OMC | ODISHA
NEW OPPORTUNITIES

Letter No. 21351/OMC/F&E/2022
23rd December, 2022

To

The Divisional Forest Officer
Cuttack Forest Division
Cuttack.

Sub: Proposal for non-forestry use of 162.42 ha of forest land for Chromite Ore Mining in Sukurangi Mining Lease in favour of M/s Odisha Mining Corporation Ltd in villages Kamarda, Ostapal, Saruabil, Sukurangi, Talangi in Sukinda Tehsil, District Jajpur, Odisha.

Ref: Letter No. 8-22/2016 (FC) dt. 18.05.2022 by MoEF & CC.

Sir,

MoEF & CC vide letter under reference has sought information pertaining to proposal for non-forestry use of 162.42 ha of forest land for Chromite Ore Mining in Sukurangi Mining Lease of OMC Ltd. The point wise compliance to the observation by MoEF & CC is given as under:

(i) Copies of Gazetted Notification of non forest and notified under Section 33 of the Orissa Forest Act, needs to be submitted by the State.

In compliance, it is submitted that the copies of Gazette Notification of non forest land notified under Section 32 of the Orissa Forest Act, 1972 (Orissa Act, 14 of 1972) pertaining to **Barakaudi Protected Forest** (35.61 ha), **Balangi Protected Forest** (52.395 ha) and **Khamarpadar Protected Forest** (68.766 ha) is enclosed as **Annexure-I Series.**

(ii) Approved copy of Comprehensive Management Plan/ Regional Wildlife Management Plan, as envisaged in condition no. (iii) of Stage-I approval has not been submitted along with the compliance report.

In compliance, it is submitted that the copy of the approved Comprehensive Management Plan/Regional Wildlife Management Plan, as envisaged in condition no. (iii) of Stage-I approval is enclosed as **Annexure II.**

(iii) DSS analysis of the degraded forest land of 33.0 ha, stated to be identified in lieu of 1.5 times the area of Safety Zone could not be carried out as the KML files, stated to be submitted along with CD, not received corresponding the degraded forest land. The same needs to be provided by the State.

In compliance, it is submitted that the KML file of the degraded forest land over 33.30 ha identified in Daitari DPF in lieu of 1.5 times the area of Safety Zone is enclosed herewith in the form of a CD.

(iv) District Collector, Jajpur has issued certificates dated 18.12.2014 and 26.03.2016 for respective area of 179.38 ha and 87.83 ha. Forest area being diverted under the extant proposal is 162.42 ha, therefore discrepancy in the forest area approved under the FC Act, 1980 and mentioned under the FRA, 2006 certificate may be rectified by the State. Further, documentary evidence pertaining to records of consultations and meeting of Sub-Divisional Level Committee and District Level Committee have not been submitted along with the compliance. The same needs to be submitted by the State.

In compliance, it is submitted that Sukurangi Chromite Mining Lease over 382.709 ha comprises of 267.21 ha of forest land and 115.499 ha of non-forest land. Collector, Jajpur has issued certificate under FRA, 2006 in two phases i.e. over 179.38 ha on dt. 18.12.2014 and over 87.83 ha on dt. 28.03.2016 covering entire forest land of 267.21 ha. Stage-II Forest Clearance over 104.29 ha of

forest land has been granted by MoEF vide letter dt. 21.07.2011 and Stage-I FC over 162.42 ha has been granted vide letter dt. 14.09.2017 by MoEF & CC. The details are given as under:

Certificate by Collector under FRA, 2006 (in ha)		Forest area considered under FC Act 1980 (in ha)	
Letter No & date	Area	Letter No.& date	Area
No. 4376/ dt 18.12.2014	179.38	No. 8-194/2000 FC, dt 21.07.2011 (Stage II)	104.78
No. 609/dt 28.03.2016	87.83	No. 8-22/2016 (FC) dt 14.09.2017 (Stage-I)	162.42
Total	267.21	Total	267.20

The discrepancy of 0.01 ha more area in the FRA certificate issued by the Collector, Jajpur can be attributed to the outcome of DGPS survey.

FRA certificates over 179.38 ha and 87.83 ha along with the documentary evidence pertaining to records of consultations and meeting of Sub-Divisional Level Committee and District Level Committee are enclosed as **Annexure-III series**.

(v) In compliance to condition no. (xxviii) of the Stage-I approval, it is reported that provision of condition are not applicable as the mine is surrounded by other leases leaving no blank area available within 100 meter of perimeters from the boundary of lease implying that a cluster of mines is formed as per the extant guidelines of the Ministry. Whether the State Government has explored the possibility to ensure the compliance of this condition along with outer 100 meter perimeter of the cluster so formed.

In compliance, it is submitted that the following mining leases owned by various companies form a cluster around Sukurangi chromite mines:

Sl. No.	Location of cluster	Adjoining Lessee	Area in ha	Status of working
1	Kaliapani	OMC	971.245	Non-working
2	Bhiontangar	FACOR	23.872	Working
3	Sukinda	TISCO	406.00	Working
4	Sukinda Dump	TISCO	99.792	Active
5	OB Dump	OMC	168.948	Non working
6	South-Kaliapani	OMC	552.457	Working
7	Sukurangi	OMC	582.709	Working
8	Saruabil	TML	265.858	Working
9	Kumarda	TML	107.24	Working
10	Tailangi	OMC	65.683	Non-working

Out of the cluster of above ten mines, the name listed at Sl.No.1, 5 and 10 in the above Table are non working due to want of forest clearance and the condition for plantation within 100 mtr perimeter shall be imposed while recommending the proposal for grant of forest clearance by MoEF & CC. The said condition has been stipulated against South-Kaliapani (Complied) and Sukurangi (Being complied) proposals of OMC. The remaining proposals of TISCO, FACOR and TML, although are operating with valid forest clearance have no such stipulations to comply. The existing MDF patches within 100 mtr perimeter observed under DSS have not been proposed for plantation. The map showing 100mtr of outer perimeter of mining leases around Sukurangi Chromite mines is enclosed as Plate I for clarity. Accordingly, a scheme over 13.704 ha have been prepared and technically approved by RCCF, Angul on dt. 28.10.2022 for a total financial outlay of Rs 1,21,11,623/- . OMC has transferred Rs 1, 21, 11,623/- online through RTGS vide UTR No. UBIN1 22311148327 dt 07.11.2022 in the ORRISA CAMPA Account ID: 15082584710243, IFSC Code. UBIN 0996335 in Union Bank of India, Ludhi Complex Branch, Block-11, CGO Complex, Phase I, Lodhi Road, New

Delhi 110003 as per the demand raised by DFO, Cuttack towards technically approved scheme. The copy of the technically approved scheme, RTGS receipt in support of proof of the deposit by OMC is enclosed as **Annexure-IV series** for reference.

(vi) National Authority (CAMPA) vide their OM no. NA-1-26/2017-CAMPA dated 25.04.2022 (copy enclosed) desired additional detail to enable them to furnish a remittance report on the receipt of compensatory levies realized from the user agency. Detail as per the observation of NA (CAMPA) may be furnished by the State.

In compliance, it is submitted that the compliance to the observation by National Authority (CAMPA) vide their OM no. NA-1-26/2017-CAMPA dated 25.04.2022 is enclosed as **Annexure-V**.

It is requested to kindly consider the above compliance and recommend to higher quarter for grant of Stage-II FC.

Yours faithfully,

Encl. As above.

(Dr. Suman Krishna Sil)
General Manager (Gen)
Authorized Signatory

The Odisha Gazette

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No. 190 CUTTACK, MONDAY, FEBRUARY 3, 2020/MAGHA 14, 1941

FOREST & ENVIRONMENT DEPARTMENT

NOTIFICATION

The 17th January 2020

S.R.O. No. 38/2020—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 F. & E. Department for raising compensatory afforestation purpose thereon against the proposed diversion of 162.42 Ha. of forest land for Chromite Ore Mining and 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., dated the 14th September 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 35.61 Ha. (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
Area in Acres	.	88.00
Name of the village	.	Barakaudi
Name of the Police Station	.	Thuamul Rampur
Name of the Tahasil	. .	Thuamul Rampur
Name of the Subdivision	. .	Bhawanipatna
Name of the District	. .	Kalahandi

LAND SCHEDULE

Village	Khata No	Plot No.	Kissam	Total Area (in Ac.)	Boundary Description			
					North	South	East	West
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Barakaudi	115/1	732/903/989	Dangar	40.00	Plot Nos. 732/903/989	Plot No. 732 (P), 730, 731 & 712	Plot Nos. 730/987, 736 (P), 736/904/989.	Plot No. 712

Village	Khata No.	Plot No.	Kissam	Total Area (in Ac.)	Boundary Description North	South	East	West
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Darakundi	1154	736/987	Dangar	15.00	Plot No 736/904/989	Plot No 736 (P)	Village Krishna Kabadi	Plot No 732/986
		732/903/988		16.00	Plot No 903 (P)	Plot No. 732/988	Plot Nos 736/904/989 & 904 (P)	Plot Nos. 712 & 902
		736/904/989		17.00	Plot No. 904 (P)	Plot No. 736/987	Village Krishna Kabadi.	Plot Nos 732/986 & 732/903/986
			Total	88.00 Ac. (35.61 Ha.)				

[No.1307—10F (Cons.)-05/2020-F&E]

By order of the Governor

MONA SHARMA

Additional Chief Secretary to Government

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FOREST & ENVIRONMENT DEPARTMENT

NOTIFICATION

The 17th January 2019

S.R.O. No. 37/2020.– 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 F. & E Department for raising compensatory afforestation purpose thereon against the proposed diversion of 162.42 Ha. of forest land for Chromite Ore Mining and Ancillary Activities in Sukrangi Mining Lease in Jajpur District Odisha by Mining Corporation Ltd. vide in-principle approval order No. 8-22/2015-FC., dated the 14th September 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 52.395 Ha. (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
Area in Acres	.	129.47
Name of the village	..	Balangi
Name of the Police Station	..	Thuamul Rampur
Name of the Tahasil	.	Thuamul Rampur
Name of the Subdivision	.	Bhawanipatna
Name of the District		Kalahandi

LAND SCHEDULE

Village	Khata No	Plot No.	Kissam	Total Area (in Ac.)	Boundary Description North	South	East	West
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Balangi	122/1	81/ 103	Danger	5.25	Plot No. 197	Plot Nos 167, 164 165, 161, 162, 160, 158, 159	Plot No 196	Village Sukasan
		187		13.88	Plot Nos. 196/1225 & 196 (P)	Plot Nos 184, 185	Plot Nos. 188, 189	Plot Nos. 185 196
		196/ 1225		1.82	Plot No. 197	Plot No. 187	Plot Nos. 189, 194, 205	Plot No. 195 (P)

Village	Khata No.	Plot No.	Kissam	Total Area (in Ac.)	Boundary Description North	South	East	West
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Balang		197	Dangar	34.76	Plot Nos. 198, 204	Plot Nos. 163, 196(P), 196/1225	Plot No. 205	Village Sukasan & Singari RF
		205		19.75	Plot Nos. 207 & 208	Plot Nos. 192, 194 & 196	Plot Nos. 207 & 208	Plot Nos 196/1225 197 & 204
		353		23.5	Plot No. 230	Plot Nos. 236, 332 & 333	Plot Nos. 334, 335, 352, 351, 354 & 355	Plot Nos 231, 233 234 & 235 (Road)
		349		2.02	Plot No 372/1224	Plot Nos 347 & 336	Plot Nos. 372/1224 & 348	Plot Nos. 350 & 351
		372/1224		26.49	Plot Nos. 372 (P), 356, 357 & 365	Plot Nos. 372 (P) & 345	Plot Nos 356 & 372 (P)	Plot Nos 346, 347 348, 349 350, 351, 354 & 355
			Total ..	129.47 Ac. (52.395 Ha.)				

[No.1300—10F (Cons.)-05/2020 F&E.]

By order of the Governor

MONA SHARMA

Additional Chief Secretary to Government

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FOREST & ENVIRONMENT DEPARTMENT

NOTIFICATION

The 17th January 2019

S.R.O. No. 36/2020.—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 F. & E. Department for raising compensatory afforestation purpose thereon against the proposed diversion of 162.42 Ha. of forest land for Chromite Ore Mining and Ancillary Activities in Sukranga Mining Lease in Jajpur district, Odisha by Mining Corporation Ltd. vide In-principle approval order No. 8- 22/2018-FC., dated the 14th September 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 68.766 Ha. (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
Area in acres	. .	169.92
Name of the village	.	Khamarpadar
Name of the Police Station	. .	Thuamul Rampur
Name of the Tahasil	.	Thuamul Rampur
Name of the Subdivision	. .	Bhawanipatna
Name of the District	. .	Kalahandi

Land Schedule

Village	Khata No	Plot No	Kissam	Total Area (In Ac.)	Boundary Description			
					North	South	East	West
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Khamarpadar	242/1	81/ 1678	Dangar	4.11	Plot No 81 (P)	Plot Nos 82/1679 & 82 (P)	Plot Nos. 81 (P)	Plot Nos. 81 (P)
		82/ 1679		13.53	Plot No. 81/1678, 81 (P) & 82 (P)	Plot Nos. 82 (P)	Plot Nos. 83/1680 & 83 (P)	Plot No. 79
		83/ 1680		24.19	Plot No. 84/1681 & 83 (P)	Plot Nos. 105 (P) & 100	Plot Nos 92/1686 & 92 (P)	Plot Nos 52/1670 & 82 (P)

Village	Khata No.	Plot No.	Kasam	Total Area (in Ac.)	Boundary Description North	South	East	West
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Khamapadar		84/1681		26.08	Plot Nos. 85/1682, 84 (P) & 85 (P)	Plot Nos. 83/1680 & 83 (P)	Plot Nos. 91/1685 & 91 (P)	Village Chala Bandu-guda, Plot Nos. 84 (P) & 801 (P)
		85/ 1682		21.29	Plot No. 86	Plot Nos 84/1681 & 85 (P)	Plot No. 90	Village Chala Bandu guda
		86		19.33	Village Junapani	Plot No 85/1682	Plot No. 87/1683	Village Chala Bandu-guda & Junapani village
		87/ 1683		27.68	Village Junapani	Plot Nos 90 & 87 (P)	Plot Nos 88/1684, 87 (P) & 88 (P)	Plot No 86
		88/ 1684		9.84	Village Junapani	Plot No. 88 (P)	Plot No 88 (P)	Plot Nos 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. (68.766 Ha.)				

[No.1293- 10F (Cons.)-05/2020-F&E.]

By order of the Governor

MONA SHARMA

Additional Chief Secretary to Government

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ANNEXURE - II

GOVERNMENT OF ORISSA
FOREST & ENVIRONMENT DEPARTMENT

No.10(Gen)-12/2005-28305/F&E, Date: 30/12/05

From: Sri Vinod Kumar, I.A.S.
Special Secretary to Government

To

The Principal Chief Conservator of Forests (WL) & CWLW, Orissa

Sub: Wildlife Management Plan for Keonjhar and Bonai Forest Divisions - Implementation at the cost of User Agencies of forest 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 Ajay Kumar Rohra, IFS, Keonjhar Forest Division for entire Keonjhar and Bonai Forest Divisions.

Simultaneously, your proposal of revised cost estimate and budgetary requirement for implementation of this wildlife plan for the mining affected areas in Keonjhar and Bonai Forest Divisions for Rs.7397.50 lakhs vide your letter No.7766 dt.1.12.2005 is approved. A revision of the Chapter-14 of the plan prepared by Sri Ajay Kumar Rohra, IFS, implementation of Wildlife Management Plan shall be funded at the cost of mining lease holders who have been allowed diversion of forests in their lease-hold areas with the approval by Government of India, MoEF. The list of mining lease areas which would be treated Wildlife Management Plan implementation has been listed in 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 wildlife plan. On such undertakings of the User Agencies and recommendations 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 which has observed that the strategies planned therein in ecology, therefore, it has recommended to include certain restoration strategies for application to undertake custom specific habitat in the lease areas for which Chief Wildlife Warden has been requested to advise a guideline in consultation with the Nodal Officer for preparation and implementation of such specific restoration plan of the User Agency within the project area vide F&E Deptt. letter No.15214 dt.26.8.2006.

The User Agency shall bear the cost borne on following lines towards their undertakings for implementation from 2005-06 and shall deposit the amount with DFO concerned in the prescribed head of account (400-Forestry and Wildlife-01, conservation-Forestry and wildlife-400 Other receipts).

(a) [illegible]

(b) [illegible] by [illegible] years, who have [illegible]

[illegible] 2005-06 [illegible] purpose prior to 2005-06 and have given undertakings with the DFO concerned.

[illegible] Rs. [illegible]/- per hectare of NL area for the Wildlife Management plan [illegible] for balance period. The User Agencies have been allowed to operate mines for first time with Government of India approval (Stage-I) for 2004-07 and onwards.

PCCF (Nodal) shall initiate realization for the User Agencies with February [illegible] the unfinished undertakings if any regard to 2005-06. Position of realization and be intimated by him to the Chief Wildlife Warden and to the Department as well as to UFCs concerned.

You are, therefore, requested to prepare an action plan for 2006-07 to be implemented by UFC, Keonjhar and DFO, Bonai Forest Divisions under your supervision as well as your proposal for allotment under head of expenditure: 2406 Forestry and Wildlife-[illegible] Wildlife preservation vide F&E Deptt. letter No.[illegible] dt.[illegible] 2005.

Yours faithfully,

Special Secretary to Government

Memo No. [illegible]/F&E, Date: [illegible]

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.[illegible] 06.01.12.2005 approved is enclosed.

Encl: As above.

Special Secretary to Government

Memo No. [illegible] Date: [illegible]

Copy forwarded to the UFC, Keonjhar/ 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. 1(-0 /3WL,(Gen.)31/84.
Dated, Bhubaneswar the 10 th Jan.'85

RECEIVED 11 JAN 2005 FOREST & ENVT. DEPTT.

