮  ৫+৩ - পাতায় লেখা পুঁথি

১৫৯  ৫+৩ - তুলট কাগজে লেখা

১৫৮ - হরিবংশের উপাখ্যান

Ahalya Dev
মহাপাত্র
Guru Prema Panchayat

506. [illegible]

507 [illegible]

508 [illegible]

509 [illegible]

510  - Shreyashi Das

511 Barbak Das

512  [illegible]

513 Sumi Das

514 [illegible]

515  - [illegible]

516  [illegible]

517  [illegible]

518 Bishtu Nayak

519  [illegible]

520 S. Anjali

Ahalya Behury
Sarpanch
Kasa Grama Panchayat

5 2)  L.T.I ଆଙ୍ଗୁଠି ଛାପ

3.2 — Maheswar Das

4 2)  L.T.I ଝୁଲୁଝୁଲୁ ମୁହାଁ ଦାସ୍

5 2)  L.T.I - ଛାଗଡ଼ି ଚରଣ

6 2)  L.T.I - ଘୁଷୁରି ଚରଣ

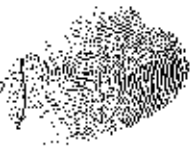
7 2)  L.T.I - ଦୁଇ ଖଣ୍ଡି ଜାମୁକ

8 2)  L.T.I - Tikri Nayak

9 2) ଜଗବନ୍ଧୁ ଜେନାମଣି

10 2) ଗୋପୀନାଥ ଜେନାମଣି

11 2) James Barara

12 2)  L.T.I - ଆଣ୍ଠୁ ଛିଣ୍ଡିଯାଇଛି

13 2) Damu Barara

Ahalya Behera
Sarapanch
Kalisa Gram Panchayat

Smt Singrai Banara

Sri P. Banara

Sri Sanjay Munda

Sri Narendra Das

Sri Jothansa Sahoo

Adviya Behera
Gram Panchayat
Kusa Gramia Panchayat

ଅଭିଯୋଗ ପତ୍ର

ଅଭିଯୋଗ ନଂ. ୪୮ ତାରିଖ :- ୮/୦୨/୨୦୧୪

ମାନ୍ୟବର ଜିଲ୍ଲାପାଳ ସାହେବଙ୍କ ସମୀପରେ ସାଦର ନିବେଦନ ଏହି ଯେ, ମୁଁ ଜଣେ ଚାଷୀ ଓ ଗ୍ରାମ ପଞ୍ଚାୟତ ଚାଷୀ ଉପଦେଷ୍ଟା ଅଟେ। ମୋର ଜମି ଖତିୟାନ ନଂ. ୨୫୫୫ ଅଟେ। ମୋର ଜମି ଚାଷ ପାଇଁ ଜଳସେଚନ ନିମନ୍ତେ ଏକ ବୋରୱେଲ୍ ଖନନ କରିବା ପାଇଁ ଆବେଦନ କରିଥିଲି। ଏହି ଆବେଦନ ଉପରେ ଅନୁସନ୍ଧାନ କରି ଜିଲ୍ଲା ଭୂତଳ ଜଳ ସମ୍ପଦ ବିଭାଗ ଦ୍ୱାରା ଏହି ଜମିରେ ବୋରୱେଲ୍ ଖନନ କରିବା ପାଇଁ ଅନୁମତି ପତ୍ର ଦିଆଯାଇଛି। ଏହି ଅନୁମତି ପତ୍ର ଅନୁଯାୟୀ ମୁଁ ଏହି ଜମିରେ ବୋରୱେଲ୍ ଖନନ କରିବା ପାଇଁ ଆବଶ୍ୟକ ଟଙ୍କା ଜମା କରିଛି। ଏହି ଜମିରେ ବୋରୱେଲ୍ ଖନନ କରିବା ପାଇଁ ଆବଶ୍ୟକ ଯନ୍ତ୍ରପାତି ଆଣିବା ପାଇଁ ଯାଇଥିବା ସମୟରେ ଅଭିଯୁକ୍ତ ଜଣକ ମୋତେ ଏହି ଜମିରେ ବୋରୱେଲ୍ ଖନନ କରିବାକୁ ମନା କରିଛନ୍ତି। ଏହି ଜମି ଉପରେ ଅଭିଯୁକ୍ତ ଜଣକ ମିଥ୍ୟା ଦାବି କରୁଛନ୍ତି। ଏହି ଜମି ମୋର ପୈତୃକ ସମ୍ପତ୍ତି ଅଟେ। ଏହି ଜମିରେ ବୋରୱେଲ୍ ଖନନ କରିବା ପାଇଁ ମୁ

ତୃତୀୟତଃ ହରିଜନ, ଶ୍ରୀ ଅନନ୍ତ ସାହୁଙ୍କ ଘରଟି ସମ୍ପୂର୍ଣ୍ଣ ଭାଙ୍ଗିଯାଇ
ଥିବାରୁ ଥାନା-ଅଧିକୃତଙ୍କୁ ଦିଆ ଯାଇପାରିନାହିଁ ।

ଏହିକି ଉପରୋକ୍ତ ଗ୍ରାମଗୁଡ଼ିକରେ ଯେଉଁ ଘର, ଦୋକାନ ଇତ୍ୟାଦି
ସମ୍ପୂର୍ଣ୍ଣ ଭାଙ୍ଗିଛି, ତାହାର ଯେଉଁ ମାଲିକମାନଙ୍କର ଦାବି ତାରିଖ ୨୩/୨/୮୫ ମସିହା
ଯାଏ ଫର୍ମ୍ମ ପୂରଣ ହୋଇ ଆସିଛି ସେମାନଙ୍କୁ ଏହି ତାରିଖ ଯାଏ ଅନୁଦାନ
ଦେବାକୁ ଆମେ ସୁପାରିଶ କରିଛୁ । ଏହି ତାରିଖ ପରେ ଯେଉଁମାନେ ଦାବି
ଦାଖଲ କରିଛନ୍ତି ସେମାନଙ୍କ ଦାବି ଉପରେ ଆମେ ଆଉ ଏକ ତାଲିକା ପ୍ରସ୍ତୁତ
କରି ଅନୁଦାନ ପାଇଁ ସୁପାରିଶ କରିବୁ । ଏହି ତାଲିକା ଆମେ ଆଗକୁ
ଦେଇଥିବା ତାଲିକାର ଅତିରିକ୍ତ ହେବ । ଏଥିରେ ଯେଉଁ ସମସ୍ତଙ୍କ ନାମ
ରହିଛି ସେମାନଙ୍କ ଘର ଭାଙ୍ଗିଛି ଏବଂ ଏମାନେ ଅନୁଦାନ ପାଇବାକୁ
ଯୋଗ୍ୟ ବୋଲି ଆମେ ମତ ଦେଉଛୁ । ଏମାନଙ୍କ ତାଲିକା ଆଗାମୀ ସପ୍ତାହରେ
ଦାଖଲ କରିବୁ । (ଅତି)

Passed for payment of Rs. 500/-
(Rupees Five hundred) only

Sarapanch
Kansa nama Panchayat

Paid by me Rs 500/-

Executive Officer
Kansa G P

ଦୁଇଟି ଶବ୍ଦ ସିଦ୍ଧାନ୍ତ ଓ ଉପପତ୍ତି ବିଷୟରେ
ଏହି ବିଷୟ ଆଲୋଚନା ଅତ୍ୟାବଶ୍ୟକ ଏବଂ ଏହି ଦୁଇଟି ଶବ୍ଦ
ଅଭିନବ ଆଲୋଚନା ଅଟେ ଏହା ବିଷୟ ଆଲୋଚନା ଅଟେ
ଉପପତ୍ତି ଅଟେ ।

ଏହି ଶବ୍ଦଦ୍ୱୟରେ ଏକ ପ୍ରାଚୀନ ପରିପ୍ରେକ୍ଷୀରୁ ବିଚାରଧାରା
ଏକ ଆଲୋଚନାରେ ଆସି ଏକ ନୂତନ ଦିଗ ଖୋଲିଥିଲା । ଏହାରେ ଜଣେ ଆଲୋଚକ
ଦେଖା ଦେଇଥିଲେ ଯିଏକି ବିଜ୍ଞାନ ସମ୍ପର୍କରେ ଏକ ଅଭିନବ ଦୃଷ୍ଟିକୋଣ
ଉପସ୍ଥାପନ କରିଥିଲେ । ଏହି ଆଲୋଚକଙ୍କ ଆଲୋଚନାରେ ଏହି ଦୁଇଟି ଶବ୍ଦ
ବିଶେଷ ଗୁରୁତ୍ୱପୂର୍ଣ୍ଣ ଭାବରେ ଉଲ୍ଲେଖ ହୋଇଥିଲା । ଏହି ଦୁଇଟି ଶବ୍ଦ ଆଲୋଚନାରେ
ଆସିବା ପରେ ଏହା ଏକ ନୂତନ ଦିଗ ଖୋଲିଥିଲା । ଏହି ଆଲୋଚକଙ୍କ ଆଲୋଚନାରେ
ଏହି ଦୁଇଟି ଶବ୍ଦ ଆଲୋଚନାରେ ଆସିବା ପରେ ଏହା ଏକ ନୂତନ ଦିଗ ଖୋଲିଥିଲା ।
ଏହି ଆଲୋଚକଙ୍କ ଆଲୋଚନାରେ ଏହି ଦୁଇଟି ଶବ୍ଦ ଆଲୋଚନାରେ ଆସିବା ପରେ
ଏହା ଏକ ନୂତନ ଦିଗ ଖୋଲିଥିଲା । ଏହି ଆଲୋଚକଙ୍କ ଆଲୋଚନାରେ ଏହି
ଦୁଇଟି ଶବ୍ଦ ଆଲୋଚନାରେ ଆସିବା ପରେ ଏହା ଏକ ନୂତନ ଦିଗ ଖୋଲିଥିଲା ।
ଏହି ଆଲୋଚକଙ୍କ ଆଲୋଚନାରେ ଏହି ଦୁଇଟି ଶବ୍ଦ ଆଲୋଚନାରେ ଆସିବା ପରେ
ଏହା ଏକ ନୂତନ ଦିଗ ଖୋଲିଥିଲା ।

ଜଗତ୍ସିଂହପୁର ଜିଲ୍ଲାର ଆନୁମାନିକ ୭୦୦୦ ଅଧିବାସୀଙ୍କ ପିଇବାପାଣି ସମସ୍ୟାର ସମାଧାନ ପାଇଁ ଗତ ଅର୍ଥବର୍ଷରେ ଆରମ୍ଭ କରାଯାଇଥିବା ଏକ ପାଇପ୍‌ଲାଇନ ପ୍ରକଳ୍ପ ଚଳିତ ବର୍ଷ ଜୁନ୍ ମାସ ସୁଦ୍ଧା ସମାପ୍ତ ହେବାର ଥିଲା । କାମ ଶେଷ ହୋଇଥିବା ଦର୍ଶାଇ ଠିକାଦାର ସଂସ୍ଥା ଏହାର ଦାୟିତ୍ୱ ଜିଲ୍ଲା ପରିଷଦ କର୍ତ୍ତୃପକ୍ଷଙ୍କୁ ହସ୍ତାନ୍ତର କରିଥିଲା । କିନ୍ତୁ ଏହି ପ୍ରକଳ୍ପ ଅଞ୍ଚଳର ଅଧିକାଂଶ ଅଧିବାସୀ ଏପର୍ଯ୍ୟନ୍ତ ପିଇବାପାଣି ସୁବିଧାରୁ ବଞ୍ଚିତ ରହିଥିବା ଅଭିଯୋଗ କରିଛନ୍ତି । ଏହି ଅଭିଯୋଗ ଅନୁଯାୟୀ ପ୍ରକଳ୍ପର ପାଇପ୍‌ଲାଇନ ବିଛାଇବା ସମୟରେ ଅନେକ ସ୍ଥାନରେ ପାଇପ୍‌ଲାଇନ ଭୂମିରେ ପୋତା ହୋଇନଥିବା ଅଭିଯୋଗ ହୋଇଛି । ଏଥିସହିତ ପ୍ରକଳ୍ପର ଅଧିକାଂଶ ଟ୍ୟାପ୍‌କଳ ଅକେଜୋ ହୋଇ ପଡିଥିବା ଅଭିଯୋଗ ହୋଇଛି । ଏହି ଅଭିଯୋଗ ଅନୁଯାୟୀ ପ୍ରକଳ୍ପର ପାଇପ୍‌ଲାଇନ ବିଛାଇବା ସମୟରେ ଅନେକ ସ୍ଥାନରେ ପାଇପ୍‌ଲାଇନ ଭୂମିରେ ପୋତା ହୋଇନଥିବା ଅଭିଯୋଗ ହୋଇଛି । ଏଥିସହିତ ପ୍ରକଳ୍ପର ଅଧିକାଂଶ ଟ୍ୟାପ୍‌କଳ ଅକେଜୋ ହୋଇ ପଡିଥିବା ଅଭିଯୋଗ ହୋଇଛି । ଏହି ଅଭିଯୋଗ ଅନୁଯାୟୀ ପ୍ରକଳ୍ପର ପାଇପ୍‌ଲାଇନ ବିଛାଇବା ସମୟରେ ଅନେକ ସ୍ଥାନରେ ପାଇପ୍‌ଲାଇନ ଭୂମିରେ ପୋତା ହୋଇନଥିବା ଅଭିଯୋଗ ହୋଇଛି । ଏଥିସହିତ ପ୍ରକଳ୍ପର ଅଧିକାଂଶ ଟ୍ୟାପ୍‌କଳ ଅକେଜୋ ହୋଇ ପଡିଥିବା ଅଭିଯୋଗ ହୋଇଛି ।

ଏହି ଅଭିଯୋଗ ଉପରେ ଜିଲ୍ଲା ପରିଷଦ ସଭାପତି ଶ୍ରୀଯୁକ୍ତ ଅନନ୍ତ ନାରାୟଣ ଜେନା ଏକ ତଦନ୍ତ ପାଇଁ ଜଣେ ଅତିରିକ୍ତ ଜିଲ୍ଲାପାଳଙ୍କ ନେତୃତ୍ୱରେ ଏକ ତଦନ୍ତ କମିଟି ଗଠନ କରିଛନ୍ତି । ଏହି କମିଟି ଆସନ୍ତା ୩୦ ତାରିଖ ସୁଦ୍ଧା ତଦନ୍ତ ରିପୋର୍ଟ ଦାଖଲ କରିବାକୁ ନିର୍ଦ୍ଦେଶ ଦିଆଯାଇଛି ।

ଏହି ତଦନ୍ତ ପ୍ରସଙ୍ଗରେ ଜିଲ୍ଲା ପରିଷଦ ସଭାପତି ଶ୍ରୀଯୁକ୍ତ ଜେନା ଆଜି ଏକ ସାମ୍ବାଦିକ ସମ୍ମିଳନୀ ଡାକି ଏହି ଅଭିଯୋଗ ସମ୍ପର୍କରେ ସମ୍ବାଦିକମାନଙ୍କୁ ସୂଚନା ଦେଇଛନ୍ତି ।

FORESTER
KANSA SECTION
29/10/14

29/10/14
Revenue Inspector
Kankadapal

29/10/14
Executive Officer
Kansa G P

Sarpanch
Kansa Gram Panchayat

29/10/14
Sr. Manager Mining
Balarangi Chromite Mines

Welfare Assistant
RAJINDA BLOCK

Lakar san Mohanta
Laxmipriya Mohanta
Sonu Behera
- ଶ୍ରୀମତୀ ବେହେରା
- Bijranchi mudulai
- ବିଜୟଶ୍ରୀ ମୁଦୁଲାଇ
- ଘନଶ୍ୟାମ ମୁଦୁଲି
ଲାଡୁମଣି ବାସୁଦେବ
ଚନ୍ଦ୍ରମଣି ଲାଙ୍କୁଡିଆ
ସୁଶୀଳା ମୁଦୁଲି
ଶ୍ୟାମସୁନ୍ଦର ମୁଦୁଲି
Rudra Uda
Bijay Uda

L.T.O of Ramdev Bhagat

ଚନ୍ଦ୍ରମଣି ସିଂହ ମୁଦୁଲି
ଶ୍ରୀରାମଚନ୍ଦ୍ର
ଦାମୋଦର କାଙ୍କୁଡିଆ
ଦୁର୍ଗାମଣି ଚାନ୍ଦୁଡିଆ
ଦାମୋଦର ମହାନ୍ତି
ଶଚିନନ୍ଦନ ମହାନ୍ତି
ଉତ୍କଳମଣି ଗୋପବନ୍ଧୁ ଦାସ
ଶ୍ରୀଧର କାର ଖୁଣ୍ଟିଆ
ସତ୍ୟବାଦୀ ଜେନାପତି
ନୀଳାମ୍ବର ପୁରାଣି

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Kaliapani Gram Panchayat


LTP Kayni Pradhan


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Prabhan Ku Mudulı


Ltp. Bamai Hembram

Biraj Behera


L.T.P


L.T.P


L.T.P. Baloram Sidhu


Ltp. Sanjay Lakra


Ltp. Tara Lakra

Parbati Mahakud

Bhabya Dehury

























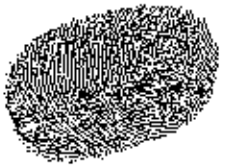










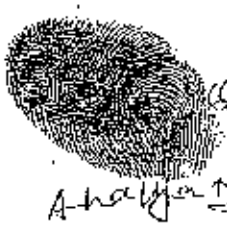












Ajay Barman Roy
MATIA HASDA

Shiba Hansda

Nagani Baraik

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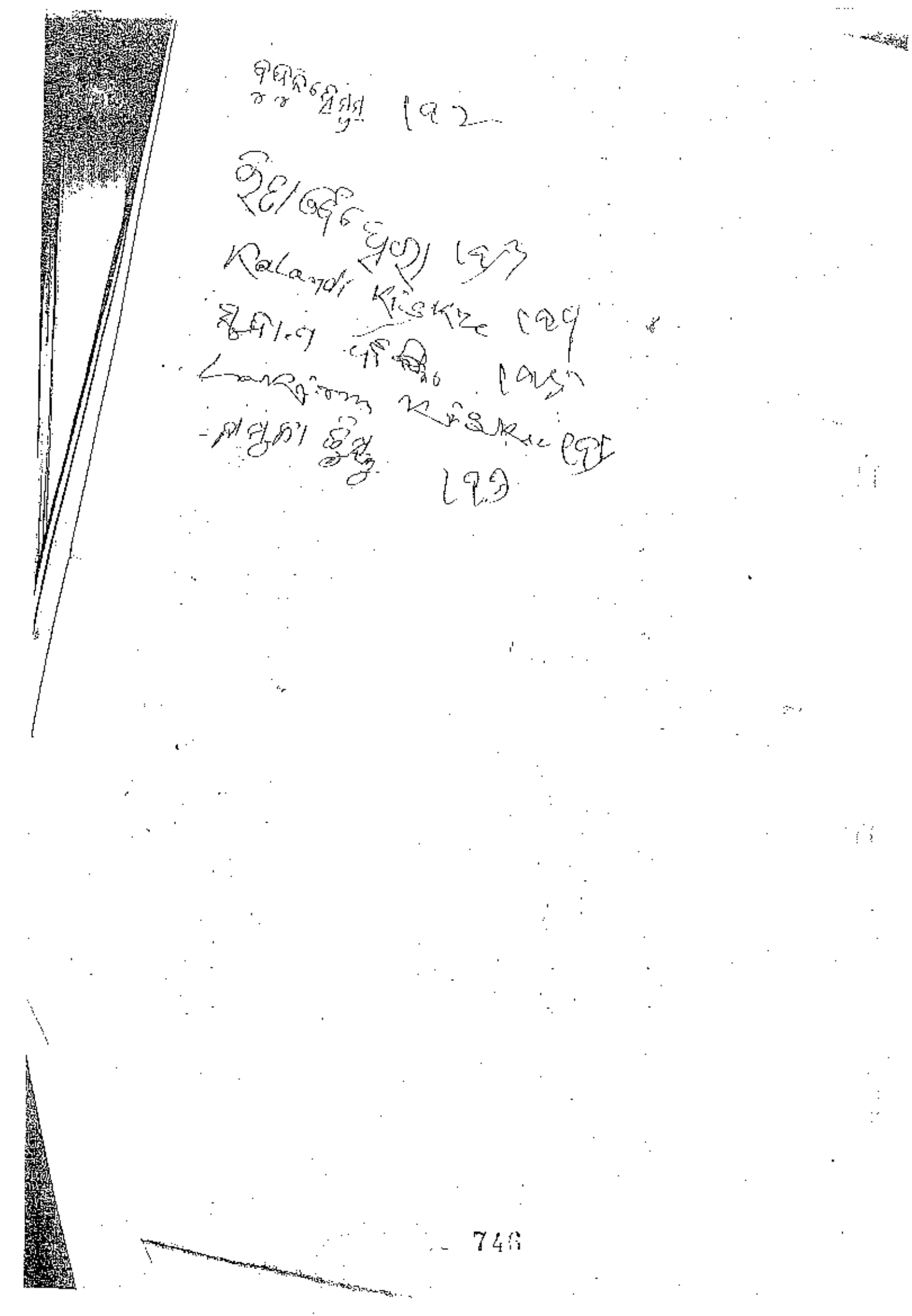
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Thalang Dehury

Ward no. Panchayat

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ଅଭିଯୋଗ ନଂ - ୪୮ ତାରିଖ :- ୮.୦୨.୨୫

ମହାଶୟ, ଅତ୍ୟନ୍ତ ଦୁଃଖର ସହିତ ଜଣାଇବାକି ଯେ, ମୁଁ ଜଣେ ଚାଷୀ ଅଟେ । ମୋର ଜମି ଖ.ନଂ - ୨୫୫୫ ରହିଛି । ଏହାକୁ ମୋ ପିତାଙ୍କ ଦ୍ୱାରା ଓକିଲ ଶ୍ରୀ ଅଜୟ ଦେହୁରୀଙ୍କୁ ଦିଆଯାଇଛି । ଏହି ଜମିରେ ମୁଁ ଚାଷ କରୁଛି । ଏହି ଜମିରେ ମୋର ଏକ ଘର ଅଛି । ଏହି ଘରେ ମୁଁ ମୋ ପରିବାର ସହିତ ରହୁଛି । ଏହି ଜମି ମୋର ଜୀବିକାର ଏକମାତ୍ର ଉତ୍ସ । ଏହି ଜମିରେ ମୁଁ ଚାଷ କରି ମୋ ପରିବାରର ଭରଣପୋଷଣ କରିଥାଏ । ଏହି ଜମି ମୋର ପୈତୃକ ସମ୍ପତ୍ତି ଅଟେ । ଏହି ଜମି ମୋ ପିତାଙ୍କ ଠାରୁ ମୁଁ ପାଇଛି । ଏହି ଜମି ମୋର ଏକମାତ୍ର ଜୀବିକାର ଉତ୍ସ ଅଟେ । ଏହି ଜମି ମୋର ଏକମାତ୍ର ଜୀବିକାର ଉତ୍ସ ଅଟେ । ଏହି ଜମି ମୋର ଏକମାତ୍ର ଜୀବିକାର ଉତ୍ସ ଅଟେ ।

ଏହି ଜମିରେ ମୁଁ ଚାଷ କରୁଛି । ଏହି ଜମିରେ ମୁଁ ଚାଷ କରୁଛି । ଏହି ଜମିରେ ମୁଁ ଚାଷ କରୁଛି । ଏହି ଜମିରେ ମୁଁ ଚାଷ କରୁଛି । ଏହି ଜମିରେ ମୁଁ ଚାଷ କରୁଛି । ଏହି ଜମିରେ ମୁଁ ଚାଷ କରୁଛି । ଏହି ଜମିରେ ମୁଁ ଚାଷ କରୁଛି । ଏହି ଜମିରେ ମୁଁ ଚାଷ କରୁଛି

Paysed for payment of Rs. 500/-
(Rupees Five hundred) only

Adhyaksheny
Sarapanchas
Kalisa rama Panchayat

Paid by me Rs 500/-

Executive Officer
Kansa G

ଅନୁବାଦ

ଶ୍ରୀମତୀ ସୁଧା / ଆମନ୍ତ୍ରଣ ପତ୍ରିକା

ଶ୍ରୀମତୀ ସୁଧା ... ଉଦ୍ଦିଷ୍ଟ ପ୍ରାପ୍ତ ... ଶ୍ରୀମତୀ

ସୁଧିଃ ଦିଲ୍ଲୀରେ ଥିଲେ ଏବଂ

ତାରିଖ ... ୨୮-୦୨-୧୪ ଶ୍ରୀମତୀ ... ଦିବାକର

ଅନୁବାଦ ଶେଷ

29.10.14
FORESTER
KANSA SECTION

29/10/14
Revenue Inspector
Kankadapal

29/X/14
Executive Officer
Kansa G P

Adolya Debnary

29/10/2014
Block Agriculture Officer
Bhikrangi Bhramite Block

28.10.14
Block Development Officer
BUKINDA BLOCK

Subramanda Dehury 27
Narsingh Dehury 28
Basanta Kumar Dehury 29
Somesh Samal 30
Mangal Kandhar 31
Ranjan Dehury 32
Basanta Dehury 33
Sisir Ho 34
Deepak Hansda 35
Bijay Munda 36
[illegible] 37

Sanjay Hembram

Kanaklata Hembram

Kanaklata Hembram

Kanaklata

L.T.P. Sanjaya Hembram

Rabindra Hembram

L.T.P.

L.T.P.

L.T.P.

Kanda Murmu

Pirangeta Murmu

Radhika Murmu

Hasda

L.T.P.

L.T.P.

Maoj Kumar Murmu

Mangal Kalindi

L.T.P.

L.T.P.

L.T.P.

ଗ୍ରାମ ପଞ୍ଚାୟତ କାର୍ଯ୍ୟାଳୟରୁ -- ବାଜ୍ୟପତ୍ର

ଜରୁରୀକାଳୀନ ସଂ - ୪୮ ତାରିଖ :- ୮.୦୨.୨୦୨୧

ସମସ୍ତ ଗ୍ରାମବାସୀଙ୍କ ସୂଚନାର୍ଥେ ଜଣାଯାଉଛି ଯେ ଆସନ୍ତାକାଲି ତା. ୨୮.୦୨.୨୦୨୧ ରିଖ ସକାଳୁ ୭ଟାରୁ ଅପରାହ୍ନ ୩ଟା ପର୍ଯ୍ୟନ୍ତ ଗ୍ରାମର ସମସ୍ତ ଅଧିବାସୀଙ୍କ ପାଇଁ ଜରୁରୀକାଳୀନ ଭିତ୍ତିରେ କରୋନା ଟିକାକରଣ ଅଭିଯାନ ଚାଲିବ । ଏଥିପାଇଁ ଗ୍ରାମର ୩ଟି ସ୍ଥାନରେ ଟିକାକରଣ କେନ୍ଦ୍ର ଖୋଲାଯିବ । ଏଥିରେ ୧୮ ବର୍ଷରୁ ଉର୍ଦ୍ଧ୍ୱ ସମସ୍ତ ବୟସ୍କ ନାଗରିକ ଟିକା ନେଇପାରିବେ । ଟିକା ନେବାକୁ ଆସିବା ସମୟରେ ଆଧାର କାର୍ଡ ଓ ଭୋଟର କାର୍ଡ ସହିତ ଆସିବାକୁ ଅନୁରୋଧ କରାଯାଉଛି । ଟିକା ନେବାକୁ ଆସୁଥିବା ସମସ୍ତ ବ୍ୟକ୍ତି ମାସ୍କ ପିନ୍ଧି ଆସିବା ଏବଂ ସାମାଜିକ ଦୂରତା ରକ୍ଷା କରିବା ପାଇଁ ଅନୁରୋଧ କରାଯାଉଛି । ଟିକା ନେବାକୁ ଆସୁଥିବା ସମସ୍ତ ବ୍ୟକ୍ତି ଏହି ସୂଚନାକୁ ଗୁରୁତ୍ୱ ଦେଇ ଟିକାକରଣ କେନ୍ଦ୍ରରେ ଉପସ୍ଥିତ ରହି ସହଯୋଗ କରିବାକୁ ଅନୁରୋଧ କରାଯାଉଛି ।

ଅହଲ୍ୟା ଦେହୁରୀ
ସରପଞ୍ଚ
ଗ୍ରାମ ପଞ୍ଚାୟତ

ଅହଲ୍ୟା ଦେହୁରୀ
ସରପଞ୍ଚ
ଗ୍ରାମ ପଞ୍ଚାୟତ

ତାରିଖ
୨୦/୨/୨୧
ଇ.