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

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

Sir,

With reference to Forest & Environment Department letter No.18251/FED dt. 7.12.84 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 Denai 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 sites for mine damaged areas of Keonjhar district and part of Sundergarh 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 confined off with power fence to avoid accidents.
4. Lease holder shall have to pay the compensable 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 km radius 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 Denai 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

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

Yours faithfully,

Conservator of Forests (Wildlife)

Memo No. _____/Dy.

Copy forwarded to the Chief Conservator of Forests, (Nodal), O/O P.C.C.F., Orissa/Conservator of Forests Rourkela Circle for information and necessary action with reference to Forest & Environment Deptt. Memo No. 18203/EFE dt. 7.10.04.

Conservator of Forests(Wildlife).

Manik/

Government of Orissa
Forest & Environment Department

No.10F(Cons)-61/2004 6495 /F&E., Dated- 23/3/08

From:

Sri P.K.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.50/- 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 23/3/08

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 23/3/08

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. [illegible] Dated [illegible]

From

Sri [illegible], IFS
Principal Secretary to Government.

To

The Principal Chief Conservator of Forests, Odisha.

Sub: Revision of wage rate for implementation of Wildlife Management Plan in the Simlipal Tiger Reserve area.

Sir,

Two Forest Divisions of Mayurbhanj District i.e. [illegible] are located in the subject project area and in fact the entire forest location in Mayurbhanj district region as well as have undertaking mining activities in heavy mining hotspots, such as the State characteristics and wildlife is observed, an depositing Rs. 10,000/- per hectare or NL area towards cost of Wildlife Management Plan in their mining plans sent at the stage for implementation of Wildlife Management Plan approved plan. This rate in Forms of Wildlife Management Plan was last made vide [illegible] September 2012 referred to above considering the minimum wages rate of Rs. 70/- per mandays (upto Rs. 350/- per mandays) to the notification the State Government in [illegible] Department Notification No. [illegible] dt. 6.10.2013, have fixed the minimum rate to be 152/- per mandays. Hence the revised rate of wages on NL area has been adopted cost of Wildlife Management Plan for implementation of Wildlife Management Plan approved plan.

Keeping in view the upward revision of wage rate of Rs. 152/- per mandays, the State Government in [illegible] have been pleased to enhance the cost rate of Wildlife Management Plan from Rs. 10,000/- per hectare to Rs. [illegible] per hectare for [illegible] area with effect from [illegible] for project implementation of the Wildlife Management Plan in the area. The income towards [illegible] (i.e. [illegible]) the State funding requirement of Wildlife are required to cover the cost as per revised requirement.

Required follow up action in the matter may be taken with appropriate action as Divisional Forest Officers (DFOs).

Yours faithfully

Special Secretary to Government

Memo No. [illegible] Dated [illegible]

Copy forwarded to [illegible] Officer (Information & Awareness) [illegible] in letter No. [illegible] of 2017.

Special Secretary to Government

Memo No. [illegible] Dated [illegible]

Copy forwarded to all [illegible] Divisional Forest Officers (DFOs) for information & immediate necessary action.

Special Secretary to Government

Memo No. [illegible] Dated [illegible]

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Special Secretary to Government.

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

Memo No. [illegible] (Misc)-[illegible]
Dated, Bhubaneswar, the [illegible] October, 2017

Copy forwarded to all Divisional Forest Officers (DFOs), Divisions for information and necessary action.

Additional Principal Chief Conservator of Forests
Social Forestry & Social Office, Odisha

Memo No. [illegible] Dated [illegible]

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

Additional Principal Chief Conservator of Forests
Social Forestry & Social Office, Odisha

GOVERNEMNT OF ORISSA

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

PREPARED BY,

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ASST. CONSERVATOR OF FORESTS,
KEONJHAR FOREST DIVISION.

SUBMITTED BY

SRI VIKRAM SINGH, IFS,
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DIVISIONAL FOREST OFFICER,
BONAI FOREST DIVISION

FOREWORD

Keonjhar and Banai Forest Division together contain significant wildlife resources of Deccan peninsular 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 Banai 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 Banai 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,
Banai 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 Banai 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 Banai 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 special 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 Dehradun 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 might 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 these are relevant in preparation of this plan.

I am highly indebted to Sri S.C. Mishra, IFS, Conservator of Forests Angul 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 Forests for his constant encouragement in preparation of this Plan for both the divisions combinedly.

My heartfelt thanks are to Sri L.D Mohanty Sr. Clerk, and Sri Pitamber Mishra Sr. Clerk 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 [illegible]

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

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Vernacular/ Local Name	Botanical Name	Family
TREES		
Acnu	Morinda tinctoria	Rubiaceae
Acacia	Acacia catechu/ferrugina	Mimosaceae
Ambari	Mangifera indica	Anacardiaceae
Arla (Amla)	Emblica Officinalis	Euphorbiaceae
Ambnia	Spondias pinnata / mangifera	Anacardiaceae
Ambanacia	Bauhinia racemosa	Caesalpiniaceae
Arkula	Alangium salvifolium / lamarkii	Cornaceae
Arujun / Kaha	Terminalia arjuna	Combretaceae
Asan / Sainj	Terminalia tomentosa /alata	Combretaceae
Ashok	Saraca indica	Caesalpiniaceae
Ata	Anona squamosa	Annonaceae
Babul	Acacia nilotica	Mimosaceae
Baghai	Pellnidium binatum	
Bahada	Terminalia belerica	Combretaceae
Bandhan	Ougeinia dejeinensis	Papilionaceae
Barada	Lagisberia returnum	
Bari	Ficus bengalensis	Moraceae
Bar Bakuln / Dhabar	Dalbergia paniculata	Papilionaceae
Barkoli / Bara	Zyzyphus mauritiana	Rhamnaceae
Barunu	Crateva religiosa	Capparidaceae
Batra	Melia composita	Meliaceae
Baula	Mimosops elengi	Sapotaceae
	Monilkara hexandra	
Bel	Aegle marmelos	Rutaceae
Bhatojamu / Paijam /Fitajamu	Syzygium(/ Eugenia) operculata	Myrtaceae
Bhalia	Semicarpus anacardium	Anacardiaceae
Bhanta	Limonia acidissima	Rutaceae
Bharu	Chloroxylon swietenia	Meliaceae
Bija / Piasal	Pterocarpus marsupium	Papilionaceae
Chakunda	Cassia fistula/siamea	Caesalpiniaceae
Champa	Michelia Champaca	Magnoliaceae
Chandan	Santalum album	Santalaceae
Char	Buchanania lanzan	Anacardiaceae
Chaul	Cassine glauca (Elaeodendron glaucum)	Verbenaceae
Chauldhua	Glycosmis pentaphylla	Rutaceae
Chikatan	Ashonia scholaris	Apocynaceae
Chikini / Kalchica	Glochidion lanceolarium	Euphorbiaceae
Chedelguci	Vitex peduncularis	Verbenaceae
Debaldari	Polyalthia longifolia	Anacardiaceae
Dhaman	Grewia tiliaefolia	Tiliaceae
Dhoramaje /Kenja/Charu	Holoptelia integrifolia	Ulmaceae
Dhaura	Anogeissus latifolia	Combretaceae

Vernacular / Local Name	Botanical Name	Family
Indkurum/ Sanchiserulu	Wrightia tomentosa	Asclepiadaceae
Jamun / Dumar	Ficus racemosa/glomerata	Moraceae
Gambhari	Gmelina arborea	Verbenaceae
Gangaisoli / Khorkhori	Nyctanthus arbortristis	Oleaceae
Vernacular / Local Name	Botanical Name	Family
Gandhapala	Millusa velutina	Annonaceae
Gorikari / Gaudali	Cochlospermum religiosum /gossypium	Bixaceae
Gorh Khari(Khadar)	Acacia ferruginea /senegalensis	Mimosaceae
Ghaora	Zizyphus glaberima/Xylosyro	Rhamnaceae
Ghera Kanjia	Albizzia chinensis/stipulata	Mimosaceae
Gila	Entada scandens	Papilionaceae
Gilinga	Pterospermum heterophyllum	Sterculiaceae
Gir dhani (Gerdali)	Sterculia urens	Sterculiaceae
Gobire	Acacia leucophloea	Mimosaceae
Haldu	Diospyros montana	Ebenaceae
Haldu / Kurum /Kaim	Adina cordifolia	Rubiaceae
Harida	Terminalia chebula	Combretaceae
Hingal	Barringtonia acutangula	Barringtoniaceae
Jamu	Syzygium cumini	Myrtaceae
Jari / Asvaschha	Ficus religiosa	Moraceae
Jai Sardha	Litsea glutinosa/sebifera	Lauraceae
Jeonlinjo/Jautha	Artocarpus lacucha/lakoocha	Moraceae
Kadamba	Anthocephalus cadamba	Rubiaceae
Kaitha	Feronia elephantum	Rutaceae
Kamalagunda	Mallotus philippinensis	Euphorbiaceae
Kalasirisha / Tinia	Albizzia odoratissima	Mimosaceae
Kalchi	Diospyros sylvatica	Ebenaceae
Kanchan	Bauhinia purpurea	Caesalpiniaceae
Kangara / Kalhasak	Xylia xylocarpa	Mimosaceae
Karsa/Dhurkunda	Hymenodictyon excelsum	Rubiaceae
Kasaia	Kydia calycina	Malvaceae
Kenda / Karia	Cleistanthus collinus	Euphorbiaceae
Karanja	Pongamia pinnata (glabra) (Derris indica)	Papilionaceae
Kas / Kasai	Bridelia retusa	Euphorbiaceae
Kanakal	Strychnos potatorum	Loganiaceae
Kateranga / Damkuruda	Gardenia latifolia	Rubiaceae
Kendu	Diospyros melanoxylon	Ebenaceae
Kanhati/Kantakusum/Rajama /Kenkar	Garuga Pinnata	Burseraceae
Khair	Acacia Catechu	Mimosaceae
Khakada	Casearia elliptica/tomentosa	Samydaceae
Kumadu	Gardenia turgida	Rubiaceae
Kadala/Udal	Sterculia villosa	Sterculiaceae
Kochra	Strychnos nux-vomica	Loganiaceae
Kuler	Bauhinia variegata	Caesalpiniaceae
Gandhari (Kiri)	Gardenia dichotoma	Rubiaceae

Dalsingha		
Kumbhi	Careya arborea	Myrtaceae/Barringtoniaceae
Kusum	Schleichera oleosa	Sapindaceae
Limba/Neem	Azadirachta indica	Meliaceae
Limburu	Protium serratum	Burseraceae
Ludhia	Symplocos racemosa	Styraceae
Mai(Tia)	Lannea coromandelica	Anacardiaceae
Mahalimba	Alangium excelsa	Cornaceae
Mahua	Madhuca indica	Sapotaceae
Makarkendu/Mankade Kendu	Diospyros malabarica/Peregrina	Ebenaceae
Marunga/ Tentro/Dhalasirish	Albizzia procera	Mimosaceae
Mundi/ Mitkinla/Gudkaim	Mitragyna parvifora	Rubiaceae
Mushe/Ekaim	Schrebera swietenioides	Sapindaceae/Oleaceae
Mukhamaja / Ritha	Sapindus emarginatus	Sapindaceae
Vernacular / Local Name	Botanical Name	Family
Muncika/Mandika	Walsura piscida	Meliaceae
Nagesvar	Mesua ferrea	Guttiferae
Nimbrunia	Bursera serrata	Burseraceae
Nunnunia	Embelia robusta	Myrsinaceae
Oa	Dillenia indica	Dilleniaceae
Palas	Butea monosperma	Papilionaceae
Palchua	Erythrina variegata/indica	Papilionaceae
Panas	Artocarpus heterophyllus	Moraceae
Pannanbhori	Trewia nudiflora	Euphorbiaceae
Parkodal/Parkodum	Firmiana(Sterculia) colorata	Sterculiaceae
Penkusum	Aphanamixis polystachya(Reymea trifuga)	Meliaceae
Pitol	Stereospermum chelonoides/suaveolens	Bignoniaceae
Pongphana	Oroxylum indicum	Bignoniaceae
Phasi	Anogeissus acuminata	Combretaceae
Roi / Kurenghi	Dillenia pentagyna	Dilleniaceae
Rohini	Soymida febrifuga	Meliaceae
Sequon	Tectona grandis	Verbenaceae
Sahada	Streblus asper	Moraceae
Sal / Sarai / Rengal	Shorea robusta	Dipterocarpaceae
Salai	Boswellia serrata	Burseraceae
Sanp / Sarap	Garuga pinnata	Palmae
Sehra/Mchena	Randia dumetorum	Rubiaceae
Sidha / Sedha	Lagerstroemia parviflora	Lythraceae
Simal	Bombax ceiba	Bombacaceae
Sirs / Sirsum	Albizzia lebbek	Mimosaceae
Sissoo(Pahadi sissoo)	Dalbergia latifolia	Papilionaceae
Sissoo (Jali sissoo)	Dalbergia sissoo	Papilionaceae
Sonar	Cassia fistula	Caesalpiniaceae

Sijna/Sijh	Euphorbia nivalia	Euphorbiaceae
Tal	Borassus flabellifer	Palmae
Telkuruwa	Ixora arborea	Rubiaceae
Tentuli / Tetul	Tamarindus indica	Caesalpiniaceae
Tuku(Ubk)	Randia uliginosa	Rubiaceae
Tulsi	Wendlandia tinctoria	Rubiaceae
Tuna	Albizzia odoratissima	Mimosaceae
Trema	Trema orientalis	Ulmaceae
Toon	Toona ciliata	Meliaceae
BAMBOOS		
Dabo Bamboo / Kantebanza	Bambusa arundinacea	Gramineae
Sirin bamboo	Dendrocalamus strictus	Gramineae
GRASSES		
Bogai / Sukai/Panas	Eulaliopsis binata	Gramineae
Khara grass	Imperata cylindrica	Gramineae
Khulberkhuni	Chrysopogon maximus	Gramineae
Sinkula grass	Heteropogon contortus	Gramineae
SHRUBS / HERBS		
Agnijhe	Vernonia cinerea	Compositae
Agnijhal / Bonajatoroi	Clausena excavata	Rutaceae
Antia / Meregatali	Helicteris isora	Sterculiaceae
Ankola	Alangium lamarckii	Cornaceae
Anantamula	Hemidesmus indicus	Asclepiadaceae
Vernacular / Local Name	Botanical Name	Family
Arkha	Calotropis gigantea	Asclepidaceae
Badichano / Badichand	Synedrella nodiflora	Verbenaceae
Barbidanga / Nunnaria	Embelia robusta	Myrsinaceae
Bon kopasi	Thespesia lampas	Malvaceae
Bon kalkaia	Atylosia scarabaeoides	Papilionaceae
Bon khajuri	Phoenix acaulis/sylvestris	Palmae
Bon sorish	Vernonia ferea	Compositae
Basanga	Justicia adhatoda	Acanthaceae
Bhainshdara	Strobilanthes auriculatus	Acanthaceae
Bhoi-kuruwan (Telkuruwa)	Ixora arborea/parviflora	Rubiaceae
Dhatki	Woodfordia fruticosa	Lythraceae
Gire phool	Indigofera cassioides	Papilionaceae
Gua Koli	Mappia foetida	
Gurudu	Gardenia gummifera	Rubiaceae
Kamto/Harunkali	Murraya exotica	
Kantekal	Zizyphus oenoplia	Rhamnaceae
Kurel	Holarrhena antidysenterica	Apocynaceae
Nirgundi	Vitex negundo	Verbenaceae
Nanisathi	Flemingia chappar	Papilionaceae
Sijiya	Euphorbia neriifolia	Euphorbiaceae
Ulai	Wendlandia exserta	Rubiaceae

CLIMBERS / LIANES

Anantamula	Hemidesmus indicus	Asclepiadaceae
Atunci	Combretum decandrum	Combretaceae
Baidanga	Mucuna pruriens	Papilionaceae
Bichhuati	Tragia plukenetii	Euphorbiaceae
Dartori	Acacia sinuata	Mimosaceae
Gutapalash/Nuipalasa	Butea superba (Spatholobus roxburghii)	Papilionaceae
Mordalai/Mursa Nai	Milletia extensa/auriculata	Papilionaceae
Mutari/Mutura	Smilax macrophylla	Liliaceae
Pitaraj	Dioscorea bulbifera	Dioscoreaceae
Tinga	Celastrus paniculata	Celastraceae
Sarsabari	Asparagus racemosus	Liliaceae
Siel	Bauhinia vahlii	Papilionaceae

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

LOCAL NAME	ENGLISH NAME	ZOOLOGICAL NAME	STATUS	WILD LIFE SCHEDULE
Bachuli	Short nosed fruit bat	Cynopterus sphinx	Common	V
Bhuskuptia	Pangolin	Manis crassicaudata	Rare	I
Bagha	Tiger	Panthera tigris	Rare	I
Bara bili	Jungle cat	Felis chaus affinis	Occasional	II
Baraha	Wild pig	Sus scrofa	Common	III
Bhalu	Sloth bear	Melursus ursinus	Very Common	I
Belari muse	Common giant Flying squirrel	Petaurista philippinensis/ petaurista	Rare	II
	Malayan giant squirrel	Ratufa bicolour		
Bilua/Kuhin	Jackal	Canis aureus	Very Common	II
Chita Bagh	Leopard cat	Felis bengalensis	Very Rare	I
Dabela	Wild dog	Cuon alpinus	Occasional	II
Kakura/Dhola				
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
Gundichi insa	Common Squirrel	Funambulus pennanti/palmarum	Common	IV
Girandi	Mouse deer	Tragulus meminna	Rare	I
Hati	Asiatic Elephant	Elephas maximus	Common	I
Hela (Sodhua)	Striped Hyaena	Hyaena hyaena	Sporadic	III
Jhinka	Porcupine	Hystrix indica indica	Sporadic	IV
Lenkuna/Kalarapa	Leopard/Panther	Panthera pardus	Occasional	I
Indra bagha				
Jhilass	Tabby cat/Common palm civet	Paradoxurus hermaphroditus	Occasional	IV
Kettas	Large Indian civet	Viverra zibetha	Occasional	II
Kekisiar	Fox	Vulpes bengalensis	Common	II
Kukura	Barking deer	Muntiacus muntjack / muntiacus	Sporadic	III
Monkey (Hanu)	Monkey/ Hanuman langur	Presbytis entellus	Less common	II
Monkada (Pari)	Rhesus macaque	Macaca mulatta	Common	II
Musa	Rat	Rattus rattus	Common	V
Neula	Mongoose (common)	Herpestes edwardsii	Common	IV
Nevla (Raji)	Small Indian mongoose	Herpestes auropunctatus	Sporadic	IV
Nilagai	Blue bull	Boselaphus tragocamelus	Extremely Rare	III
Udha	Common otter	Lutra lutra	Rare	II