ଜାତିସଂଯୁକ୍ତି

କ୍ରମିକ	ଗ୍ରାମର ନାମ	ଅଧିବାସୀ ସଂଖ୍ୟା	ଘରସଂଖ୍ୟା	ମନ୍ତବ୍ୟ
୧	ଉତ୍ତରପାଲି	୭୫୫	୧୫୫	ଦୁଇଟି ଅଙ୍ଗନବାଡି କେନ୍ଦ୍ର ରହିଛି
୨	ଦିଘଲିଗାଁ	୬୮୫	୧୪୫	ଅଙ୍ଗନବାଡି କେନ୍ଦ୍ର ଏବଂ ଏକ ପ୍ରାଥମିକ ବିଦ୍ୟାଳୟ ରହିଛି
୩	ମାଝିଆଳିପଡ଼ା	୩୫୫	୭୫	ଅଙ୍ଗନବାଡି କେନ୍ଦ୍ର ରହିଛି
୪	ଜାଲପଡ଼ା	୭୫୫	୧୫୫	ଅଙ୍ଗନବାଡି କେନ୍ଦ୍ର ରହିଛି

ଜରୁରୀପତ୍ର ନଂ - ୪୨ ତାରିଖ -- ୫.୦୨.୨୦୨୧

ଏତଦ୍ଦ୍ୱାରା ଜଣାଯାଉଛି ଯେ ଆସନ୍ତାକାଲି ତା. ୬.୦୨.୨୦୨୧ ରିଖ ସକାଳ ୭ଟାରୁ ଅପରାହ୍ନ ୩ଟା ପର୍ଯ୍ୟନ୍ତ ଗ୍ରାମର ସମସ୍ତ ଅଧିବାସୀଙ୍କ ପାଇଁ ଜରୁରୀକାଳୀନ ଭିତ୍ତିରେ କରୋନା ଟିକାକରଣ ଅଭିଯାନ ଚାଲିବ । ଏଥିପାଇଁ ଗ୍ରାମର ୪ଟି ସ୍ଥାନରେ ଟିକାକରଣ କେନ୍ଦ୍ର ଖୋଲାଯିବ । ଏଥିରେ ୧୮ ବର୍ଷରୁ ଉର୍ଦ୍ଧ୍ୱ ସମସ୍ତ ବୟସ୍କ ନାଗରିକ ଟିକା ନେଇପାରିବେ । ଟିକା ନେବାକୁ ଆସିବା ସମୟରେ ଆଧାର କାର୍ଡ ଓ ଭୋଟର କାର୍ଡ ସହିତ ଆସିବାକୁ ଅନୁରୋଧ କରାଯାଉଛି । ଟିକା ନେବାକୁ ଆସୁଥିବା ସମସ୍ତ ବ୍ୟକ୍ତି ମାସ୍କ ପିନ୍ଧି ଆସିବା ଏବଂ ସାମାଜିକ ଦୂରତା ରକ୍ଷା କରିବା ପାଇଁ ଅନୁରୋଧ କରାଯାଉଛି । ଟିକା ନେବାକୁ ଆସୁଥିବା ସମସ୍ତ ବ୍ୟକ୍ତି ଏହି ସୂଚନାକୁ ଗୁରୁତ୍ୱ ଦେଇ ଟିକାକରଣ କେନ୍ଦ୍ରରେ ଉପସ୍ଥିତ ରହି ସହଯୋଗ କରିବାକୁ ଅନୁରୋଧ କରାଯାଉଛି ।

ଅହଲ୍ୟା ଦେହୁରୀ
ସରପଞ୍ଚ
ଗ୍ରାମ ପଞ୍ଚାୟତ

ଜରୁରୀପତ୍ର ନଂ - ୪୨(୧) ତାରିଖ :- ୫.୦୨.୨୦୨୧

ଏତଦ୍ଦ୍ୱାରା ସମସ୍ତ ଗ୍ରାମବାସୀଙ୍କୁ ସୂଚନା ଦିଆଯାଉଛି ଯେ ଆସନ୍ତାକାଲି ତା. ୬.୦୨.୨୦୨୧ ରିଖ ସକାଳ ୭ଟାରୁ ଅପରାହ୍ନ ୩ଟା ପର୍ଯ୍ୟନ୍ତ ଗ୍ରାମର ସମସ୍ତ ଅଧିବାସୀଙ୍କ ପାଇଁ ଜରୁରୀକାଳୀନ ଭିତ୍ତିରେ କରୋନା ଟିକାକରଣ ଅଭିଯାନ ଚାଲିବ । ଏଥିପାଇଁ ଗ୍ରାମର ୪ଟି ସ୍ଥାନରେ ଟିକାକରଣ କେନ୍ଦ୍ର ଖୋଲାଯିବ । ଏଥିରେ ୧୮ ବର୍ଷରୁ ଉର୍ଦ୍ଧ୍ୱ ସମସ୍ତ ବୟସ୍କ ନାଗରିକ ଟିକା ନେଇପାରିବେ । ଟିକା ନେବାକୁ ଆସିବା ସମୟରେ ଆଧାର କାର୍ଡ ଓ ଭୋଟର କାର୍ଡ ସହିତ ଆସିବାକୁ ଅନୁରୋଧ କରାଯାଉଛି । ଟିକା ନେବାକୁ ଆସୁଥିବା ସମସ୍ତ ବ୍ୟକ୍ତି ମାସ୍କ ପିନ୍ଧି ଆସିବା ଏବଂ ସାମାଜିକ ଦୂରତା ରକ୍ଷା କରିବା ପାଇଁ ଅନୁରୋଧ କରାଯାଉଛି । ଟିକା ନେବାକୁ ଆସୁଥିବା ସମସ୍ତ ବ୍ୟକ୍ତି ଏହି ସୂଚନାକୁ ଗୁରୁତ୍ୱ ଦେଇ ଟିକାକରଣ କେନ୍ଦ୍ରରେ ଉପସ୍ଥିତ ରହି ସହଯୋଗ କରିବାକୁ ଅନୁରୋଧ କରାଯାଉଛି ।

ଅହଲ୍ୟା ଦେହୁରୀ
ସରପଞ୍ଚ
ଗ୍ରାମ ପଞ୍ଚାୟତ

ଅହଲ୍ୟା ଦେହୁରୀ
ସରପଞ୍ଚ
ଗ୍ରାମ ପଞ୍ଚାୟତ

Paesed for payment of Rs. 500/-
(Rupees Five hundred) only

Sarpanch
Kansa rama Panchayat

Passed by me Rs 500/---

Executive Officer
Kansa G P

ଥାନା ପରିସୀମାରୁ ଜାତିସାଙ୍କ୍ଷ୍ୟ, ଜାଜିପୁର ପୋଲିସ

ଅଭିଯୋଗ ନଂ - ୪୪୩ ତା. ୧୨. ୮. ୨୦୧୩.

ମୁଁ ଜଣେ ଅଶିକ୍ଷିତା ଆଦିବାସୀ ମହିଳା ଏବଂ ମୋର ମାତୃଭାଷା ଓଡ଼ିଆ ନୁହେଁ । ମୋର ଜନ୍ମ ଓ ଲାଳନପାଳନ ଏଠାରେ ହୋଇଥିବାରୁ ମୁଁ ଏଠାର ଭାଷା ଓଡ଼ିଆ ଭଲ ବୁଝିପାରେ । ମୁଁ ଓଡ଼ିଆ ଭାଷା ଭଲ ଲେଖି ପାରୁନାହିଁ । ମୋର ଅଭିଯୋଗ ଏହି ଯେ, ମୋ ସ୍ୱାମୀ ଶ୍ରୀ ଦୁଃଖୀରାମ ମୁଣ୍ଡା ଏବଂ ମୋ ଶାଶୁ ଶ୍ରୀମତୀ ଲକ୍ଷ୍ମୀ ମୁଣ୍ଡା ଉଭୟେ ମୋତେ ଯୌତୁକ ପାଇଁ ଦୀର୍ଘ ଦିନ ଧରି ନିର୍ଯ୍ୟାତନା ଦେଉଥିଲେ । ଗତ ୧୦. ୭. ୨୦୧୩ ତାରିଖ ଦିନ ମୋ ସ୍ୱାମୀ ଓ ଶାଶୁ ମୋତେ ଘରୁ ବାହାର କରି ଦେଇଥିଲେ । ମୁଁ ମୋ ବାପା ଘରେ ରହୁଛି । ମୋ ସ୍ୱାମୀ ଓ ଶାଶୁ ମୋତେ ଫୋନ୍ ଯୋଗେ ଯୌତୁକ ପାଇଁ ଧମକ ଚମକ ଦେଉଛନ୍ତି । ମୋ ସ୍ୱାମୀ ଓ ଶାଶୁ ମୋତେ ଯୌତୁକ ପାଇଁ ମାରିଦେବା ପାଇଁ ଧମକ ଦେଉଛନ୍ତି । ମୁଁ ଏ ବିଷୟରେ ଥାନାରେ ଅଭିଯୋଗ କରିବାକୁ ଚାହୁଁଛି । ମୋ ସ୍ୱାମୀ ଓ ଶାଶୁଙ୍କ ବିରୁଦ୍ଧରେ ଉପଯୁକ୍ତ ଆଇନଗତ କାର୍ଯ୍ୟାନୁଷ୍ଠାନ ଗ୍ରହଣ କରିବାକୁ ମୁଁ ଆବେଦନ କରୁଛି ।

ଆପଣଙ୍କ ବିଶ୍ୱସ୍ତା

Jitima munda

ଜିତିମା ମୁଣ୍ଡା

ପିତା - ଶ୍ରୀ ଦୁଃଖୀରାମ ମୁଣ୍ଡା

ଗ୍ରାମ - ଜାଜିପୁର ସହର

ଥାନା - ଜାଜିପୁର

ଜିଲ୍ଲା - ଜାଜିପୁର

ଅଭିଯୋଗ ଶୁଣି ଲିପିବଦ୍ଧ କରିଥିବା ଅଫିସରଙ୍କ ନାମ ଓ ପଦବୀ

ଶ୍ରୀ ଅଜୟ କୁମାର ପଣ୍ଡା

ଏ.ଏସ୍.ଆଇ.

ଜାଜିପୁର ପୋଲିସ

Ajaya Kumar Panda

ASI

Jajpur Police

ଜଙ୍ଗଲ ଅଧିକାର ଆଇନ୍ -୨୦୦୬ ଅନୁସାରେ କରାଯାଇଥିବା ଗ୍ରାମସଭା ବୈଠକର ବିବରଣୀ

ତାରିଖ : ୦୬-୦୯-୨୦୧୩ ସମୟ : ଅପରାହ୍ନ: ଘ ୩.୦୦ଟିକା

ସ୍ଥାନ: ସୁକୁରଙ୍ଗି ଆମ୍ବତୋଟା

ଅଦ୍ୟ ତା ୦୬-୦୯-୨୦୧୩ ରିଖ ଅପରାହ୍ନ: ଘ ୩.୦୦ଟିକା ସମୟରେ ସୁକୁରଙ୍ଗି ଆମ୍ବତୋଟା ପରିସର ମଧ୍ୟରେ ଜିଲ୍ଲାପାଳ , ଯାଜପୁର ଙ୍କ କାର୍ଯ୍ୟାଳୟ ପତ୍ର ସଂଖ୍ୟା- ୧୩୦୬, ତା ୧୬-୦୬-୨୦୧୩ ରିଖ ଓ ଗୋଷ୍ଠିଉନ୍ନୟନ ଅଧିକାରୀ, ସୁଜିନାଙ୍କ ପତ୍ର ସଂଖ୍ୟା-୨୯୦୬, ତା ୦୧-୦୮-୨୦୧୩ ରିଖ ଅନୁସାରେ ସାଉଥ କାଳିଆପାଣି ଖଣିର ଡାଇଭରସନ୍ ପ୍ରପୋଜାଲ୍ ନିମନ୍ତେ ଏବଂ ଜିଲ୍ଲାପାଳ, ଯାଜପୁର ଙ୍କ କାର୍ଯ୍ୟାଳୟ ପତ୍ର ସଂଖ୍ୟା-୧୨୯୨, ତା ୧୫-୦୬-୨୦୧୩ ରିଖ ଓ ଗୋଷ୍ଠିଉନ୍ନୟନ ଅଧିକାରୀ, ସୁଜିନାଙ୍କ ପତ୍ର ସଂଖ୍ୟା-୨୯୦୫, ତା ୦୧-୦୮-୨୦୧୩ ରିଖ ଅନୁସାରେ ସୁକୁରଙ୍ଗି ଖଣିର ଡାଇଭରସନ୍ ପ୍ରପୋଜାଲ୍ ନିମନ୍ତେ ସରପଞ୍ଚ, କାଳିଆପାଣି ଗ୍ରାମ ପଞ୍ଚାୟତଙ୍କ ଅଧ୍ୟକ୍ଷତାରେ ପୂର୍ବ ନିର୍ଦ୍ଧାରିତ କାର୍ଯ୍ୟସୂଚୀ ଅନୁଯାଇ ଏଜ ଗ୍ରାମସଭା (ଜଙ୍ଗଲ ଅଧିକାର ଆଇନ୍ ଧାରା-୬ଜ ମର୍ତାବଳି ମୁତାବଜ) ବୈଠକ ଆୟୋଜନ କରାଯାଇଥିଲା । ଉକ୍ତ ଗ୍ରାମସଭାରେ ନିମ୍ନଲିଖିତ ବ୍ୟକ୍ତି ଏବଂ ପଦାଧିକାରୀ ମାନେ ଉପସ୍ଥିତ ଥିଲେ ।

୧. ସରପଞ୍ଚ, କାଳିଆପାଣି ଗ୍ରାମପଞ୍ଚାୟତ
୨. ଜଙ୍ଗଲଅଧିକାର କମିଟିର ସଭାପତି
୩. ଜଙ୍ଗଲଅଧିକାର କମିଟିର ସମ୍ପାଦକ
୪. ଜଙ୍ଗଲଅଧିକାର କମିଟିର ଅନ୍ୟାନ ସଭ୍ୟ ଓ ସଭ୍ୟା ବୃନ୍ଦ
୫. ଗ୍ରାମବାସୀ ବୃନ୍ଦ

ଏତଦ୍ ବ୍ୟତିତ, ଉକ୍ତ ଗ୍ରାମସଭାରେ ନିମ୍ନଲିଖିତ ସରକାରୀ କର୍ମଚାରୀ ଓ ଓଡ଼ିଶା ଖଣି ନିଗମର ଅଧୀକାରୀ ମାନେ ଉପସ୍ଥିତ ଥିଲେ ।

୧. ମଙ୍ଗଳ ସଂଗ୍ରସାରଣ ଅଧିକାରୀ ତଥା ନୋଡାଲ୍ ଅଫିସର,ଏଫ୍.ଆର୍ ଏ.,ସୁଜିନା
୨. ବନପାଳ, ରାଁସୋଳ
୩. ରାଜସ୍ୱ ପରିଦର୍ଷକ, ସୁକିନା
୪. ରାଜସ୍ୱ ନୀରିକ୍ଷକ,ଗୋବର୍ଧନପୁର୍
୫. ରାଜସ୍ୱ ନୀରିକ୍ଷକ, କାଙ୍କଡପାଳ
୬. ପଞ୍ଚାୟତ ନିର୍ବାହି ଅଧିକାରୀ, କାଳିଆପାଣି ଗ୍ରାମପଞ୍ଚାୟତ

୭. ଖଣିପରିଚାଳକ, ସାଉଥ କାଳିଆପାଣି ଖଣି
୮. ବରିଷ୍ଠ ଖଣିପରିଚାଳକ, ସୁକୁରଙ୍ଗି ଖଣି

ଉକ୍ତ ଗ୍ରାମସଭାରେ ଓଡିଶା ଖଣି ନିଗମ ଦ୍ୱାରା ପରିଚାଳିତ ସାଉଥ କାଳିଆପାଣି ଖଣି ଏବଂ ସୁକୁରଙ୍ଗି ଖଣି ର ଡାଇଭରସନ୍ ପ୍ରପୋଜାଲ୍ ର ଉଦ୍ଦେଶ୍ୟ ଓ ତାହାର କାର୍ଯ୍ୟ କାରିତା ସମ୍ବନ୍ଧ ରେ ବିଷଦ ଭାବରେ ବୈଠକରେ ନିମ୍ନମତେ ଆଲୋଚନା କରାଯାଇଥିଲା । ଏତଦ୍ ବ୍ୟତିତ ଅନୁସୂଚିତ ଜନଜାତି ଏବଂ ଅନ୍ୟାନ୍ୟ ପାରମ୍ପାରିକ ବନବାସିଙ୍କର (ଜଙ୍ଗଲ ସ୍ୱୀକୃତ ଅଧିକାର ଆଇନ୍-୨୦୦୬) ର ସମସ୍ତ ନୀତିନିୟମ ସମ୍ବନ୍ଧରେ ଆଲୋଚନା କରାଗଲା ।

୧. <u>ସାଉଥ କାଳିଆପାଣି ଖଣି ନିମନ୍ତେ ଗ୍ରାମ ସଭା ବୈଠକର ବିବରଣୀ :</u>

ଓଡିଶା ଖଣି ନିଗମ ପରିଚାଳିତ ସାଉଥ କାଳିଆପାଣି ଖଣି ର ଡାଇଭରସନ୍ ପ୍ରପୋଜାଲ ନିମତେ ସୁକୁରଙ୍ଗି ମୌଜାରେ ୨୯୧.୭୧ ଏକର ଜଙ୍ଗଲ ଜମିକୁ ଅଣ ଜଙ୍ଗଲ ଉଦ୍ଦେଶ୍ୟରେ ବ୍ୟବହାର ପା ଜିଥିବା ଆବେଦନ କୁ ତାହର ମାନଚିତ୍ର ସହ ଗ୍ରାମସଭାର ଅବଗତି ନିମନ୍ତେ ଉପସ୍ଥାପନା କରାଗଲା ।

ରାଜସ୍ୱ ନୀରିକ୍ଷକ, କାଙ୍କଡପାଳ ଙ୍କ ଦ୍ୱାରା ଜଙ୍ଗଲ ଅଧିକାର ଆଇନ୍ ସମ୍ବନ୍ଧରେ କରାଯାଇଥି ସର୍ଜମିନି ତଦନ୍ତ ବିବରଣୀ ଉକ୍ତ ବୈଠକରେ ଉପସ୍ଥାପିତ କରାଯାଇଥିଲା । ଓଡିଶା ଖଣି ନିଗମ ପରିଚାଳି ସାଉଥ କାଳିଆପାଣି ଖଣି ଆବେଦନ କରିଥିବା ଡାଇଭରସନ୍ ପ୍ରପୋଜାଲ୍ ରେ ମୌଜା ସୁକୁରଙ୍ଗି ର ୨୯୧.୭ ଏକର ଜଙ୍ଗଲଜମି ଅର୍ନ୍ତଭୁକ୍ତ ଅଟେ ।

ରାଜସ୍ୱ ନୀରିକ୍ଷକ, କାଙ୍କଡପାଳଙ୍କ ଉପସ୍ଥାପିତ ବିବରଣୀ ରୁ ଜଣାଗଲା ଯେ ମୌଜା ସୁକୁରଙ୍ଗି ପ୍ରସ୍ତାବିତ ଡାଇଭରସନ୍ ରକବା ମଧ୍ୟରେ କୌଣସି ଲୋକ ବସ ବାସ କରୁ ନାହାନ୍ତି ।

୨. <u>ସୁକୁରଙ୍ଗି ଖଣି ନିମନ୍ତେ ଗ୍ରାମ ସଭା ବୈଠକର ବିବରଣୀ ଗ୍ରାମ ସଭା ବୈଠକର ବିବରଣୀ</u>

ଓଡିଶା ଖଣି ନିଗମ ପରିଚାଳିତ ସୁକୁରଙ୍ଗି ଖଣି ର ଡାଇଭରସନ୍ ପ୍ରପୋଜାଲ୍ ନିମନ୍ତେ ସୁକୁ ମୌଜାରେ ୭.୪୩ ଏକର ଏବଂ ଫରେଷ୍ଟ ବ୍ଲକ-୨୭ ରେ ୩୬.୧୦ ଏକର (ସମୁଦାୟ- ୪୨.୫୩ ଏକ ଜଙ୍ଗଲ ଜମିକୁ ଅଣ ଜଙ୍ଗଲ ଉଦ୍ଦେଶ୍ୟରେ ବ୍ୟବହାର ପାଇଁ କରିଥିବା ଆବେଦନ କୁ ତାହାର ମାନ ସହ ଗ୍ରାମସଭାରେ ଅବଗତି ନିମନ୍ତେ ଉପସ୍ଥାପନା କରାଗଲା ।

ରାଜସ୍ୱ ନୀରିକ୍ଷକ, କାଙ୍କଡପାଳ ଙ୍କ ଦ୍ୱାରା ଜଙ୍ଗଲ ଅଧିକାର ଆଇନ୍ ସମ୍ବନ୍ଧରେ କରାଯାଇ ସର୍ଜମିନ୍ ତଦନ୍ତ ବିବରଣୀ ଉକ୍ତ ବୈଠକରେ ଉପସ୍ଥାପିତ କରାଯାଇଥିଲା । ଓଡିଶା ଖଣି ନିଗମ ପରିଚା ସୁକୁରଙ୍ଗି ଖଣି ପାଇଁ ଆବେଦନ କରିଥିବା ଡାଇଭରସନ୍ ପ୍ରପୋଜାଲ୍ ରେ ମୌଜା ସୁକୁରଙ୍ଗି ରେ ୭. ଏକର ଜଙ୍ଗଲଜମି ଅର୍ନ୍ତଭୁକ୍ତ ଅଟେ ଏବଂ ଅବଶିଷ୍ଟ ୩୬.୧୦ ଏକର ଫରେଷ୍ଟ ବ୍ଲକ-୨୭ ରେ ଅନ୍ତର୍ଭୁକ୍ତ

ରାଜସ୍ୱ ନୀରିକ୍ଷକ, କାଙ୍କଡପାଳଙ୍କ ଉପସ୍ଥାପିତ ବିବରଣୀ ରୁ ଜଣାଗଲା ଯେ ମୌଜା ସୁକୁରଙ୍ଗି ଏବଂ ଫରେଷ୍ଟ ବୁକ--୨୬ ରୁ ପ୍ରସ୍ତାବିତ ଡାଇଭରସନ୍ ଉଜବା ମଧ୍ୟରେ କୌଣସି ବ୍ୟକ୍ତି ବିଶେଷ ବସ ବାସ କରୁ ନାହାନ୍ତି ।

ଉକ୍ତ ଗ୍ରାମ ସଭାରେ ସାଉଥ ଜାଳିଆପାଣି ଖଣି ଏବଂ ସୁକୁରଙ୍ଗି ଖଣି ପାଇଁ ଡାଇଭରସନ ପ୍ରପୋଜାଲର ବିଭିନ୍ନ ଦିଗ ସମ୍ବନ୍ଧରେ ବିସ୍ତୃତ ଭାବେ ଆଲୋଚନା କରାଯାଇ ଉପସ୍ଥିତ ଗ୍ରାମବାସୀ ମାନଙ୍କୁ ଭଲ ଭାବେ ବୁଝାଇ ଦିଆଯାଇଥିଲା । ଏଣୁ ସୁକୁରଙ୍ଗି ମୌଜାର ୬.୪୩ ଏକର ଓ ଫରେଷ୍ଟ ବୁକ-୨୬ ର ୩୬.୧୦ ଏକର (ସମୁଦାୟ--୪୨.୫୩ ଏକର) ସୁକୁରଙ୍ଗି ଖଣି ପାଇଁ ଏବଂ ସୁକୁରଙ୍ଗି ମୌଜାରୁ ୨୯୧.୭୧ ଏକର ସାଉଥ ଜାଳିଆପାଣି ଖଣି ପାଇଁ ପ୍ରସ୍ତାବିତ ଡାଇଭରସନ୍ ପ୍ରପୋଜାଲ୍ ମୁତାବକ ଉକ୍ତ ଜଙ୍ଗଲ ଜମିକୁ ଖଣି ଖାଦାନ ଉଦ୍ଦେଶ୍ୟ ରେ ବ୍ୟବହାର କରାଗଲେ ଗ୍ରାମବାସି ମାନଙ୍କର କୌଣସି ଆପତ୍ତି ଅଭିଯୋଗ ରହିବ ନାହିଁ ବୋଲି ଗ୍ରାମସଭାରେ ଉପସ୍ଥିତ ଗ୍ରାମବାସି ମାନେ ମତ ପ୍ରକାଶ କଲେ । ଗ୍ରାମସଭାରେ ଉପସ୍ଥିତ ସମସ୍ତ ସଭ୍ୟ ସଭ୍ୟା ଉକ୍ତ ପ୍ରସ୍ତାବକୁ ସମର୍ଥନ କରିବାସହ ସୁକୁରଙ୍ଗି ଖଣି ଏବଂ ସାଉଥ ଜାଳିଆପାଣି ଖଣି ଖାଦାନ କାର୍ଯ୍ୟକୁ ତ୍ୱରାନ୍ୱିତ କରିବା ପାଇଁ ବୈଠକରେ ସହମତି ପ୍ରକାଶ ପାଇଥିଲା ।

ସର୍ବଶେଷରେ ସଭାପତି ଉପସ୍ଥିତ ସମସ୍ତ ସଭ୍ୟ ସଭ୍ୟା , ସରକାରୀ କର୍ମଚାରୀ ଏବଂ ଓଡିଶା ଖଣି ନିଗମ କର୍ତ୍ତୃପକ୍ଷଙ୍କୁ ଧନ୍ୟବାଦ ଅର୍ପଣ ସଭା ସାଙ୍ଗ କରିଥିଲେ ।

Satrughna Dehury
ସଭାପତି
ଜଙ୍ଗଲଅଧିକାର କମିଟି

ସମ୍ପାଦକ
ଜଙ୍ଗଲଅଧିକାର କମିଟି

Tinka Munda
ସରପଞ୍ଚ
ଜାଳିଆପାଣି ଗ୍ରାମପଞ୍ଚାୟତ

6/9/13
Revenue Inspector
Kankadanal
କାଙ୍କଡପାଳ

6/9/13
ରାଜସ୍ୱ ନୀରିକ୍ଷକ
ରାଜସ୍ୱ ନିରୀକ୍ଷକ
ଗୋବର୍ଦ୍ଧନପୁର

ରାଜସ୍ୱ ପର୍ଯ୍ୟବେକ୍ଷକ
Revenue Supervisor
SUKINDA TAHASIL

ପଞ୍ଚାୟତ ନିର୍ବାହି ଅଧିକାରୀ କାଳିଆପାଣି 6-9-13
Executive Officer
Kalispani G P

ବନପାଳ
ରାଉରକେଲା
Sashikanta Behera
Forest Section Officer
Ransol Section

ଖଣି ପରିଚାଳକ
Manager (Mining)
South Kalimati Chromite Mine
Orissa Mining Corporation

ବରିଷ୍ଠ ଖଣିପରିଚାଳକ
ସୁକୁରଙ୍ଗି ଖଣି

Santosh Kumar Pati
6.9.13
ମଙ୍ଗଳ ସଂପ୍ରସାରଣ ଅଧିକାରୀ ତଥା
ନୋଡାଲ୍ ଅଫିସର, ଏଫ୍.ଆର୍.ଏ., ସୁକିନ୍ଦା

1/ Madadhar Dehury (W.M)
2/ Sarat Dehury
3/ Binaya Kumar Dehury
4/ Bhima Dehury
5/ [illegible]
6/ [illegible]
7/ [illegible]
8/ [illegible]
9/ [illegible]
10/ [illegible]
11/ [illegible]
12/ Mahas Dehury
13/ [illegible]
14/ [illegible]
15/ Bijaya Ku Dehuri
16/ Sankar Dehury
17/ [illegible]
18/ Nilendra ROUT
19/ [illegible]
20/ [illegible]
21/ [illegible]
22/ [illegible]
23/ [illegible]
24/ [illegible]

Trinath Munda
Sarpanch
Kalapani G.P.

763

35/ [redacted] ଦେଉଡ଼ି

36/ [redacted] ଦେଉଡ଼ି

37/ [redacted] ଦେଉଡ଼ି

38/ [redacted] ଦେଉଡ଼ି

39/ [redacted] ଦେଉଡ଼ି

40/ pitaous Dehury

41/ [redacted] ଦେଉଡ଼ି

42/ [redacted] ଦେଉଡ଼ି

43/ [redacted] ଦେଉଡ଼ି

44/ [redacted] ଦେଉଡ଼ି

45/ Unati Dehuri

46/ [redacted] ଦେଉଡ଼ି

47/ [redacted] ଦେଉଡ଼ି

48/ [redacted] ଦେଉଡ଼ି

49/ [redacted] ଦେଉଡ଼ି

50/ [redacted] ଦେଉଡ଼ି

Janifa munda
Sarpanch

41) [illegible]

42) [illegible]

43) [illegible]

44) [illegible]

45) [illegible]

46) [illegible]

47) [illegible]

48) Kirtan Dehury

49) [illegible]

50) Reena Chandra Dehury

51) Shankaraghan Dehury

52) Kailash Dehury

53) [illegible]

54) [illegible]

55) [illegible]

56) [illegible]

57) [illegible]

58) [illegible]

59) [illegible]

Jamadamunda
Sarpanch
KALLAPANI G.P.

76

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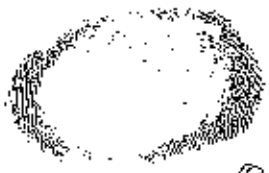
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Smita Munda
Surrogate

77/ [illegible]

78/ [illegible]

79/ [illegible]

80/ [illegible]

81/ [illegible]

82/ [illegible]

83/ [illegible]

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87/ [illegible]

88/ [illegible]

89/ [illegible]

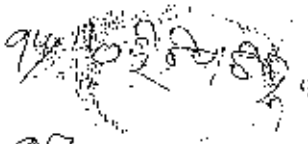
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91/ [illegible]

92/ [illegible]

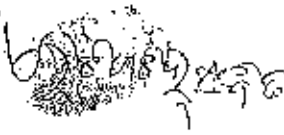
Sanatan Munda
Sarapanch
KALIAPANI G.P.

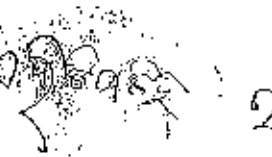








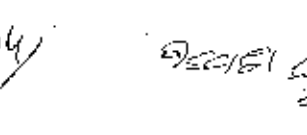




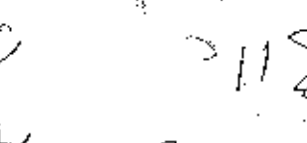


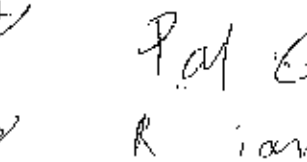












109/ ଦଣ୍ଡୀରା ହାଣ୍ଡି
110/ ସାଉନ ଜାଲୁଝୁଡି
111/ ଚରା ଫୁଟୁକି ସୁତା
112/ ଚୁଲି କାନ୍ଦୁଣି
113/ ସାବରା ଝୁଡୁଣୀ
114/ ଅଧିପାଇ ଝୁଲାନି
115/ ଗୁଡ଼ିଆ ଖେଳଣି
116/ Fishy patao
117/ ଛୁଆ ଗାଈ
118/ ଛୁଆ ଗାଈ
119/ ଦିହୁଡି ଘର ଚିତ୍ରକଥା
120/ ଅଣ୍ଡିରା ଚିତ୍ରକଥା

121/ ଦିନ ସନ୍ଧ୍ୟାଚିତ୍ର
122/ ଜିବୁ ସନ୍ଧ୍ୟାଚିତ୍ର
123/ ଜୈନ୍ତ୍ରା ହାଉ ସିଂ
124/ ଉଜ୍ଜ୍ୱଳି ସିଂ
125/ Rai kumarsingh
126/ Bhageswar Singh
127/ ଶୀତା ସିଂ
128/ ଝୁଲିଆ ଘଣ୍ଟି
129/ ଗଜୁଆଣି ଛାତି
130/ ଛତ୍ରିଆ ଛାତି

Jinka munda
Sarpanch
KALIAPANI G.P.

131/ ବାଛୁ ଆଣ୍ଡୁରି ମୁଣ୍ଡା
132/ ଆଘାନ୍ତି ଦେହୁରୀ
133/ ସାବ୍ରମି ଦେହୁରୀ

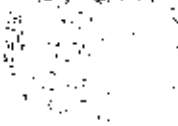
134/  ଅଞ୍ଜି ଦେହୁରୀ

135/ ~~Rashmita~~ Dehury
Rashmita Dehury

136/  ଜଯନ୍ତୀ ଦେହୁରୀ

137/  ଚନ୍ଦ୍ରା ଦେହୁରୀ
138/ ଗୋଦାବରୀ ମୁଣ୍ଡା

139/  ଚନ୍ଦ୍ରମଣି ଦେହୁରୀ

140/  ମୁକୁନ୍ଦ ଦେହୁରୀ

141/  ସିକ୍ରିଲ ଦେହୁରୀ
142/ ଜୟନ୍ତୀ ମୁଣ୍ଡା
143/ ଲାଭା ଦେହୁରୀ
144/ ଅଞ୍ଜି ଦେହୁରୀ
145/ ଦେହୁରୀ
146/ ଶାନ୍ତି ଦେହୁରୀ
ଚନ୍ଦ୍ର ମଣି ଦେହୁରୀ

147/  ଅନନ୍ତ ଦେହୁରୀ

Jamuna Munda
Sarapanch
KALIAPANI G.P.

154/ ଶକ୍ତି ସେଠୀ
155/ Bhagirathi Sethi
156/ Gitarani Sethi
157/  ଗୀତାରାଣୀ ସେଠୀ
158/  ଭାଗିରଥି ସେଠୀ
159/ Hemprabha Sharma
160/  ହେମପ୍ରଭା ଶର୍ମା
161/ ଜୟନ୍ତୀ ମହାନ୍ତି
162/ Odary Samad
163/  ଜୟନ୍ତୀ ମହାନ୍ତି
164/  ଜୟନ୍ତୀ ମହାନ୍ତି
165/ ନିଳାମଣି ଦେବୀ
166/ ଜୋମୁ ବାଗିଚା
167/ Jomora Begam
168/  ଜୋମୁରା ବେଗମ

Jinnta Munda
Sarapanch
KALIAPANI G.P.

169/ ଦଳଥୁର ମହାନ୍ତି : 9L771

165/ Manga Mandla

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168/ Mahant Hansda

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170/ Bandharam Murmu

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180/ Basanta Hansdak

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Sarapanch
KALIAPANI G.P.