Sofin [illegible]	Small Indian civet	Viverricula indica	Occasional	II
Sambar	Sambar	Cervus unicolor	Rare	III
Thylua	Hare	Lepus nigricollis ruficaudatus	Common	IV
Ramesiola	Wolf	Canis lupus	Very rare	[illegible]

BIRDS

Gum	Indian Myna	Acridotheres tristis
Dayo	Weaver bird	Ploceus philippinus
Sanja gakhi		Accipiter nisus
Dhanukakada	Jungle fowl (red)	Gallus gallus
Baar	Little egret	Egretta garzetta
Bhada Bhadrik		Carpodacus beregensis
Shalashai	(white bellied grey)	Tetras biastrites
	Brahmany duck	Cairina ferruginea
Bhangaraj		Dicrurus paradiseus
Chatara	Red crested cuckoo	Microperus affinis
Chilli	Common kite	Elanoides jacobinus
Cinnamon grey bee eater		Milvus migrans
Common Iora		Merops orientalis
Dahuka	Cormorant	Aegithina tiphiaumani
		Amongocis phoenicurus
Deulia paro		Centropus sinensis
Damaro kau		Columba livia
Gendala	Jungle crow	Corvus macrorhynchos
Ghardhakatia	Open billed stork	Anastomus oscitans
Gobra chadhe		Passer domesticus
Hidibasanta		Motacilla cinerea
Hanuda chadhe		Oriolus xanthornus
Hansa	(Green pigeon)	Gracupus phoenicopterus
Kajipati		Anas poecilorhyncha
Kapote/Kapta	Common drongo	Dicrurus macrocercus
Kathe hane pachai	Ring dove	Streptopelia decaocta
Kau (pal)	Pigmy wood pecker	Picoides hemus
Kau (Dangra)	Common crow	Corvus splendens
Kachuakhai		Corvus macrorhynchos
Kali	Grey hornbill	Arthraceros coronatus
Kanthchua	Indian cuckoo	Tuttymonis scolopacinus
Mayna	Crow pheasant	Centropus sinensis
Machamaka (King Fisher)	Pea fowl	Pavo cristatus
Panikun		Coryle rivus
Pecha		Phalacrocorax niger
Sin	Spotted owl	Anthreinbrama
Sagura	Hill myna	Gracula religiosa
Sonkhchilli	King vulture	Sarcogyps calvus
Soi	White bellied kite	Haliastur indus
Teeta	Green Indian Parakeet	Psittacula eupatria
White browed bulbul	Potridge	Francolinus pondicerianus
Whistling teal		Pycnonotus luteolus
		Dendrocygna javanica

REPTILES & AMPHIBIANS

SNAKES

Abhraj (King cobra)	--	Naja hannah
Ajagara	Python	Python molurus
Benga	Common Indian Toad	Bufo melanostictus
Bodo	Common boa	Boa constrica
Russel's viper		Viper russell
Chiti (Common krait)	--	Bungarus caeruleus
Dhamana	Rat snake	Ptyas mucosus
Dhanda	Piscator	Xenochrophis piscator
Dondadia	--	Eryx conicus
Leudanila	--	Cryophis nasutus
Naga	Cobra	Naja naja
Rana	Banded krait	Bungarus fasciatus
Tonga	--	Naja naja kaothia
Teli sapa	--	Typhlops brahminus
Kainchha	--	Kachuga tectum tentoria
Kumbhira matia	--	Crocodilus palustris
Gochi	Monitor lizard	Varanus monitor/bengalensis
Jhiriptiti	--	Hemydactylus flaviviridis
Pahada endua	--	Chamaeleon zeylanicus

FISHES

Bata	--	Wallgoonia attu
Bhigarda	--	Glossogobius giuris
Bhakura	--	Catla catla
Chenga		Ophiocephalus gachua
Chitala	--	Notopterus chitel
Dandakhari	--	Esomus danrica
Jalanga	--	Pangasius pangasius
Kantia	--	Mystus cavasius
Kerendi	--	Barbus chilassis
Kua	--	Anches testudineus
Magura	--	Clarias batrachus
Mirkali	--	Cirrhina mrigala
Mohurali	--	Amblypharyngodon mola
Pohala	--	Cirrhina reba
Phal	--	Notopterus notopterus
Rohi	--	Labeo rohita
Sarpuna	--	Barbus sarana
Seula	--	Ophiocephalus striatus
Singi	--	Heterophneustes fossilis
Tadi	--	Mastacembelus armatus

CHAPTER - I

THE PROTECTED AREA, THE EXISTING SITUATION.

1.1: Introduction.

Keonjhar and Bonai division combined 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 corridor link, for free mixing with that bigger population of elephants in Saranda forests of Bihar and Similipal 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, I

[illegible] wildlife management plan for this [illegible] belt to move towards sustained resource use compatible with wildlife objectives. A participatory planning has been ingrained with eco-tourism approach and flagship species conservation approach. In order to reduce the dependency of villagers on resources of RFs and DFCs, 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 30575.6093 Ha. area under working mines and 93 mining leases comprising of 14570.4496 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 13572.7269 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°-30' 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 Keonjhar district is 8320.43 Sq. Kilometres. The total reserved forest area is 1839.98 Sq. kilometres consisting of 94 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 geographical area of this district

The non-forest area having forest growth in Sonajhor division has been calculated to be 44.51 Sq. Kms. 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-Keonjhar 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 Banra Forest Division and Deogarh Forest Division. Geographically 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, Taki block is the largest and forms almost a compact and contiguous patch of forest along with its adjoining and nearby forest blocks of Kuru R.F., Bakshi R.F., Sarkunda R.F., Sarsanna P.R.F., Khajardihi R.F., Khajardihi P.R.F., Bhawanipalor R.F., Bhawanipalor P.R.F., Anandadhar R.F., Anandadhar P.R.F., Aswadhi R.F., Amritati P.R.F and Nagaria P.R.F.

In the west Bonai also almost a compact and contiguous patch of forests is formed by RF blocks of Singida, Jalai, Jada, Soluguda, Karmamunda, Kurjar, Majardina, Rajpirit, Kele and P.R.F blocks of Singida, Mahulbahal - T,

Mahulchi - II, Balai, Saligada, Ranpur - I, Ranpur - II, Kelo, Majurdiha A, Majurdiha B, Kantamundia-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. Km. As per the records of Bonai Division, the recorded area of 69 R.F. blocks and 52 P.R.F. blocks covered under this plan is 1162.29 sq. Km. and 335.90 sq. Km. respectively. So, the total recorded forest area covered under this plan comes out to be 1498.19 sq. Km. 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 Brahmani on North and East directions and National Highway-23 on West direction. The river Brahmani divides this Division into almost two equal halves, i.e. East Bonai and West Bonai. The river Brahmani enters the Division at its Northern point near Tumra 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 metaled 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. Moreover the elephant is the most widely 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 form 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. There is ecotone zone i.e. the agricultural land, wasteland, water bodies, riparian 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 Bonai 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 a vital 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 Subdivisions inherently unstable and subject to seismic effects in long run besides hydrological changes. Hence this region has of great future significance.

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 teeming 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 unrealized zone in a better forestal tract requires committed management approach which must be compatible with wildlife conservation aspects

CHAPTER - 2

BACKGROUND INFORMATION AND ATTRIBUTES

2.1: Configuration of the Ground

Keonjhar district can be divided into two distinct but dissimilar 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 mountainous area of Sadar and Champua Sub-Divisions inhabited by Bouyans 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 Brahmani 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 Mankadnacha peak 1100 m (3664') which is situated on the western border overlooking 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 203 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 one 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 Brahmani 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 Brahmani between Bonaigarh and K. Balang and the small level patches of land in Karo situated at an elevation 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 (RRF) and Nagariu (RRF) are bearing magnificant sal forests and are the extension and the continuity of the Keramposka Mountain Range of Singhbum. The principal mountain peaks lying within these hill Ranges are Mankarnach (1117 m.) and Badamgurh (1074 m.) both of which are located along Bonai - Keonjhar boundary. The other important peaks are Karamitar (1065 m.) Bichakhamari (903 m) and Khardadhar

(914 m.). This extension of Kodapada mountain ranges running from north-east direction to south-west direction is endowed with valuable deposits of high grade manganese. The Bonthapentar (763 m. - 917 m.) from which descends Kendadhar 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 Sarasora - 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 Bhadra, Kharli and Saptarshi nalahs. The hill blocks in west Bonai form two distinct but separate masses - One mass consists of Rasimath, Gurundia, Ulsura, Sadhpahar and Bolo forest blocks, while the other hill mass consists of forest blocks of Raipiri, Kelo, Kunjar, Kantamunda, Majurdina, Belai, Sohugada and Jaga. These two distinct hill masses are separated from each other by Kharla and Saptarshi 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 (764 m) in Kunjar R.F. block and Saichabinaga (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. It's main tributaries are Kenera, Dec and Salandi on the left and Arsai, Bindika, Kanjari, Kharkatia (Gita), Mushal and Kusai on the right. The river originates from "Gupteswar" power near Ganeshiria in Juangpirh 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 rapidly 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 Simlipal hills of Mayurbhanja district and enters Kendujhar district at Satsati. This river flows through the heart of Baula hills to the plains of Anandapur Sub-Division leaving Kendujhar district near Suso. 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 Kaliapani and Charigarh plains is drained by the Ramial and the Sumakoi rivers which are two important tributaries of the river Brahmani. The Ramial emerges from the hill ranges of Keipal block situated on the North of Kaliapani while the Sumakoi river originates from the core of Kalapat forests and flowing West towards Telkoi takes a southerly turn at Debiajal 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 Sorbil valley is drained by Kora river. This river rises from

the hills of Kaira range of Bonai Forest Division and flows in a Northwesterly direction past Gua (Bihar) to join river Koel which joins Sankh at Panposh to form the river Brahmani. Throughout its course within Keonjhar 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 Keonjhar, Ghatagaon and Anandapur Range get dried-up towards the end of the hot weather. The water courses of the Ramial and Sanakui also dry up completely in the month of April.

River System And Catchment of Bonai Division

The Brahmani 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 Tarum and after a course of about 51 kms. within the Division flows away into the Deogarh district. It has many tributaries in the forms of hill streams all along its eastern and western bank within the Division. The most important among these hill streams is the Kurandhi nallah which originates from Tada block near Tarum and from there, after a course due north – west, joins the river Brahmani at Banghat. Other similar hill streams tributaries of the river Brahmani in East Bonai are Sukanda nalah, the Aranchi Nalah, the Sunji nallah, the Pargan nalah and Karapari nalah. All these nallahs are

perennial in nature. The drainage of greater part of western Bonai is towards the river Brahmani. Along the west bank, the river Brahmani receives only few streams which are not perennial in nature. Among these Karangsurah nalah is formed by joining of Saplara nallah flowing through the Kanjar and Sulgada blocks and Kendujhar nallah flowing through Rusinath and Gurudia block. It passes through Dhenkium blocks and then joins the Brahmani river. Rukara nalah flows through Balia, Dandapat and Ulsura blocks and joins the Brahmani near Jibka. There are quite a few small non-perennial nallahs which flow through Dandapat, Sindhurla and Ulsura blocks and fall directly into the Brahmani river.

Kola and Karapani nallahs are also perennial and join the Brahmani river near Barkote and Jangla respectively. Kola nallah originates from Mahalpada block while Karapani originates from puri area. Amrudhi nallah and Khandadhar nallah are other two important nallahs which originate from southern portions of Amrudhi block and Khandadhar block respectively. Both of these nallahs join together and fall into the Brahmani river near Paigaon.

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 pirhis, 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 Jhumming tract of the Bhuyan and Juang pirhis only. It is noticed all over the district. Extensive eroded areas are met with in Rohini, Atri, 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 Kalaspal and Reora, contribute considerably to the process of soil erosion.

Large number of mining leases in the reserved forests cajoining 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 lessee and are again brought under afforestation, matters are likely to go from bad to worse and finally beyond control.

About 18% of the total geographical area of Banai 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 Banai division due to relatively thick forest cover barring degraded forest areas and areas where mining operation are under taken viz. Khandadhar RF., Sankunda RF, Khajuridihi RF, Bhabanipatna RF, Kernamal RF, Tarla 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.

2.4 Geology, Rock & Soil :-

The Geology of Keonjhar district is very interesting due to its vast mineral potential. The geological formations and rock types over 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 laterite and reworked cargo.
	Dolerite dykes
	Quartz veins
Kolhans	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 Loop.
..... 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 rocks 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 hematite jasper and quartzite emerged subsequently and gave rise to rich and extensive iron and manganese deposits of the district. Occurrences of impure dolomite with stromatolite like impressions are associated in the iron ore group of rocks in Kasio- Barpada area. This period

was accompanied from side spread volcanic activities. The quartzite and traps situated to the West Kendujhargarh and on the Keonjhar-Dhenkanal district boundary similar South are supposed to be of Dharwar stage. This group of rocks 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-Barbil sector. Widespread weathering and erosion continued and during quaternary period extensive intermission was marked in the high lands and soil 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 Singbhum of Bihar to the North, (2) The Bhuyan Jungpirah including Nuyagarh reserved forest (3) The Rebna-Kalapat region including Changaris (4) The great central region from Champua to the foot hills of Purna Hill ranges including Santoshpur to the East of Baitarani river (5) Bauna- Nuaschi hilly region. (6) The great alluvial plain of Anandapur

The first region is an extension of Iron ore group of Singbhum 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 associated with B.H.J. and shales respectively. The iron ores are regarded marine chemical precipitate in the form of oxides, Carbonates, silicate and sulphides. Subsequently the enrichment is effected by leaching and replacement of silica. The iron ore (hematite) occurs in the form of massive beds, pockets and large lensoid bodies. Usually four types of ores are seen in this area i.e (a) hard massive (b) laminated (c) laterioid (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, Barsapani, Khandbanda, Sidhamath, Belkundi, Kasia-Barpada, Jajang, Gurdi-Pulsa and Jiling-langa etc. which together accounts to over 2000 million tonnes of iron ores.

The important manganese ores are found in Gurude, Roda, Bindrasahi, Chormalda, Sidhamath and other places

The forests of Thakurani, Bolorani, Uliburu, Sidhamath and Kara 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 premominately rock types of Bhuyan - Juangpiri 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 turn underlain by weathered Kendujhar granite. On the top of weathered granite some times china clay pockets are seen while to the further west trap and tuffites are seen. White to yellowish lithomarge is associated with traps. In Dhalkata pahar at Kuanr pockets of Bauxites are seen which are derived from the traps. The Sadhamardan hill is also situated near Sukari 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 predominance of quartz sericite schist sand amphibolites, good agricultural lands are found in Tilko. and Bansipal.

The third region consists of extensive hill ranges which stretch along the Dhenkanal border from near Binaik up to Arandapur point. 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 ore 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 Arandapur. The granites vary greatly in texture. It is usually course 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 Tarinipakri. These rocks are traversed profusely by dolerite dykes mostly along the joint places of granite. The most conspicuous dyke is found near Palaspanga 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 Atri, Santoshpur and Barabank are situated in this region on the gritty and unfertile soil derived from granite.

The Baula- Nuasahi region exhibits extensive occurances of quartzite and quard schist on both the sides of Sakindi 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 Sajanpal in the valley

and low lying hills. Around Bouki and Nikashi chromite deposits are found in association with ultrabasics (peridotite and serpentinites). Even though good agricultural lands are available to the south of this 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 soil.

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, Daberpur, Pandua and Manchara. 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 Bhakota in Ghatagan range.

The only rock of recent formation is the laterite which is usually associated with basic igneous rocks and iron ores at high elevation. Laterite soils are extremely porous and permeable and give rise to a forest soil exceedingly favourable to soil, if found in sufficient depth. Detrital laterite has a beneficial effect on forest vegetation through their effect on the water supply of the locality. They act as great store houses for water from numerous perennial springs along the base of the scarps. Perennial springs are therefore a feature of Kore, Sidhumath 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 Bhanjori group and Kalhan series are recognised and are younger than the iron

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

RECENT TO SUB-RECENT			Alluvium and Soil
			Laterite Vein Quartz
			Aplitic granite and Gneisses
PRECAMBRIAN	Iron Ore Group	Dhanjori Group	Aplanite Dykes, Carbonaceous quartzite and phyllite.
			Quartzite and Quartz-sericite Schists
			Quartzite, Phyllite, Grit and Conglomerate
			UNCONFORMITY
	Sukar Group	Bonai Group	Quartz reefs, Bonai granite
			Basic and Ultrabasic intrusives
			Purple and brown shale with Manganese ore
			Black shale, Banded haematite jasper & Iron ore Basic metavolcanics
		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 along the range while in the sides the dips are 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 occurrence of the economic minerals are stated below.

Iron Ore :

The most significant Iron Ore deposits are found in the Bonai Range, viz. Khandadhar, Malangtoli, Dondrohapahar, Besada, Bolia pahar, Badamgarh pahar, Mitikuda and Rakne. Other minor deposits of iron ore are available at Kalta, Deming Duru and Barsuan in the Karna Range.

Manganese Ore :

Manganese Ore deposits available in Bonai Division are restricted to the precambrian rocks and are associated with shale and laterite. The important lateretoid deposits are found in the Kaira valley near Daimunda, Pocadihi, Malda, Mahulsukha, Sorkunda, Orahuni, Nandidihi, Bhatura, Ranisol, Nuangaon etc. Almost all grades of these ores are available but ores containing less than 45% manganese are more prevalent.

Building Stones :

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

Asbestos :

In the Bonai region, asbestos of Tremol ite type occur is the ultrabasic rocks near Rengal.

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 sub-group.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 this belt is about 500 sq. km. The other importance of this Division lies in the availability of intrusive rocks (granite, gneisses, dolerites 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 derived 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 mineral characteristics . It is therefore, the soil can roughly be classified under the rocks from which they are derived.

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

usually flushed down into the lower ground towards the agricultural lands. Where the slopes are gentle or the ground is level, the clay fraction is not removed but is generally carried down by percolating water to variable depth in the soil, leaving a sandy layer on and near the surface. Such soils usually constitute pans or clay lacks and are capable of carrying good forest crops as may be seen in some of the class II 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 Nonteshpur and Atal blocks. The top drying of sal trees is usually 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, Kurain, Karada, etc. Where this red soil is of sufficient 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 valleys 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 a columnar structure due to high proportions of clay.

The shales form reddish or [illegible] 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 soil 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 intractable soil for soil (Kara ,compartment -20). At time, the shales tend to be calcareous and when this is the case sabai grass is easily seen in the area.

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

The quartzites and schists are very impervious to weathering as can be seen in Kalspat hills and in the Jiang-pirah . Hence their slopes are contrary devoid of soil and lack any vegetation . However, where the soil has been able to accumulate in the valleys, good loams or sandy loams which is favourable to soil 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 sufficient moisture is not available as on slopes, these shallow quartzite soil stand to support dry mixed forest, often with Sherui as the common small tree.

The serpentinites are of very limited extent . They generally yield a very infertile sandy soil which supports a poor and open crop of sal together with 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 Khamar or eroded ravine lands carrying little vegetation except stunted growth of Bhera, Swam, Gahira, Khair and Parasi grass.

The soils in the area 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 ferrugineous 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 Brahmani valley. Due to predominance of quartzites and quartz-schists types of rocks in the hill ranges of west Bonai, the soil derived 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 Keonjhar 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 and but the nights are usually cool. The monsoon generally arrives 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 tornado 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 Bonai, Gualt and Kuchi (Kanjipani) and the adjacent forests situated in the valley of the Baitarani and in parts of Keira range or in Kunjor Hills. It is never severe 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 53 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 observed throughout 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 NIÑO ("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, droughts, 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, creating 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 and 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 species. 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 Gara 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 Division except in small pockets in blocks like Atoi, Baula ,Bebuja, Kalapat, Barabank and Soutespur R.Fs.The extent of such crop is quite negligible and comparatively of no importance., The sal forests vary conspicuously in quality 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 Seranda Division of Bihar, Bonai forests of Sundargarh district and Simil pal forests of Mayurbhanja district .

The presence of proportionately high percentage of pole crop in most of the forest blocks of Kendujhar district is a most striking feature and one of the reasons attributed for this unusual condition is the indiscriminate felling of the past and repeated 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 practice of 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 Rebera and Kalapal blocks and those in the plain Rifs of Telkoi single owe their origin to the past poda. Prior to 1930 the forests of Keraudjhar were subjected to most unsatisfactory working. It was leased out to Bengal Timber Trading 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 Cuttack 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, Anidelia retusa, Emblica officinalis, Elaeodendron glaucum, Dillenia pentagyna, Bombax ceiba, Kydia calycina, Adina cordifolia, Mitragyna parviflora, Lagerstroemia parviflora, Cleistanthus collinus, Syzygium cojinensis, Eugenia operculata, Bursera serrata, Laurea coromandelica, Garuga pinnata, Semicarpus anacardium, Albizia procera (In damp localities), 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 calcareous soil are Boswelia serrata

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 Kebna 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 fruiticosa, 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 sorta 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 sabai grass (Andropogon contortus) Sabai (Eulaliopsis binata) and broom grass (Thysanolaena agrostris)

The miscellaneous forest is limited in extent 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 Kartipal and Baidukhia and along the Mayurbhanja boundary, (2) the upper slopes of the hills in Kalapat reserve, (3) the South-Eastern corner of Atai between Sagarbolta and Kanto, the eastern part of Santoshpur and (4) the greater portion of Baraunk block. Over 30 percent of the better 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 Reserve and Koduat P.F.s 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 interspersed 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 A I 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 repeated 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 ex diorite and hematite 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 RF blocks of Toda , Koira, 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 Sa. 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 ,Majurdina,Kantamunda and Raipari where Sa. Forest conforms to quality III.

In the R.F blocks of Champajharan,Jhorbeda , Mohana ,Dhenghar, Silkuta & Rakshi of East Bonai and R.F. blocks of Rasimal,Gurandia and Dharkion of West Bonai ,the forest crop is much inferior in the northern half in

comparision to southern belt 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, Sonaunda, Khajuridihi, Tola, Meridhamaran, Khandaanar etc. of east Sonai 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 trees 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 classification 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/C2 Northern 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 DST-Dry deciduous scrub forests. Most of the forest blocks in the plain areas of Ghimbua 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 near Daitari having predominance of Xylia can be taken up in the former type.

The vast unsurveyed forest area of Bhuyampira and Tuangpira which extends 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 Podu (Jhooming) cultivation every year. In this process most of the valuable species like Sal, Asan, Bija, Sisoo 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 coppice waste. The middle storey consists of Oxytenthus colinus, Dalbergia paniculata, Syzygium cumini,

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

This extensive forest tract can be included in the 3C/C2a(ii) Moist peninsular low level sal of the classification of forest types of India 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/C2a (iii) -Moist peninsular valley Sal

This type embraces all the good sal forests of the Division and extends over a large tract of the district. This type is met with mainly in Rana, Sidhamatha, Ulibaru, Thakurani, Baitarani, parts of Rebna and Kalapat blocks and all the main forests of Telkoi Range i.e. Bandhanjhari, Sarekai, Jharbeda, Krishnapur Kadail, Nenainchar and Ranibeda RFs.

The geological formation in Rebna, Kalapat and Champgarh 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% of 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 (asna), T. belerica , Lagerstroemia parviflora, Anogeissus latifolia ,Syzygium cumini , Mangifera indica , Schleichera oleosa and the like . The most striking

feature in this type of forest is the presence of Ardisia solanacea (Bantoki), Desmodium species, Miletia auriculata (Khaber), Combretum decandrum and Profuse regeneration of sal, both coppice as well as of seedling origin. There are small patches of Dhauri (Anogeissus latifolia) with other xerophytic miscellaneous species seen in Thakuran 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 around Sarbil and Jaca 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) 58/C1c-Dry peninsular Sal Forests

This sub-type of forest cover a large tract of the Division. Most part of Atei, Barabank, Santaspur, parts of Sidhamath, Rebna and Baula and B-Class R.Fs of Ghatagaon, Pipilia, Poipal, Mashindbilla, Belipokhari, Palaspal, Nalbanga, Balabhadrapur, Basantpur, Kalimati, Sarapat, Patna, Naranapur, Raghunathpur, Belda and Maidenkela are included in this sub-type. Sal is predominant in this type of forests but of poor quality having associates like Terminalia tomentosa (ekata), Anogeissus latifolia, Pterocarpus marsupium, Diospyros melanoxylon, Adina cordifolia, T. Chebula, T. belerica, Lagerstroemia parviflora, Buchanania lanzan, Lannea coromandelica 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 chappar, Indigofera pulchela, Woodfordia fruiticosa Desmodium species. Strobilanthes species, Ban khajuri (Phoenix acaulis) are frequently met with in parts of Atai, parts of Rezna, and in Barbanka blocks . The common climbers in these forests are Bauhinia vahlii , Smilax species while Combretum decandrum occurs in valleys and ravines .

These forests are rarely having more than 20M height in average 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 Bada, Santospur, Atai Barbanka , Pedipakhari, Nalugo, Mankadchua parts of Kalapal, R.F. on steeper hill slopes and southern aspects. These forests usually have poorer vegetation with upper canopy often broken and irregular . The trees have a relatively short bole ,spreading crown, poor form and height rarely over 15 to 20m . The main 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.

Dhauri (Anogeissus 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), Bijo (Pterocarpus marsupium), Karam (Adina cordifolia), Harida (T. chebula) . Boswelia serrata, L. parviflora, E. suberosa .While the middle storey consists

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

Nyctanthus arbor-tristis (Gangasiuli) however is seen in abundance . The undergrowth is usually rare and consists of shrubs like Phoenix species, Helicteres with grasses of Aristida setacea, Cymbopogon martini 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 classification of forests 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, Terminalia tomentosa, Bursera serrata, Mocaranga peltata, Alstonia scholaris, Oroxylum indicum, Artocarpus lakoocha, Diospyros montana, Anogeissus

latifolia and Terminalia species. The common undergrowths are Adhatoda vasica, Holarrhena antidysenterica, Murraya, Clerodendron, Broom grass and stray bamboo clumps (B. arundinacea) "Nai palus" and Aturdi 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 SB / Cbe 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 fire, 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 RFs, like Kotaprasad, Bailimalia, Laxmiposi, Jyotipur, Uchanda, Jaripada, Raikala, Tangarani, Nahang, Barunga, Ostapura and new RFs like Sarasposi, Kadagetia, Tanda, Laxmiposi can be clumped into this sub-type. Many of the scrubs are rather distasteful to the cattle or thorny and they are usually Holarrhena antidysenterica, Dodonaea, Randia, Carissa with species like Karanda, Asana, Mahula, Dumaghurada, Kendu and Ghanta etc. Climbers are not common in these forest blocks but in Barunga and Ostapura blocks Aturdi is seen in most locality. Sal being the predominant species in these degraded scrubby 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/C/c sub-type.

In the Rehan block between Baripal and Gazadpata (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), Dangharodu (Gardenia latifolia), Dhoura (Anogeissus latifolia), Kendu (Diospyrous melanoxyion) Dharki (Woodfordia fruticosa) and Telkurum (Ixora parviflora) in addition to sal which is invariably of stunted growth. The ground flora is mostly of Sabaigrass (Eschoenus angustifolium) and Bankhajuri (Phoenix species).

The artificial raised sisoo and casuarina plantation in Hatibandha and Nuagaon 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 colonisor and the purpose was served effectively and usefully. With the improvement of the soil, species like Jamu, Casearia, Phasi, Neem, Streblusasper and Saccharum narenga (Tandi grass) come 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 afforestation Division with species like Acasia, Eucalyptus, Sissoo, etc.

The Forests of Boani Division can be classified under the following types and subtypes in the lines of classification adapted 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 Sunai. 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 Kore, Sarkimo, Khajardihi, Kotkand and Lunga of East Barni and in the Valleys and Pockets of forest blocks of Raipini , Kolo ,Kurjar,Majardiha,Jada,Sulguro and Bara of west Bonai.Though it is at its best in the well drained 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 Barni 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 consequence of this practice.Only Shifting cultivation was however not being practiced extensively in west Bonai and for that reason ,occurrence of even aged crop is rare .Under this broad type ,three sub-types ,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 Khajardihi.These areas are mostly having crystalline and lateritic 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 presence 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 available in the top canopy are Terminalia tomentosa, Anogeissus latifolia, Syzygium cumini, Lagerstroemia parviflora, Pterocarpus marsupium. The middle story contains Careya arborea, Schrebera swietenioides, Bridelia retusa, Dalbergia paniculata and Wendlandia excelsa. Holarrhena antidysenterica and Indigofera pulchella 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. Koira, Sarkanda, Tada, Khajuriddhi, Katamal. It is also prevalent in the moist valleys lying in the southern portions of west Bonai. The underlying rocks are laterite or crystalline. The soil is deep loam or alluvium and supports a magnificent crop of Sal. The quality is in general IST. 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 Diospyros peregrina, Syzygium cumini, Careya arborea and Diospyros melanoxylon. The ground flora consist of Woodfordia fruticosa, Flacourtia indica, Holarrhena antidysenterica, etc. The common climbers available are Combretum decandrum and Butea superba. Bamboos are absent in the East but West Bonai contains good quality Sella Bamboos.

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

This sub-type is confined to the moist valleys of forest blocks of Toda Sankunda,Kara and Langa 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 Garcya arborea, Pterocarpus marsupium , Casearia tomentosa and Ficus species. The under growth consist of Croton oblongifolius, Clausena excavata , Murraya exotica , Glochidion lanceolarium and Litsea sebifera. The common climbers available are Bauhinea vahlii,Smilax Macrophylla and Combretum decandrum. Bamboos are absent in the these areas.

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

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. Bakshi,Dhanghar,Silkota -I , Silkota -II , Mohuro, Crampojharan, Karachi and Gharbeda. 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 ,occurrence 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 75 % 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 0.6.

The common associates of sal in the top canopy are Terminalia tomentosa,Anogeissus latifolia, Pterocarpus marsupium , Diospyros melanoxylon, Adina cordifolia, Mitragyna parviflora, Madhuca indica, Bombax ceiba and Sterculia urens .The second storey comprises of Emblica officinalis , Terminalia chebula, Dugenia dejeinensis, Cleistanthus Collinus, Lannea coromandelica ,Semicarpus anacardium,Buchanania lanzan,Zizyphus xylopyra, Kydicalyana, Symplocus racemosa and Schrebera swietenioides . The under growth consist of Indigofera pulchella ,Ferangia clupper,Phoenix sylvestris and Desmodium species.Common climbers available in the area are - Bauhinia vahlii,Smilax macrophylla,Butea superba, Acacia pennata and Combretum decandrum.Salia Bamboo (Dendrocalmus strictus) occurs in most of the blocks

of West Bond. Dengi bamboo (Cephalostachyum pergracile) occurs along nallah banks in the Kaipirf, Kunjar and Majurdina 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 southern aspect. Terrain under this type is having fairly steep slope with rocky outcrops. 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, Diospyros melanoxylon, Terminalia tomentosa, Adina cordifolia, Pterocarpus marsupium, Terminalia Chebula, Dalbergia latifolia, Ougeinia oojeinensis, Buchanania Lanzan, Syzygium cumini, Cleistanthus collinus, Madhuca indica, Schleichera oleosa etc. The shrub growth consists of Gardenia turgida, Randia dumet, Holarrhena antidysenterica and Nyctanthes arbortristis. Solia bamboo (Dendrocalmus strictus) occurs in abundance in this type of forest.

Dry Bamboo Brakes 5/E9

Solia Bamboo (Dendrocalamus strictus) is having its luxuriant growth in the upper slopes of hills of the forest blocks of West Bond. Patches of these bamboos are also found with in the areas of mixed forests where soil is too shallow to allow the growth of tree species. In the RF block of Mahuipado, Solia 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 scattered tree species found are Boswellia serrata, Sterculia urens, Anogeissus Latifolia, Cochlospermum gossypium, Euphorbia nivelia, Gardenia gummifera etc.

Orissa Tropical Semi-evergreen Forests (type 2B/C1).

The extent of this type of semi-evergreen 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 characteristic species available are -Terminalia arjuna, Diospyrus embryopteris, Mangifera indica, Alstonia scholaris, Eugenia operculata, Ficus glomerata, Saraca indica and Mesua ferrea. Michelia champaka is also available but its distribution is rare. Wild banana and wild citrus also occur occasionally. Glycosmis Lanceolarium, Litsea sebifera, Croton oblongifolius, Chloroxylon 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 Sarkanda, 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.

Anogeissus latifolia Forests.

Small and fairly pure patches of Anogeissus latifolia find their occurance within the areas of moist Sal forests in Toda and Kora 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 strengthened 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 Kenaujhar and Bona 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 Atal forests. Fire in most 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 huntings 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 Ranipada, Baramunda, Bandhanjhari and the eroded areas of Bobna R.F. suffer from drought during summer. It is perhaps

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

Frost:

Damage due to frost is neither severe nor extensive. Frost occurs near Gadi, Kumar 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 Banai 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 immature, 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 Hatibancha had been uprooted and disposed off. The effects

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

The supercyclone during last part of Oct 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, Reona 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 soil 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 become homeless and thousands of trees in various plantations were damaged/uprooted and subsequently looted away by cyclone affected people. 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 Kaupat, Rebana and Boula R.Fs. and RFs of Bonai division. They are quite common in moist and damp localities. Most of the post ravaged areas of past are infested with climbers. The commonly seen climbers in these forests are Bauhinia vahlii, Butea

superba, Albizzia lucidula and Cedrelopsis grevei. The first 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. Spathelobus roxburghii and Gnetum ula cephyla 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 beats. The notorious fungi are Ganoderma lucidum, Polyporous sharea and Fomes tricolour. The Sissoo 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 :

Detailed 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 [illegible] 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 Khejuriri and Tedo 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. Almost whole of Keonjhar and Bonai Division is within elephants habitat zone II. Occasional grazing of the young regenerations by Bison was noticed in the Kalapat forests bordering Dhenkanal district. In one part Elephants cause considerable damage in Rebana R.F. near Dailari, Kalapat R.F. on the border of Dhenkanal and in Karo and Sidhanath R.F. adjoining Bonai forests of Sundergarh and Saranda forests of Bihar. Elephants strip off the barks of many good Sal trees in Baula, Rehna, Kalapat and Karo R.Fs. The incidence of elephants in Atai R.F. is also quite common. Browsing animals like Sambar, 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 Bella R.F., Moidankel R.F., Jadipada R.F., Narenpur R.F., Raghunathpur R.F., Sidhanath D.P.F., Sarasakoora D.P.F., Nayagarh RF., Siahanatha RF., Bolta and 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 left 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 Kolon Range while it is somewhat less in other two Ranges. Sincere and vigorous efforts should be initiated at the departmental level for controlling 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 synonymous 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 Barbil divisions together represent one of the superrich mineralized region of India. Out of this Koira -Gedo -Barbil sector boast of one of the most significant reserve of quality iron and manganese ore. It is a matter of strange coincidence that almost all the mineral concentrations are located in better quality forest areas. Hence exploitation of minerals compelled us to disturb the pristine forests.