182 Ameli Kumar Mandal

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Jamuna munda
Sarapanch
KALIAPANI G.P.



Janita Munda
Sarapanch
KALLAPAHI G.P.

215/ [illegible]

216/ [illegible]

217/ [illegible]

218/ Sadananda Behury

219/ [illegible]

220/ [illegible]

221/ [illegible]

222/ [illegible]

223/ [illegible]

224/ [illegible]

225/ [illegible]

226/ [illegible]

227/ [illegible]

Jnitamanda
Sarapanch
KALIMPARA G.P.

775

228/ Rabindra Dehury

229/ [illegible]

230/ [illegible]

231/ [illegible]

232/ Mangaraj Dehury

233/ Abhiram Dehury

234/ Seebashis Dehury

235/ Gyabinda Dehury

236/ Narasingha pradhan

237/ pankaj Dehury

238/ Tarun Dehury

239/ Narayan Pradhan

240/ [illegible]

241/ [illegible]

242/ [illegible]

243/ [illegible]

244/ [illegible]

245/ Budhadeb Barik

Sunita Munda
Sarpanch
KALIAPANI G.P.

Dinesh Kumar Singh

Rohit Kumar Das

265 [illegible]

266 [illegible]

267 Prabhat Kumar [illegible]

268 [illegible]

269 [illegible]

270 [illegible]

271 [illegible]

272 [illegible]

273 [illegible]

274 Ganga [illegible]

275 [illegible]

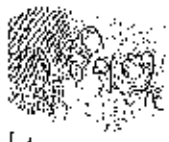
276 [illegible]

277 [illegible]

278 [illegible]

Jamida munda
Sarpanch
VILLAGE [illegible]













Sanghamitra
Sarpanch
ALIAPARA G.P.

Basanta Kumar Nayak
ବସନ୍ତ କୁମାର ନାୟକ
Basanta Kumar Nayak

Golekhia Behera Bhaga
Yogendra Mohanty
ଗୋଲକିଆ ବେହେରା ଭାଗ
Rajeeb Mohanty
Sanjeeb Mohanty
Pradeep Kumar Sahu
Manmatha Mohanty
Gnanaranjan Sethi
Pandita Sethi
ରୁକ୍ମାଣି ଦାସ
Rukmani Das
Dipak Kumar Das
ଦୀପକ କୁମାର ଦାସ
Sushanta Mohanty
Tarun Kumar Mahanta
ତରୁଣ କୁମାର ମହାନ୍ତ
Gopal Ch. Sahu
ଶାନ୍ତି ମୁଣ୍ଡା
Jayanti Das
ଜୟନ୍ତୀ ଦାସ
Sagar Ranjan Das
ସାଗର ରଞ୍ଜନ ଦାସ
ଅମିତା ମୁଣ୍ଡା
Amita Munda
Amita Sahoo

P. 1-

325/ ସାଗର ଚରଣ ମୁଣ୍ଡା

326/ ଦୁଖୀ ଚାଷୀ ମୁଣ୍ଡା

327/ ଗୋବିନ୍ଦ ମୁଣ୍ଡା

328/ ଗୋପୀନାଥ ମୁଣ୍ଡା

329/ ଜଗନ୍ନାଥ ମୁଣ୍ଡା

330/ ଲକ୍ଷ୍ମୀଧର ମୁଣ୍ଡା

331/ ଲକ୍ଷ୍ମୀକାନ୍ତ ମୁଣ୍ଡା

332/ ସୁକୁମାର ମୁଣ୍ଡା

333/ ଶ୍ରୀମତୀ ମୁଣ୍ଡା

334/ ଭାଗିରଥୀ ମୁଣ୍ଡା

335/ ଚାଷୀ ମୁଣ୍ଡା

336/ Jagadish Mahanand

337/ ଜଗଦୀଶ ମୁଣ୍ଡା

Jamka Munda
Sarpanch
KALIAPANI G.P.

339 [redacted]

340 Ramakrushna Mahakuda

341 [redacted]

342 [redacted]

343 Chandramani Mohanta

344 [redacted]

345 [redacted]

346 Prapful Mohanta

347 [redacted]

348 [redacted]

349 Chita Mohanta

350 [redacted]

351 [redacted]

352 [redacted]

Sinha Munda
Sarpanch
KALIAPANI G.P.

R.A

[3]

OFFICE OF THE PANCHAYAT SAMITI, SUKINDA

Phone No. 06726-244421 ,FAX No. 06726 244421
E Mail Id- bdo-sukinda@gramsat.nic.in

Letter No. 3989 Dt. 7.10.13

To-

District Welfare Officer
Jajpur

Sub- Submission of Gram Sabha resolution copy regarding issuance of Certificates under Forest Right Act, 2006.

Ref- Your Letter No 1307 Dt 17-07-2013

Sir,

With reference to the letters on the captioned subject and as per the D.O Letter No 17593 Dt 24-01-2013 of the Chief Secretary, Odisha for diversion of 291.71 hectors of Forest Land in respect of Soth Kaliapani Mines (Within M.L granted area in Forest Block No 27, Kaliapani) and 6.43 Ares of forest land in Mauza Sukurangi as well as 36.10 Acres of forest land in Forest Block No 27, Kaliapani (both Within the M.L granted area of OMC ltd) towards mining activities of OMC, one Paltiasbha(Gram Sabha) was convened in the premises of Ambatota of Kaliapani village for the purpose issuance of Certificate of No objection and consent in favour of the proposed diversion fulfilling all the Parameters as prerequisite and with required quorum.

The proposed diversion was consented by the local in habitant and given no objection certificate. It is note worthy to mention here that no lands have been occupied by any Scheduled Tribe and Other Traditional Forest Dwellers in the concerned land as per the report of Revenue officials.

The original proceedings recorded in the Gram Sabha along with other pre requisites is enclosed herewith for taking future course of action at your end.

Block Development Officer
Sukinda 7/10/13

List of Enclosures

1- Gramsabha resolution in original form page 1 to 20
2- Photo copy of notice
3- Still photo along video graph copy of Gram sabha recordings
4- Receipt of Drummer Charges
5- Enquiry Report of R.I along with Map & Land Schedule
6- Notice Copy

Memo No 3990 Date 7-10-13

Copy forwarded to Tahasildara, Sukinda / Regional Manager OMC Limited. Jajpur Road for information and necessary action.

Block Development Officer
Sukinda

ଗ୍ରାମର ନାମ :- ଓଷୁପାଳି ଗ୍ରା.ପ୍ର.- ଜିଲ୍ଲା :-

ସ୍କୁଲ :- ଓଷୁପାଳି ପ୍ରାଥମିକ ବିଦ୍ୟାଳୟ ପ୍ରାଚ୍ୟ

ସରିଫ୍ :- ୨୮.୦୦-୨୦୦୪ ଶିକ୍ଷାବର୍ଷ :- ସୁ. ଉ.୦୦-୦୧ ଯାଏ

ଏହି ବିଦ୍ୟାଳୟଟି ୨୮-୦୨-୨୦୦୪ ମସିହାରେ ସ୍ଥାପିତ ହୋଇଥିଲା । ଏହି ଓଷୁପାଳି ପ୍ରାଥମିକ ବିଦ୍ୟାଳୟ ପୂର୍ବରୁ ଏକ ଘରୋଇ ବିଦ୍ୟାଳୟ ଭାବରେ ଚାଲୁଥିଲା । ଏହି ବିଦ୍ୟାଳୟଟି ଜଣେ ଶିକ୍ଷୟିତ୍ରୀଙ୍କ ଦ୍ୱାରା ପରିଚାଳିତ ହେଉଥିଲା । ଏହି ବିଦ୍ୟାଳୟରେ ୧୫ ଜଣ ଛାତ୍ରଛାତ୍ରୀ ପଢୁଥିଲେ । ଏହି ବିଦ୍ୟାଳୟଟି ଏକ ଭଡ଼ା ଘରେ ଚାଲୁଥିଲା । ଏହି ବିଦ୍ୟାଳୟଟି ଏକ ଘରୋଇ ବିଦ୍ୟାଳୟ ଥିବାରୁ ଏଥିରେ ପଢୁଥିବା ଛାତ୍ରଛାତ୍ରୀଙ୍କ ପାଠପଢ଼ା ଉପରେ ଅଭିଭାବକମାନେ ଅସନ୍ତୁଷ୍ଟ ଥିଲେ । ଏହି ବିଦ୍ୟାଳୟଟି ଏକ ଭଡ଼ା ଘରେ ଚାଲୁଥିବାରୁ ଏଠାରେ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ପାଇଁ ପର୍ଯ୍ୟାପ୍ତ ପରିମାଣର ଶିକ୍ଷଣ ସାମଗ୍ରୀ ନଥିଲା । ଏହି ବିଦ୍ୟାଳୟଟି ଏକ ଭଡ଼ା ଘରେ ଚାଲୁଥିବାରୁ ଏଠାରେ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ପାଇଁ ପର୍ଯ୍ୟାପ୍ତ ପରିମାଣର ଶିକ୍ଷଣ ସାମଗ୍ରୀ ନଥିଲା । ଏହି ବିଦ୍ୟାଳୟଟି ଏକ ଭଡ଼ା ଘରେ ଚାଲୁଥିବାରୁ ଏଠାରେ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ପାଇଁ ପର୍ଯ୍ୟାପ୍ତ ପରିମାଣର ଶିକ୍ଷଣ ସାମଗ୍ରୀ ନଥିଲା । ଏହି ବିଦ୍ୟାଳୟଟି ଏକ ଭଡ଼ା ଘରେ ଚାଲୁଥିବାରୁ ଏଠାରେ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ପାଇଁ ପର୍ଯ୍ୟାପ୍ତ ପରିମାଣର ଶିକ୍ଷଣ ସାମଗ୍ରୀ ନଥିଲା । ଏହି ବିଦ୍ୟାଳୟଟି ଏକ ଭଡ଼ା ଘରେ ଚାଲୁଥିବାରୁ ଏଠାରେ ଛାତ୍ରଛାତ୍ରୀଙ୍କ ପାଇଁ ପର୍ଯ୍ୟାପ୍ତ ପରିମାଣର ଶିକ୍ଷଣ ସାମଗ୍ରୀ ନଥିଲା ।

ଶିକ୍ଷାଳୟ ଦେବୀ ଜ୍ଞାନ ଆଲୁକୁ ଚଉଥରେ ଦୋଷୀ ଓ ଦୋଷୀ ଅଟେ ।
ଜିନ୍ଦୁ ଜାନୁକୁ ଜଗଦ୍ଧାତ୍ରୀଙ୍କୁ କାଳିକାର ଯାତ୍ରା ହୁଏ ଅଟକ
ଅଟେ ପ୍ରାଣିକ ଘାସଖଣ୍ଡରୁ ଛତ୍ରଦେବୀ ଅଟେ କିମ୍ବା ଅଟେ
ଜିଲାଦି ଜ୍ଞାନରେ ଖୁଡ଼ୀକୁ ଚଲାଯାଇଥିଲେ ।

ଦିନ ଅଟେ ଆଦିମ ଯାତ୍ରାରେ ବସ୍ତୁମଳ
ଅଟେ ଆଚଣ୍ଡାଳ ଜ୍ଞାନ ଆଜି ଚାଲିଥାଏ ଦୂରି ଅଟେ
ଜିଲାଦି ଯାତ୍ରା ଅଟେ ୪୦.୧୫—ଅଟେ ଜଳ ଜଳ
ଅଟେ ଜଳ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ
ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ
ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ
ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ
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ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ
ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ
ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ ଅଟେ

ଏହି ଜାତୀୟ ପ୍ରସ୍ତାବ ଯାହା ୪୦.୮୫ ଏକର ଜମିରେ ଅଛି ଏହାକୁ ଆମ ଜିଲ୍ଲା ସ୍ତରରେ ଏହାକୁ ଅନୁମତି ଦେବା ପାଇଁ ଅନୁରୋଧ କରୁଛୁ। ଏହି ପ୍ରସ୍ତାବ ଉପରେ ଆମେ ସମସ୍ତ ଅଧିକାରୀ ମାନଙ୍କ ସହିତ ଆଲୋଚନା କରିଛୁ। ଏହି ପ୍ରସ୍ତାବ ଯାହା ଆମ ଜିଲ୍ଲାରେ ଅଛି ଏହାକୁ ଆମେ ଅନୁମତି ଦେଇପାରିବା। ଏହି ପ୍ରସ୍ତାବ ଉପରେ ଆମେ

ଗ୍ରାମ ପଞ୍ଚାୟତ ଅଧିକାରୀଙ୍କ ଦ୍ୱାରା ଭୋଟର ତାଲିକାରେ ଅନ୍ତର୍ଭୁକ୍ତ ହୋଇଥିବା ଭୋଟରମାନଙ୍କ ସୂଚୀ

1- ଶ୍ରୀମତୀ ଅହଲ୍ୟା ଦେବୀ
2- ଭୋଟର ପରିଚୟ ପତ୍ର ନଂ। ORI04/023/026224
3- ସ୍ୱାମୀଙ୍କ ନାମ
4- ଜନ୍ମ ତାରିଖ
5- Gouttam mohanto
6- ବିଜୟ ମହାନ୍ତି
7- Rohit BEHERA
8- ହରି ସାହୁ
9- Rabi Das
10- SANJU Lopalo
11- ଗୋବିନ୍ଦ ଚନ୍ଦ୍ର ଦାସ
12- ମୁଁ
13- ଶ୍ରୀ ବାଳୁ ଖଟୁଆ GKR 149427
14- Laxmidhar Behera GKR 3209111
15- ଶ୍ରୀମତୀ ଲୁଚୁକୁନି
16- ମୋ ନାମ
17- ଶ୍ରୀମତୀ ଚନ୍ଦ୍ରମଣି
18- ସୁଦର୍ଶନ ଦଳେଇ ORI04/023/026903
19- ଭୋଟର ତାଲିକାରେ ଅନ୍ତର୍ଭୁକ୍ତ ORI04/023/026078
20- Bhima Ada YBJ0500637
21- ଦୀପ୍ତିରେଖା ସାହୁ
22- Abhimanyu Behera GKR3209103

Abalya Devi
Sarpanch
787 Kusa Gram Panchayat

23- [illegible]

24- [illegible]

25- [illegible]

26- [illegible]

27- [illegible]

28- [illegible]

29- [illegible]

30- [illegible] GKR1549583

31. [illegible]

32- [illegible]

33- [illegible]

34- [illegible] OR/04/023/025 054

35- [illegible] GKR1549963

36- [illegible]

37- [illegible]

38- [illegible]

39- [illegible]

40- [illegible] OR/04/023/025442

41- [illegible]

42- [illegible]

43- [illegible]

44- [illegible]

45- Manoranjan Banerjee GKR 3209160
46- Rajkishore Mohanta YBJ 0252483
47- Jagdananda Mohanta YBJ 0523191

48- Gopal Rahua YBJ GKR 155 7859
49- Sukdeb Mahanta YBJ 0523118
50- Sidiou Nada GKR 154 9864
51- Ramesh Mahanta YBJ 0522920
52 Dibyar Banara

53- [illegible] GKR 3209384
54- Aseban Hembram GKR 1549989
55- Sanjeb Barada JKR 3209145
56- [illegible] YBJ 00155 94

57- Debadas Bikram YBJ 0414680
58- [illegible] OR/09/023/026120
59 Purna Ch Bera
60- Padan Besra GKR 1404151
61 Ramesh Mahanta GKR 2835353
62- Paresh Dehury
63- Mohan Singh Aida OR/09/023/026209
64- Chandramani Mohanta OR/09/023/025921
65- [illegible]
6 Mahesh Mahanta Akaligaon Chariali

66 -- ORISSA 6832

67 - Sunita Hembram GKR 1549971

68 - ORISSA ORI04/023/028212

69 - ORISSA ORI04/023/026589

70 -- ORISSA ORI04/023/ 6763

71 - Babita Monowka GKR 352885
YBF 05 00603

72 - Nitima Mondal

73 - Kastuni Mahanta YBJ 09

74 - Selecti Mahanta GKR 154

75 76 ORISSA

77 T Bibi Behera

78 79 ORISSA ORI04/023/026075

80 81 T Prithiviraj Behera

82 T Asha Behera

83 84 ORISSA ORI04/023/026882

85 T Bindyarani Behera

T Ramakanta Behera

86 LT ORISSA ORI04/023/026717

87 LT Abhimanyu Murmu

Abhimanyu Behera











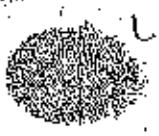








101 L.T  

102 L.T 

103 L.T 

104 L.T 

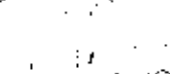
105 

106 L.T 

107  L.T

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119

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121 L.T. Kanchidei Dehuri

122 Markanda Dehuri

123 [illegible]

124 Sadanada Dehury

125 L.T. Sabyasachi Dehury

126 L.T. Bimala Dehury OR/04/027/006368

127 L.T. Kumari Dehury

128 Barsuli Brahman

129 Raju Dehury 87052368

130 L.T. Jitendra Mahanta

131 L.T. Ranjit Dehury OR/04/026345

132 [illegible] JKR2800634

133 [illegible] OR/04/027/026080

134 L.T. [illegible]

135 L.T. Bimala Behera

136 L.T. Rabindra Dehury YBJ00155111

Gnana Basu

137  L.T

138  L.T

139

140  L.T

141

142  L.T

143 Aimani mohanta GKR267448

144  L.T

145  L.T

146  L.T

147

148

150

Ostapal Grama Basi

151 Gangadhar Munda OR/04/023/026206

152 Sonqui Munda OR/04/023/026920

153 Dhananjay Sahu[illegible] I.D. Card OR/04/023/026[illegible]

154 [illegible] Ratna Munda OR/04/023/02675

155 [illegible] Bedha Singh Munda OR/04/023/026[illegible]

156 [illegible] Mahadeva Nagasai

157 [illegible] Lanja Venkatam YPJ0685965

158 [illegible] Dobaru Ramam GKR1550[illegible]

159 [illegible]

160 [illegible] YPJ0[illegible]

161 [illegible] YPJ0[illegible]

162 [illegible] GKR1526[illegible]

163 [illegible]

164 [illegible]

165 [illegible] GKR1519[illegible]

Anupam Debnath

Panchayat Secretary

Basi Gram Panchayat

166 - [illegible]

167 - [illegible] GKR1549559

168 Kanwal Kumar Sahayam UR/64/023/[illegible]

169 - [illegible] Kumar Sahayam

170 - [illegible] YIIBB052946

171 - [illegible] OR/[illegible]

172 - [illegible] YBM[illegible]

173 - [illegible] YB[illegible]

174 - [illegible] YBJ0045149

175 - [illegible]

176 - [illegible]

177 - [illegible]

178 - [illegible] OR/[illegible]

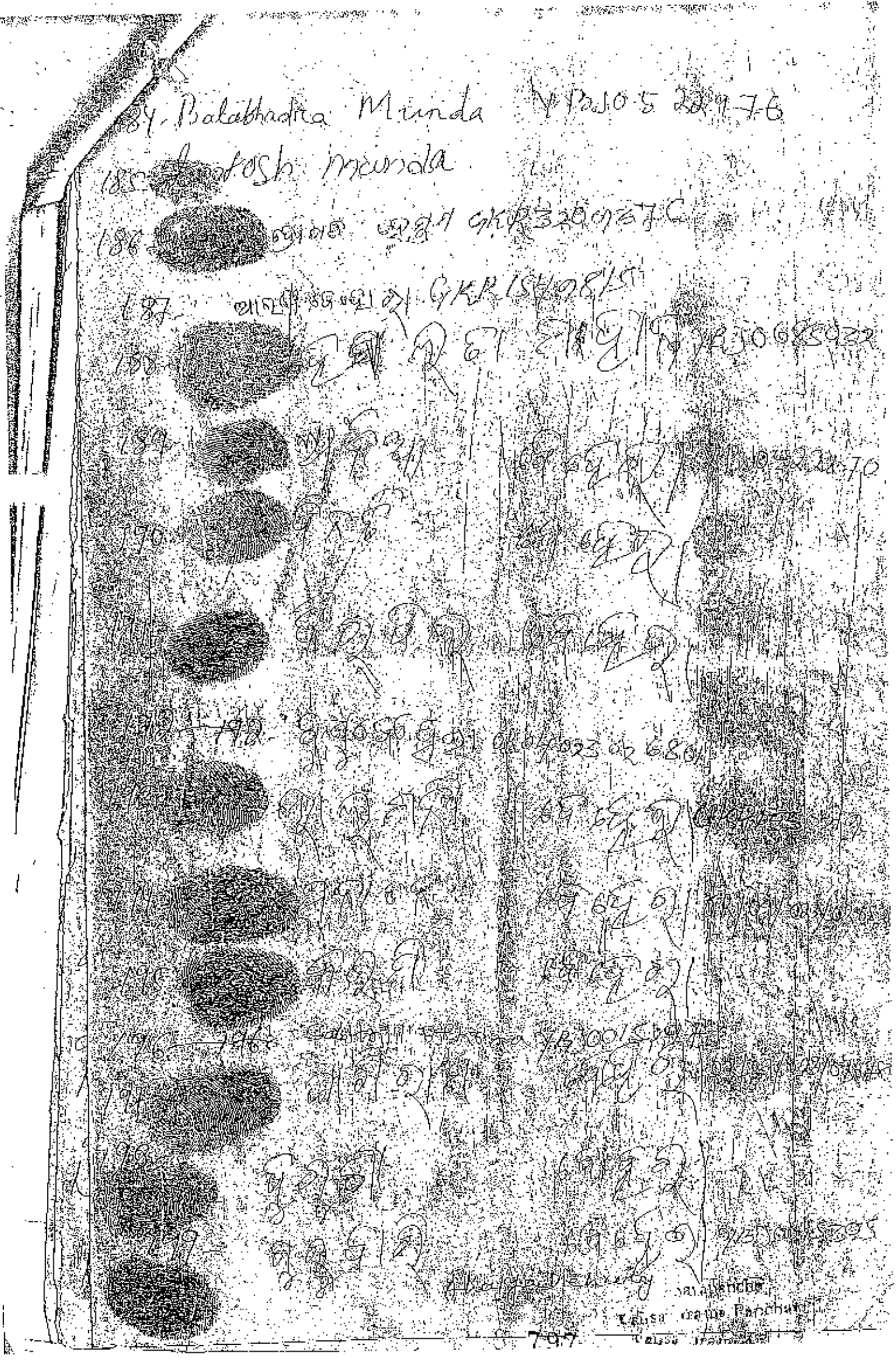
179 - [illegible]

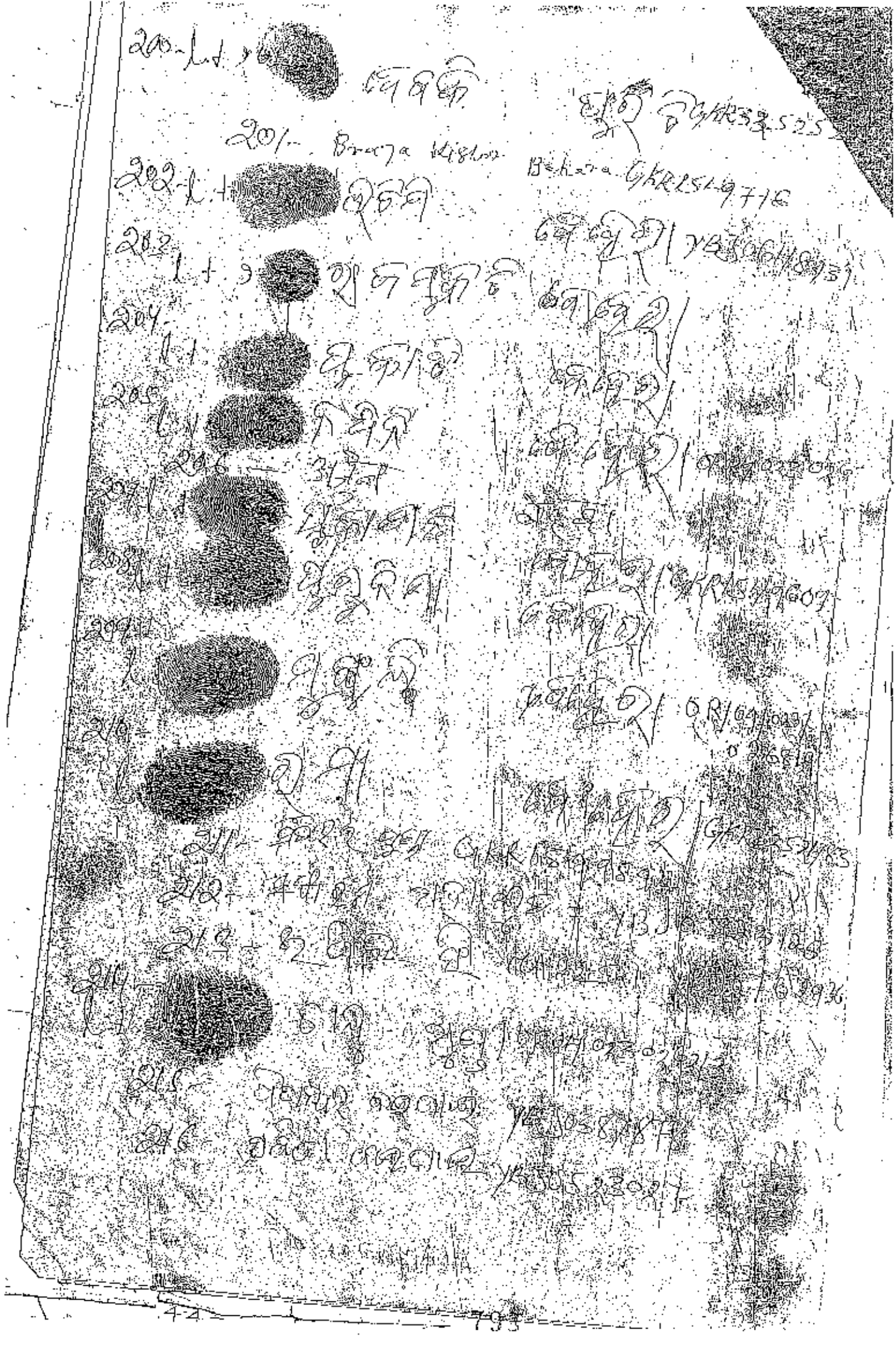
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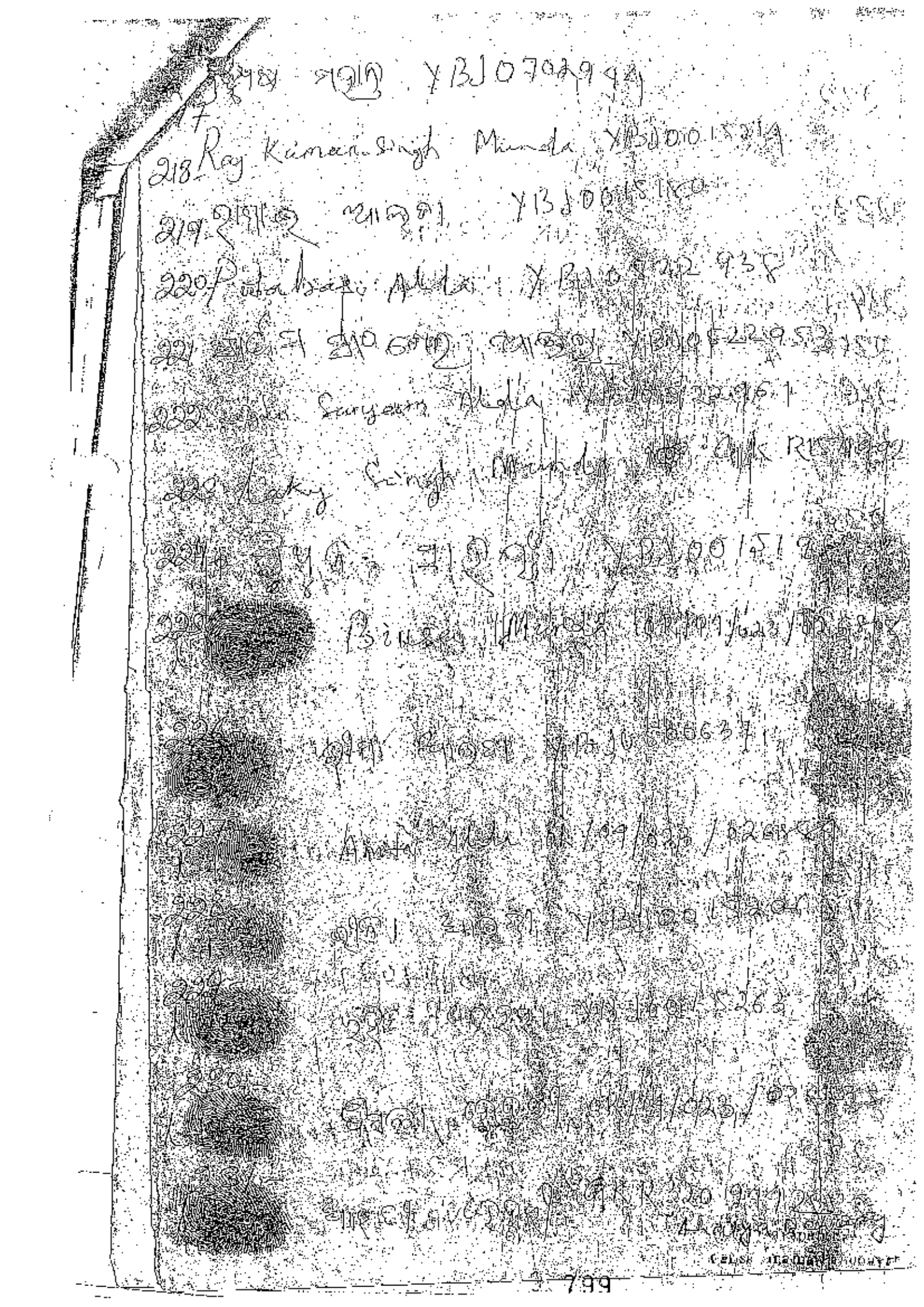
181 - [illegible]

182 - [illegible] YBJ0[illegible]

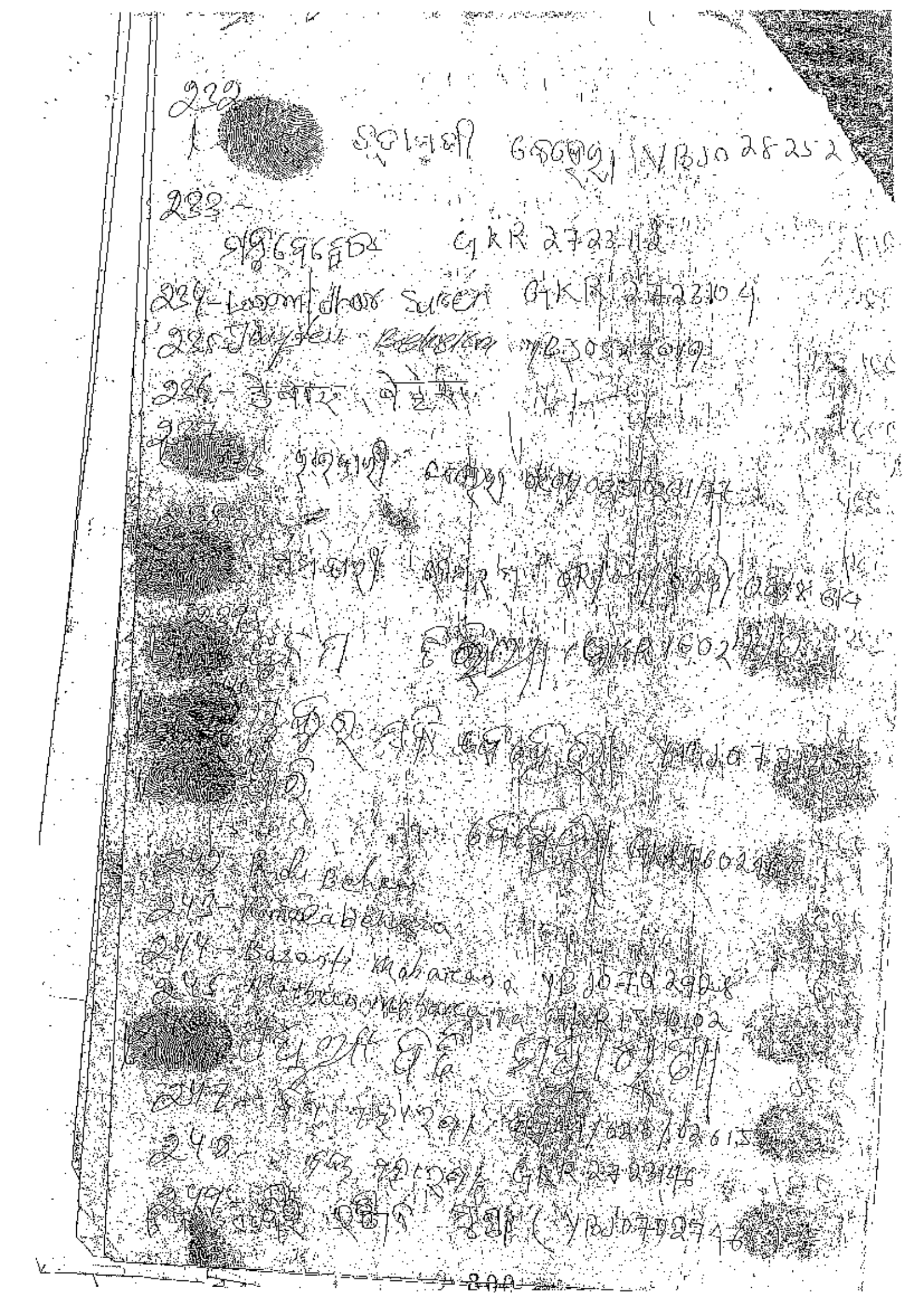
183 [illegible] OR/09/023/025298







799



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251 [illegible] GKR2674548

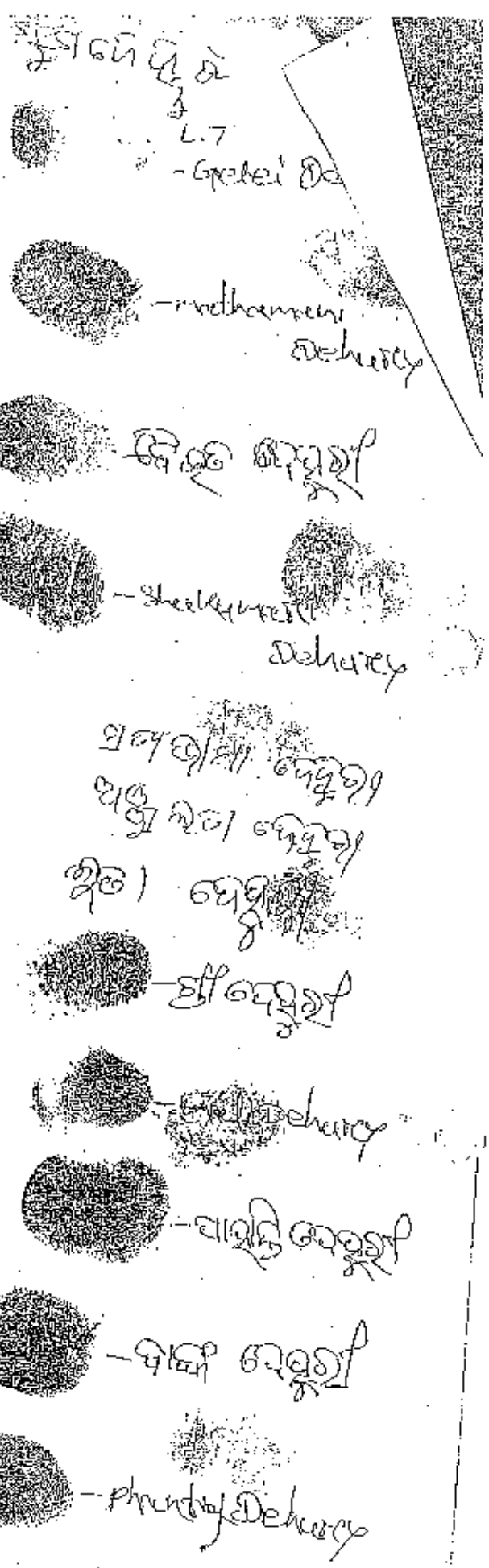
252 [illegible] GKR2674548

253 [illegible] GKR2470490

254 Jhamak Behera GKR3200124

255 Balabhadra Mahanta MH 05 23167

Abhaya Deheery
Sahapathi
Kanisa Pradha Panchayat



Shaeesha Dehury

Aarti Dehury

Laxman Dehuri

Asha Dehury

Basula Pradhan

Aalya Dehury

Kusa Rama Panchayat

Jagannath Mohanta.

Shukadeb Behera

Madan Mahanta

ମଦନ ମହାନ୍ତ

ପ୍ରଦୀପ ମହାନ୍ତ

ଶୁକଦେବ ବେହେରା

Ajaya Behera

Pairing Behera

Bibhabhasha

Behera

ବିଭାବସୁ ବେହେରା

Raj Kishore Mahanta



Phadu Mohanta

Nanda Kishore Mohanta

ନନ୍ଦକିଶୋର ମହାନ୍ତ



ଫକୀରଚନ୍ଦ୍ର ମହାନ୍ତ

ବିଜୟ ପାତ୍ର



Makhan Mohanta.

ହରିହର ମହାନ୍ତି

ଜୟଦେବ ମହାନ୍ତି

ଶ୍ରୀଧର ମହାନ୍ତି

Ahalya Behera

Satapancha

Gajapati Panchayat

Rangadhar Mohanta.

ବିଦ୍ୟାଧର ମହାନ୍ତି

Sri Kartheek Mohanta



Lokuntala Mohanta

Human Mahanta





Ramesh Mohanta

Satyabhama Dehuri

L.T. of
Kanyuma Dehury

Nayha Dehury
Sarat Pradhan

L.T. of Odia Dehuri
Bhadrati Dehuri

L.T. of
Kelabburi Dehuri

L.T. of Sambasi Jena

SAMPATI BAHARA

Analya Dehury
Sarpanch
Kasba Gram Panchayat

Saradhabi Behera.

ଶ୍ରୀ ସାରଦାବାଳି



L.T. of Momada Behera.

ଶ୍ରୀମତି ମୋମଦା

ବିଶାଖା ମାଝିଙ୍କ

Lalmahen Majhi



L.T. of

ଶ୍ରୀମତୀ ରୀନାମୁଣ୍ଡି

ଭକ୍ତବତ୍ସଳ ବେହେରା

Vaktabachhe Dehury

ଶ୍ରୀଯୁକ୍ତ ବନ୍ଦିଷ୍ଠ

ଏକାଦିନି ବେହେରା

ସମ୍ପତ୍ତି ସାହୁ ସୁନ୍ଦରୀ

ବିଶାଖା ମୋହନ୍ତ

ମାଳିମା ମାଝିଙ୍କ

ଦେବୀଦାସି ଦେହୁରୀ



L.T.O. of

Swamati Sarkar

Reena Mudi

Madhusudan Purty

ବିଶାଖା ମିଶ୍ରକ୍ଷ

Akalya Dehury

Kalisa Mahana Panchayat



L.T. 9 no
Chandan Chandra



L.T. 9 no
Baladeep Mandia



Lt. 9 no Ramu Mandia

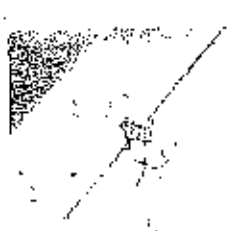
Maraj Behera



Lt 9 no Mathura Hembram.

Tapura Hembram

Abhijit Behera
Sabapatia
Cuttack Panchayat



S. K. Hasib











A. Khalimuddin Sarkar
Jalpaiguri
Cultural Cinema Panchayat

Babula Pradhan

ବାବୁଲା ପ୍ରଧାନ

ଟିପସହି ଦେଇଛନ୍ତି



L.T.I of

Padi Pradhan

ସ୍ୱ/ସ୍ୱର୍ଗତ ବାଦି ପ୍ରଧାନ

ଶ୍ରୀଶ୍ରୀକାନ୍ଦ ଦେଉଳି

Srikanda Dehuri

ଶ୍ରୀ ଶ୍ରୀକାନ୍ଦ ଦେଉଳି

ଦୟାମଣି ଲହରା



L.T.I of

Dayamani Lahara

ଦୟା ଲହରା

ଟିପସହି

Dayamani Lahara

ଅହଲ୍ୟା ଦେହୁରୀ

ଟିପସହି ନାହିଁ

Ahalya Dehury

Cross Thumb Panchayat



L.T.I of

Ahalya Dehury

ସାକ୍ଷୀଙ୍କ ଦସ୍ତଖତ
ଟିପଚିହ୍ନ ବାମହସ୍ତ



L. T. I. of
Ardhendra Dehury

ଦକ୍ଷିଣ ହସ୍ତ

Rabana Bhuyan

ତଦନ୍ତକାରୀ ଅଧିକାରିକା
ସ୍ୱାକ୍ଷର ସାହାଯ୍ୟକା
Lakuru Mahanana
ଦୁଇଜଣ ସାକ୍ଷୀଙ୍କ
ଦସ୍ତଖତ ସାମ୍ମାରିକ



ଅଂଶୁମାନ ଦେହୁରୀ

ଅନ୍ୟ ସାକ୍ଷୀଙ୍କ ଦସ୍ତଖତ
ଟିପଚିହ୍ନ
Purna Dehury
L. T. I. of



Lucu Behera
Sarba Purty

Ardhya Dehury
Panchayat

ପୃଷ୍ଠା ନମ୍ବର

Smt padmabati Dehuri.

Suresh Dehuri

Lt Rahani Dehuri

Lt Bibhakar Dehuri

Lata Mahanta

Lt Sabha Dehuri

Nanga Pangira

Ahalya Dehury

Sabha Prama Panchayat

ଆଙ୍ଗୁଠି ଚହ୍ନାଦାର



L. T. 9. or
Pahanti Ojha



L.T. 9. or
Bharati Ojha

ବାଦୀ ପକ୍ଷୀ ସାକ୍ଷୀଙ୍କ
ଟିପଚିହ୍ନ ଅଙ୍ଗୁଠି
ଓ ତର୍ଜନୀ ଅଙ୍ଗୁଳି



LT 9 or
ଗୋବିନ୍ଦ ଦାଶ

ଦକ୍ଷିଣ ହସ୍ତର ବୃଦ୍ଧାଙ୍ଗୁଳି
ଓ ତର୍ଜନୀ ଅଙ୍ଗୁଳି



LT 9. or-
ଦାଶରଥି ଦଳପତି



LT 1 -or
ଦୁଃଖୀ ଭୁଞ୍ଜ



LTP - or
Gouribala Behera



LTI - or Ashruti Behera

Bhagyadeni
Sarpanch
Gajsa Rama Panchayat

ଟିପଚିହ୍ନ ଚହ୍ନାଦାର

Anaba Dehuri


Lt. of Kebubari Murad


Lt. of Kadamani


Lt. of Sagarika Sadar---


Lt. of Hemanta Bisoi---


Lt. of Matapi munda


Lt. of Pulan munda

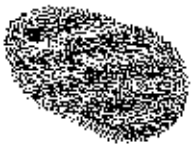
Anaba Dehury
Member
Chhua Gram Panchayat



L.T. 9, 0f
Rasmi Behera



L.T. 9, 0f
Ashok Munda



L.T. 9, 0f
Narayan Dehuri



L.T. 11, 0f
Basanti Mahanta



L.T. 1, 0f
Sri Mantosaren

Adhya Behury
Balanchi
Police Training Panchayat

COLLECTORATE : JAJPUR

Ph.-06728-222001 (O), 222330 (R), FAX – 222087
E-mail: dm-Jajpur@nic.in, web site:-www.jajpur.nic.in

(ST & SC DEV. SECTION)

No. ____ __/Date. _ ____ ____.

To

The Divisional Forest Officer,
Cuttack Forest Division, Ghatakul,
Nuapara, Cuttack.

Sub:- Issuance of certificate under Forest Rights Act, 2006 in connection with Sukurangi Chromite Mines of M/s. OMC Ltd.

Ref:- Your Letter No. 7933 Dt. 10.09.2015

Sir,

In inviting a reference to the letter on the captioned subject cited above, I am directed to enclose herewith the model certificate [87.83 hectares] in Form-II for projects other than liner projects under Forest Rights Act, 2006 in favour of M/s. OMC Ltd. for Sukurangi Chromite Mines for taking further action at your end.

Yours faithfully,

Encl:- As above

District Welfare Officer,
Jajpur

Memo No. 604 / Date. 28/3/16

Copy forwarded to the Regional Manager, M/s. OMC Ltd. Jajpur Road for information and necessary action.

District Welfare Officer
Jajpur

FORM-II

(for projects other than linear projects)

Government of Odisha

Office of the District Collector, Jajpur

No. 542 Date. 23.3.16

TO WHOMSOEVER IT MAY CONCERN

In compliance of the Ministry of Environment and Forests (MoEF), Government of India's letter No.11-9/98-FC (pt.) dated 3rd August 2009 wherein the MoEF issued guidelines on submission of evidence for having initiated and completed the process of settlement of rights under the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition Forest Rights) Act, 2006 ('FRA' for short) on the forest land proposed to be diverted for non-forest purposes, it is certified that 87.83 hectares of forest land proposed to be diverted in favour of M/s. Odisha Mining Corporation Ltd. for Sukurangi Chromite Mines in Jajpur district falls within jurisdiction of Sukurangi & Saruabil village in Sukinda tahsil.

It is further certified that:

(a) the complete process for identification and settlement of rights under the FRA has been carried out for the entire 87.83 hectares of forest land proposed for diversion. A copy of records of all consultation and meetings of Forest Rights Committee, Gram Sabha (s), Sub-Division Level Committee and the District Level Committee are enclosed as Annexure- A to Annexure-C.

(b) the proposal for such diversion (with full details of the project and its implementations, in vernacular/local language) have been placed before each concerned Gram Sabha of forest-dwellers, who are ellgible under FRA;

(c) the each of concerned Gram Sabhas, has certified that all formalities/processes under the FRA have been carried out, and that they have given their consent to the proposed diversion and the compensation and ameliorative measures, if any, having understood

the purpose and details of proposed diversion. A copy of the certificate issued by the Gram Sabha of Kaliapani village is enclosed (as mentioned above).

(d) the discussion and decisions on such proposals had taken place only when there was a quorum of minimum 50% of the members of the Gram Sabha present;

(e) the diversion of forest land for facilities managed by the Government as required under section 3 (2) of the FRA have been completed and the Gram Sabhas have given their consent to it;

(f) the rights of Primitive Tribal Groups and Pre-Agricultural Communities, where applicable have been specifically safeguarded as per Section 3 (1) (e) of the FRA.

Encl: As above

(Satya Kumar Mallick)
Collector & District Magistrate,
Jajpur

COLLECTORATE : JAJPUR
Ph. 06728-222081 (O), 222330 (R), FAX – 222087
E-mail: dm-jajpur@nic.in, web site: www.jajpur.nic.in
(ST & SC DEV. SECTION)

No. 1863 /Date. 30/9/15

To

The Block Development Officer,
Sukinda.

Sub:- Diversion of balance forest land over 162.42 ha. pertaining to Sukurangi Chromite Mines of M/S. OMC Ltd. under Cuttack Forest Division.

Ref:- Letter No. 11279 Dt. 31.08.15 of M.D., OMC Ltd. &
Letter No. 7933 Dt. 10.09.15 of D.F.O., Cuttack

Sir,

In inviting reference to the letters on the captioned subject, I am directed to furnish herewith the land scheduled for diversion of forest land for use of non-forest purpose and request you to convene palli sabha in the respective villages with their 'consent and no objection' for the proposed diversion for issuance of certificate under Forest Rights Act, 2006 in connection with Sukurangi Chromite Mines of M/s. OMC Ltd. .

In view of the above facts and circumstances you are requested to convene Pallisabha directing the Sarpanch of concerned G.P with following points to be recorded in Pallisabha proceedings and submit the requisite documents alongwith recommendation of palli sabha to this office for taking further action at this end.

a) Complete process for identification and settlement of rights under FRA, 2006 has been carried out for the entire forest area proposed for diversion.
b) Pallisabha Resolution be recorded in local language (Oriya) duly signed by Sarpanch and member present.
c) Letter of willingness be obtained for proposed diversion with the fact that they have understood the purpose and details of proposed diversion and its implication and compensatory measures.
d) It is to be ensured that there is 50% quorum in the meeting.
e) Application of individual/community claims may be collected if any.
f) It is to be ensured that FRC members along with the representatives of User Agencies are present in Pallisabha.
g) Video recording along with still photographs of Gram Sava may be ensured.
h) Money receipt supporting to payment of charges to the drummer may be kept.
i) Wide publication of Pallisabha notice to all concerned and at public places like School, Hat, Market and Panchayat Office.

This may be treated as MOST URGENT.

Yours faithfully,

30/9/15
District Tribal Officer,
Jajpur

LAND SCHEDULED

Sl. No.	Name of the Tahasil	Name of the Village	Forest Area for diversion
1	2	3	4
1.	Sukinda	Samabil	Ac. 46.92
2.	Sukinda	Sukurangi	Ac. 170.10
		Total	Ac. 217.02 or 87.83 ha.

Memo No. 1864 / Date. 30/9/15

Copy submitted to the Tahasildar, Sukinda for favour of kind information. He is requested to expedite co operation to the BDO, Sukanda for convening the palli sabha in the respective village.

30/09/15
District Welfare Officer,
Jajpur

Memo No. 1865 / Date. 30/9/15

Copy submitted to the Managing Director, Odisha Mining Corporation Limited, Bhubhaneswar, Post Box No. 34, 751001 for information and necessary action.

30/09/15
District Welfare Officer,
Jajpur

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Sukurangi

Gram Panchayat: Kaliapani

Place: Mango grove of Sukurangi

Date: 18.12.2015 Time: 10.00AM

A meeting of Gram Sabha/Palli Sabha under Forest Rights Act 2006 was held today on 18.12.2015 at 10.00 AM as scheduled earlier as per letter no. 1863 Dt. 30.09.2015 of Welfare Section, Collectorate, Jajpur and letter no. 2442 Dt. 01.10.2015 of Block Development Officer, Sukinda. Ward Members of Sukurangi, Members of Forest Rights Committee and villagers were present in the meeting. Sarapanch Kaliapani G.P; Member, Panchayat Samiti of Kaliapani G.P; Executive Officer, Kaliapani G.P; Revenue Inspector Kankadapal; Forester Rasol; Welfare Extension Officer Sukonda Block; Regional Manager, OMC Ltd, Jajpur Road; Mines Manager, Sukurangi Chromite Mines also attended the meeting.

Smt. Jinita Munda, Sarapanch, Kaliapani G.P was elected President of the meeting. Since the meeting had the quorum required as per law, the President directed to start the meeting and the meeting was conducted accordingly. The following matters were put up in the meeting for discussion:

Proposal:

Letter No. 2442 Dt.1.10.2015 of Block Development Officer was put up and read in the meeting.

Proposal of Odisha Mining Corporation Ltd for use of 170.1 Acres of forestland in Sukurangi village of Sukinda Tahasil for non-forest purpose for Sukurangi Chromite mines was put up in the meeting.

Purpose of the meeting was appraised to all villagers present in the meeting. Diversion Proposal and individual & community rights of local Scheduled Tribes and Traditional Forest Dwellers under Forest Rights Act 2006 was put up in the meeting by concerned officers.

Land Schedule of the forest area to be diverted, enquiry report as per provision of Forest Rights Act 2006 was put up in the meeting by the Revenue Inspector, Kankadapal. Location of the proposed land was appraised to villagers with the help of map.

As per the report, the area of 170.1 Acres proposed for diversion for non-forest use comes under Forest category. No tribal or Traditional Forest Dweller has any individual or community right over the 170.1 Acres area proposed for diversion. No tribal or Traditional Forest Dweller depends on this area for livelihood. Besides this, the area is also under occupation for the mine.

Local Tribal or Traditional Forest Dwellers have not claimed any individual or community right and similar views were expressed by the villagers in the meeting. The villagers were of the opinion that they will have no objection if the forest area is used for the mine.

Hence the proposal for use of 170.1 Acres forestland for non-forest purpose by M/s Odisha Mining Corporation Ltd was unanimously approved.

The meeting was ended with vote of thanks by the President to the villagers, Government officers and Officers of Odisha Mining Corporation Ltd attending the meeting.

Sd/-
Executive Officer
Kaliapani G.P

Sd/-
Manager (Mining)
Sukurangi Chromite Mines

Sd/-
Sarapanch
Kaliapani G.P

Jinita Munda
Sarapanch
Kaliapani G.P

Sd/-
Forester
Ransol Section

Sd/-
Welfare Extension Officer
Sukinda Block

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Saruabil

Gram Panchayat: Kansa

Place: Saruabil Shiba Temple

Date: 18.12.2015 Time: 3.00 PM

A meeting of Gram Sabha/Palli Sabha under Forest Rights Act 2006 was held today on 18.12.2015 at 3.00 PM as scheduled earlier as per letter no. 1863 Dt. 30.09.2015 of Welfare Section, Collectorate, Jajpur and letter no. 2442 Dt. 01.10.2015 of Block Development Officer, Sukinda. Ward Members of Saruabil, and villagers were present in the meeting. Sarapanch Kansa G.P; Member, Panchayat Samiti of Kansa G.P; Executive Officer, Kansa G.P; Revenue Inspector Kankadapal; Forester Rasol; Welfare Extension Officer Sukunda Block; Regional Manager, OMC Ltd, Jajpur Road; Mines Manager, Sukurangi Chromite Mines also attended the meeting.

Smt. Ahalya Dehury, Sarapanch, Kansa G.P was elected President of the meeting. Since the meeting had the quorum required as per law, the President directed to start the meeting and the meeting was conducted accordingly. The following matters were put up in the meeting for discussion:

Proposal:

Letter No. 2442 Dt.01.10.2015 of Block Development Officer was put up and read in the meeting.

Proposal of Odisha Mining Corporation Ltd for use of 46.92 Acres of forestland in Saruabil village of Sukinda Tahasil for non-forest purpose for Sukurangi Chromite mines was put up in the meeting.

Purpose of the meeting was appraised to all villagers present in the meeting. Diversion Proposal and individual & community rights of local Scheduled Tribes and Traditional Forest Dwellers under Forest Rights Act 2006 was put up in the meeting by concerned officers.

Land Schedule of the forest area over 46.92 Acres to be diverted, enquiry report as per provision of Forest Rights Act 2006 was put up in the meeting by the Revenue Inspector, Kankadapal. 9 nos. of S.T families and 1 non-S.T family are staying within the forest area to be diverted for mining purpose. List of these 10 families is shown in Annexure-A. These families had not applied under Forest Rights Act. Application of these families was accepted in the meeting by Forest Rights Committee.

As per the report, out of the area of 46.92 Acres proposed for diversion for non-forest use, the afore-mentioned 10 families occupy 1.21 Acres and in the rest area no tribal or Traditional Forest Dweller have any individual or community right. No tribal or Traditional Forest Dweller depends on this area for livelihood. Besides this, the area is also under occupation for the mine.

Local Tribal or Traditional Forest Dwellers have not claimed any individual or community right excepting 1.21 acres individual claims of 10 families and similar views were expressed by the villagers in the meeting. The villagers wanted clarification from the User Agency whether 10 families staying in the area will be rehabilitated or not.

Participating in the discussion the Regional Manager, OMC Ltd, clarified that no family will be rehabilitated if 46.92 hectare forestland will be diverted for non-forest use. If required later on the rehabilitation will be done as per principles of Government.

After considering the clarification given by the Regional Manager, OMC Ltd, the villagers were of the opinion that in case of rehabilitation if the rehabilitation policy of Government is followed, they will have no objection if the forest area is used for the mine.

Hence the proposal for use of 46.92 Acre forestland for non-forest purpose by M/s Odisha Mining Corporation Ltd was unanimously approved.

The meeting was ended with vote of thanks by the President to the villagers, Forest Rights Committee, Government officers and Officers of Odisha Mining Corporation Ltd attending the meeting.

Sd/-
Executive Officer
Kansa G.P

Sd/-
Sarapanch
Kansa G.P

Sd/-
Forester
Ransol Section

Sd/-
Manager (Mining)
Sukurangi Chromite Mines

Sd/-
Welfare Extension Officer
Sukinda Block

Ahalya Dehury
Sarapanch
Kansa G.P.

ଶ୍ରୀଲ ପଞ୍ଚାୟତ ସମିତି
କାକଟପୁର

ପତ୍ର ସଂଖ୍ୟା - ୯୩ ତାରିଖ - ୨୩/୦୫/୨୦୧୫

ସେବାରେ
ସମସ୍ତ ଗ୍ରାମପଞ୍ଚାୟତ ସଭାପତି
ଶ୍ରୀଲ ପଞ୍ଚାୟତ ସମିତି, କାକଟପୁର

ବିଷୟ - ଜୁନ୍‌ମାସରୁ ନୋଡାଲ୍‌ଠାରୁ ଦରମିତ ଅଙ୍ଗନବାଡ଼ି କେନ୍ଦ୍ରକୁ ଯାଇ ଶିଶୁଙ୍କୁ ଖାଦ୍ୟ ପ୍ରଦାନ ସମ୍ପର୍କରେ ଆଲୋଚନା ନିମନ୍ତେ ସଭା / ପାଠ୍ୟଚକ୍ର।

ମହାଶୟ,

ଆପଣଙ୍କୁ ବିଦିତ ଯେପରି ଜୁନ୍‌ମାସରୁ ଏକ ନୂତନ ପଦ୍ଧତିରେ ଅଙ୍ଗନବାଡ଼ି କେନ୍ଦ୍ରକୁ ଖାଦ୍ୟ ଯୋଗାଣ ହେବାକୁ ଥିବାରୁ ଏ ବିଷୟରେ ଆଲୋଚନା ନିମନ୍ତେ ଆପଣଙ୍କୁ ଏବଂ ଅଙ୍ଗନବାଡ଼ି କର୍ମୀମାନଙ୍କୁ ଆସନ୍ତା ୨୭/୦୫/୨୦୧୫ ତାରିଖ ଦିନ ସକାଳ ୧୦ଟାରେ ଏକ ସଭା / ପାଠ୍ୟଚକ୍ର ଆୟୋଜନ କରାଯାଇଛି। ଏହି ସଭାରେ ଆପଣଙ୍କ ଅଞ୍ଚଳର ସମସ୍ତ ଅଙ୍ଗନବାଡ଼ି କର୍ମୀଙ୍କୁ ଉପସ୍ଥିତ ରହିବାକୁ ନିର୍ଦ୍ଦେଶ ଦେବାକୁ ଅନୁରୋଧ କରାଯାଉଛି। ଏହି ସଭାରେ ଆଲୋଚ୍ୟ ବିଷୟଗୁଡ଼ିକ ହେଲା :

୧. ଗ୍ରାମପଞ୍ଚାୟତ / ପାଠ୍ୟଚକ୍ରରୁ ଯୋଗାଇବାର ପଦ୍ଧତି ସମ୍ପର୍କରେ ଆଲୋଚନା।
୨. ଗ୍ରାମପଞ୍ଚାୟତ / ପାଠ୍ୟଚକ୍ରରୁ ଯୋଗାଇବାକୁ ଥିବା ଖାଦ୍ୟ ସାମଗ୍ରୀର ତାଲିକା ପ୍ରସ୍ତୁତି ସମ୍ପର୍କରେ ଆଲୋଚନା।
୩. ଗ୍ରାମପଞ୍ଚାୟତ / ପାଠ୍ୟଚକ୍ରରୁ ଯୋଗାଣ ହେବାକୁ ଥିବା ଖାଦ୍ୟ ସାମଗ୍ରୀର ପରିମାଣ ସମ୍ପର୍କରେ ଆଲୋଚନା।
୪. ଗ୍ରାମପଞ୍ଚାୟତ / ପାଠ୍ୟଚକ୍ରରୁ ଯୋଗାଣ ହେବାକୁ ଥିବା ଖାଦ୍ୟ ସାମଗ୍ରୀର ଗୁଣବତ୍ତା ସମ୍ପର୍କରେ ଆଲୋଚନା।
୫. ଅନ୍ୟାନ୍ୟ ବିଷୟ ଯଦି ଥାଏ ତାହା ସମ୍ପର୍କରେ ଆଲୋଚନା।

ଧନ୍ୟବାଦ ସହିତ

ଆପଣଙ୍କର ବିଶ୍ୱସ୍ତ

NO-57 dt 16/12/15

To
The Tahasildar Saliconda.

Sub- Submission of report regarding Survey of Palli Sabha/Gramasabha for issuance of Certificate under FRA-2006 for diversion of forest land for non-forest use in connection of Sukinda Chromite Mines of OMC Ltd.

Ref:- Tahasil. office Saliconda Memo NO: 3272 dt 15/12/15.

Sir!