However 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 PLs) comprising of 17371.1498 ha lease hold area. Similarly in Barbil division there are 56 working mines comprising of 9931.6815 ha lease hold area and 70 non working mines (including PLs) comprising of 13572.2269 ha lease hold area. Excluding of MLs & PLs. And both working and non-working mines in Keonjhar and Barbil 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 five broad land use categories viz. Forest, Water bodies, River, Agriculture, Land with or without scrub, mines / mining related activities,

Still overall, encroachment of forest lands and brushwood from the forest occupies the most significant land use in Keonjhar-Champua sector.

There are two rare plant species viz. Mitrella [illegible] and [illegible] species have been recorded from Kund and Megachar area of the Sarenda 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. Sichaimatha RF., Baibaroni RF., Ulabar RF., Thakuram RF., Kero RF of Champua Range and Tada RF., Khajuriddi RF., Kotmal RF., Sarbasala 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 Rated, Melliveora capensis (Schreber)

Sloth Bear, Melursus ursinus (Shaw)

Leopard Cat, Felis bengalensis (Kerr) Tiger, Panthera tigris (Linnaeus)

Leopard Cat, Felis bengalensis (Kerr) Tiger, Panthera tigris (Linnaeus)

Elephant, Elephas maximus (Linnaeus)

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

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

Pea Fowl, Pavo cristatus Linnaeus Indian Pied Hornbill, Anthroscerus 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).

Reptiles : [illegible]

[illegible] bengalensis(Dandin)

Indian Cobra, Naja naja (Linnaeus) King

Cobra, Ophiophagus hannah (Cantor)

Russell's Viper, Vipera russelli (shaw)

Rat snake, Ptyas mucosus (Linnaeus)

Checkered Keel Back, Xenochrophis Piscator

(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 then 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 later 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 craze 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. Grove 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 parts could be brought under reserve or even up till now. Attempts at various times to win

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

The Sauli forests in the Anandapur Sub-Division was worked under a 'Ghari' 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 delay or hindrance. During 1897-98 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 seem to have been removed from these forests and the Sauli forests were very badly handled though no records are available.

Early History

The history of the forest administration and management of Baripada Division prior to 1880's 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 dependent 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, millet etc. used to be sown. After cultivating for two to three years, such cleared patches used to be abandoned by the tribes 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 1898 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. Burcoch in 1905 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 reverse 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 Rebja 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.N.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 Tadra Dev Deyanidh. 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 Kara, Sidhamatha, Thakurdal and Ulibara blocks owing to their proximity to the Jarada 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 Nuifanchi and Nuaipatna blocks of Anandpur Range, after the devastating flood in the River Baitarani during 1937. The forests of the ex-state were visited by Sri S. 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 practice of shifting cultivation.

The revised working plans by Mr. A. B. Lal which came in force from 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 his 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.

Khurshid Mr. Pant and took up the assignment. Mr. Sarangi made some major changes while drafting the part-I of the revised plan which was prepared for the period 1969-70 to 1989-90.

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 crop, capable of producing high grade large size timber. A uniform system was prescribed as sal grows fast under this system.

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

(3) Improvement Working Circle was suggested to work out the unworked areas in Tolsa 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 Coppice 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 Rebra block. In addition, provisions were made in all working circle to rehabilitate the eroded patches.

(6) A new working circle zoned as Nistar working circle was created comprising of all "5" class reserved forests to cater to the needs of less paying tenants with the provision to improve the stocking on these degraded forests by artificial regeneration and enrichment planting.

(7) A Plantation Working Circle was formed to exploit and replant the areas in Hathoundha and Nuniapaina blocks. Plantation on forest blocks like Salapada and Tutiori etc. was advocated.

(8) Because of various mining activities within the reserved forest areas a separate Mining Working Circle was formed covering large mining leasehold 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 Water Working Circle.

(6) The Plantation Working Circle.

(7) The Away 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-RCM/705 dt.31-11-95 of C.C.F.(Central) Govt. India. He had recommended for constitution of the following five working circles.

1) Sal Conservation 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 from overgrazing by wild or domestic animals, excess uprooting, cutting of inequated 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 has 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.F's 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.F's for more than 6 months interferes in the habitats and haultats 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 prohibited.

(c) In the Baula 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 Gotumane, Daki, Jhampsi, Sakatpalia and new Srijangan 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 Siladri 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 Hadgarh reservoir, it is necessary to create artificial reservoirs and bunds on river Fitaua, Badnadi and other streamlets flowing within Baula R.F. to store water for use by the wild animals during the hottest months. Excavation of grass ponds and renovation of ponds and waterholes inside the R.F. should be taken up on a priority pattern. Bird houses and feed boxes should be hung on trees along water courses to attract bird population

in Bada R.F. particularly on the sand 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 fowl 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, felling and cropping, 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 Bada 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) Kalinkate on Kalinkate - Timau, Dalli forest road.

(i) Hadagech to watch over the reservoir and portions up to Patanta Dalsi & Jhangasi.

(j) Dalli to watch over the reservoir and boundaries of Mayurbhanja district.

(k) Gyalulia 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 bounds. Thus species whose occurrence has become rare, deserve protection, even by introduction from 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, more specially species which were 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 Sandepat Working Circle.
3. The Coppice Working Circle
4. The Bamboo Working Circle.

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

Sri G. P. 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 26.11.95. It has been further extended up to 30.06.96 vide No. 10-F.C.W.P-05-Dnar 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 (F) dated. 26.12.90. Under this plan following six working circles were constituted :-

1. The Soil 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.

5.Pathi's Plan 1997-98 to 2016-17

Revised working plan for RF and PRF of Bonai Forest Division has been prepared by Sri Suresh Pathi IFS. This plan has been prepared for the duration 1997-98 to 2016-17. He has discussed some relevant point with respect to management 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 wildlife management suggestions which are also relevant in the prescriptions of a comprehensive wildlife management plan for mining belts of Keonjhar and Sonai divisions. The same are described below.

HABITATS OF IMPORTANT WILD SPECIES.

Tiger :

It prefers a dense wooded habitat free from human 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, Gilkatel, Silkatel, Jaypur, Sahkuna and Khandadhar. The main prey species are

strongly territorial when inhabiting neither habitat with low 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, Champajhar South, Silkuto-I, Silkuto-II, Dhanghar, Rajpiri, Baluk, Kunjar, Kantamunda, Kelo, Majurdima, Jarda, Sahiguda, Kalai, Siriguda, Tada, Khajuridih, Sarkunda, Kusumdih, Dhenkiam, Rusimath & Surundia.

Elephant :

It prefers moist deciduous forests having good growth of bamboos with perennial source of water. It feeds on a variety of garage like grasses, reeds, bamboo, leaf, twigs, 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, Silkuto-I, Silkuto-II, Rajpiri, Kunjar, Kantamunda, Kelo, Majurdima, Jarda, Sahiguda, Kalai, Siriguda, Tada, Sarkunda, Kusumdih, 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 monsoon, it moves around the valley and

feeds on the new flush of grasses. In summer when the leaf fodder is scarce it moves to forest on coarse and dry grasses. It is gregarious and sociable animal and moves in large herds. It is highly susceptible to rinder pest and foot and mouth disease. In this division it is only confined to a few forest blocks adjoining to Sonabeda forest of Bihar like Silkuta I R.F., Silkuta - II R.F. and Tolo 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, Rusinath, and Kusumdihi

Deer :

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

The following wild fauna, which are listed 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	ZOOLOGICAL NAME
Herbivores	Indian elephant	Elephant Maximus
	Indian bison	Bos Gaurus
Insectivores	Pangolin	Manis Crassicaudata
Carnivores	Tiger	Panthera tigris
	Leopard	Panthera pardus
	Sloth Bear	Melursus Ursinus
	Indian Wolf	Canis lupus
	Wild Dog	Cuon alpinus
Birds	Horn Bill	Anthracoceros malabaricus
	Peafowl	Pavo cristatus
	Red Spur fowl	Galloperdix spadicea
Reptiles	Indian Python	Python molurus

Disturbance and Shrinkage of Wildlife habitat :

In the Rural Forest Division over the years there has been rapid shrinkage of wilderness. Unabated poaching of wild animals, Pernicious practices of shifting cultivation and Akkand 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, reduction of N.T.F.P. in unscientific manner, mining activities, illicit

[illegible] have been the reverse factors responsible for the destruction of wildlife and shrinkage of wilderness.

In the Amta 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 PDF blocks like Sarkunda, Khajuridihi, Nagaria, Bhawanpalani, Gonua, Manimunda etc. The mining activities have been undergoing since last so many years in the Tuda R.F., Sarkunda R.F., Kara R.F., Kathipal R.F., Abhayanpalani R.F., Khandadhar R.F., Mandhanamani R.F., Khajuridihi R.F. and a few other PDF 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 felling. The R.F. blocks of Shingiloi, Kundihi, Mahera, Champajharan North, Champajharan South and Kucharta 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 Anjoshi and Kotaka and better road and rail network.

Amta 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 Philippensis, Dendrocalamus strictus, Acacia catechu, Albizzia lebbeck, A. Procera, Anogeissus latifolia, Ficus glomerata, Ficus

curvycidas, Bauhinia, Ficus bengalensis, F. religiosa, Garuga Pinnata, Kydia calycina, Ogeinia oojeinensis, Lannea coromandelica, Shorea robusta, Syzygium cumini, Terminalia alata, Terminalia bellerica, Ziziphus mauritiana, Arundo Spp, Cynodon dactylon, Heteropogon contortus etc.

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

Deer, Monkey, Langur, Rats and Flores feed on wildfruits of plants like Ficus spp, Terminalia bellerica, Bauhinia lanzna, Aegle marmelos, Syzygium cumini, Schleichera oleosa, Emblica officinalis, Lannea coromandelica, Grewia hirsuta, Diospyros melanoxylon and Z. zyphus 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 preferred 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
Arundinella gigantea	Elephant & Gaur
Axonopus Compressus	All grazing Herbivores
Brachiaria Ramosa	Smaller herbivores

[illegible] species	[illegible]
	[illegible]
Cynodon dactylon	Gaur, Deer and smaller [illegible]
Centotheca lappacea	Deer
Coryspogen aciculatus (syn. Andropogon aciculatus)	Seedlings are grazed by medium size herbivores
Cyclopogen parviflorus	Gaur and Deer
Digitaria ciliaris	Gaur and smaller herbivores
Digitaria longiflora	Smaller herbivores
Digitaria sanguinalis	Gaur and smaller herbivores
Eragrostis ciliata	All grazing small herbivores
Eschaemum angustifolium	All smaller herbivores
Eschaemum 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
Rottbolia exaltata	All large
Rottbolliitra ultrasa	Smaller herbivores
Saccharum arundinaceum	All herbivores
Saccharum Bengalense	Elephant, Gaur and Deer
Saccharum spontaneum	All larger herbivores
Setaria glauca	All smaller herbivores
Setaria pumila	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 mature 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 rills, water holes, wallows saltlicks and zone 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 discused 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 resting dens of wild animals and birds are not to be felled.
4. A portion of the left over tops be 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 lopping and felling of trees is to be carried out within the 50 m. radius around the key habitat of wild animals such as deer, sal fox, wallows, water holes etc.

6. No fruit bearing trees like Jamun, Bahunia, Aritha, Zizyphus, Kendu, Mahua 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 lucks 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 Jamda 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 beings 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 : Silkata (T) R.F. -> Jharbeda R.F. -> Mahura R.F. -> Dhenkabar R.F. -> Cross River Brahmani at Deodhar -> Dhenkiote R.F. -> Kusumdihi R.F. -> Rusmalli R.F. -> Kurjee R.F.

ii. From Saranda : Toda R.F. -> Sonakunda R.F. -> Sarkunda Pkt.

iii. From Sonra : Sarigda R.F. → Bala R.F. → Jada R.F. → Sulpudu R.F. → Kunjar R.F. → Raipri R.F. → Majrdiun 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 Kaira Range.

Kaira	Raksh - I RF.	Bear, Wild Boar, Fox, Barking Deer, Lepus, Mongoose, Jungle Fowl, and Peafowl.
	Raksh - II RF.	Deer, Wild Boar, Fox, Lepus, Mongoose, Jungle Fowl & Peafowl.
	Tada RF.	Elephant, Leopard, Tiger, Bear, Wild Boar, Fox, Hyena, Jungle Cat, Barking Deer, Langoor, Rh. Monkey, Porcupine, Lepus, Mongoose, Jungle Fowl, Pea Fowl, Spur Fowl, Myna, Hornbill, Cuckoo, Wood Pecker.
	Mendhamarun RF.	Bear, Wild Boar, Fox, Jungle Cat, Barking Deer, Lepus, Porcupine, PeaFowl, and Jungle Fowl.
	Khajuridini RF.	Bear, Wild Boar, Fox, Hyena, Wild dog, Jungle Cat, Barking Deer, Porcupine, Lepus, Jungle Fowl, PeaFowl, Spur Fowl.
	Sankanda RF.	Leopard, Elephant, wild Boar, Bear, Jungle Cat, Hyena, Fox, Barking Deer, Monkey, Lepus, PeaFowl, Jungle Fowl, Mongoose, and Porcupine.
	Kathnal 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, Pythons.

5.3 Post management of Wild life

During the Curzon administration of the Kendujhar Ex-state, adequate protective measures were being taken by the rulers to save the wild animals from illegal or haphazard hunting 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 rulers 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 tribes practically bagged quite a number of wild animals from these forests. The organised tribal gangs normally comes 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 erstwhile past (pre merger period) under the patronage of the rulers, 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 measures furthering the cause of wild animals were taken by the rulers 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, some 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, Sambar, Chital and barking deer shall be killed.
2. No person shall road and shoot within the Reserved forest except with the written permission of Dewan of Rural 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 Baripada Conservation Unit.

A multitude of faunal profusion includes a variety of mammals, birds, reptiles and insects in forest tracts of Keonjhar and Baripada forest division. Considering the ecological requirements of these wildlife and due to proximity of the great Saranda forests of Bihar and Simlipal 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 biodiversity 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 - Baripada forest tracts seemingly hosts 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 behaviour 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 Dhankanal 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. Naturally the legal boundary fails 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 bigints of this west wild coast range can not be studied in isolation since they are the part of the bigger population whose range of distribution spans from Similipal Tiger Reserve to RFs of Karanjia, Dhenkanal, Angul, Bonai Divisions up to great Saranda forests of Singhbhum district of Bihar state in a larger 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 Kanjipani range of Keonjhar division and Kolha range of Bonai Division to Chakapat 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- Banai 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 dispersers like elephants which disperse widely and frequently in contiguous habitat will be severely affected if the whole range of distribution is not protected. Similarly due to their territorial behaviour, the elder 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: such, can be beneficial in fulfilling the goals of conservation too. For wildlife management in Keonjhar -Banai forest continuum 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 safeside. With increasing habitat fragmentation the problem of alienation 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 dying and dashing bull elephants continue to migrate and wander around for mating far beyond the administrative boundaries of Keonjhar and Baripada 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 Chandaka range and Kaida 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, Karnps (1978) has worked out the food demand and supply for the tigers. His calculations were based mainly on the studies of Schaller (1967) in Kanha National Park (MP). According to his estimate out of 34.5 unit of ungulates required by an adult tiger, Chital (Axis) 25, Barasingha 1, 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 930 Nos. (Deera swamy, 1989). According to

Jarral and Sunder (1987) an average size tiger kills up to 80 average size prey every year. Where as, Karup (1976) estimated that a tiger would require about 45 ungulate kills in a year. According to Schaller (1967) 95 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. (Karup. 1976), number of Sambar 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 the 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 superior in equipment of teeth 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 give it an ever wider choice of territory. The panther thrives in a parched and treeless 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 scanty 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 world's oldest and most important industry. From the soil is born the man 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 Karanjhar - Bonai section which are mostly found in reserve forests (RFs & VFs.

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, intended did 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 constitutional 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 safeguarding 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 parley 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 areas in Champua range are operating prior to 1980 they can not be closed although they violate forest extent point No 5,6,7. To compensate this and to operate 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 Banai 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, Reserves forests, Protective forests to preserve on plots.

Bio-diversity is the totality of genes, species and ecosystems in the region. It can be divided in to three hierarchial 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 June,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 biodiversity 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. All are extreme some are determinants or 'drivers' of the ecosystem 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 ecosystem. 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) Diversity 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 Banai Division.

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

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

6.5.1:(b) 1993 Tiger Census (5th 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		2	2
Bhanjan & Jhing Pir								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 Belgri beat of Champua range.

6.5.2(a) Elephant Census, 1995 (5.6.95 to 8.6.95)

Range	Beat	Forest	Unit	M	F	C	Total
Keonjhar	Gopalpur	Tulasichandra DPF	1	2	5	1	8
Ghatagaon	Ghatagaon	Atei R.F	1	1	1	1	3
	Kedabahali	Atei R.F.	1	1	3	1	5
	Mellan	Atei R.F.	1	1	1	1	-
	Daigarpal	Atei R.F.	1	1	-	-	1
	Harichandanpur	Atei R.F.	1	1	1	-	2
	Palespal	Rebena	2	2	6	4	12
	Gargadbahal	Rebena	1	1	3	2	6
	Bhagamunda	Atei R.F.	1	-	1	1	2
	Fipilia	Fipilia R.F	1	-	1	-	4
	Tondo	Atei R.F.	1	1	3	-	4
		Total	11	9	20	10	39

Range	Beat	Forest	Unit	M	F	C	Total
Deogaon	Telpada	Rebena R.F. Damsite	1	1	-	-	1
	Daitary	Rebena R.F. Belt line	1	-	4	2	6
		Total	2	1	4	2	7
Champua	Dukuna	Mahaparbat	1	1	1	1	3
		DPF (Kalinati)					
		Sandaparkhudi	1	1	-	-	1
		Nadigata	1	1	1	-	2
	Juruli	Baitareni RF	1	1	-	-	1

		(Gudubeslu)					
		Dalpchar	1		3	1	4
		Ma de	1	1	5	1	7
	Purusotampur	Juruidhar	1	1	2		3
	Kirtbaru	Kora RF	1	1	1	1	3
	Harmatha	Kajchoni	1	1			1
	Boleri	Nirpukam	1	1			1
	Kora	Thakurani RF	1	1			1
		Thakurani Basti (Soyabah)	1	2	6	4	12
	Uliharu	Uliharu RF (Hayarpur)	1	1			1
	Jhargram	Sidhamatha R.F.	2	1	1	1	3
	Lindidoja	Sidhamatha RF	1	1			1
		Kara RF	1	1			1
	Chainakpur	Chainakpur DPF	1	1			1
		Gurutan Sudi(KF)	1	1	1		2
		Total	19	13	21	9	48

Elephant Census - 1995

Bhuyan & Junga 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 Telkai Range

Forest Guard, Nayakote

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

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

Range	Beat	Forest	Unit	M	F	C	Total
Anandapur	Belipal	Boula R.F.		1	1	1	3
	Boula R.F.	Boula R.F.		1	1	1	3
	Kentipal	Boula R.F.		1	2	-	3
	Kurlakote	Boula R.F.		3	6	2	11
	Raighuti	Boula R.F.		1	1	-	2
	Hadjarh	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 Seranda forests (Singhbhum area of Bihar is approximately 100.

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

6.5.7(b) Estimation of Elephant in Keonjhar Division - 1990

Keonjhar Range	2 lone tuskers roaming in Barabanda, Pithagola, Badkhamari, Telapada i.e. in between Keonjhar and Telkoi Range.	Total 17 No.
	Gopalpur, Narayanpur, Palashponga, Jadipada, Uchuruda up to Ghatagaon - 2 tuskers, 9 females, 2 calves	
	Kandhlongri-Bhalda - 2 lone tuskers.	

Champua Range	Dalima - Jodi, Khandamaliha - 2 tuskers, 4 females, 1 Calf Chamalda, 8 elephants - Migrating up to Bonai Division - 2 tuskers, 7 females, 4 calves. Ketashani-Thakurani R.F. - Marga - 10 - 13 Kiriburu-Hermatha 5-7	Total 35 - 40
Bhuyan & Juang Pirh Range	Benichi, Chetidih, Erida-Migrating up to (Malyagiri of Deogarh Division) 4 tuskers, 4 calves, 13 females.	Total- 21
Telkoi Range	Kaliahata Section - Purujada 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, Kaighati - 2	Total -19-23
Ghatgaon Range	Bichakund-Tando 3-5, Kanto - Meter 5-8	Total-8-13
Deogaon Range	Talpada - Rebena 10-12 (Rebena R.F.) Eliparbat - Mahabiroposi Dairy 3-5 Kanhegola-Gangadbahali - 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	Sambar	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	Chewinglu	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. Monque	53	47	45	2
15	Porcupine	38	62	43	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	S. Hornbill	93	7	7	0
22	P. Hornbill	100	0	0	0
23	Fea 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 light census in Keonjhar division.

Sl. No	Name of the wild animal	Approximate population	Status
1	Wolves	400 - 600	Rare
2	Wild dog	120 -150	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	1600 -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

Wildlife Summary 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	U	M	F	U	M	F	U	M	F	U	
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	0	5	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	50
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.	Mongeuse	161
20.	Otter	1
21.	G. Squirrel	24
22.	F. Squirrel	395
23.	G. Hornbill	40
24.	P. Hornbill	6
25.	Owl	833
26.	Peacock	123
27.	Monkey	266
	Total	3675

5.5.7 :CONSOLIDATED ELEPHANT CENSUS REPORT 1959 IN RESPECT OF BONAI FOREST DIVISION.

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

M						
Unattached:						
F						
?						
TOTAL	30	18	5		-	53

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

6.5.8 Census Report on tiger Based Division Range Wise

Year	Bonai	Benki	Koira	Tamra	Jarda	Total
1989	---	1	2	---	6	9
1993	4	---	3	---	5	12
1996	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 1st July, 1975, and now has 142 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-I 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, adopted 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 became 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	07
	Insecta	01	06
	Mollusca	01	02
	Hydrozoa	02	07
	Alcyonaria	01	01
	Flora	11	17

This includes cultivated plants of ARALIGARIAACEAE Spp. CACTACEAE Spp. In India not all group of ORCHIDACEAE, CYCADACEAE and CYATHEACEAE Spp. Expecting those which are included in Appendix-I.

Appendix-II	Mammalia	05	26
	Reptilia	07	04

TRAFFIC NETWORK.

In order for the convention to be effectively implemented worldwide, the international trade and pattern is clearly 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 Netherlands, 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, 172-9, Lod. Estate, New Delhi.

TRAFFIC INDIA is required to monitor wildlife trade in the Indian region. Annually, 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 CITES 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 wary 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 lives and show us why despite that both, 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. Habitat 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 patent 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 Sonar 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 ever 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 ex tes 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 band groups and even larger clans in contiguous well-stocked wild tracts. During get togethers Matriarchs (the herd is normally led by a older female great are another with clasped trunks and generally avoid overt conflict. While young males can not wait to begin jousting and courting. They 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 to create 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 barely 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 at any given seasons, elephants can hardly do better than to move on to the nearest cultivated fields to get at the growing grains during

monsoon [illegible] rains. And it's never far for a mouth from mountains to the field. [illegible] every season for an elephant that remembers dining on the sort of plants or crop that flourish year round near villages viz. oolay, jackfruit, mango, banana, [illegible] 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. As an individual 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 crop field is tall and golden and almost ready to cut, then come in and break farmers [illegible]. Since times notorious bulls rummage through crop fields [illegible] indicating they are [illegible] and go on to feast.

During paddy harvesting season in Keonjhar and Bonai forest division, the [illegible] men sit at [illegible] over small fires near their paddy fields at night. Almost every one has a ladder [illegible] 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. [illegible] numerous sensations [illegible] of beats and clangs out against the night for driving away the marauding elephants. People also use firecrackers which same bulls ignore. Enormous bulls [illegible] fire cannot be not incentive even in the study area. Course enough men are gathered with torches, flashlights, flares 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 stills 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 negative 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 a depreading giant's 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 Chandpur 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 Sonai 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 into 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 land in 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. Gorumahisani Range of the Keonjhar and Koira Range of Baripada division have been honeycombed with mines.

Within Chandua range and Koira itself, heavy mining activities, uncontrolled grazing and firewood gathering together with illicit felling 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 Baripada 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 nature 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 Baripada Divisions are becoming increasingly cut off from other herds and habitats and the habitats with

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 boasts of only 100 to 120 resident elephants excluding migratory population from Sradagarh, 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 Baisi Forest Division.Out of these 30 were found in Jonda Range,18 in Tomka Range,5 in Keira Range.During 1995 elephant census 22 elephants were located in Keira 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 Anandpur (Hadagarh wild life sanctuary) and two tuskers were poached for ivory in Joda section of Champua range within last three years.

The hunt for ivory is fast pervading through out the globe from which Keonjhar and Baisi Conservation Unit is no exception. In his illuminating research for ivory trade-Earnest Bradley Martin revealed that modern India probably has far and away more ivory carvers than 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 rogues 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 Banai 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 give 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 & 16 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 shoulder 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 noticeably 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. Foraging 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 cres where development cuts off one portion of habitat from another. For example, when clearing for cultivation creates fault zones that divide a solid expanse of elephant range into 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 the 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 & Satkosia, other reserves can not meet even the home range requirement of the elephant. Most of the better forested tract of Champua range viz. Sidhmantha R.F., Kara R.F., Daitaraa R.F., Thakurani R.F., Ulibura R.F. and Kathoal R.F., Toda R.F., Sarkunda R.F., Kara 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 play their ecological role, the less

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

One can clearly visualise the end of self-sufficient nature in and around us. It heralds the fate of Africa, whose human population is surging while its last 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. Example 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 Simlipal Biosphere Reserves in Orissa are two other be wild life reserves which are linked by Forested tracts of Chainpur, Ghatagaon, Sadar Anandapur Ranges of Keonjhar Division and Kora 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 Simlipal 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. Guiding 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 with 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 descent 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, Suranda(Bihar), Similipal etc. Herds consisting of 15-25 are constantly roaming around Jadipada, Belda, Hand Bhuiganiea of sadar range. Another herd of 10-15 elephants are now erecting havoc in Bhenkiete, Ghatagunnea. 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 come to 130 to 140. During the summer elephant census of 1999 (Direct sighting near water hole only) only 75 were sighted.

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

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

Years	Bonai Injury/Killed	Banki Injury/Killed	Tarace.	Jarada. Injury/Killed	Keiri. Injury/Killed
1990-91 to 1992-93.					
1993-94		1(Adult)	1(Adult)		1(Child)
1994-95.					1(Adult)(M)
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.
Banki.	Kasada PF.	12.11.94(Calf)	Natural.
	Tendra PF.	18.11.94. -do-	-do-
	Kasada PF	02.12.94(Female)	-do-
Tarace.	Rasimatia PF	Prior to 2.6.94. (Adult)	Poaching.
	Dhenkiria RF.	March 96.-do-	-do-
	Demuan.	19.1.97(Female)	Natural.
Jarda.	Jalia RF	6.5.96 (Male)	Poaching

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

Years.	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	2,570.00	2,640.00
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	46,000.00
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 7/2000)	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	288.28	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. Horse damaged by wild elephant in Keonjhar Division :

Year	No. of horse damaged	Compensation assessed
1991-92	21	21,000/-
1992-93	5	2,600/-
1993-94	37	29,465/-

1994-95	70	52,950/-
1995-96	646	1,62,550/-
1996-97	182	74,250/-
1997-98	49	41,300/-
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 agriculture 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 interlinked 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 irreversible, 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 micro climate, 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 past communities remains untapped, 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 regeneration 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 of 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-1C 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 spread over 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 10 elephant habitat zones have been suggested for better management of wild elephants (Fig. 4).

Name of habitat zones	Elephant habitats
Zone 1	* Siripal and adjoining area. Kuldiha and adjoining area. Hasagarh and adjoining area.
Zone 2	* North Keonjhar and adjoining area. * South Keonjhar and adjoining area
Zone 3	* Bonai hills and adjoining area.
Zone 4	* Kapilas and adjoining area * Chandaka and adjoining area.

Zone 5	*	Sathkosia Baripal'i and adjoining area.
Zone 6	*	Ranjipagar 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	*	Singibham 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 Banai Forest Divisions.

Elephant habitat zone - 1

The elephant habitat zone -1 is formed in combination with three elephant habitat viz. Similipal, Hatagarh and Kaldina 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 km, (ii) Nato hills and (iii) Gorumahisani 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 north 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 Bangiriposi extends out forming Gorumahisani complex. Budhabalanga, Gangahara, Sana, Lost Deo, Sarja, Pehala, Khairi, Bandhan, West Deo and Subarna are the principal river streams. Besides there are a number of streams and springs. Barchapani (400m) and Jorenda (153m) are the two

prominent waterfalls come within the Similipal range. Hadagarh and adjoining area is situated in between 21°-10' 21° 21' N latitude and 86° 10 to 86° 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 composes of mainly Kuldiha wildlife sanctuary consisting of Kuldiha Reserve Forest, Devagiri Reserve Forest and Tenda Reserve Forest and very small area of adjoining Sarisha Protected Forest. The area falls under Baripada Forest Division and is under administrative 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 18).

Dense sal forest, open sal forest and degraded /Scrub forest occupy 247093.25, 35647.85 hectares of land which is 37.50% ,5.41% and 16.02% respectively to the total geographical area of the elephant habitat zone-1. The presence of settlements and agricultural land are 15794.53 hectares and 196926.02 hectares respectively against 2.01% and 29.88% to the total geographical area of the habitat zone (Table 16).

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	ECUALYPTUS 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	35617.85	5.41
9	DENSE MIXED FOREST	8658.67	1.31
10	OPEN MIXED FOREST	13833.94	2.10
11	DEGRADED /SCRUB FOREST	105581.75	16.02
12	BARREN ROCKY / STONY WASTE AREA	13467.22	2.04
13	STEEP SLOPING AREA	4547.23	0.69
14	SAND	5597.31	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 Kuladiha and adjoining area
2.	Forest division	Baripada, Keonjhar, Karanjia, Similipal NP
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 Kuladiha wild life sanctuary

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, Bataroni, Kora, Thakurani, Libiara, Sidhamata, Chamakpur of Champua Range in Keonjhar Forest Division, Tado of Koira range, Dundapat, Anandidhi and Sindhria of Bonai range, South Champua, Junen and Kuredhi of Banki range and Rudumath and Kusumdihi of Tamara range of Bonai Division. Thus it extends to three Forest Divisions e.g. Keonjhar, Banai 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 Pipilio 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 and Athagarh. The administrative jurisdiction of this area comes under the di[illegible] 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 1005 meter. (Megahinad Parbat). The details of the characteristics of the elephant habitat zone -2 are given in Table-28.11. [illegible] distribution of dense sal forest is maximum i.e. 266598.41 Ha. followed by the degraded/scrub forest, which is 266011.69 hecters. Besides the settlement with vegetation and agricultural land occupy 47506.88 hactres and 419525.32 hectors respectively. Bamboo forest are grown naturally in this region covering 11753.51 hectors which is 0.15 percent to the total geographical area of the elephant habitat zone-2 (Table-2A).

Elephant habitat zone - 19

Singhbhum and adjoining area comes under the elephant habitat zone 19. This 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 :103

CHARACTERISATION OF ELEPHANT HABITAT ZONE - 10

Sl No.	Parameters	Description
1	Elephant habitat	Singhbhum and adjoining area
2.	Forest division	Saranda , Porlat , Kolhan
3.	District	Singhbhum
4.	Location	Latitude 22° 50' - 22° 59' N Longitude 85° 00' - 85° 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, Dhauru etc.
9.	Water source	Koel 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	3.03% to habitat zone - 10

CHARACTERISATION OF ELEPHANT CORRIDORS

Elephants do not always remain confined to a particular habitat for a longer time. Herds comprising 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 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. Similipal - Hadagarh - Kuldiha
2. Satkosia - Khalasuni
3. Athmallick - Chandipada - Ramakshayanagar - South Keonjhar
4. South Keonjhar- Kapilas - Satkosia
5. Kotagarh - Lakhari valley - Maherdragiri

Similipal - Hadagarh - Kuldiha:

Similipal is linked with Hadagarh through Satakosia and Nato reserve forests. The density of forest growth is better in this corridor than the Hadagarh - Kuldiha migrational route ; still here 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 Barda chromite mines . Kuldiha is connected to Hadagarh through small hillocks like Garasahi,Sidiropala,Belpal and Bada Iduhs . 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 Nato Reserve forest .(Annexure I)

Athmallik - Chhendipada - Kanakshayanagar - South Keonjhar

The migration route of Athmallik - Chhendipada - Kanakshoychnagar - South Keonjhar route lay within Keonjhar , Dhenkanal and Angul districts. The elephant migrate from Satkosia wildlife sanctuary through Tolaipathar Reserve Forest and then Ghosar Reserve Forest via Hirnitira and finally reach Kolapat 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 sal forest , 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 1)

South Keonjhar - Kapilas - Satkosia

This was the earlier migrational route between two largest elephant habitats of Orissa i.e. Similigid 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 Sujlesar 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 Baighar Reserve Forest. (Annexure-I).

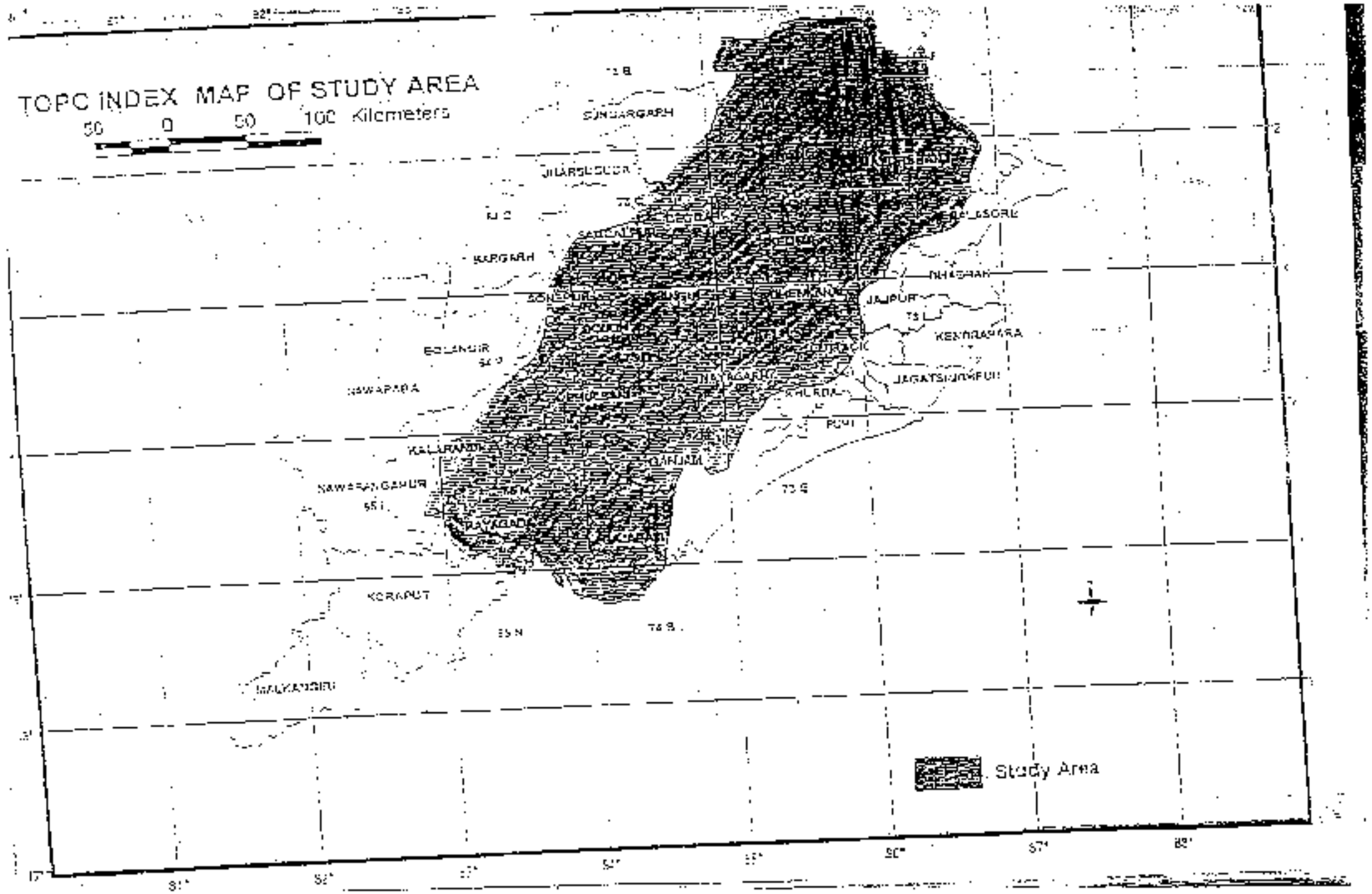
INTERSTATE MIGRATION OF ELEPHANTS

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 Thalkebad forest block of Saranda Division is connected with the Tuda 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 Ulihara and Siddhanatha forests of Keonjhar Division facilitating interstate migration of elephants. Beed - Musaboni forest area of Bihar which is situated south of the river Subarnarekha has an isolated elephant population. This elephant population migrates to Keonjhar and Mayurbhanja border areas of Orissa as well as Jindi 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 re 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 protection 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 ranges of Keonjhar and Rorai division comes under elephant habitat zone I-zone 2. This region covers one sanctuary i.e. Hadagarh Sanctuary in Anedepur Subdivision of Keonjhar Division. The maps prepared by OREAC 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 management plan has been drawn, which are also in confirmity with the wildlife compatible prescriptions laid down in the working plans prepared for Rorai and Keonjhar forest divisions.