ଉପରୋକ୍ତ ବିଷୟ ଓ ସନ୍ଦର୍ଭରେ ଆପଣଙ୍କ ଦ୍ୱାରା ଜଣାଯାଇଥିବା ଯେ, ଆପଣଙ୍କ ଏବଂ ଅନ୍ୟ ଅଧିକାରୀଙ୍କ ସମେତ ଏକ ଯୌଥ ସର୍ଭେ ଦଳ ଗଠନ କରି ଓମିସି ଲିମିଟେଡ୍ ଦ୍ୱାରା ଚାଲିତ ଖଣି ଅଞ୍ଚଳର ପଲ୍ଲୀ ସଭା/ଗ୍ରାମ ସଭା ଗୁଡ଼ିକରେ ଅରଣ୍ୟ ଅଧିକାର ଆଇନ୍ ୨୦୦୬ ଅନୁଯାୟୀ ଅରଣ୍ୟ ଜମି ଅଣ-ଅରଣ୍ୟ ବ୍ୟବହାର ପାଇଁ ଅନୁମତି ପତ୍ର ପ୍ରଦାନ ନିମନ୍ତେ ସର୍ଭେ କରିବା ପାଇଁ ନିର୍ଦ୍ଦେଶ ଦିଆଯାଇଛି। ଏହି ସର୍ଭେ ଦଳ ଦ୍ୱାରା ଉପରୋକ୍ତ ଗ୍ରାମ ସଭା ଗୁଡ଼ିକରେ ଅରଣ୍ୟ ଅଧିକାର ଆଇନ୍ ୨୦୦୬ ଅନୁଯାୟୀ ଅରଣ୍ୟ ଜମି ଅଣ-ଅରଣ୍ୟ ବ୍ୟବହାର ପାଇଁ ଅନୁମତି ପତ୍ର ପ୍ରଦାନ ନିମନ୍ତେ ସର୍ଭେ କରା

Name of the occupant encroacher in Diversion of Forest Land over an area Ac.217.02 pertaining to Sukurungi Chromite Mines of O.M.C. Ltd.
Ref:- Tahasil office Sukinda Memo No: 3272 dt 15/12/15

Name of the Encroacher/Occupant	Occupation	No of family member	Caste/ Sub-Caste	Duration of Encroachment	As per Sabik Land record: Mouza	Khata No.	Status	Plot No:	Kissam	Total area area under the Plot	area under occupation	Remarks
2	3	4	5	6	7	8	9	10	11	12	13	14
Sanatan Dehuri S/o-Late Maru Dehuri	Labourer	4	S.T. (Shatar)	12 Yrs	Sanabil	34	Raichit	306	Parajan padia	Ac 0.33	Ac 0.10	
Bari Charan Dehuri S/o Late Kana Dehuri	do	5	do	15 Yrs.	do	do	do	307	do	Ac 0.12	Ac 0.08	
Akshaya Pradhan S/o - Sanatan	do	5	do	5 Yrs	do	do	do	307	do	do	Ac 0.08	
Budhu Mahakud S/o - Prasanna	do	7	O.B.C. (Gouda)	7 Yrs	do	do	do	306	do	Ac 0.38	Ac 0.10	
Dharani Senkar S/o - Late Pradhan	do	6	S.T. (Munda)	12 Yrs	do	do	do	306	do	do	Ac 0.10	
Narayan Oram S/o - Late Thakur	do	5	S.T. (ORAON)	30 Yrs	do	do	do	285	do	Ac 0.9	Ac 0.12	
Ajit Bejra S/o - Late Bradhuram	do	7	S.T. (Munda)	30 Yrs	do	do	do	284	do	Ac 2.26	Ac 0.15	
Sana Munda S/o - Rauta Munda	do	5	do	15 Yrs	do	do	do	282	do	Ac 3.15	Ac 0.12	
Ranga Baraj S/o - Sukuram	do	6	do	20 Yrs	do	do	do	279	do	Ac 1.80	Ac 0.13	
Rupsing Chatar S/o - Dubula	do	7	do	30 Yrs	do	do	do	278	do	Ac 2.14	Ac 0.13	

Ac 1.20

Hal diversion Land
village - Sanabil
Khata - 56 - Raichit
Plot No: 402 - Jungle Ac 36.25 out of Ac 41.45
(Hal & Sabik Land Schedule attached herewith)

16/12/15

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Land schedule regarding Diversion of forest land over an area 227.02acr pertaining to Sukurangi Chromite Mines, OMC LTD

MOUZA	FAL LAND SCHEDULE- 1995 - 96						RECORD	SABIK LAND SCHEDULE						Recorded Tenant
	Khata No	Status	Plot No	Kissam	Total area of the Plot (in Acres)	Leased area (in Acres)		Khata No	Status	Plot No	Kissam	Total area of the Plot (in Acres)	proposed diversion area in acr	
Saruabil	56	Rakhita	401	G.Jungal	8.41	8.41	Govt.	34	Anabad	271	Puruna Padia	10.12	8.41	Govt.
Saruabil	56	Rakhita	402	Jungal	41.45	36.25	Govt.	34	Rakhita	272	Puruna Padia	3.94	3.94	Govt.
										273	Puruna Padia	1.39	1.39	Govt.
										274	Puruna Padia	3.67	3.57	Govt.
										275	Puruna Padia	0.75	0.16	Govt.
										276	Puruna Padia	0.60	0.19	Govt.
										277	Puruna Padia	1.00	0.13	Govt.
										278	Puruna Padia	2.14	1.80	Govt.
										279	Puruna Padia	1.80	1.52	Govt.
										280	Puruna Padia	0.89	0.05	Govt.
										281	Puruna Padia	0.62	0.04	Govt.
										282	Puruna Padia	3.15	2.21	Govt.

Land schedule regarding Diversion of forest land over an area 217.02acr pertaining to Sukurangi Chromite Mines, OMC LTD

MOUZA	HAL LAND SCHEDULE- 1995 - 26						RECORD	SABAK LAND SCHEDULE						Recorded Tenant
	Khata No	Status	Plot No	Kissam	Total area of the Plot	Leased area in acres		Khata No	Status	Plot No	Kissam	Total area of the Plot	proposed diversion area in acr	
Sazuabil								34	Rakhita	283	Puruna Padia	1.88	1.87	Govt.
										284	Puruna Padia	2.28	1.54	Govt.
										285	Puruna Padia	3.59	2.64	Govt.
										286	Puruna Padia	4.91	2.26	Govt.
										287	Puruna Padia	0.60	0.60	Govt.
										288	Puruna Padia	1.05	0.85	Govt.
										306	Puruna Padia	5.38	4.56	Govt.
										307	Puruna Padia	1.12	1.12	Govt.
										308	Puruna Padia	0.53	0.53	Govt.
										309	Puruna Padia	5.43	1.25	Govt.
										312	Puruna Padia	4.05	0.15	Govt.
										316	Puruna Padia	3.52	1.05	Govt.
										317	Puruna Padia	3.53	3.35	Govt.

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C-0

Land schedule regarding Diversion of forest land over an area 217.02acr pertaining to Sukurangi Chromite Mines, OMC LTD

MOUZA	HAL LAND SCHEDULE- 1995 - 26						RECORD	SABIK LAND SCHEDULE						Recorded Tenant
	Khata No	Status	Plot No	Kissam	Total area of the Plot	Leased area in acres		Khata No	Status	Plot No	Kissam	Tota area of the Plot	proposed diversion area in acr	
Saruabil								34	Rakhita	320	Puruna Padia	0.86	0.26	Govt.
												Total	36.25	
	56	Rakhita	578	Jungal	38.00	2.26	Govt.	34	Anabadi	276	Puruna Padia	0.60	0.11	Govt.
										277	Puruna Padia	1.00	0.82	Govt.
Saruabil										280	Puruna Padia	0.99	0.60	Govt.
										281	Puruna Padia	2.58	0.53	Govt.
												Total	2.26	

Land schedule regarding Diversion of forest land over an area 217.02acr pertaining to Sukurangi Chromite Mines, OMC LTD

MOUZA	HAL LAND SCHEDULE- 1995 - 26						RECORD	SABIK LAND SCHEDULE						Recorded Tenant
	Khata No	Plot No	Name of the tenant	Kissam	Total area of the Plot	Leased area in acres		Khata No	Status	Plot No	Kissam	Total area of the Plot	proposed diversion area in acr	
SUKRANGI	24	267	A A A	patharbani		1.30		24	Anabadi	270	Sal jungle	176.53	170.1	Govt
		271(P)	A A A	patharbani		1.00								
		273	A A A	patharbani		0.14								
	35	275	arbasadharan	road		0.7								
	24	276	A A A	patharbani		15.25								
	24	277	A A A	patharbani		0.68								
	25	278	arbasadharan	road		0.95								
	24	279	A A A	patharbani		1.82								

	25	282(P)	arbasadhera	road		0.11
	24	283	AAA	patharbani		0.5
	26	284(P)	Rakhita	vill jungle		2.8
	24	285	AAA	patharbani		0.3
	24	291(p)	AAA	patherbani		3.12
	24	293(P)	AAA	patharbani		0.93
	24	306	AAA	patharbani		15.35
	24	307	AAA	patharbani		18.75
	24	308	AAA	patharbani		13.58
	24	309	AAA	patharbani		15.13
	24	310	AAA	patharbani		20.95
	24	311(P)	AAA	patharbani		8.2
	24	312(P)	AAA	patharbani		5.32
	24	316(P)	AAA	patharbani		2.41
	24	317	AAA	patharbani		16.58
	24	318	AAA	patharbani		17.13
						170.10

ABSTRACT

Name of village	Proposed diversion area in Acr
Sarubil	46.92
Sukurangi	170.10
GRAND TOTAL AREA = 217.02 ACR	

Mines Manager
for Chromite Mines
Sukurangi

18/12/15
REVENUE INSPECTOR

OFFICE OF THE PANCHAYAT SAMITI, SUKINDA

Phone No. 06726-244421 ,FAX No. 06726-244421
E Mail Id- bdo-sukinda@gramsat.nic.in

Letter No. 2442 Dt. 01 10- 2015

To-

The Sarpanch, Kausa Gram Panchayat
The Sarpanch, Kaliapani Gram Panchayat

Sub- Convening of Palli Sabha/ Gram Sabha for issuance of Certificate under Forest right Act-2006 for diversion of balance forest land over 162.42 ha. for non forest use in connection with Sukurangi Chromite Mines of M/S OMC Ltd under Cuttack forest division.

Ref- Letter No 1863 Dt 30-09-2015 of D.W.O, Jajpur arising out of Letter No 11279 Dt 31-08-2015 of M.D OMC Ltd & Letter No 7933 Dt 10-09-2015 of D.F.O, Cuttack

Madam,

In enclosing herewith the letter under reference on the captioned subject I am to state that for diversion of the below mentioned forest land for non forest use in connection with the Sukurangi Chromite Mines of M/S OMC Ltd, Palli Sabha needs to be convened in the respective village of your G.P with the consent and no objection of the local inhabitants with 50% quorum in favour of the proposed diversion for issuance of certificate under FRA-2006.

In the above context it is requested to convene the Palli Sabha in the respective villages of your jurisdiction in an early date by following due procedure as per FRA-2006 and ensuring wide publicity.

It is noteworthy that the following parameters mentioned under points *a to i* to be followed strictly during the process of convening Palli Sabha and to be recorded in the proceedings of the said Palli Sabha. The proceedings of Pallisabha along with other requisite documents should be submitted in an early date for taking further action at this end.

a) Complete process for identification and settlement of rights under FRA- 2006 has been carried out for the entire forest area proposed for diversion.
b) Palli Sabha Resolution be recorded in local language(Odia) duly signed by the Sarpanch and member present.
c) Letter of willingness be obtained for proposed diversion with the fact that they have understood the purpose and details of proposed diversion and its implication and compensatory measures.
d) It is to be ensured that there is 50% quorum in the meeting.
e) Application of individual / community claims may be collected if any.
f) It is to be ensured that FRC members along with the representatives of User agencies are present in Pallisabha.
g) Video recording along with still photographs of Palli Sabha may be ensured.
h) Money receipt supporting to Payment of charges to the drummer may be kept.
i) Wide publication of Palli Sabha notice to all concerned and at public places like school, Hat, Market and Panchayat Office.

This matter may be treated as extremely urgent

Yours faithfully

Block Development Officer
Sukinda

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LAND SCHEDULED

Sl No	Name of the Tahasil	Name of the Gram Panchayat	Name of the Village	Forest Area for diversion
1	2	3	4	5
1	Sukinda	Kansa	Sarsabil	Ac. 46.92
2	Sukinda	Kaliapani	Sukurangi	Ac.170.10
TOTAL				Ac 217.02 or 87.83 ha

Memo No 2443 Date 01-10-2015

1- Copy forwarded to Forest Range Officer, Sukinda with a request to depute his field official to attend the said Palli Sabha on the date and time and venue to be fixed by the G.P.

2- Copy submitted to the Tahasildar, Sukinda with a request to depute his Field official to attend the said Pallisabha on the date and time and venue to be fixed by the G.P. Further He is requested to impress upon the RI concerned to make a survey of the area under proposal of diversion for tracing out whether any Scheduled Tribe or any Other Traditional Forest Dwellers as per guidelines of FRA is residing/ Occupying the said area individually or on community basis and ensure submission of the said report in early date.

3- Copy to Regional Manager, OMC Ltd, Jajpur Road for information and necessary action.

4- Copy Submitted to the D.W.O, Jajur for favour of kind information and necessary action with reference to her No 1863 Dt 30-09-2015.

5- Copy to P.A to the Collector & District Magistrate, Jajpur for favour kind information of Collector & District Magistrate.

Block Development Officer
Sukinda

(13)

ଗ୍ରାମ ସଭ୍ୟ / ସଭ୍ୟାମାନଙ୍କ ଦାୟିତ୍ୱ ଓ କର୍ତ୍ତବ୍ୟ

ଗ୍ରାମରୁ ନାମ :- ସୁନ୍ଦରଗଡ଼
ଗ୍ରାମ ପଞ୍ଚାୟତ :- ନାଗିଆ ଆଳି
ଥାନା :- ସୁନ୍ଦରଗଡ଼ ଗ୍ରାମକୁ ଆସୁଥିବା ଗ୍ରାମ
ତହସିଲ :- ଏ.ଡି.ଏମ୍ / ତହସିଲଦାର
ଜିଲ୍ଲା :- ସୁନ୍ଦରଗଡ଼ ୭୦୨୦୦୨ ଫୋନ୍ ନଂ

ଆମର ଏହା ନିଶ୍ଚୟ ଅଟେ ଯେ ଆପଣ ଏହି ପତ୍ରଟି ଗ୍ରହଣ କରିବା ପରେ ଆମ ଗ୍ରାମର ଉନ୍ନତି ପାଇଁ ଆପଣଙ୍କ ଦାୟିତ୍ୱ ଓ କର୍ତ୍ତବ୍ୟ ସମ୍ପର୍କରେ ଅବଗତ ହେବା ସହିତ ଆମ ଗ୍ରାମର ଉନ୍ନତି ପାଇଁ ଆପଣ ଯଥାଶୀଘ୍ର ପଦକ୍ଷେପ ନେବେ ।

ଆମ ଗ୍ରାମର ଉନ୍ନତି ପାଇଁ ଆପଣଙ୍କ ଦାୟିତ୍ୱ ଓ କର୍ତ୍ତବ୍ୟ ନିମ୍ନରେ ଦିଆଯାଇଛି ।

୧ - ଗ୍ରାମର ସମସ୍ତ ଲୋକଙ୍କ ସହିତ ସୁସମ୍ପର୍କ ରକ୍ଷା କରିବା ।
୨ - ଗ୍ରାମର ସମସ୍ତ ଲୋକଙ୍କ ସହିତ ସମାନ ବ୍ୟବହାର କରିବା ।
୩ - ଗ୍ରାମର ସମସ୍ତ ଲୋକଙ୍କ ସୁଖ ଦୁଃଖରେ ସାମିଲ ହେବା, ଆବଶ୍ୟକ ସମୟରେ ସାହାଯ୍ୟ କରିବା ।
୪ - ଗାଁରେ ଶାନ୍ତି ଶୃଙ୍ଖଳା ବଜାୟ ରଖିବା ।
୫ - ଗାଁର ସମସ୍ତ ଶିଶୁ ସ୍କୁଲକୁ ଯାଉଛନ୍ତି, ଯାଉନାହାନ୍ତି ଦେଖିବା ।
୬ - ଆଇନ ଶୃଙ୍ଖଳା ରକ୍ଷାକାରୀ ଅଧିକାରୀଙ୍କ, ଗ୍ରାମର ଲୋକଙ୍କ ସହିତ ସୁସମ୍ପର୍କ ରକ୍ଷା କରିବା ।
୭ - ଗ୍ରାମର ଉନ୍ନତି ପାଇଁ ଗ୍ରାମବାସୀଙ୍କୁ ସଚେତନ କରିବା ।
୮ - ଗ୍ରାମର ଉନ୍ନତି ପାଇଁ ଆବଶ୍ୟକ ଅନୁଯାୟୀ ଅଧିକାରୀଙ୍କ ସହିତ ଆଲୋଚନା କରିବା ।

ଏହାଛଡ଼ା ଆପଣଙ୍କର ଆଉ କିଛି ଅଭିଯୋଗ ଥିଲେ ଆମକୁ ଜଣାଇବା ପାଇଁ ଆମେ ଅନୁରୋଧ କରୁଛୁ ।

ଆପଣଙ୍କ ବିଶ୍ୱସ୍ତ

ସମ୍ପାଦକ
ସୁନ୍ଦରଗଡ଼ ଗ୍ରାମ ପଞ୍ଚାୟତ

ଏହି ଅଧ୍ୟାୟରେ ଆମେ ଦେଖିବା ଯେ ଜଣେ ଶିକ୍ଷକ ଏବଂ ଜଣେ ଛାତ୍ରଙ୍କ ମଧ୍ୟରେ ଏକ ଅନନ୍ୟ ସମ୍ପର୍କ ଗଢ଼ି ଉଠିଛି । ଏହି ସମ୍ପର୍କ ଏତେ ଗଭୀର ଯେ ଏହା ଉଭୟଙ୍କ ଜୀବନକୁ ପରିବର୍ତ୍ତନ କରିଦେଇଛି । ଏହି ଅଧ୍ୟାୟରେ ଆମେ ଦେଖିବା ଯେ ଶିକ୍ଷକ ଜଣକ ଛାତ୍ରଟିକୁ କିପରି ଶିକ୍ଷା ଦେଇଛନ୍ତି ଏବଂ ଛାତ୍ରଟି କିପରି ତାଙ୍କ ଶିକ୍ଷାକୁ ଗ୍ରହଣ କରିଛି । ଏହି ଅଧ୍ୟାୟରେ ଆମେ ଦେଖିବା ଯେ ଶିକ୍ଷକ ଜଣକ ଛାତ୍ରଟିକୁ କିପରି ଶିକ୍ଷା ଦେଇଛନ୍ତି ଏବଂ ଛାତ୍ରଟି କିପରି ତାଙ୍କ ଶିକ୍ଷାକୁ ଗ୍ରହଣ କରିଛି ।

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Kalpanajena

Tinkle Munda
Sarpanch
Kaliapani GP

18/12/15

Forester
Ranisol Section

18.12.15
Welfare Extension Officer
SUKINDA BLOCK

Manager (Mining)
Sukurangi Chromite Mines
TATA CHRO LTD.

ଶ୍ରୀଯୁକ୍ତ ଅଜିତ ପ୍ରସାଦ ଦାଶ
ଜିଲ୍ଲାପାଳ
ଜଗତସିଂହପୁର

ତା 24-12-2015

ବିଷୟ : ଅନାବଶ୍ୟକ ଛୁଟି

ମହାଶୟ,

ସାଧୁଚରଣ ଦାସଙ୍କଠାରୁ ଆମ୍ଭେମାନେ
ଜଗତସିଂହପୁର ଜିଲ୍ଲାରେ ଜନ୍ମିଥିଲୁ, ଜନ୍ମିଥିଲୁ ।

ସ୍ୱାକ୍ଷରିତ – ଜନ୍ମିଥିବାମାନେ ଜଗତସିଂହପୁର ଜିଲ୍ଲାରେ ଜନ୍ମିଥିବା ଜଣେ ଜଣେ ଆମ୍ଭମାନଙ୍କୁ ଜଗତସିଂହପୁର ଜିଲ୍ଲାରେ ଜନ୍ମିଥିବା ଜଣେ ଜଣେ ଆତ୍ମୀୟମାନେ
ଜିଲ୍ଲାବାସୀ / ପଲ୍ଲୀବାସୀ

ମହୋଦୟ,

ଆମ୍ଭମାନଙ୍କର ଜନ୍ମସ୍ଥାନ ଜଗତସିଂହପୁର ଜିଲ୍ଲାରେ ଥିବାରୁ ଜଗତସିଂହପୁର ଜିଲ୍ଲାରେ ଜନ୍ମିଥିବା ଜଣେ ଜଣେ ଆତ୍ମୀୟମାନଙ୍କୁ ଜିଲ୍ଲାବାସୀ / ପଲ୍ଲୀବାସୀ ବୋଲି ଜଣାଯାଇଥାଏ । ଏହି ଜିଲ୍ଲାବାସୀ / ପଲ୍ଲୀବାସୀମାନେ

Sanjeevan

Kamla G P.

Kamla G P.

ଆବେଦନ ପତ୍ର / ପରିଚୟ ପତ୍ର ପାଇଁ ଅନୁରୋଧ

ସେବାରେ ସମସ୍ତ : ସାଧୁ ଆଶ୍ରମ
ସ୍ୱାକ୍ଷର କରିଥିବା : ଶିଷ୍ୟ
ସ୍ଥାନ : ସାଧୁ ଆଶ୍ରମ ଶ୍ରୀମନ୍ଦିର ପ୍ରାଙ୍ଗଣ
ତାରିଖ : ୨୮/୦୨/୨୦୧୫
ସ୍ୱାକ୍ଷର ପତ୍ର : ଆବଶ୍ୟକ ନାହିଁ ଓ ଦାବି କରାଯିବ ନାହିଁ ।

ଆମ୍ଭ ଆଶ୍ରମରେ ୨୮/୦୨/୨୦୧୫ ରିଖ ଆବଶ୍ୟକ ନାହିଁ ଓ ଦାବି କରାଯିବ ନାହିଁ ।
ସ୍ୱାମୀ ସାଧୁଦାସ ଜୀ ଙ୍କ ଦ୍ୱାରା ଆଶ୍ରମ ପରିଚାଳନା ପାଇଁ ଯେଉଁ ଶିଷ୍ୟ ଶିଷ୍ୟା ଆବଶ୍ୟକ ଅଛନ୍ତି ସେମାନଙ୍କ ପାଇଁ ଏହି ସୁଯୋଗ ୨୮/୦୨/୨୦୧୫ ରିଖ ଠାରୁ ୦୫/୦୩/୨୦୧୫ ଯାଏଁ ଉପଲବ୍ଧ ରହିବ । ଏହି ସୁଯୋଗ ସମୟ ମଧ୍ୟରେ ଯେଉଁ ଶିଷ୍ୟ ଶିଷ୍ୟା ଆଶ୍ରମରେ ପହଞ୍ଚି ପାରିବେ ନାହିଁ ସେମାନଙ୍କୁ ଆଉ ଏହି ସୁଯୋଗ ଦିଆଯିବ ନାହିଁ । ଏହି ସୁଯୋଗ ସମୟ ମଧ୍ୟରେ ଆଶ୍ରମରେ ପହଞ୍ଚିବା ପରେ ଆଶ୍ରମ ପରିଚାଳନା ପାଇଁ ଯେଉଁ ଶିଷ୍ୟ ଶିଷ୍ୟା ଆବଶ୍ୟକ ଅଛନ୍ତି ସେମାନଙ୍କୁ ଆଶ୍ରମ ପରିଚାଳନା ପାଇଁ

ଅଟକାଇ ଦେଇଥିଲା । ଏହି ଘଟଣା ଜଣାପଡିବା ପରେ ଶ୍ରୀ ଦାସ ଏହି ଅଭିଯୋଗ ଦାଏର କରିଥିଲେ ।

ଏହି ଅଭିଯୋଗ ଉପରେ ଶୁଣାଣି ସମୟରେ ଅଭିଯୁକ୍ତ ପକ୍ଷ ଏହି ଯୁକ୍ତି ଉପସ୍ଥାପନ କରିଥିଲେ ଯେ, ଏହି ଅଭିଯୋଗ ଅଭିଯୋଗକାରୀଙ୍କ ଦ୍ୱାରା ଦାଏର ହୋଇଥିବାରୁ ଏହା ଚଳିବା ଉଚିତ ନୁହେଁ । ଏହି ଯୁକ୍ତି

ଅଧିକାରୀ ଓ ଅନ୍ୟ ଜଣେ ଅଧିକାରୀ ଏବଂ ଜଣେ ଅଧିକାରୀ ଏବଂ ଜଣେ ଅଧିକାରୀ ଏବଂ

ଅଧ୍ୟାପକ
ଜନତା କଲେଜ
ଜଳଜଳା

(5)

Manager (Mining)
Sukinda Chromite Mines
TATA STEEL LTD.

Forester
Ransol Section

18.12.2015
Welfare Extension Officer
SUKINDA BLOCK

THE PLAN SHOWING THE PALLISAMA HELD OVER AN AREA 179·60ACR IN SUKURANGI VILLAGE & 46·92ACRE IN SARUABIL VILLAGE

SUKURANGI CHROMITE MINES, MISOME LTD.

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SUKURANGI VILLAGE -

SARUABIL VILLAGE -

Athalya Debury
Surveyor
Kanas G.P

SURVEYOR
SUKURANGI

VILLAGE SUKURANGI

(179.60ACRE)

VILLAGE KAMARDA

FOREST BLOCK 21

845

ଉପସ୍ଥିତି

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26. Sarmet Dehuri

Tinkabuda
Sarapanch
KALIAPANI G.P.

Tinkabuda
18.12.15
Sarapanch
KALIAPANI G.P.

Bimalabandhu Hatibarik
[illegible]
[illegible]
Dipak Kumar Das
[illegible]
Rukmani Das
Debraj Das
[illegible]
Laxman Thatoni
Manoj Kumar Sutha
Sudhakar Thatoni
[illegible]
[illegible]
[illegible]
Santanu Kumar Sahoo
Samsaur Alli
[illegible]
Arati Dehury
[illegible]
[illegible]
[illegible]
[illegible]
Sanu Mahakud
[illegible]
[illegible]
Ajit Mahakud
Yubaraj Mahakud
[illegible]

Srinivasamurthy
Surveyor
KALIAPANI G.P.

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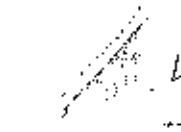
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Jamuna Mahanara













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Biranchi Nayak
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134 [illegible]

135 [illegible]

136 Sibani Dehury

137 [illegible]

138 [illegible]

139 [illegible]

140 Dilip Dehury

141 Rajen Dehury

142 Babaribahan Dehury

143 Tapan Dehury

144 Patita Dehury

145 Rabindra Dehury

146 Kirtan Dehury

147 [illegible]

148 [illegible]

149 [illegible]

150 [illegible]

151 [illegible]

152 [illegible]

Jiruka Munda
Sabapandit
Kalabahali Dist

154  Lt. ...

155 ...

156  Lt. ...

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158  Lt. ...

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167 Lt. ...

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172 [illegible]

173 Umari Dehuri

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187 [illegible]

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189 [illegible]

190 [illegible]

191 [illegible]

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192 [illegible]

193 [illegible]

194 [illegible]

195 [illegible]

196 [illegible]

197 [illegible]

198 [illegible]

199 [illegible]

200 [illegible]

201 [illegible] —(FRC)

202 [illegible]

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205 Ashoka Dehury

206 Balabhadra Singh

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208 Sankar San Dehury

209 Nilamani Nayak

210 Amita Dehuri

211 [illegible] —(FRC)

212 [illegible]

213 [illegible] —(FRC)

214

215 Rashmita Dehury

[illegible]
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Manda Kr. Nayak
Nirakar Bora Nayak
218 Susanta Nayak
219 Golakha Bohera Sahoo
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221 Mamata Mohanty
222 Gopal Sahoo
223 Jaykesh Mohanty
224 Rajesh Mohanty
225 Sabrajit Mohanty
226 Sunil Kumar Sahoo.
227 [illegible]
228 Mili Sahoo.
229 [illegible]
230 Tarun Kumar Mahanta.
231 Jagdamani Sethi
232 Ranjita Sethi
233 Jagandra Mohanty
234 Sudarsan Behera
235 [illegible]
236 [illegible]
237 Pushpa Ranjan Behera
238 Sabre Kumar Bhanja
239 [illegible]
240 Ananta Prasad Bansal.
241 [illegible]
242 [illegible]

Tinkari Mahanta
Sarapanch
CALLAPANI GP.

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Tinka Mandi
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258 [illegible]

259 [illegible]

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262 [illegible]

263 [illegible]

264 Sumanta Deka

265 [illegible]

266 [illegible]

267 [illegible]

268 [illegible]

269 Bhageswar Sahoo

270 Geeta Singh

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292 Lt- Lalita Dehuri

293 ଲଳିତା ଦେହୁରୀ

294 ସୁନିତା ସାହୁ



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299 Lt- Jana Kaibear

300 ଜୁନିଟ ଝିଙ୍କାଣି ମହାନ୍ତ

301 Bhawati Mohanta



302 Lt- Gurubari Munda

303 Bijoy munda

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309 Lt- Jayanti Hatani

Sarpanch
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325 Purna chandra Dehury

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327 Guru charana Dehury

328 Binay Dehury

Tanjamunda
Sarpanch
KALIAPANI G.P

1 Chaitanya Pradhan
2 [illegible]
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23 [illegible]
24 [illegible]
25 [illegible]
26 Chinmaya Bisoi

27 [illegible]
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29 Payanee Pradhan
30 [illegible]
31 Pabitra Dehuri
32 [illegible]
33 Maheswar Mahapatra
34 [illegible]
35 Amit Pradhan
36 M. N. Sahu
37 Hemanta Pradhan
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39 [illegible]
40 [illegible]
41 Sumit Sethi
42 [illegible]
43 [illegible]
44 [illegible]
45 [illegible]
46 [illegible]
47 [illegible]
48 Kanjamala [illegible]
49 [illegible]

Ahalya Dehuri
Sarapanch
Kansa G P



L.T.I 06-
Ganesh maharana

Rasmi Baran

Soma Hembram



L.T.I 06-
Sabitry maharana



Barti Pradhan



Sumati Behera



Kuntala Nayak



Usha Behera



Manjulatha Sahoo



Tiki Behera



Mali Pradhan



Lima Pradhan



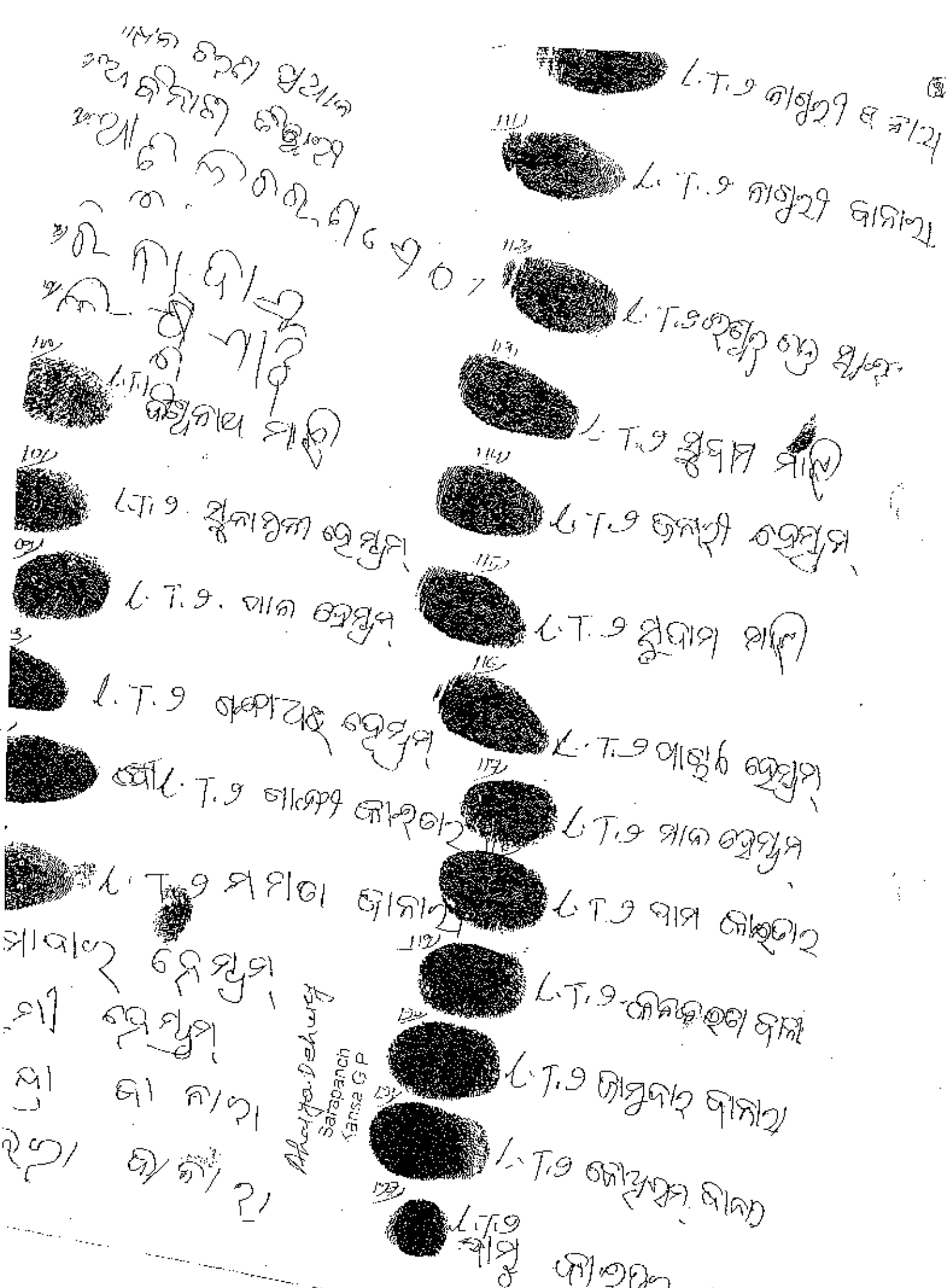
Padmabati Pradhan



L.T.I 06-
Sukumani Maharana

Sukumani Mahanana

Abhaya Behera
Sarapanch
Kansa G P



Jamaki Palei

12) Bhagaban Sethy

[illegible]

13) [illegible]

13) Snehalata Palei

[illegible]

[illegible]

130) [illegible]

131) [illegible]

132) [illegible]

133) [illegible]

134) [illegible]

135) [illegible]

136) [illegible]

137) [illegible]

138) [illegible]

139) [illegible]

140) [illegible]

141) [illegible]

142) [illegible]

143) [illegible]

144) [illegible]

145) [illegible]

146) Bhagaban Sethi —

147) [illegible]

148) [illegible] Laxmi Kanta Palei

Ahalya Behury
Sarapanch
Kansa G P

149 Kanta pradhan

150 Usabi pradhan

151 Saila pradhan

152 Gabha Dehuri

153 [illegible]

154 Gurthi Sahoo

155 Parbati HC

156 Kedi Dehuri

157 Bhadri Dehuri

158 Rama Dehuri

159 [illegible]

160 Chandamani Munda

161 Janaki Dehuri

162 Sadyabhama Pradhan

163 Puspalata Dehury

164 Laxmi Thadani

165 Jayanti Thatoi

166 Kuni Pradhan

167 Mina Dehuri

168 Bhaskar Behera

169 Gopa Pinsoa

170 Sudu Luhar

171 Radani Sikla

172 Ganji Punay

173 Balaru Say

174 Manju Pingua

175 [illegible]

176 Ganga Mani Ray

177 Kalabati Tiria

Akalya Behury
Sahpani
Kansa G.P.