TOPC INDEX MAP OF STUDY AREA
50 0 50 100 Kilometers
SUNDARGARH
JHARSUGUDA
BARGARH
BOLANGIR
NAWAPARA
KALAHANDI
NAWARANGPUR
KORAPUT
JAJPUR
KENDRAPARA
JAGATSINGHPUR
Study Area

DEMARCATED NOTIFIED FOREST MAP

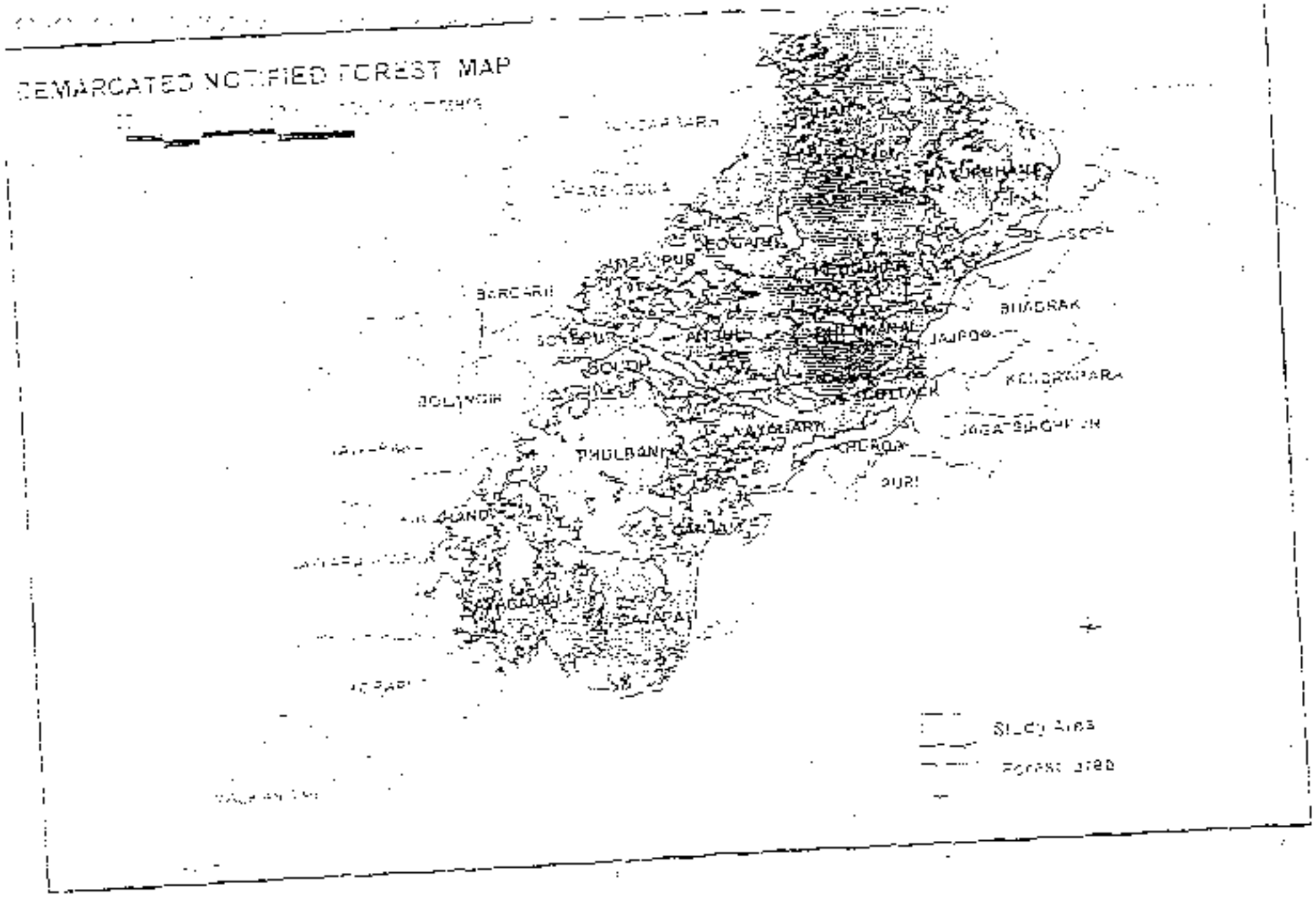
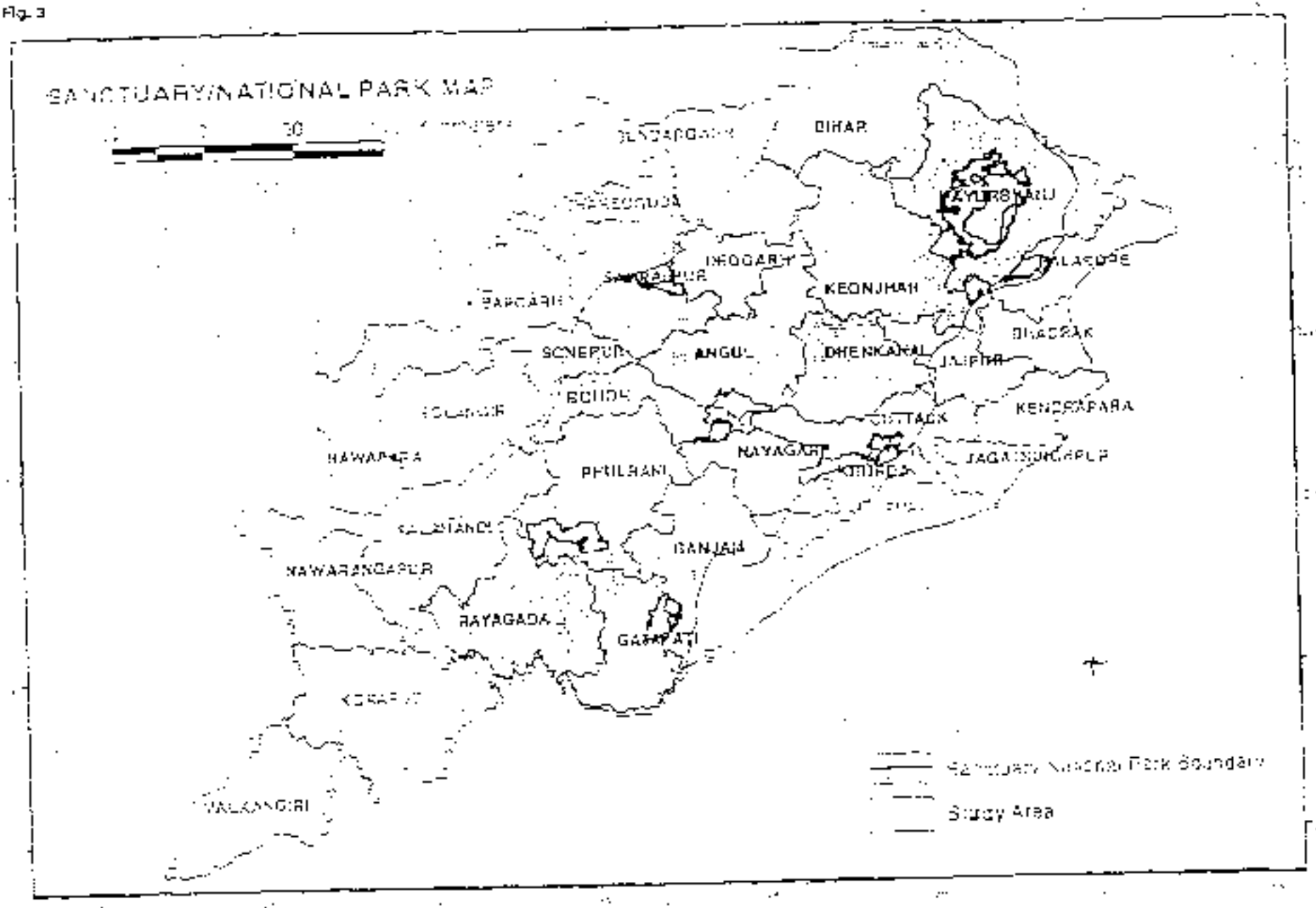
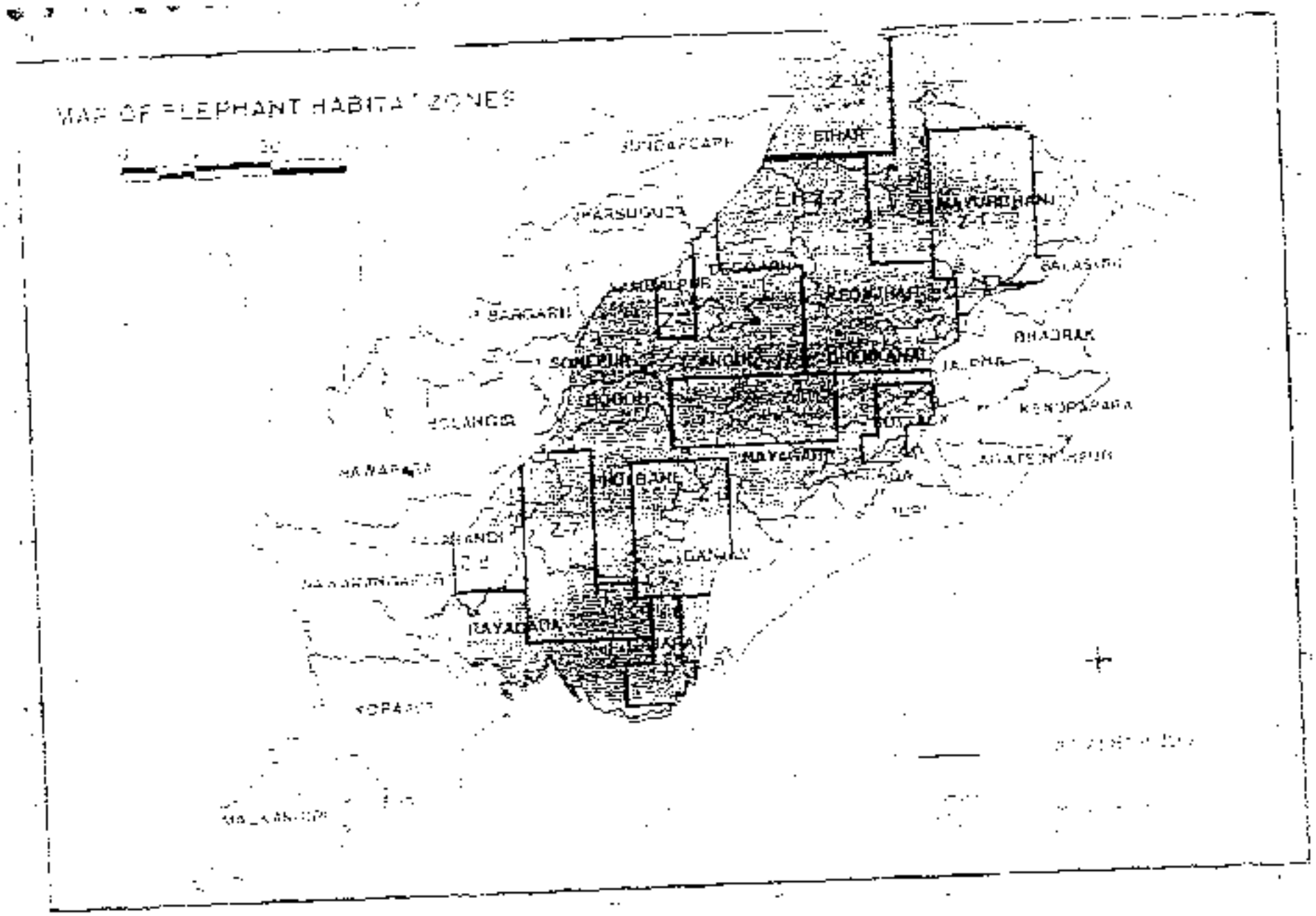
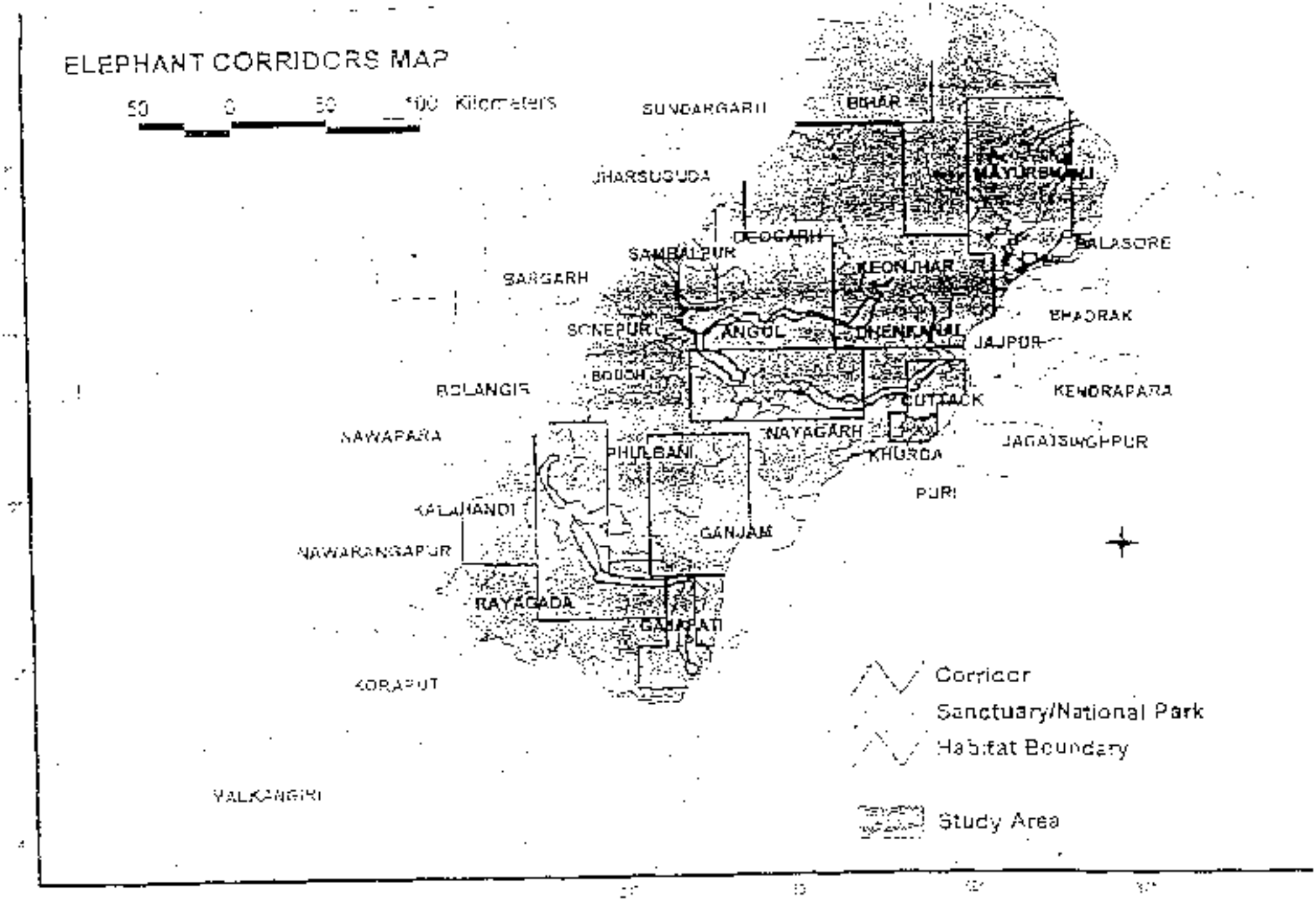
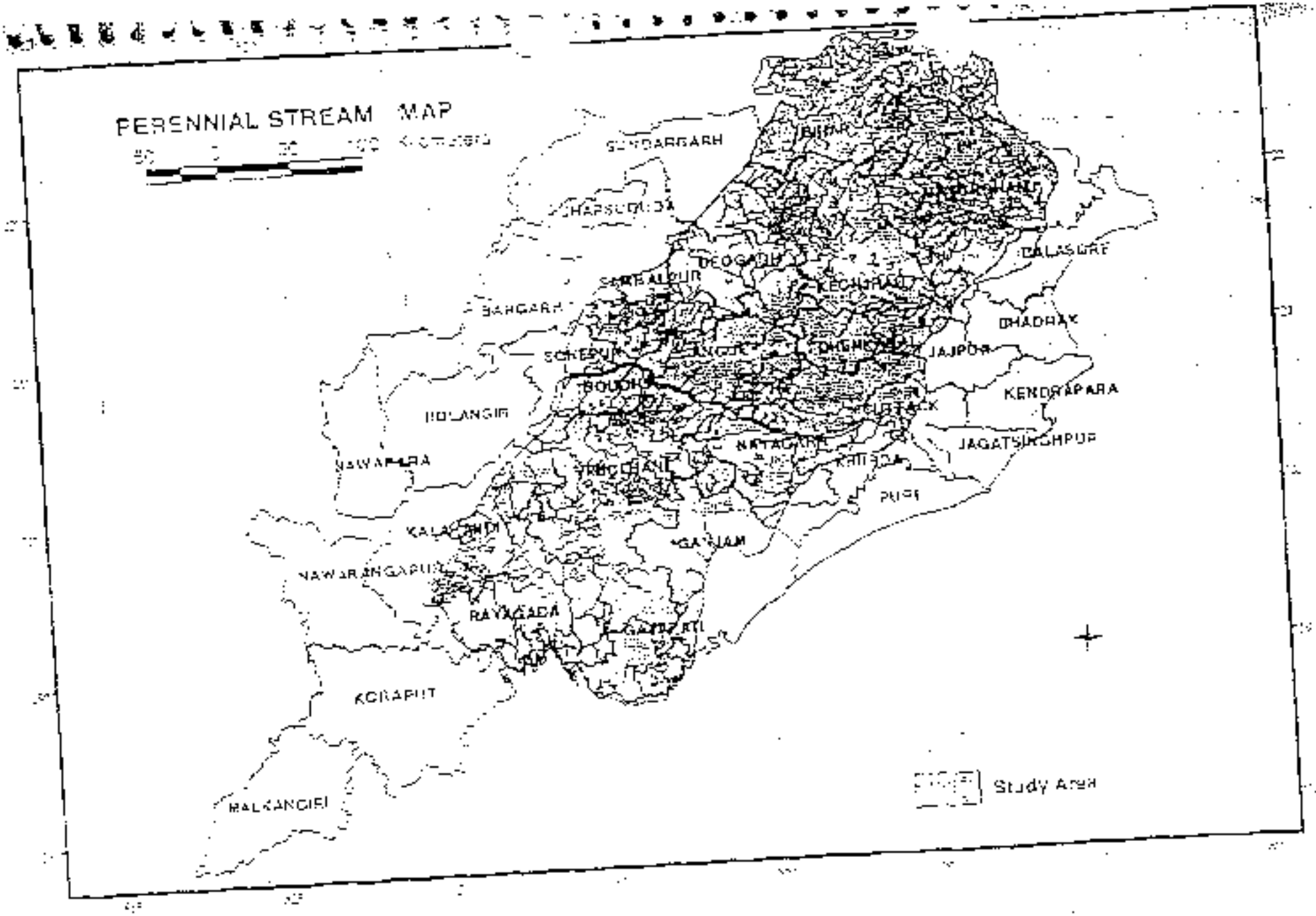