177  Rani Lugeeni

178  Sambari mahanana

180  Lagurd purty

181  Luka Jeta

183  Sandi maharana

183  mantosi Tirta

184  Chitrasen pradhan

185  Bidyadhar Thakuri

186 Ranjan kumar Sahoo

187 Kulamani pradhan

188 Balaram Murmu

189 Lukanti Murmu

190 ଶାନ୍ତିରାମ ମୁର୍ମୁ

191 ଲୁକା ମୁର୍ମୁ

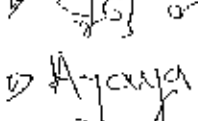
192  List Sarapanch

Ahalya Behury
Sarapanch
Kansa G P

193  List Chemeli pada











Akanya Deswal
Sarapanch
Kansa (S.P.)

Kamini Pale
Sumathi Pal









Abhaya Dehury
Sarapanch
Kansa G P











(10)

L.T.I of

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Narayan Oram

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L.T.I of

Ahalya Dehury
Sarapanch
Kansa G.P.

Sanu Hembram

Sunil Mahanta

L.T.I of

L.T.I of Chanda Munda

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Ahalya Debsingh
Saraipani
Kansa...

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Samidza Hembram

Sanatan Hembram

Bhuban Murmu

Ramandra Champua

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Abhaya Dehury
Sarapanch
Kansa G.P.

302) Baikuntha Ku Pandu (18)

303) Mohan Ranjan Behera

304) Rajani Kanta Behera

305) ପଦ୍ମିନୀ ବେହେରା

306) ମୋହନ ରଞ୍ଜନ ବେହେରା

307)  ରାଜନୀକାନ୍ତ ବେହେରା

308)  ବୈକୁଣ୍ଠ କୁ ପଣ୍ଡା

309) Rajendra Pradhan

310) ରାଜେନ୍ଦ୍ର ପ୍ରଧାନ

311) Chandan Pradhan

312)  Liaqat Chan Dehury

313) ଲିୟାକତ ଖାନ ଦେହୁରୀ

314) ଚନ୍ଦନ ପ୍ରଧାନ

315) ଅହଲ୍ୟା ଦେହୁରୀ

316)  ଏ.ଟି। ଚନ୍ଦନ ପ୍ରଧାନ

317) ଅହଲ୍ୟା ଦେହୁରୀ

318)  ଏ.ଟି। ଲିୟାକତ ଖାନ ଦେହୁରୀ

Ahalya Dehury
Sarapanga
Kansa



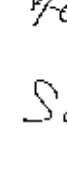


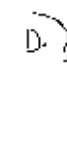














Alauja Dehury
Sarapanch
Kansa G P











Ahalya Behura
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Ahalya Dehury

Sarapanch

Kansa G P







Abadya Dehury
Sarapanch
Kansa G.P.

ଶ୍ରୀ ଅଭୟ ଦେହୁରୀ
ସାରପାଲି
କନ୍ସବାଡ଼

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Ahalya Debnary
Sarapara
Kansa



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L.T.I. [illegible]

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L.T.I. [illegible]

L.T.I. [illegible]

L.T.I. [illegible]

L.T.I. [illegible]

Akadya Dehury
Sarapany
Kana[illegible]

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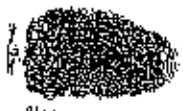
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Akalya Dehury
Sarapanch
Kansa G.P.



L.T.I ସାମୁଦ୍ରା ଦେବୀ

Ragalaka Debee



L.T.I

ସାଧିକା ଦାଶ



L.T.I

Sabitri Pakira



L.T.I ଶୁଭାଶ୍ରୀ ଦାସ



L.T.I ଅନ୍ତିମା ସାହୁ



L.T.I ସୁଭଦ୍ରାଲାଲି ସୁନ୍ଦରୀ

Ahalya Debnary
Salapanga
Kansa S.P



L.T.I ଦୀପିକାରାଣୀ ଦେବୀ

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[illegible]

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[illegible] L.T.I [illegible]

[illegible] L.T.I [illegible]

[illegible] L.T.I [illegible]

180/ Bisunatha Ki Buka

181/ [illegible]

182/ [illegible]

183/ [illegible] L.T.I [illegible]

184/ [illegible]

185/ [illegible]

186/ Budi Ram Ho

187/ [illegible]

188/ [illegible]

189/ [illegible]

Akaya Dehury
Sarap[illegible]
Kansa[illegible]





L.T. of
ઝુકે ઉદાસ



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ઉદાસ ઝુકે

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ઉદાસી ઝુકી

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Amit Oram

Bisoty Oram

Dilip Oram

Ajay Munda

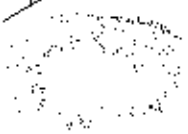
ઝુકે ઉદાસ



L.T. of
ઉદાસ મુંડા



L.T. of
Gurucharan Chatar



L.T. of - Biram Chatar

ઉદાસ મુંડા



L.T. of -
ઝુકેલા મુંડા

Gulsan Birua

Abdja Dehury

Sarapanch
Kausa GP



L.T. of Ganga Rana

508  L.t.l. of-
ଶ୍ରୀମତି କୁମାରୀ

509 ଏଡ଼ି କୁମାରୀ

510 ଶ୍ରୀମତୀ କୁମାରୀ

511 Maharanawar Maharana

512 Payuna Maharana

513 ଏଲାଣୀ ମହାରଣା

514  L.t.l. of-
Dabendra Maharana

515  L.t.l. of-
Shrimati Kumi Maharana

516  Lt-l.of.
Aroma Maharana

517 ଶ୍ରୀ ଦିଗର ଶ୍ରୀ ମହାରଣା

518  L.t.l of-
Natika Maharana

519 ଶ୍ରୀମତୀ ମହାରଣା

520  L.t.l of.
Laxmi Maharana

521  L.t.l of-
Sujen Maharana

522  L.t.l. of.
Sujmati Maharana

523 ଶ୍ରୀ ମହାରଣା

524  L.t.l of-
Pilakama Maharana

Ahalya Dehury
Sarapanri
Kansa (P

525)  L.T.I. of - Parbati Maharana

526)  L.T.I. of - Sambari Maharana

527)  L.T.I. of - ~~Parsu~~ Parsuram Maharana

528) ଦିଲ୍ଲିପ ମହାରଣା

529) ଶ୍ରୀଜଗବନ୍ଧୁ ଜେନା ମହାପାତ୍ର

530) ଅର୍ଜୁନ ମହାପାତ୍ର

531) ଗୋପୀନାଥ ମହାପାତ୍ର

532) ତ୍ରିଲୋଚନ ମହାପାତ୍ର

533) ~~ଦିଗମ୍ବର~~ ବିଶ୍ୱନାଥ ମହାପାତ୍ର

534)  L.T.I. of. Bisu Maharana

535)  L.T.I. of. Sanatan Maharana

536)  L.T.I. of. ଜଗନ୍ନାଥ ମହାପାତ୍ର

537)  L.T.I. of. ଶାନ୍ତି ମହାପାତ୍ର

538)  L.T.I. of. Nagun Samad

539)  L.T.I. of... Saibani Chakkia

540)  L.T.I. of - Lili Champia

Ahalya Behury
Sarapanch
Kansa G.P

L.T.I. of.
Khatra Munda

L.T.I. of.
Mina Champia

L.T.I. of.
Namsi Champia

L.T.I. of.
Tulasi Champia

Milli champia

L.T.I. of.

Purnima Hembram

Jitendra Munda

Sunita Munda

L.T.I. of.

Akshaya Behera
Sarpanch
Kan...



L.t.1.or.
Gajamati Munda



L.t.1.or.
Bisu Munda
Kalakar Baalkan



L.t.9.m.



L.t.9.or.



L.t.9.or.



L.t.9.lf.

Akalya Debroy
Sarapanga
Kansa G.P

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[redacted]

Laxipany Mahata

Sita mirdh

Lalita Kum Mahata

[redacted] Gherea para Singh

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Alaya Dehury
Sarapanch
Kansa G P

ANNEXURE - XX

Office of the Regional Chief Conservator of Forests, Angul

Memo No. 5707 /SCFC-I-82/2020. Dated. 09-12-21

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub:- Diversion of balance forest land of 162.42ha including 24.150 ha of forest land to be maintained as safety zone (as per Sabik Settlement records as on 25.10.1980 and after 25.10.1980) in respect of Sukurangi Chromite Mines of M/s. OMC Ltd.- Approval of schemes.

Ref:- Your Memo No. 8414 dated 03.12.2021.

The following schemes submitted vide your Memo under reference are approved by the undersigned at the wage rate of Rs.315/ per man-day and returned herewith in one set of the approved scheme for needful action.

Sl. No.	Condition No	Name of the scheme	Financial outlay. (Rs.)
1	xii(a)	Mitigative measures to minimize soil erosion and choking of streams.	12,80,000/-
	Xii(b)	Planting adequate drought hardy plant species and sowing of seeds.	05,29,500/-
2.	Xii(c)	Construction of Check Dam, retention /toe walls to arrest sliding down of the excavated material along the contour	41,33,200/-
	Xii(d)	Stabilize overburden dump by grading/benching so as to ensure the angles of repose at any given planee is less than 28.	2,39,72,000/-
3.	xiii(c)	Management of top soil at Sukurangi Chromite Mines.	03,39,86,500/-
4.	xxix	De-silting of existing water and other water bodies within 5 Km from ML boundary	77,26,300/-
	xxx	Plantation up to 100 meters on either side from the bank of river on either side in Sukurangi Chromite Mines	90,53,500/-
5.	Addl. Condition 'D'	Construction of a RCC wall along Damsal Nala.	02,19,81,100/-

You are requested to submit point wise compliance on the stipulated condition imposed in stage-I approval order to this office immediately for further action.

Encl: As above.

Regional Chief Conservator of Forests
Angul

Memo No. 5718 dated. 09-12-21

Copy along with copy of the above approved scheme each in one set forwarded to the Addl. Principal Chief Conservator of Forests (Forest Diversion and Nodal Officer, FC Act), Office of the Principal Chief Conservator of Forests & HoFF, Odisha for favour of information and necessary action with reference to Memo No.8414 dated 03.12.2021 of the DFO, Cuttack Division.

Encl: As above.

Regional Chief Conservator of Forests
Angul.

Memo No. 5719 dated. 09-12-21

Copy forwarded to the Managing Director, OMC Ltd. OMC House, Bhubaneswar for information and necessary action.

Regional Chief Conservator of Forests
Angul

SCHEME

FOR

DE-SILTING OF VILLAGE TANKS AND OTHER WATER BODIES LOCATED WITHIN 05 KM FROM THE MINE LEASE BOUNDARY

OF

SUKURANGI CHROMITE MINING LEASE

UNDER CUTTACK FOREST DIVISION

OF

M/s ODISHA MINING CORPORATION LTD.
(A Govt. of Odisha Undertaking)
OMC HOUSE, POST BOX-34, BHUBANESWAR-1

(As per condition No.(xxix) of the Stage-I forest clearance granted by MoEF & CC, Govt. of India vide F.No.-3-22/2016 FC dt. 14.09.2017)

(@ Rs. 315.00/- per manday)

SCHEME FOR DE-SILTING OF VILLAGE TANKS AND OTHER WATER BODIES LOCATED WITHIN 05 KM FROM THE MINE LEASE BOUNDARY OF SUKURANGI CHROMITE MINES OF ODISHA MINING CORPORATION LTD. SO AS TO MITIGATE THE IMPACT OF SILTATION OF SUCH TANKS/WATER BODIES

1. INTRODUCTION

Stage-I approval for diversion of balance forest land 162.42 ha. for non-forest purpose for Sukurangi Chromite mines of Odisha Mining Corporation Ltd. has been accorded vide F.No.8-22/2016-FC Dt. 14.9.2017 of Ministry of Environment, Forests & Climate Change subject to fulfilment of certain conditions.

As per condition No. (xxix) of the Stage-I approval, *"The User Agency shall prepare a list of existing village tanks and other water bodies with GPS co-ordinates located within five km. from the mine lease boundary. This list is to be duly verified by the concerned Divisional Forest Officer. The User Agency shall regularly undertake desilting of these village tanks and other water bodies so as to mitigate the impact of siltation of such tanks/water bodies. A detailed plan for desilting of identified ponds and water bodies to be prepared in consultation with forest department and shall be submitted to MoEF& CC before Stage-II approval;"*

In compliance with this condition, a comprehensive scheme is prepared for implementation of the same within 5 km from boundary of the said mining lease. Earlier a scheme was prepared which has been approved by RCCF, Angul. Labour commissioner of Odisha vide letter no. 5639/LC dt. 02.11.2021 has revised the minimum wage rate from Rs. 311.00 to Rs. 315.00 per man day. In this context, the scheme has been revised at current wage rate of Rs. 315.00 per man day.

The said ML area finds place within the Latitudes: 21° 02' 18.851" (ML Boundary pillar No. 47)- 21° 03' 46.022" (ML Boundary pillar No. 5) North and Longitudes: 85° 47' 43.770" (ML Boundary pillar No. 1)–85° 49' 21.744" (ML Boundary pillar No. 32) East in the Survey of India Topo Sheet bearing No. 73 G/16. The area exhibits an undulated topography with varying elevations from 130 meters to 254 meters above Mean Sea Level (AMSL). The ML area bears a common boundary with South-Kaliapani Chromite ML area (552.457 ha) of OMC Ltd towards south-east, Kaliapani ML area (971.245 ha) of OMC to North West, Saruabil-Sukurangi ML (23.243 ha) & Balipadia-Mahagiri ML (185.81 ha) of OMC to east and virgin Mahagiri Hill Ranges towards south of the ML area. Evacuation of minerals can happen independently without entering in to any other lease. Tomka-Mangalpur public road passes through the northern part of the ML and is the only road through which entire mineral of Sukinda valley is transported to different destinations.

The mining and ancillary activities will convert this area prone to intensive soil erosion by creating rills and gullies on mined out pit benches, on the surface of O.B. dump, on the shoulder of haul roads, on the surface of the surface-soil deposit and on the bank of the natural streams. Such gullies eventually may widen and occupy large tract of the slope and cause heavy soil loss and flooding the valley bottom with heavy siltation. This results the virgin forest area prone to soil erosion. During rains, the exposed soil will not allow percolation of rainwater to charge the groundwater table. Consequently the seasonal streams will be dried up. Therefore, it is essential to treat the area with strategic soil and moisture conservation measures to mitigate the adverse impact of mining.

2. Factors responsible for Siltation

Siltation is an inherent problem with ponds, lakes and almost all types of water reservoirs world over. Siltation occurs due to deposition or settling of soil eroded from the shore line, decaying fallen leaves, grass and other vegetative materials and decomposed organic materials settled on pond bottoms. Soil erosion may be attributed as the primary factor responsible for pond siltation in this area. Higher gradient and excess rainfall are the most common reasons of soil erosion. Erosion of Soil occurs from the waste dumps, excavated areas and naturally denuded ground surface. However, looking into the current problem of siltation of the village ponds, the major factors are the surface runoff containing silt particles entering into the pond. As the age of the ponds increases, new layers of silt accumulate on the older ones and the silt layers become thicker. Finally the depth of the pond decreases and it loses its water storage capacity. At this time it needs to be desilted to recover. The best practice against siltation is to do silting pond bottom at regular intervals as well as taking adequate preventive measures.

3. LOCATIONAL DETAILS

It is observed that the following tanks / water bodies fall within 5 Km from boundary of the mining lease area which need de- silting.

No	Village	Length in mtr	Width in mtr	Area in sq m	Volume in cum taking the height as 1 mtr and area as 70% of total area	Expenditure		
						Earth work @ Rs 125.00 per cum in Rs	Inlet & outlet pipes in Rs	Grand Total
1	Chingudipal	55.22	45.68	2522.450	1765.71	220713.75	12200	232913.75
2	Pimpudia	60.13	120.08	7220.410	5054.29	631786.25	12200	643986.25
3	Kaduabandi	67.42	66.34	4472.643	3130.85	391356.25	12200	403556.25
4	Sukuranji	75.74	73.47	5560.831	3892.58	486572.50	12200	498772.50
5	Kakudia	77.73	49.10	3816.543	2671.58	333947.50	12200	346147.50
6	Panasia	37.47	34.43	1290.092	903.06	112882.50	12200	125082.50
7	Pimpudia	183.74	243.72	44781.113	31346.78	3918347.50	12200	3930547.50

Total		61,81,006.25
	Escalation 20%	15,45,251.56
	Grand Total	77,26,257.81

Or say Rs 77,26,300.00 (Rupees Seventy seven lakh twenty six thousand three hundred) only

4. Map showing the location of ponds is enclosed as Plate-I.

5. Co-ordinates of location of ponds is given below: -

WB NO.	POINT_NAME	LONGITUDE	LATITUDE
1	A	85°45'18.54"	21°04'07.91"
	B	85°45'17.95"	21°04'06.20"
	C	85°45'16.44"	21°04'06.66"
	D	85°45'17.03"	21°04'08.37"
2	A	85°50'22.13"	21°00'40.22"
	B	85°50'23.16"	21°00'41.92"
	C	85°50'26.77"	21°00'39.99"
	D	85°50'25.74"	21°00'38.29"
3	A	85°49'01.85"	20°59'53.30"
	B	85°49'04.13"	20°59'52.83"
	C	85°49'03.64"	20°59'50.72"
	D	85°49'01.36"	20°59'51.19"
4	A	85°48'36.07"	21°03'07.05"
	B	85°48'38.36"	21°03'05.84"
	C	85°48'37.11"	21°03'03.76"
	D	85°48'34.83"	21°03'04.96"
5	A	85°46'43.31"	21°00'36.11"
	B	85°46'45.99"	21°00'35.89"
	C	85°46'45.84"	21°00'34.30"
	D	85°46'43.16"	21°00'34.52"
6	A	85°47'46.33"	21°00'54.08"
	B	85°47'47.60"	21°00'53.85"
	C	85°47'47.38"	21°00'52.75"
	D	85°47'46.11"	21°00'52.98"
7	A	85°49'57.23"	21°00'12.81"
	B	85°50'00.58"	21°00'17.89"
	C	85°50'07.76"	21°00'13.72"
	D	85°50'04.41"	21°00'08.64"

4. TOPOGRAPHY:

The ponds are mostly on plain terrain. They are situated close to habitation.

5. SOIL TYPE.

The soil is hard and lateritic. The pond silt is basically of clay, silt and sand. The silts are soft and easily can be removed. The depth of siltation as observed varies from 30 cm to 200 cm. On an average 115 cm or say 1 meter silt is proposed to be removed.

6. METHODOLOGY FOR DE-SILTATION

Keeping in view the site condition it is proposed to take up de-siltation on a cycle of five year basis (i.e. each pond will be de-silted twice within the plan period over 10 year) particularly during summer months when the pond / water bodies are dried up with exposed silts. Removal of silts is to be done either manually or mechanically basing on ground condition and quantity of silts accumulation. Silt accumulation occurs in the basal area of the tank which is roughly estimated to be 30% less of the aerial area. The estimated quantum of silt that is required to be removed is given in the table.

During excavation the excavated silt are to be put on the embankment of the pond with top height at least of 1 meter and base width 2.5meter basing on availability of land on periphery. The soil on embankment to be compacted and two inlet and two outlet pipe are to be fixed in the embankment (6" diameter PVC pipe or Cement Pipe).

7. Cost estimate:

As per schedule of rate for earth work "Earth work in excavation by mechanical means (hydraulic excavation means over areas exceeding 30cm depth 1.5m in width as well as 10 sqm. On plan including disposal of excavated earth lead up to 50 m and lift up to 1.5m disposal earth to be levelled and neatly dressed etc complete @Rs 123.42/ cum. Basing on volume of earth work as indicated above Table No, cost estimate to be calculated. In addition cost of Inlet / outlet pipes, at each pond an additional cost of Rs 6000/- per tank to be added. Total amount of Rs 77,26,300.00 (Rupees Seventy seven lakh twenty six thousand three hundred) only will be required for the project.

8. Execution:

This project of De-siltation of Village tank will be carried out by the user agency. An amount of Rs 77,26,300.00 will be required.

9. INSPECTION AND MONITORING.

The manner of execution & periodical monitoring will be made by M/s OMC Ltd authority. The Execution and achievements may be reviewed by the Divisional Forest Officer, Cuttack Division from time to time as possible. In case of some dispute if the earmarked tank could not be de- silted in assigned year it may be executed in the next year along with the next year's programme.

Approved for Rs 77,26,300/-

Regional Chief Conservator
of Forests, Angul Circle.

Divisional Forest Officer
Cuttack Forest Division

ANNEXURE - XXI

Office of the Regional Chief Conservator of Forests, Angul

Memo No. 5717/ SP.FC-I-82/2020. Dated. 09-12-21

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub:- Diversion of balance forest land of 162.42ha including 24.150 ha of forest land to be maintained as safety zone (as per Sabik Settlement records as on 25.10.1980 and after 25.10.1980) in respect of Sukurangi Chromite Mines of M/s. OMC Ltd.- Approval of schemes.

Ref:- Your Memo No. 8414 dated 03.12.2021.

The following schemes submitted vide your Memo under reference are approved by the undersigned at the wage rate of Rs.315/- per man-day and returned herewith in one set of the approved scheme for needful action .

Sl. No.	Condition No	Name of the scheme	Financial outlay. (Rs.)
1	xii(a)	Mitigative measures to minimize soil erosion and checking of streames.	12,80,000/-
	Xii(b)	Planting adequate draught hardy plant species and sowing of seeds.	05,29,500/-
2.	Xii(c)	Construction of Check Dam, retention /toe walls to arrest sliding down of the excavated material along the contour	41,33,200/-
	Xii(d)	Stabilize overburden dump by grading/benching so as to ensure the angles of repose at any given plance is less than 28.	2,39,72,000/-
3.	xii(e)	Management of top soil at Sukurangi Chromite Mines.	03,39,86,500/-
4.	xxix	De-silting of existing water and other water bodies within 5 Km from ML boundary.	77,26,300/-
	xxx	Plantation up to 100 meters on either side from the bank of river on either side in Sukrangi Chromite Mines	90,53,500/-
5.	Addl. Condition 'D'	Construction of a RCC wall along, Damsal Nala.	02,19,81,100/-

You are requested to submit point-wise compliance on the stipulated condition imposed in stage-I approval order to this office immediately for further action.

Encl: As above.

Regional Chief Conservator of Forests
Angul

Memo No. 5748 dated. 09-12-21

Copy along with copy of the above approved scheme each in one set forwarded to the Addl. Principal Chief Conservator of Forests (Forest Diversion and Nodal Officer, FC Act), Office of the Principal Chief Conservator of Forests & HoFF, Odisha for favour of information and necessary action with reference to Memo No.8414 dated 03.12.2021. of the DFO, Cuttack Division.

Encl: As above.

Regional Chief Conservator of Forests
Angul.

Memo No. 5749 dated. 09-12-21

Copy forwarded to the Managing Director, OMC Ltd. OMC House, Bhubaneswar for information and necessary action.

Regional Chief Conservator of Forests
Angul

SCHEME FOR

PLANTATION UP TO 100 METERS ON EITHER SIDE OF DAMSAL NALLAH PASSING THROUGH SUKURANGI CHROMITE MINES

OVER 11.229 HA

IN COMPLIANCE TO THE CONDITION NO. (I) OF THE ORDER NO. F.NO. 8-22/2016-FC DT. 19.12.2016 OF MOEF & CC, GOVT. OF INDIA.

PERTAINING TO

SUKURANGI CHROMITE MINING LEASE LOCATED IN JAJPUR DISTRICT, ODISHA

OF

M/S ODISHA MINING CORPORATION LTD.
(A GOVT.OF ODISHA UNDERTAKING)
OMC HOUSE, BHUBANESWAR-751001

(@ Rs 315.00 per man/day)

SCHEME FOR PLANTATION UP TO 100 METRES ON EITHER SIDE OF DAMSAL NALLAH PASSING THROUGH SUKURANGI CHROMITE MINES OF M/s ODISHA MINING CORPORATION LTD.

1. INTRODUCTION

Odisha Mining Corporation Ltd had submitted a proposal for diversion of balance forest area of 102.42 hectares for non-forest purpose under Section 2 of Forest Conservation Act 1980 in Sukurangi Chromite Mines. The proposal was placed before Forest Advisory Committee on 9th and 10th November, 2016. As per the recommendation of FAC in the said meeting the MoEF & CC directed vide its order no. F.No. 8-22/2016-FC Dt.19.12.2016 for certain actions to be taken up before clearance under Forest Conservation Act is accorded.

As per condition No. (i) of the said letter, "Plantation up to 100 mtrs from the bank of river on either side, to be done and maintained as green belt".

In compliance, a comprehensive scheme is prepared for implementation of the same by the user agency. Earlier a scheme for plantation up to 100 meters on either side from bank of Damsal Nallah passing through Sukurangi Chromite Mines has been approved by RCCF, Rourkela. Earlier a scheme on fencing, protection and regeneration safety zone area has been approved by RCCF, Angul @ Rs. 213.50/- per man day, Rs. 298.00/- per man day, Rs. 303.40/- per man day, Rs. 308.00 per man day and @ Rs. 311 per manday. Labour Commissioner of Odisha vide letter no.5639/LC dt. 02.11.2021 has revised the minimum wage rate to Rs. 315.00 per man day. In this context the scheme has been revised @ Rs. 315.00 per man day.

2. LOCATION OF THE AREA

Map showing 100 mtr width area from either side of river bank within the area proposed for diversion is shown as Plate-I. The land schedule of the forest area proposed for plantation in Sukurangi Chromite Mines is furnished as Annexure-I. The area covers 29.229 hectares of forest land out of which funds for raising 18 ha plantation has been paid by the User Agency vide UTR No. ANDH1 5311685031O Dt.26.04.2013. Hence a scheme for raising plantation over balance 11.229 ha is prepared as below:

3. PLANTATION MODEL:-

Block plantation with 1600 plants per hectare will be raised with maintenance of plantation for 10 years. A site specific cost norm for the plantation is furnished as Annexure-II.

4. TECHNICAL DETAILS : -

Plantation shall be taken up with 1600 plants per hectares at spacing of 2.5m x 2.5m 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. 18 months old saplings will be used for plantation. All post planting measures like casualty replacement, soil working, manuring, fire protection etc. will be undertaken in time.

While taking up plantation, the following points shall be carefully followed: -

- Care to be taken to raise healthy plantable 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 fertilizer and insecticide 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 should be done in time.
- Chain link wire mesh fencing adopted on both side of Plantation for better protection. The cost norm for the barbed fencing is furnished as Annexure-**III**.

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. Considering the topography, soil and moisture availability of the plantation area, the following species will be planted.

Name of species	Common name	Remarks
Azadirachta indica	Neem	
Pterris indica	Karanja	
Emblica officinalis	Amla	
Terminalia chebula	Harida	In lower areas with good soil depth

Terminalia bellirica	Bahada	In lower areas with good soil depth
Dalbergia sissoo	*Sissoo*	In lower areas with good soil depth
Gmelina arborea	Gambhari	In lower areas with good soil depth
Dendrocalamus strictus	Salia bamboo	In lower areas with good soil depth healthy seedlings from rhizomes may be
Dalbergia sissoo	Sissu	In lower areas with good soil depth
	Chakunda	In lower areas with good soil depth
Tamarindus indica	Tentuli	In lower areas with good soil depth
Madhuca indica	Mahul	Only two years old seedlings may be planted
Simaruba ghauca	Simaruha	In rocky areas with low soil depth
Zizyphus mauritania	Ber	In rocky areas with low soil depth
Mangifera indica	Mango	In situ plantation (direct placing of mango stone in planting site) during pre-monsoon may be adopted in few lower areas or where life saving watering can be done during

5. EXECUTING AGENCY

The work in the present Scheme shall be executed by M/s OMC Ltd.

6. REQUIREMENT OF FUNDS

The total cost of the implementation of the project will be Rs. 90,42,200.00 (Rupees ninety lakhs forty two thousand two hundred) only as shown in Annexure-IV. This budget will be subject to increase in amount considering the increase in materials and labour charges.

Divisional Forest Officer
Cuttack Forest Division

ANNEXURE – II

BASE COST NORM FOR COMPENSATORY AFFORESTATION (BLOCK PLANTATION) @ 1600 PLANTS PER HECTARE (18 months old seedling)

Sl. No.	Items of work	Preferable Period of Execution	No. of Mandays	Labour Cost (in Rs.)	Material Cost (in Rs.)	Total Cost (in Rs.)
1	2	3	4	5	6	7
	0th Year (Advance Work) Pre-Planting Operation					
1.	Survey, demarcation and Pillar posting	Nov/Dec	2	630	0	630
2.	Preparation of Treatment Map (Digital /400)	Nov/Dec	1	315	100	415
3.	Site preparation (Cleaning & removal of debulses)	Nov/Dec	12	3780	0	3780
4.	Creation of 4.00 mt. wide Inspection Path	Feb/Mar	1	315	0	315
5.	Alignment and stacking	Feb/Mar	2	630	0	630
6.	Digging of pits (45 cm x 45 cm x 45 cm) in hard and gravelly soil	Feb/Mar	64	20160	0	20160
7.	Construction of Temporary Labour Shed, Drinking water facility and First-Aid etc.	Jan/Mar	0	0	3500	3500
	Total		82	25830	3600	29430
	1st Year/ Planting Year					
1.	Refilling of pits by altering the dug-out soil of the pits, application of Organic compounds/ CDM/ FYM & mixing the same properly.	Jun/Jul	12	3780	8000	11780
2.	Transportation of 10 months old polypot seedlings in hired truck/ tractor from the permanent/ Mega nursery to planting site including Loading & unloading. (Average lead of 10 Rkm) & Stacking the seedling @ Rs. 6/- per Seedling. (1760 nos.)	Jul/Aug	0	0	10560	10560
3.	Watering the polypot seedlings at planting site.	Jul/Aug	3	945	0	945
4.	Conveyance of polypot seedlings on head load from the stacking site to individual dugout pits within the planting site, applying insecticide, fertilizers & planting after scooping the soil with other applied materials & pressing the soil properly around the planted seedlings.	Jul/Aug	36	11340	0	11340
5.	Cost of Fertilizer & Insecticide (a) NPK/ Bio-fertilizer @ 50 gms/ plant as basal dose = 80 kg @ Rs. 30/- per kg = Rs. 2400.00 (b) Urea/ Vermicompost/ Mo Khata/ any other fertilizer in two subsequent doses @ Rs. 1,200.00 (c) Insecticide/ Bio-pesticide @ 5 gms/ plant = 8 kg @ Rs. 150/- per kg = Rs. 1200.00	Jul/Aug	0	0	4800	4800
6.	Casualty Replacement @ 10% (160 nos.)	Jul/Aug	4	1260	0	1260
7.	1st weeding & Manuring	Aug/Sept	15	4725		4725
8.	2nd Weeding, Soil working (1mt. diameter around the plants) and Manuring.	Oct/Nov	20	6300	0	6300
9.	Fire line tracing (2m. wide fire line over 400 m long) including maintenance of inspection path.	Feb/Mar	3	945	0	945
10.	Watch & Ward including watering as per requirement.	Aug-Mar	12	3780	0	3780
	TOTAL		105	33075	23360	56435
	2nd Year Maintenance					
1.	Transportation of 1Nos seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs. 6/- per seedlings.	Jul	0	0	960	960

	Tractor @ Rs. 6/- per seedlings	Jul	4	1260	0	1260
2.	Causality replacement- 10%					
3.	Cost of Fertilizer & Insecticide A) Cost of Insecticide/ Bio-pesticide @ 5 gms/plant = 0.8 Kg @ Rs. 150/ per kg = Rs. 120/- B) Urea/ NPK/ Bio-fertilizer/ Vermicompost/ Mo Khata/ any other fertilizer @ Rs. 4486/-	Aug/Sept	0	0	4006	4606
4.	Weeding (Complete weeding), Manuring & Soil working (1mt. diameter around the plants)	Sept/Oct	20	6300	0	6300
5.	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	945	0	945
6	Watch & Ward including watering as per requirement	Apr-Mar	18	5670	0	5670
7.	Maintenance of Temporary Labour Shed, Drinking water facility and First-Aid etc.				1000	1000
	Total		45	14175	6566	20741
		3rd Year Maintenance				
7	Cost of Fertilizer Urea/ NPK/ Bio-fertilizer/ Vermi compost/ Mo Khata/ any other fertilizer	Sept/Oct	0	0	4486	4486
8	Weeding, Manuring & Soil working (1mt. diameter around the plants)	Sept/Oct	20	6300	0	6300
9	Fire line tracing (2 m wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	945	0	945
10	Watch & Ward including watering as per requirement	Apr/Mar	18	5670	0	5670
11	Maintenance of Temporary Labour Shed, Drinking water facility and First-Aid etc.	Apr/Mar			1000	1000
	Total		41	12915	5486	18401
		4th Year Maintenance				
1	Fire line tracing (2 m. wide fire line over 400 m long) including maintenance of inspection path	Feb/Mar	3	945	0	945
2	Watch & Ward	Apr-Mar	18	5670	0	5670
	Total		21	6615	0	6615
		5th Year Maintenance				
1	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
2	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
		6th Year Maintenance				
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945.0
2.	Pruning of branches, Singling out of multiple shoots	Jan/Mar	5	1575.00	0	1575.0
3.	Watch & Ward	Apr-Mar	18	5670.00	0	5670.0
	Total		26	8190	0	8190.0
		7th Year Maintenance				
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
2.	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
		8th Year Maintenance				
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
2.	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
		9th Year Maintenance				
1.	Fire line tracing (2 m. wide fire line over 400 m length)	Feb/Mar	3	945.00	0	945
2.	Watch & Ward	Apr-Mar	18	5670.00	0	5670
	Total		21	6615	0	6615
		10th Year Maintenance				
1.	Fire line tracing (2 m. wide fire line	Feb/Mar	3	945.00	0	945

2.	Watch n Ward	Total	Apl/May	10 21	6670.00 6615	0 0	6670 6615	

Year wise Abstract of Cost Norm (Showing seedling cost separately)

Sl. No.	Year	No. person days	Labour Cost @ Rs. 315/- per day	Material Cost	Monitoring Evaluation, Learning, Documentation and Other Contingency (5%) of (4+5)	Cost of Seedlings @ Rs. 50.31 per seedlings	TOTAL COST
1.	0th Year	87	25830	3600	1470	0	30900
2.	1st Year	105	33075	23360	2822	88546	147803
3.	2nd Year	45	14175	6566	1047	8090	29878
4.	3rd Year	41	12915	5406	920	0	19371
5.	4th Year	21	6615	0	331	0	6946
6.	5th Year	21	6615	0	331	0	6946
7.	6th Year	26	8190	0	410	0	8600
8.	7th Year	21	6615	0	331	0	6946
9.	8th Year	21	6615	0	331	0	6946
10.	9th Year	21	6615	0	331	0	6946
11.	10th Year	21	6615	0	331	0	6946
	Total	425	133875	39012	6643	96596	276126.00

1,48,66/-
27,940/-
2,99,066/-

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

Sl. No.	Commencement Year	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost (21 Years)
	Base Norms	320001	147803	29828	19523	6946	6946	8602	6946	6846	6946	5846											278128
1	2021-22	303360	156193	32885	22366	8443	8865	13525	9774	10262	10776	11314	11830										312504
2	2022-23		324421	63993	34557	25435	8965	9508	15107	10262	10776	11314	11830	12474									321919
3	2023-24			340667	171109	36256	24663	9508	9774	12705	10776	11314	11830	12474	13098								344174
4	2024-25				357731	179555	38069	25895	9774	10262	12341	11314	11830	12474	13098	13753							361521
5	2025-26					377559	188638	39979	37183	10262	10776	14008	11830	12474	13098	13753	14440						379993
6	2026-27						396437	258070	41971	38546	10776	14709	12474	13098	13753	14440	15162						399838
7	2027-28							414409	207974	44070	29973	13514	13830	13474	13098	13753	14440	15162					419317
8	2028-29								42479	218572	46633	31479	13830	13474	14217	13753	14440	15162	15920				426492
9	2029-30									45633	329091	48587	39045	13474	13098	17027	14440	15162	15920	16716			448496
10	2030-31										47936	240756	51016	54698	13093	13753	17879	15162	15920	16716	17552		484488

DIVISIONAL FOREST OFFICER,
CUTTACK FOREST DIVISION,

ANNEXURE – III

Fencing for Compensatory Plantation raised outside the Forest Areas using Angle Iron & Chain Link wire mesh

(250 Rmt/Ha.)

Sl. No	Item of work	Preferable Period of Execution	Man days	Wages	Marital cost	Total Cost (Rs.per Ha.)
		0th Year (PPO)				
1	Earth work (excavation of hole) in Hard soil at a distance 3 mt. 0.40m x 0.40m=0.064 x 84=5.376 cum @ Rs.140/ cum =Rs.753.		2.42	762.3	0.0	762.3
2	Cement concrete (1:4:8) using 40 mm RHC metal 84 X 0.40m X 0.40m = 1.344m@3775.9/cum		0	0	5,047.4	5,047.4
3	Angle iron pole of size 50mm X 50 mm X 6mm of height 2.40 mt. 84 x 2.40=201.60rmt. @4.50/kg/rmt. = 907.20 kg@ 69.50 per kg				63,050.0	63,050.0
4	Cement Concrete (1:2:4) for fixing the iron angle pole using 12mm BHG chips 84 X 0.40m X0.40m X 0.30m = 4.032 cum @5486.77/cum				22,123.0	22,123.0
5	Cost of Chain link mess using 4mm Dia GI wire having gap size 50mm X 50mm 250 Rmt X 2.10mt=525sq.mt2333/5sqmt=Rs.1,73,775				1,73,775.0	1,73,775.0
6	Double coat painting of Iron angle pole over a coat of primer using good quality enamale paint 84 x 2.10 x 0.20 = 35.28sqmt @ Rs 108.80/Sqmt				3,838.0	3,838.0
7	Painting of GI chain link mess 250 x 2.10 x 2 = 1050/10 = 105 Sqmt.@108.80 Sqmt.				11,424.0	11,424.0
8	Transpotation of Chain link mess,Iron angle,Straightening & fixing of chain link mess etc. @ 2% of the total cost				5,600.0	5,600.0
		Total	2.42	762.3	2,84,857.4	285619.7 Or 285620.00
	Rate per running mt. 2,85,620/250 = Rs.1142/Rmt					
		1st Year Maintenance				
1	No Maintenance is required	Sept / Oct	0	0	0	0
		2nd Year Maintenance				
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1 st yr. 1142 x 1% = 1142 say Rs.11	Sept / Oct	0	0	11000	11000
		3rd Year Maintenance				
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1 st yr. 1142 x 1% = 1142 say Rs.11	Sept / Oct	0	0	11000	11000
		4th Year Maintenance				
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1 st yr. 1142 x 1% = 1142 say Rs.11	Sept / Oct	0	0	11000	11000
		5th Year Maintenance				
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1 st yr. 1142 x 1% = 1142 say Rs.11	Sept / Oct	0	0	11000	11000
		6th Year Maintenance				
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1 st yr. 1142 x 1% = 1142 say Rs.11	Sept / Oct	0	0	11000	11000
		7th Year Maintenance				
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1 st yr. 1142 x 1% = 1142 say Rs.11	Sept / Oct	0	0	11000	11000
		8th Year Maintenance				

1	Maintenance of wire mess fence @ 1% per running mt. cost of Installation in 1 st yr. 1142 x 1% = 1142 say Rs.11	Sept / Oct	0	0	11000	11000

9th Year Maintenance

1	Maintenance of wire mess fence @ 1% per running mt. cost of Installation in 1 st yr. 1147 x 1% = 1142 say Rs.11	Sept / Oct	0	0	11000	11000

10th Year Maintenance

Sl. No	Item of work	Preferable Period of Execution	Man days	Wages	Marital cost	Total Cost (Rs.per No.)
1	Maintenance of wire mess fence @ 1% per running mt. cost of installation in 1 st yr. 1142 x 1% = 1147 say Rs.11	Sept / Oct	0	0	11000	11000

Abstract

Sl. No	Year	No. person days	Labour cost @ Rs.315/- per days	Material Cost	Total cost (Rs.)
1	0 th year	2.47	762.3	284857.4	285619.7 Or 285620.00
2	1 st year	0.0	0.0	0.0	0.0
3	2 nd year	0.0	0.0	11000.0	11000.0
4	3 rd year	0.0	0.0	11000.0	11000.0
5	4 th year	0.0	0.0	11000.0	11000.0
6	5 th year	0.0	0.0	11000.0	11000.0
7	6 th year	0.0	0.0	11000.0	11000.0
8	7 th year	0.0	0.0	11000.0	11000.0
9	8 th year	0.0	0.0	11000.0	11000.0
10	9 th year	0.0	0.0	11000.0	11000.0
11	10 th year	0.0	0.0	11000.0	11000.0
	Total	2.47	762.30	383857.4	384619.70 Or Say 384620.00

Matrix for Fencing model-F-II (Iron angle with Chain link wire mesh)

Sl. No.	Name of Village	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total (Rs.)
Scale 40cm		265020	0	11000	11000	11000	11000	11000	11000	11000	11000	11000											476341
1	2951-52	265020	0	15126	15734	15000	14952	14740	15478	16155	17054	17916											148209
2	3042-53		259901	0	15712	15371	14979	14741	15477	16152	17068	17917	18814										465328
3	3052-54			31-8596	0	15269	14948	14741	15478	16151	17068	17916	18814	19793									188441
4	3074-55				230541	0	15027	14742	15478	16152	17034	17913	18814	19794	20743								339715
5	3018-56					347157	0	14739	15479	16153	17065	17913	18814	19793	20742	21780							525279
6	3020-57						354631	0	15474	16153	17065	17913	18814	19793	20743	21780	22869						581565
7	3027-58							355759	0	16153	17068	17916	18814	19794	20743	21780	22869	24011					550863
8	3029-59								401067	0	17063	17919	18814	19793	20742	21780	22869	24012	25213				615857
9	3029-60									421992	0	17916	18813	19793	20743	21780	22868	24012	25213	26473			550647
10	3030-61										443092	0	18812	19793	20743	21780	22868	24012	25213	26473	27796		

Annexure-IV

FINANCIAL FORECAST

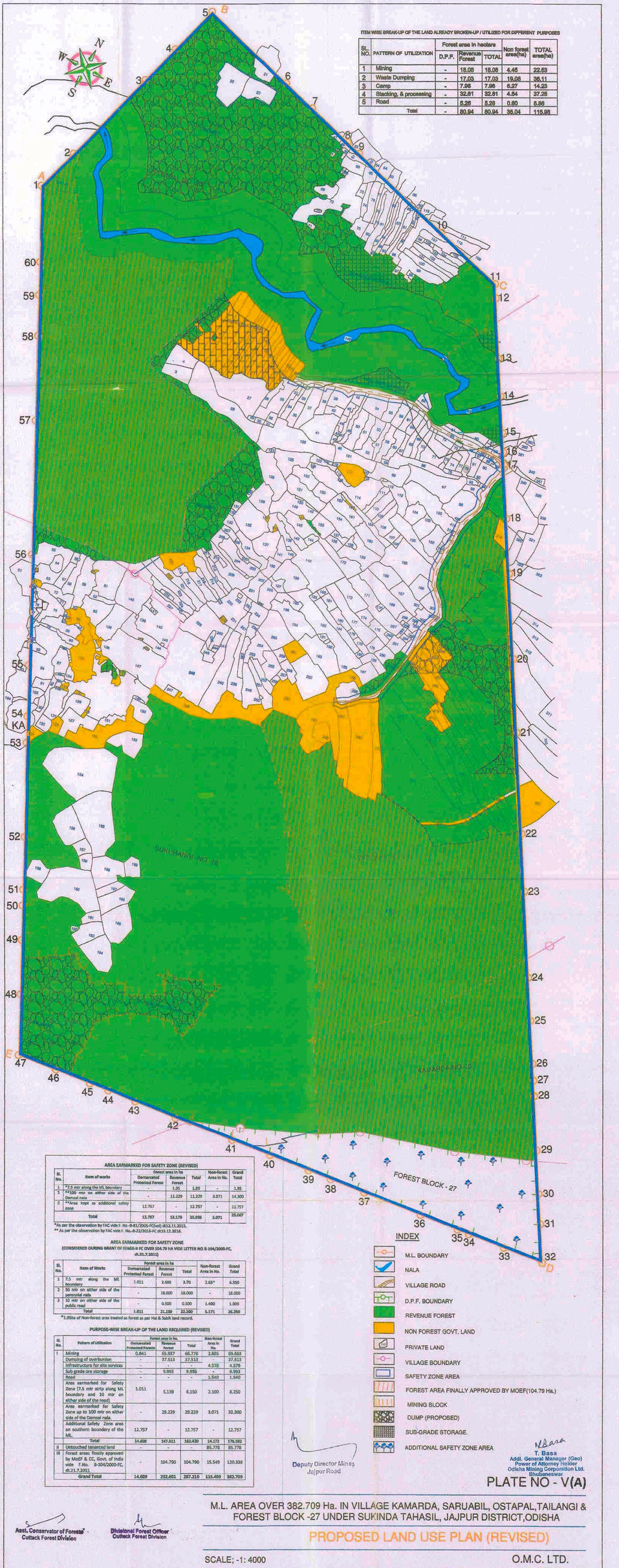
Sl. No.	Particulars of interventions	Financial Involvement (Rs)
1	Block plantation (1600 plants/ha) over 11.229 ha on either side of river bank @ Rs.12304/Ha	35,06,861.01
2	Chainlink wire mesh over 3.3 Km=3300 meter. @ Rs 419341/250 Rmt 3300/250=13.2 x 419341 =55,35,301.20	55,35,301.20
	Total	90,42,162.81 say 90,42,200.00

(Rupees ninety lakhs forty two thousand two hundred) only

Divisional Forest Officer
Cuttack Forest Division

Approved for Rs. 90,53,500/-

Regional Chief Conservator
of Forests, Angul Circle.



ITEM WISE BREAK-UP OF THE LAND ALREADY BROKEN-UP / UTILIZED FOR DIFFERENT PURPOSES

Sl. NO.	PATTERN OF UTILIZATION	Forest area in hectare			Non forest area(ha)	TOTAL area(ha)
		D.P.F.	Revenue Forest	TOTAL		
1	Mining	-	18.08	18.08	4.45	22.53
2	Waste Dumping	-	17.03	17.03	19.08	36.11
3	Camp	-	7.96	7.96	6.27	14.23
4	Stacking, & processing	-	32.81	32.81	4.84	37.25
5	Road	-	5.26	5.26	0.80	5.86
	Total	-	80.94	80.94	35.04	115.98

AREA EARMARKED FOR SAFETY ZONE (REVISED)

Sl. No.	Item of works	Forest area in ha			Non-forest Area in Ha.	Grand Total
		Demarcated Protected Forest	Revenue Forest	Total		
1	*7.5 mtr along the ML boundary	-	1.95	1.95	-	1.95
2	**100 mtr on either side of the Damsal nala	-	11.229	11.229	3.071	14.300
3	**Area kept as additional safety zone	12.757	-	12.757	-	12.757
	Total	12.757	13.179	25.936	3.071	28.007

*As per the observation by FAC vide F. No.-8-81/2005-FC(pt) dt12.11.2015.
** As per the observation by FAC vide F. No.-8-22/2016-FC dt13.12.2016.

AREA EARMARKED FOR SAFETY ZONE
(CONSIDERED DURING GRANT OF STAGE-II PC OVER 104.79 HA VIDE LETTER NO 8-104/2005-FC, dt.21.7.2011)

Sl. No.	Item of Works	Forest area in ha			Non-forest Area in Ha.	Grand Total
		Demarcated Protected Forest	Revenue Forest	Total		
1	7.5 mtr along the ML boundary	1.011	2.689	3.70	2.65*	6.350
2	50 mtr on either side of the perennial nala	-	18.000	18.000	-	18.000
3	10 mtr on either side of the public road	-	0.500	0.500	1.400	1.900
	Total	1.011	21.189	22.200	5.171	26.250

*1.35ha of Non-forest area treated as forest as per Hal & Sabik land record.

PURPOSE-WISE BREAK-UP OF THE LAND REQUIRED (REVISED)

Sl. No.	Pattern of Utilisation	Forest area in ha.			Non-forest Area in Ha.	Grand Total
		Demarcated Protected Forests	Revenue forest	Total		
I	Mining	0.841	65.957	66.776	2.805	69.563
	Dumping of overburden	-	37.513	37.513	-	37.513
	Infrastructure for site services	-	-	-	4.576	4.576
	Sub grade ore storage	-	5.993	5.993	-	5.993
	Road	-	-	-	1.540	1.540
	Area earmarked for Safety Zone (7.5 mtr strip along ML boundary and 10 mtr on either side of the road)	1.011	5.139	6.150	2.100	8.250
	Area earmarked for Safety Zone up to 100 mtr on either side of the Damsal nala.	-	29.229	29.229	3.071	32.300
	Additional Safety Zone area on southern boundary of the ML.	12.757	-	12.757	-	12.757
	Total	14.609	147.831	162.420	14.172	176.592
II	Untouched tenanted land	-	-	-	85.778	85.778
III	Forest areas finally approved by MoEF & CC, Govt. of India vide F.No. 8-104/2005-FC, dt.21.7.2011.	-	104.790	104.790	15.549	120.339
	Grand Total	14.609	252.621	267.210	115.499	382.709

INDEX

- M.L. BOUNDARY
- NALA
- VILLAGE ROAD
- D.P.F. BOUNDARY
- REVENUE FOREST
- NON FOREST GOVT. LAND
- PRIVATE LAND
- VILLAGE BOUNDARY
- SAFETY ZONE AREA
- FOREST AREA FINALLY APPROVED BY MOEF(104.79 Ha.)
- MINING BLOCK
- DUMP (PROPOSED)
- SUB-GRADE STORAGE.
- ADDITIONAL SAFETY ZONE AREA

Deputy Director Mines
Jajpur Road

T. Basa
Addl. General Manager (Geo)
Power of Attorney Holder
Odisha Mining Corporation Ltd.
Bhubaneswar

PLATE NO - V(A)

Asst. Conservator of Forests
Cuttack Forest Division

Divisional Forest Officer
Cuttack Forest Division

M.L. AREA OVER 382.709 Ha. IN VILLAGE KAMARDA, SARUABIL, OSTAPAL, TAILANGI & FOREST BLOCK -27 UNDER SUKINDA TAHASIL, JAJPUR DISTRICT, ODISHA

PROPOSED LAND USE PLAN (REVISED)

SCALE; -1: 4000

O.M.C. LTD.

ANNEXURE:- XXII

ANNEXURE - XXIII Series

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
GOATAKULA: NUAPARA: CUTTACK

Memo No. 2276
Dated, Cuttack 21-5-09

To

The General Manager (Forest & Environment)
M/S.O.M.C Ltd. Bhubaneswar.

Sub: i.) Implementation of Wildlife Management Plan in the Mining area at Project cost.

ii) Diversion of 104.79 ha. (Originally proposed 132.94 ha.) of Forest land for Chromite mining in Sukrangi Chromite mines of M/S Orissa Mining Corporation (O.M.C) Limited in District Jajpur, Orissa.

Ref: This office memo no.1286 dt.18.03.2009.

Dear Sir,

Please refer to this office memo cited above and arrange to make payment of Rs 76,54,180/-(Rupees seventy six Lakhs fifty four thousand one hundred eighty) only towards cost of Wildlife Management Plan over 382.709 ha. of M.L. area in respect of Sukerangi Chromite mines through Bank Draft in favour of Compensatory Afforestation Fund (CAF) Orissa Account No.CA-1585 in Corporation Bank Lodhi Road, New Delhi. The Bank Drafts for the said amount should be submitted to this office immediately for onward transmission of the same and for recommendation of the Diversion Proposal for final approval under Section -2 of F.C Act 1980.

Yours Faithfully.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Memo No. 2277 /Dt. 21-5-09
Copy forwarded to the Conservator of Forests, Angul Circle, Angul for favour of kind information and necessary action with reference to this office memo no. 1287 dt.18.03.2009 and memo no.6092 of the Chief Conservator of Forests , Forest Diversion and Nodal Officer , F.C Act , O/O-the P.C.C.F, Orissa Bhubaneswar to his address.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Memo No. 2278 /Dt. 21-5-09
Copy forwarded to the Chief Conservator of Forests Forest Diversion and Nodal Officer, F.C Act, O/O-the P.C.C.F, Orissa Bhubaneswar for favour of kind information and necessary action with reference to this office memo no.1288 dt.18.03.2009 & his memo no. 6091 dt.25.04.2009.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Cable: ORMINCORP, Bhubaneswar
Tel: +0674 2393431, 2395680, 2393389 (EPABX), 2392747(Di
Fax: 0674-2391629 , 2396889, 2394772

The Orissa Mining Corporation Ltd.
(A Government of Orissa Undertaking)
OMC HOUSE, BHUBANESWAR -751001

No. 11151 /OMC/F&E/09 Date: 06.07.2009

To

The Divisional Forest Officer,
Cuttack Forest Division,
Ghatakula, Nuapara,
Cuttack.

Sub: Payment towards cost of implementation of Wild Life Management Plan in respect of Sukrangi Chromite Mines of OMC Ltd.

Ref: DFO office letter memo No.2276 dt.21.05.09.

Sir,

In inviting a kind reference to the above cited letter and subject, we are depositing herewith a sum of Rs.76,54,180/- **(Rupees seventy six lakh fifty four thousand one hundred eighty)** only towards cost of implementation of Wild Life Management Plan in respect of **Sukrangi (Chromite)** mining lease of OMC in Jajpur district through Demand Draft in favour of CAF, Orissa, A/C No.CA-1585 in Corporation Bank, Lodhi Road, New Delhi. The details are as follows:

a)	Issuing Branch:	Andhra Bank, BBSR
b)	Drawee Branch:	CAF, Orissa, A/C No.CA-1585 in Corporation Bank, Lodhi Road, New Delhi.
c)	Amount:	Rs.76,54,180/- **(Rupees seventy six lakh fifty four thousand one hundred eighty)** only.
d)	Demand Draft No.:	No.495385 to 495392 (8 nos.) dtd.4.7.09 for Rs.9, 00,000/- each and No.495393 dtd.04.07.2009 for Rs.4, 54,180/- only.

Yours faithfully,
Sd/-
Dy.General Manager(G)F&E

Encl: Demand Drafts in original.

Memo No. 11152 /OMC/F&E/09 Date: 06.07.09

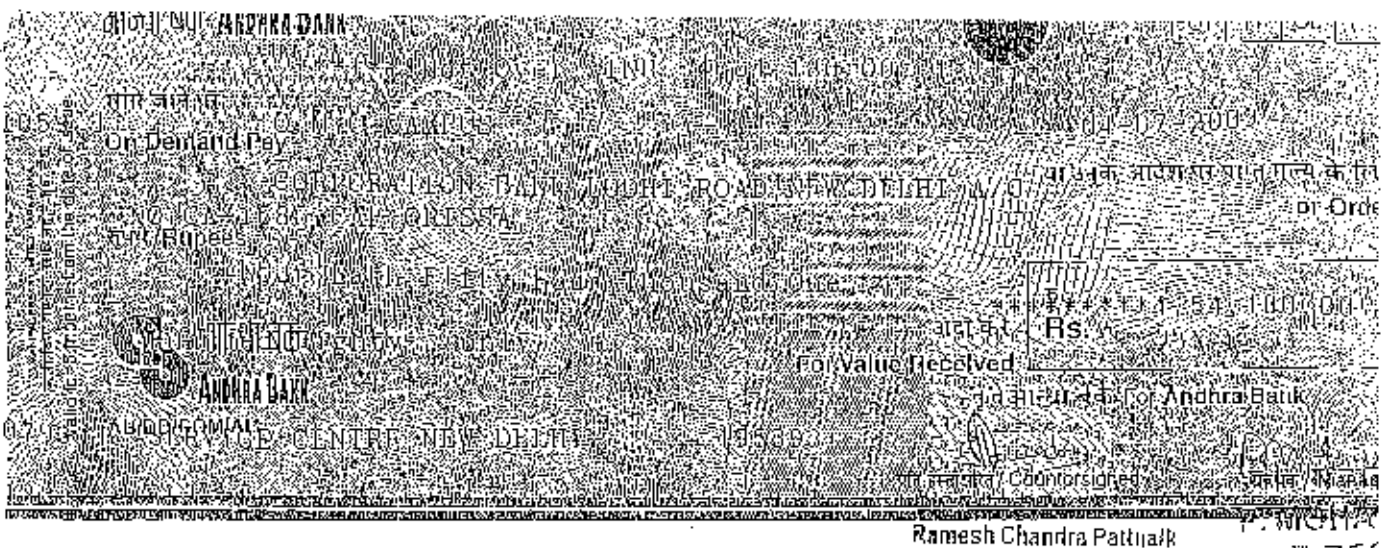
Copy submitted to the PCCF(WL) and Chief Wild LifeWarden, 5th Floor, BDA Apartment, Prakruti Bhawan, Nilakantha Nagar, Nayapalli, Bhubaneswar – 12. He is requested to approve the Site Specific Conservation Plan of Sukrangi mines of OMC Ltd.

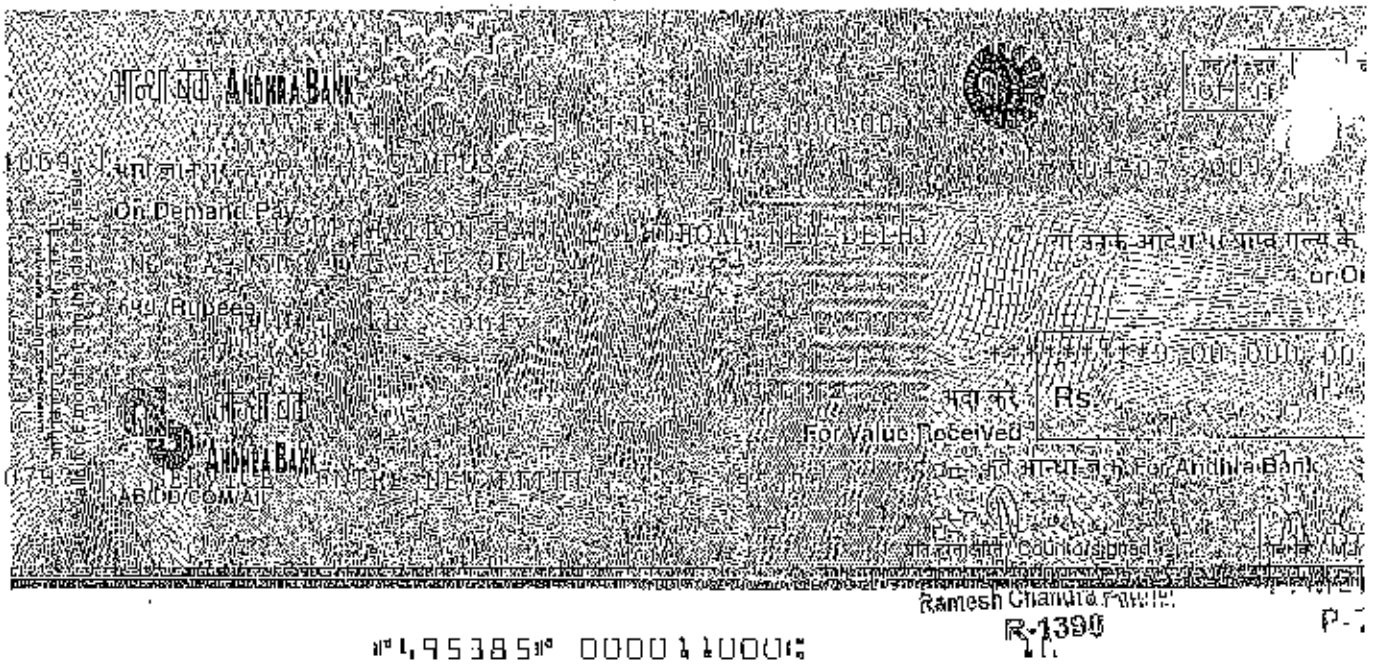
Copy to the Chief Conservator of Forests (Nodal), O/o PCCF, Aranya Bhawan, Chandrasekharpur, Bhubaneswar – 23 for kind information.

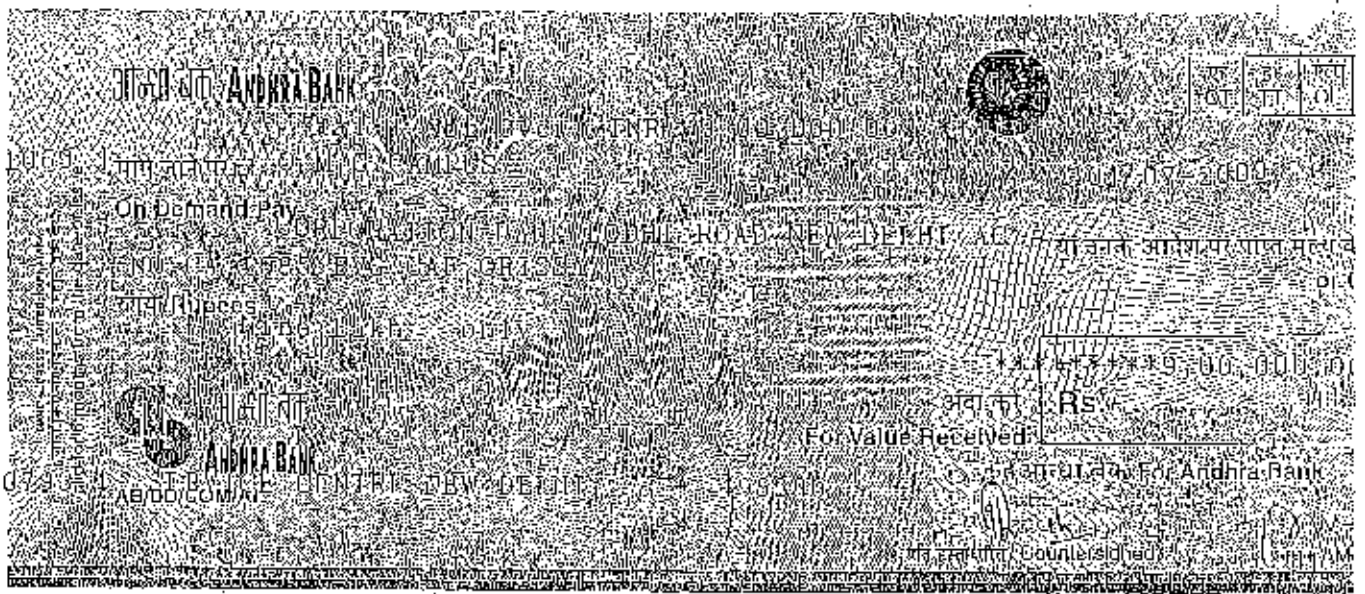
Copy to the Regional Manager, OMC Ltd., J.K.Road for information and necessary action.

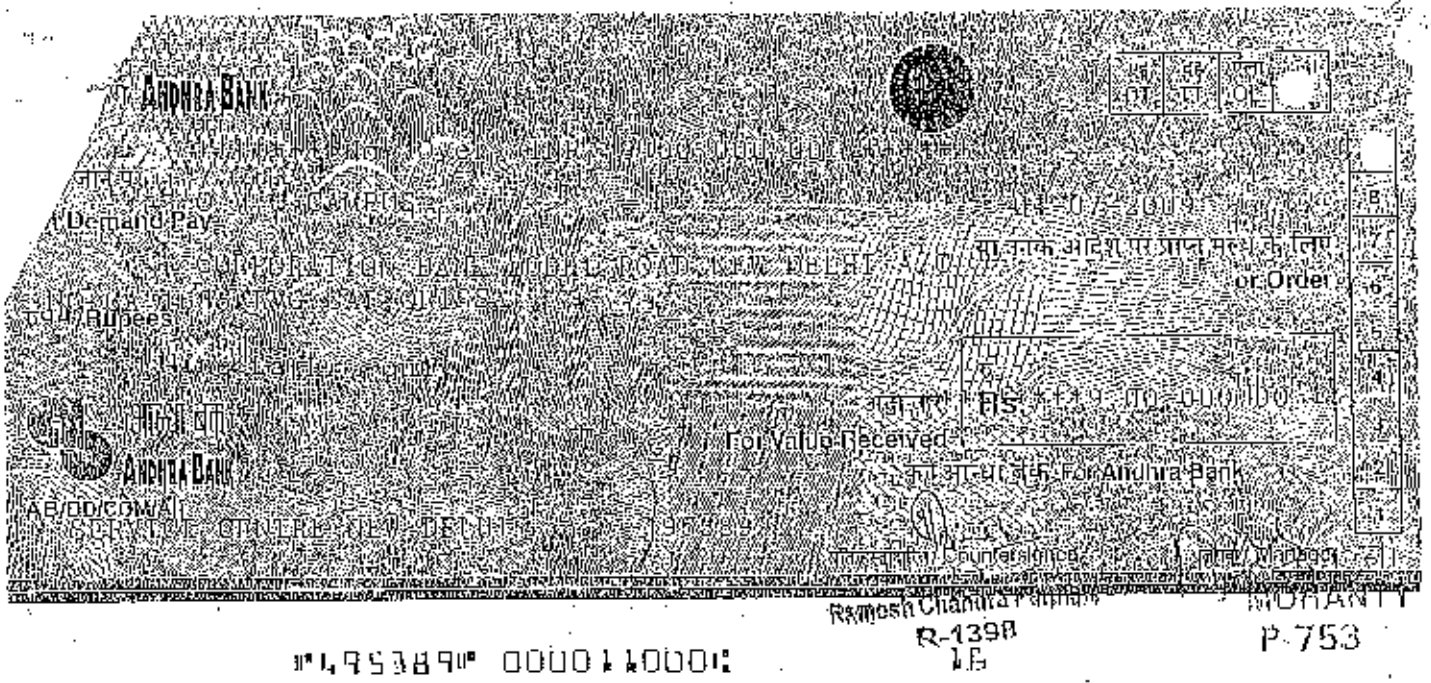
Copy to the Manager (A/C), OMC Ltd., HO for information.

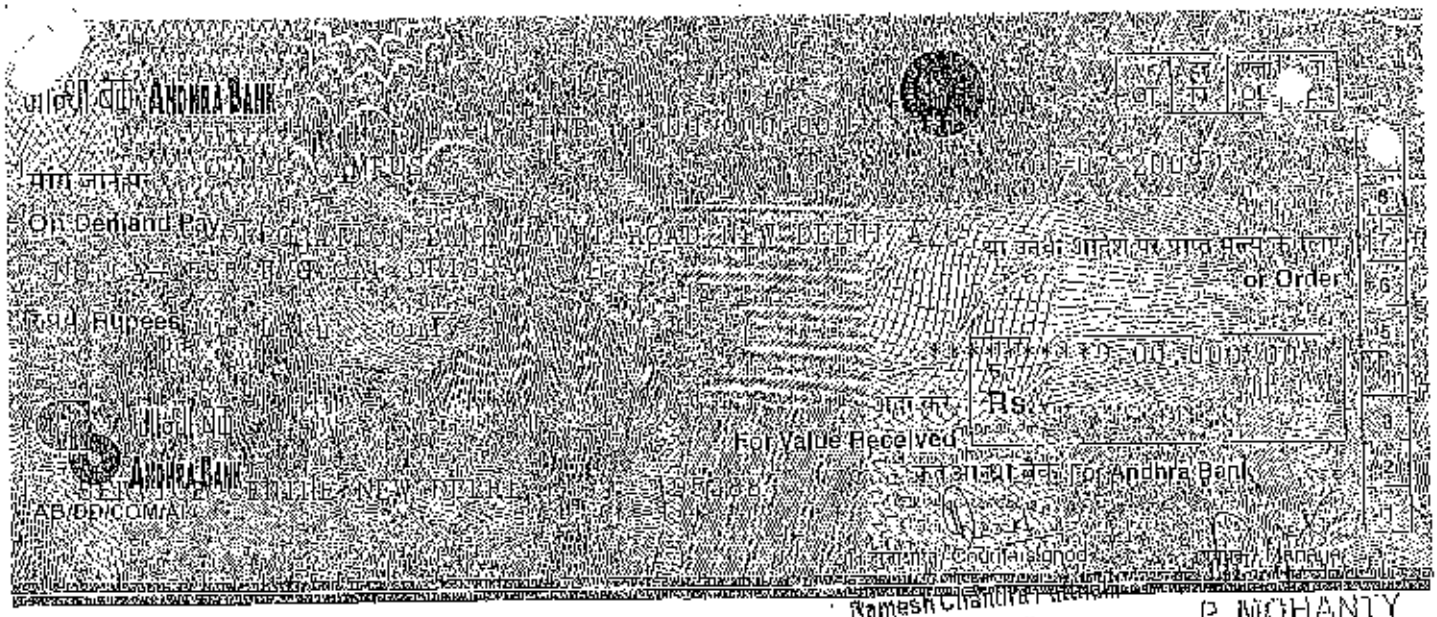
Dy.General Manager(G)F&E
06/7/09

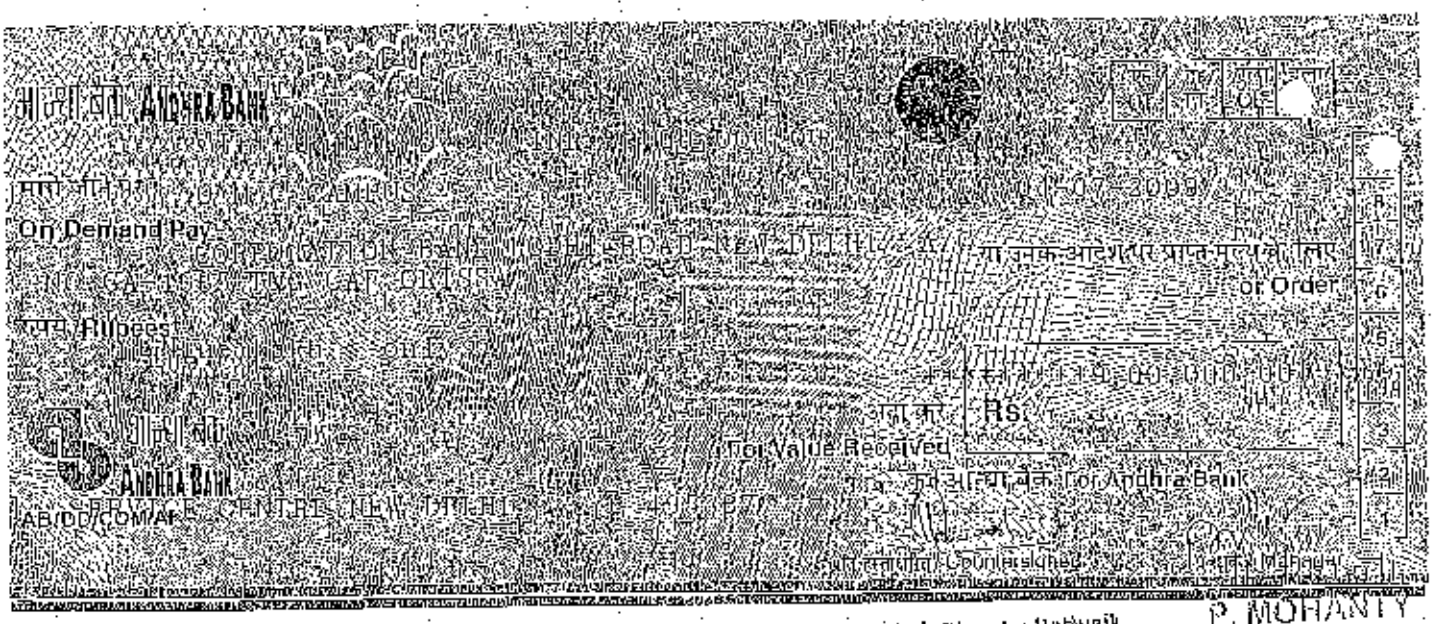

ANDHRA BANK
On Demand Pay
Rupees
For Value Received
For Andhra Bank
Ramesh Chandra Pattnaik
R-1398

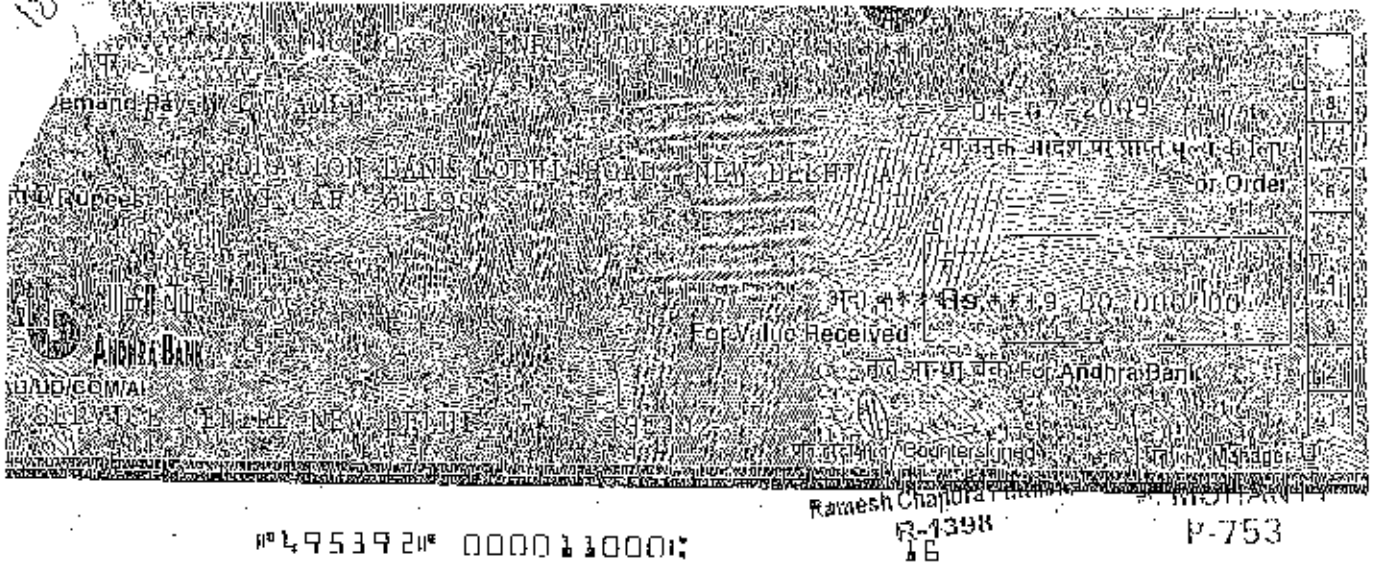

ANDHRA BANK
On Demand Pay
Rupees
For Value Received
For Andhra Bank
Ramesh Chandra Pattnaik
R-1390

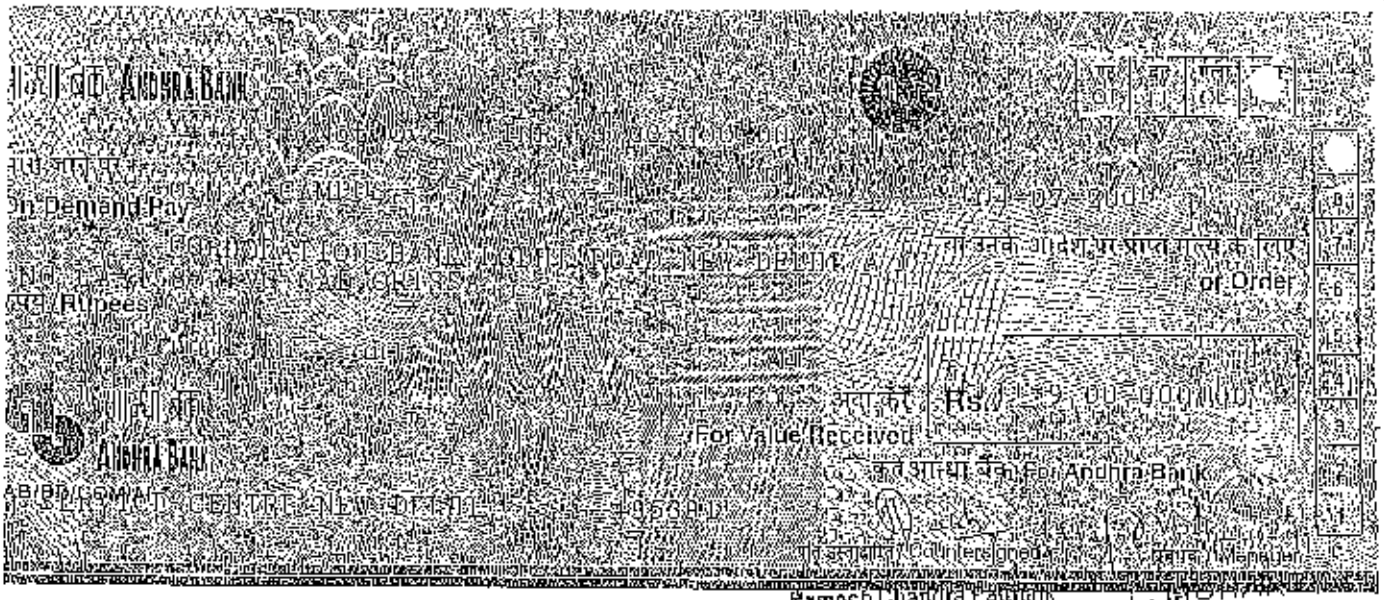

ANDHRA BANK
On Demand Pay
Rupees
For Value Received
For Andhra Bank
Ramesh Chandra Pattnaik
R-1398

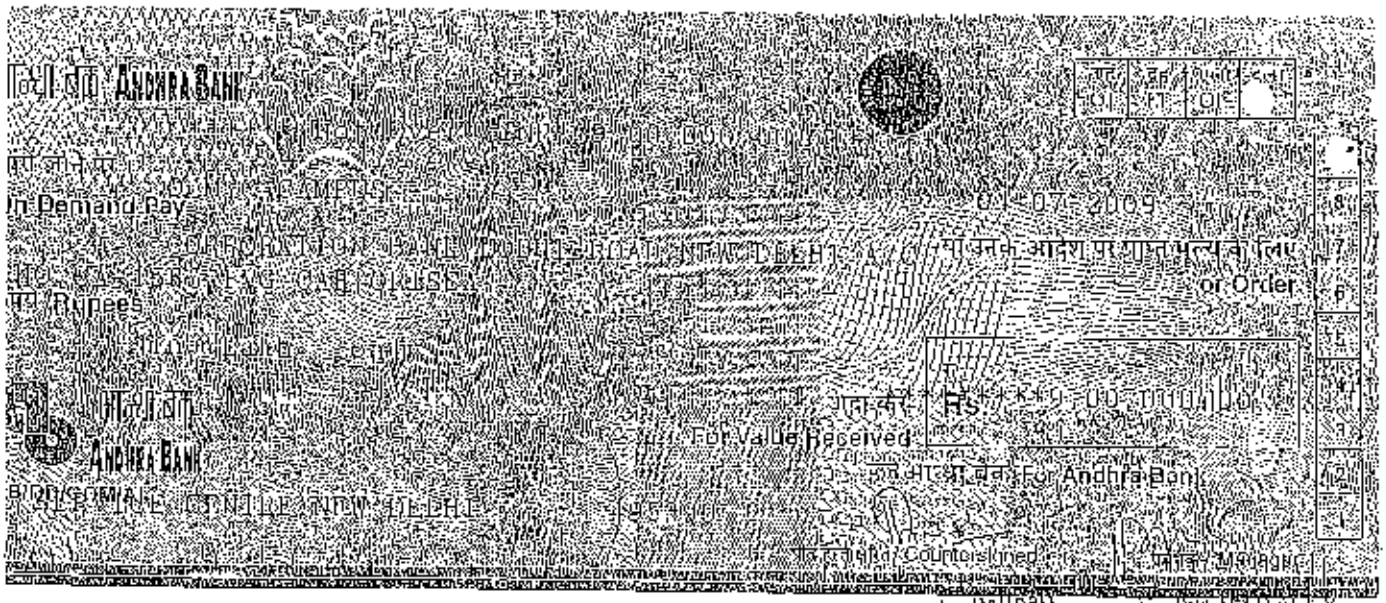

ANDHRA BANK
Demand Pay
Rupees
Rs.
For Value Received
For Andhra Bank
Ramesh Chandra Pattnaik
R-1398
P. MOHANTY
P-753
"495389" 000010000:


ANDHRA BANK
On Demand Pay
Rupees
Rs.
For Value Received
For Andhra Bank
Ramesh Chandra Pattnaik
R-1398
P. MOHANTY
P-753
"495388" 000010000:


ANDHRA BANK
On Demand Pay
Rupees
Rs.
For Value Received
For Andhra Bank
Ramesh Chandra Pattnaik
R-1398
P. MOHANTY
P-753
"495387" 000010000:


ANDHRA BANK
For Value Received
For Andhra Bank
Ramesh Chandra Pathak
R-1398
P-753


ANDHRA BANK
For Value Received
For Andhra Bank
Ramesh Chandra Pathak
R-1398
P-753


ANDHRA BANK
For Value Received
For Andhra Bank
Ramesh Chandra Pathak
R-1398
P-753

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Government of Odisha
Forest & Environment Department

No. 10F(Cons.)108/2015_ 3572 /F&E, Bhubaneswar, dated the 15.02.18

From

Sri Debidutta Biswal, IFS
Special Secretary to Government.

To

The Principal Chief Conservator of Forests, Odisha

Sub: Clarification on payment of Regional Wildlife Management Plan (RWLMP) fund on ML area basis in case of mining leases

Sir,

I am directed to refer to your office letter No. 2188 dated 2.2.2018 on the above mentioned subject and to say that clarification has been sought in this letter as to whether the lessee who had got Stage-II approval earlier for part forest area or whole forest area within the same ML area are liable for depositing the cost of RWLMP at revised rate during the processing of subsequent diversion proposals. In the above context, it is clarified that taking note of provisions of relevant circulars of State Government issued till date in the matter of realization of cost of RWLMP from mining lessees, the mining lessees who have deposited the cost of RWLMP pertaining to entire ML area as per rate applicable for that time period/on that date, need not deposit any further amount owing to revision of rate of RWLMP on subsequent occasions.

Yours faithfully,

15/2/18

Special Secretary to Government

DM(FSE)
16/2
16/02/18

ANNEXURE - XXV

Office of the Regional Chief Conservator of Forests, Angul

Memo No. 5717/ SF FC (-82/2020. Dated. 09-12-21

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub:- Diversion of balance forest land of 162.42ha including 24.150 ha of forest land to be maintained as safety zone (as per Sabik Settlement records as on 25.10.1980 and after 25.10.1980) in respect of Sukurangi Chromite Mines of M/s. OMC Ltd.- Approval of schemes.

Ref:- Your Memo No. 8414 dated 03.12.2021.

The following schemes submitted vide your Memo under reference are approved by the undersigned at the wage rate of Rs.315/- per man-day and returned herewith in one set of the approved scheme for needful action .

Sl. No.	Condition No	Name of the scheme	Financial outlay. (Rs.)
1	xii(a)	Mitigative measures to minimize soil erosion and checking of streames.	12,80,000/-
	Xii(b)	Planting adequate drought hardy plant species and sowing of seeds.	05,29,500/-
2.	Xii(c)	Construction of Check Dam, retention /toe walls to arrest sliding down of the excavated material along the contour	41,33,200/-
	Xii(d)	Stabilize overburden dump by grading/benching so as to ensure the angles of repose at any given plance is less than 28.	2,39,72,000/-
3.	xii(e)	Management of top soil of Sukurangi Chromite Mines.	03,39,86,500/-
4.	xxix	De-silting of existing water and other water bodies within 5 Km from ML boundary.	77,26,300/-
	xxx	Plantation up to 100 meters on either side from the bank of river on either side in Sukrangi Chromite Mines	90,53,500/-
5.	Addl. Condition 'D'	Construction of a RCC wall along Damsal Nala.	02,19,81,100/-

You are requested to submit point-wise compliance on the stipulated condition imposed in stage I approval order to this office immediately for further action.

Encl: As above.

Regional Chief Conservator of Forests
Angul

Memo No. 5748 /dated. 09-12-21

Copy along with copy of the above approved scheme each in one set forwarded to the Addl. Principal Chief Conservator of Forests (Forest Diversion and Nodal Officer, FC Act), Office of the Principal Chief Conservator of Forests & HoFF, Odisha for favour of information and necessary action with reference to Memo No.8414 dated 03.12.2021 of the DFO, Cuttack Division.

Encl: As above.

Regional Chief Conservator of Forests
Angul.

Memo No. 5749 /dated. 09-12-21

Copy forwarded to the Managing Director, OMC Ltd. OMC House, Bhubaneswar for information and necessary action.

Regional Chief Conservator of Forests
Angul

SCHEME

FOR

CONSTRUCTION OF RCC WALL ALONG THE DAMSALA NALLAH

WITHIN

SUKURANGI CHROMITE MINING LEASE

UNDER CUTTACK FOREST DIVISION

OF

M/s ODISHA MINING CORPORATION LTD.
(A Govt. of Odisha Undertaking)
OMC HOUSE, POST BOX-34, BHUBANESWAR-1

(As per additional condition No.(D) of the stage-I forest clearance communicated by F&E Dept., Govt. of Odisha, vide letter no. 10F (Con) 195/2016/20247/F&F dt. 03.10.2017)

(@ Rs. 315.00/- per manday)

SITE SPECIFIC SCHEME FOR CONSTRUCTION OF RCC WALL ALONG THE DAMSOLA NALLAH WITHIN SUKURANGI CHROMITE MINING LEASE OF O.M.C LTD IN JAJPUR DISTRICT UNDER CUTTACK DIVISION.

I. INTRODUCTION

Stage-I approval for diversion of balance forest land 162.42 ha. for non-forest purpose for Sukurangi Chromite mine of OMC Ltd. has been accorded vide F.No.8-22/2016-FC Dt. 14.9.2017 of Ministry of Environment, Forests & Climate Change subject to fulfillment of certain conditions. State Govt. communicated the above approval vide letter no. 10F (Con)195/2016/20247/F&E dt. 03.10.2017 with six no. of additional conditions.

As per additional condition No. (D) of the Stage-I approval, the User Agency shall take up *"As recommended by RCCF, Rourkela, RCC wall shall be constructed by the User Agency along the Damsola nallah which is a tributary of Brahmani river to avoid water contamination and pollution"* at project cost.

In compliance with this condition, a comprehensive scheme is prepared for implementation of the same in the entire area of the said mining lease. Earlier a scheme was prepared which has been approved by RCCF, Angul. Labour commissioner of Odisha vide letter no. 5639/LC dt. 02.11.2021 has revised the minimum wage rate from Rs. 311.00 to Rs. 315.00 per man day. In this context, the scheme has been revised at current wage rate of Rs. 315.00 per man day.

The said ML area finds place within the Latitudes: 21° 02' 18.851" (ML Boundary pillar No. 47)–21° 03' 46.022" (ML Boundary pillar No. 5) North and Longitudes: 85° 47' 43.770" (ML Boundary pillar No. 1) 85° 49' 21.744" (ML Boundary pillar No. 32) East in the Survey of India Topo Sheet bearing No. 73 G/16. The area exhibits an undulated topography with varying elevations from 130 meters to 254 meters above Mean Sea Level (AMSL). The ML area bears a common boundary with South-Kaliapani Chromite ML area (552.457 ha) of OMC Ltd towards south-east, Kaliapani ML area (971.245 ha) of OMC to North West, Saruabil-Sukurangi ML (23.243 ha) & Balipadia-Mahagiri ML (185.81 ha) of OMC to east and virgin Mahagiri Hill Ranges towards south of the ML area. Evacuation of minerals can happen independently without entering in to any other lease. Tomka-Mangalpur public road passes through the northern part of the ML and is the only road through which entire mineral of Sukinda valley is transported to different destinations.

2. TOPOGRAPHY

The Mine lease is located at the foot of the Mahagiri hill range and slopes from south-east to north-west. The south eastern corner of the lease hold is marked by a steep hill rising upto 254 mRL. Subsequently the slope becomes gentler. The north-western corner of the lease is at about 130 mRL. In the north western part of the lease, there is a small mound rising to 154 mRL. In general, the lease area has more or less flat topography between 140 m and 160 mRL and slopes from north to south. The overall slope of the area is from SE to NW.

3. RCC WALL

It has been proposed to construct 1865 meter long R.C.C wall cum on either side of the Damsola Nallah. There is also provision of water exit point in the RCC wall. The water exit points will be kept according to the contours and direction of flow of the surface runoff at an interval of about 100 mt. The estimated cost of construction of retaining wall including cost of surface cutting and blasting comes to Rs 2,19,81,100.00 (Annexure-I).

FINANCIAL FORECAST

Sl. No.	Particulars of interventions	Quantity	Financial involvement (Rs)
1	Construction of RCC retaining wall along the Damsala Nallah	1865 mtr RCC wall	2,19,81,100.00
	Total		**2,19,81,100.00**

4. EXECUTION:

This project of construction of RCC retaining wall along the Damsala Nallah will be carried out by the user agency. An amount of Rs 2,19,81,100.00 will be required.

5. INSPECTION AND MONITORING:

The manner of execution & periodical monitoring will be made by M/s OMC Ltd authority. The Execution and achievements may be reviewed by the Divisional Forest Officer, Cuttack Division from time to time as possible. In case of some dispute if the earmarked tank could not be de- silted in assigned year it may be executed in the next year along with the next year's programme.

Approved for Rs. 2,19,81,100/-

Regional Chief Conservator of Forests, Angul Circle.

Divisional Forest Officer
Cuttack Division

CONSTRUCTION OF RCC RETAINING WALL ON EITHER SIDE OF THE DAMSOLA NALLAH

RCC retaining wall

1) D/W excavation in foundation by mechanical means.
   1865 x 1.925 x 0.90 = 3231.00 Cum
   Taking 80%, Qty. = 2585.00 Cum @ 67.04/Cum = Rs. 173298.40

2) Blasting.Qty. 20% of Item (1) 646.00 Cum @434.46/Cum = Rs. 280661.16

3) PCC (1:4:8) using 25mm metal.
   1865 x 1.925 x 0.10 = 359 Cum@3960.40/Cum = Rs. 1421783.60

4) RCC M20 in Base.
   1865 x 1.725 x 0.20=643 Cum @6093.88/Cum = Rs. 3918364.84

5) RCC M20 wall.
   1865 x 0.20 x 2.10 = 783
   1865 x 0.125 x 0.75=175
   958 Cum @8355.01/Cum = Rs. 8004099.58

6) Cutting HYSD bar.

Qty. 415 = 643 +958 = 1601 Cum
@ 0.80 Qtl./Cum = 1281 Qtl. Or say 128.1 MT @ Rs. 63878.80/MT= Rs. 8182871.28

Rs. 2,19,81,081.86 Say Rs. 2,19,81,100.00

Annexure-XXIVI

BRIEF DETAILS OF THE SIMILAR PROJECTS (CHROME ORE LEASES) OF M/S OMC LTD.

Sl. No.	Name of the Lease	Mineral	ML area (in ha)	District	Date of execution	Period of Lease (in years)	Present Status
1	2	3	4	5	6	7	8
1.	Bangur	Chromite	139.94	Keonjhar	02.09.75	20	No forest land involved.
2.	Kalarangi	Chromite	936.220	Jajpur	09.12.66	20	Exploration completed.
3.	Kallapani	Chromite	971.245	Jajpur	08.07.67	20	Exploration completed.
4.	Kathpal	Chromite	264.466	Dhenkanal	10.02.69	20	Condition stipulated vide Stage-I FC is being complied.
5.	Base of Mahagiri	Chromite	185.810	Jajpur	09.09.70	20	Exploration completed.
6.	South-Kallapani	Chromite	552.457	Jajpur	22.01.80	20	FC over entire forest land has been obtained and mine is in operation.
7.	Saruabil-Sukurangi	Chromite	23.243	Jajpur	29.01.81	15	Exploration has been completed.
8.	Birasal	Chromite	583.021	Dhenkanal	04.11.76	20	Exploration completed.

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