Fig. 3


SANCTUARY/NATIONAL PARK MAP
30
BIHAR
KEONJHAR
ANGUL
DHENKANAL
JAJPUR
BHADRAK
KENDRAPARA
CUTTACK
NAYAGARH
PHULBANI
GANJAM
NAWARANGAPUR
RAYAGADA
GAJAPATI
KORAPUT
MALKANGIRI
Sanctuary/National Park Boundary
Study Area


MAP OF ELEPHANT HABITAT ZONES
Z-10
BIHAR
Z-1
BALASORE
BHADRAK
KENDRAPARA
Z-2
Z-7
DANGS
NAVSARI
KORAPUT


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
SUNDARGARH
CHAPSUDA
DEOGARH
SAMBALPUR
BARGARH
SONEPUR
BOUDH
BOLANGIR
NAWAPARA
KALAHANDI
NAWARANGAPUR
RAYAGADA
KORAPUT
MALKANGIRI
GANJAM
NATAGARH
KHURDA
PURI
CUTTACK
DHENKANAL
KEONJHAR
JAJPUR
BHADRAK
BALASORE
KENDRAPARA
JAGATSINGHPUR
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

DATA : IRS - 1C - LISS-II, 19 97
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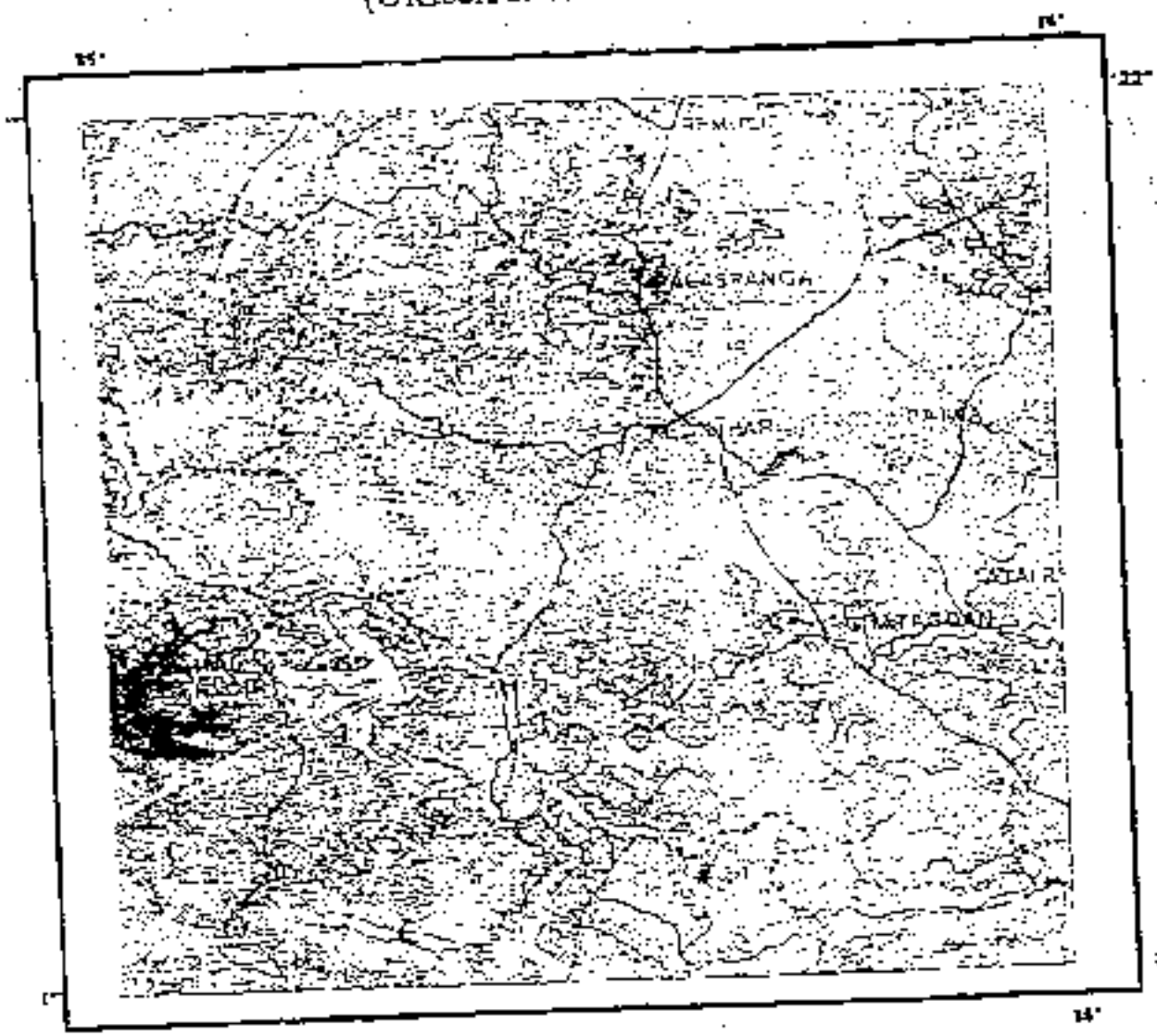
g. 3 (3)

(Topo Sheet No. - 73 G)

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



10 0 10 20 Kilometers

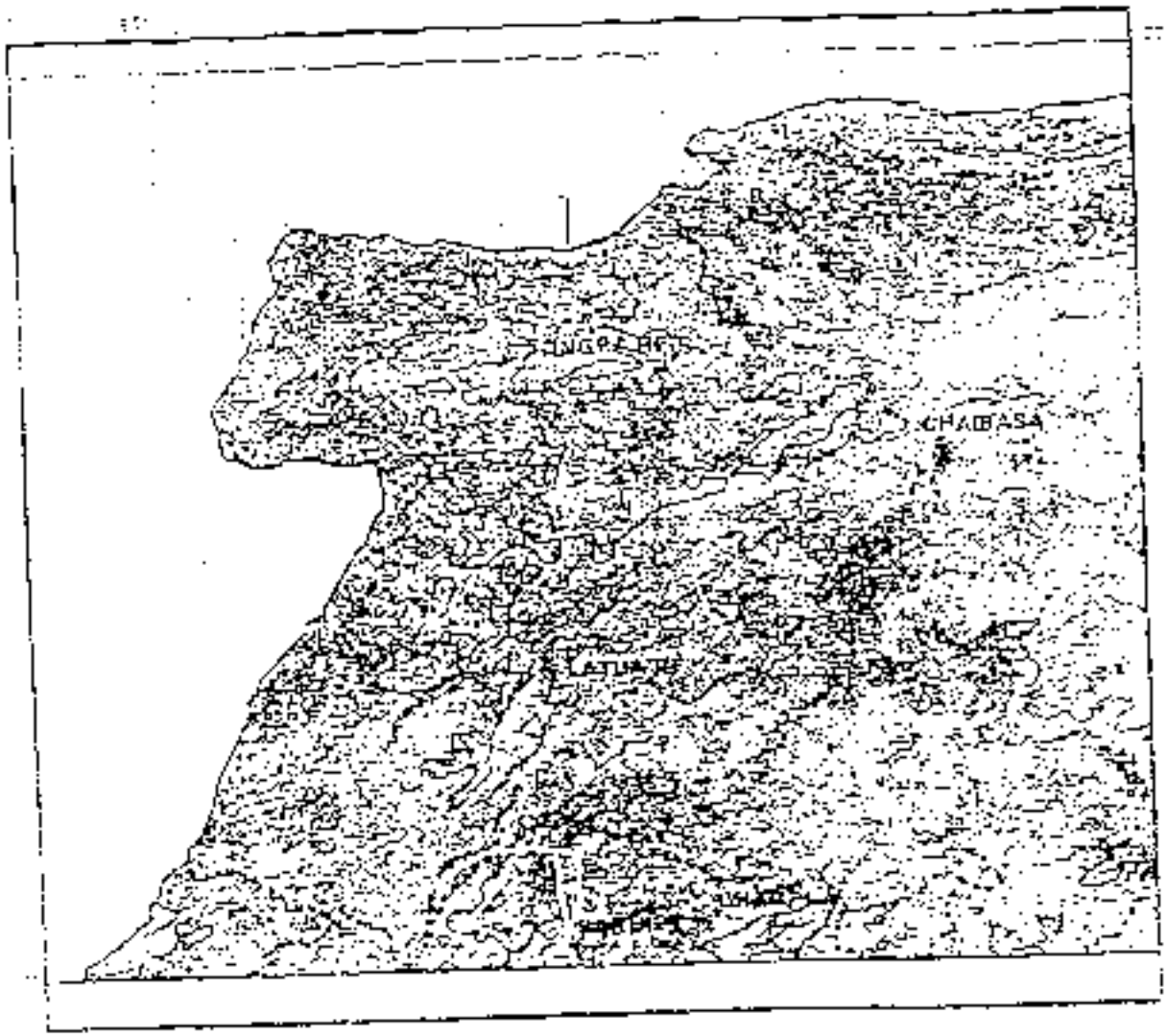
- SETTLEMENT WITH VEGETATION
- AGRICULTURAL LAND
- EUCALYPTUS PLANTATION
- CASHEW PLANTATION
- BAMBOO
- TEAK
- DENSE SAL FOREST
- OPEN SAL FOREST
- DENSE MIXED FOREST
- OPEN MIXED FOREST
- DEGRADED / SCRUB FOREST
- BARREN ROCKY / STONY WASTE
- STEEP SLOPING AREA
- SAND
- MINING AREA
- WATERBODY
- PERENIAL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

DATA : IRS - 1C - LISS-II, 1997
Orissa Remote Sensing Application Centr
Bhubaneswar

g. 8 (10)

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

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



0 5 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

DATA : IRS - 1C - LISS-III, 1997
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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 part in their natural habitat with flagship species conservation approach.

Shrinkage 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 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 peril. 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.

Shrinkage 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 acacia 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 over 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 Keonjhar Maharaja has undertaken planting of Mango, Neem, Syzigium, Tamarind, Ficus all along the road from Rairu's 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 thirst 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 are hardly capable of sustaining a viable wild life population of any kind. On 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 hattings, 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 reduces

seed germination and regeneration is affected. Overgrazing sets in retrogression and allows obnoxious weed invasion viz. Eupatorium odoratum, Parthenium histerophorus, Agiratum conizoides etc.which proliferate in forested blocks 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., Kara R.F., Baitarani R.F., Thakurani R.F., Jilburu R.F.,Bauta R.F., Khajuridihi R.F.,Sorkunda 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 Kara - Bolani-Barbil area bordering Bihar recently. A lot of valuable Teak plantations have been plundered along with natural big Sal trees. Scores of labourers from buildings in mining belt are resorting to illicit felling 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 Simipal -Hadagarh area and Daitary-Sukinda area bordering Attgarh Division is acute.

Poaching

Recently Ivory poaching has been detected in Jooc area. Besides that wildlife trade is thriving in Champura village of Chanpua 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 Jorda area.

Encroachments

Encroachments are prevalent in Uliburu R.F., Kero R.F. compartment No. 1 to 6, compartment No. 7 near Kiriburu township, compartment No. 10 & 11 near Hirekud 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

Kero and Sidhanath 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 Kero, Sidhanath, Thakurani, Baitarani Uliburu Khandadhar, Amrudihi, Kiojurigini 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 or 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 Koro 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 Kojra 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., Khasra 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., UDFFs., 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 together 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 and livestock populations.

Alternative strategies

Clearly, such well considered answers to the "Hows" and "Whys" lead us to the only conclusion that a prolonged neglect of tardiness, 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) than other wildlands (L.Fs, village forests, groves etc) and the rural areas including 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 outlined 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 flow corridors for 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 ecosystem 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 are 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 PARs 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 slender 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 need 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 inputs 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 hired, 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 part color. 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 political 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 PA. This will be a precursor to the participatory planning process for PA management itself viz. zoning and regulations for use of resources.
4. Developing an appropriate zoning plan for a given PA and its multiple us 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 insurance merit as ascertained in the initial stages of the participatory planning process, as a move to mitigate

novous hardships or incongruities as well as to foster trust building necessary to sustaining people's interest in the holistic plan as 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 launching 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. Focusing the underlying approach of Ecodevelopment around and 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 innovated 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 redirections 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 enlightenment 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.

Lack of Committed Approach

Keonjhar - Banai 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 ,at Banai 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, Jada, Kaira, Banai,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 ores. 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 Kuna river and other places (Haramath Temple area), Khandadhar along Brahmani river,Hadagarh reservoir near Baula 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 elder people short interpretive nature trails, promenades 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. Awareness 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. SATL, Jolani or M/s. TESCO 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 busy 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 - 3

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

ponents of strategies -

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

ogical & Ecological measures:	Habitat improvement, increasing prey-base, weed eradication, corridor linking.
ysical 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.

1. 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 clearing boundary line as was done usually 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.F's after delineating and refixing pillars in boundary line. The compartment lines need to be maintained which will also serve as internal firelines. Appropriate sign boards of R.F's, Compartment No.etc should be maintained.

15.7 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 habitat:

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

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.F's and DPF's will be strictly delineated separately with clear boundary lines with pillar posting .All the encroachments should be evicted outside R.F's on a priority basis.Till the process of eviction and relocation is completed the encroachments should be fingered 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 tourists 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 tank, spreading of disease from domestic animals to wild life 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 area 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 be 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 & D.P.F 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 formaly 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, thereby 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. Social 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 & medicinal 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 to degrading forest all around.

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

Objective

To create favourable habitat condition by taking appropriate restorative measures.

Strategies

Protection of forest, environment, unique habitat, riverine site, controlled grazing, habitat consolidation, 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-biogas gas, fuel efficient Chullas, Wood substitute, 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 Kirburu-Meghatuburu (Sunset point) Hurmatha jungle site along Kare River. Khandadhar water fall in Bonai division

etc are excellent tourist spots. Besides this most of the public sector and private wines have excellent accommodation with cows, nurseries, gardens. Only some nature trails, interpretive trails, important geological formation sites (SATL, Bolor) need to be developed with Audio-visual facilities, Amphitheatres in the zones 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 lag end of the financial year a small amount of fund is released for creation of fire line on deploying a few fire watchers which is insignificant in comparison to the enormous work to be done in fire protection.

Management Actions needed

Principle 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 Walkie-Talkies to communicate with the other ground staff or control or other watchtower after locating fire or smoke. Fire fighting has to be completed before 15th of January & unburnt 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 in Similipal, small brush piles will be made in the center of the fireline to provide cover for ground dwelling birds. The sporadic fire resistent 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 tour 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, gunnies, 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.

rolling

A few patrolling camps need to be established in interior areas. The patrolling party should consist of one Forester, two Forest Guards, and two Gang 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 identity.

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

At present staffs are deployed which are scattered in beats. Since new-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.

Training

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., T.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-

ex-undergraduate-diploma must be organised for field staff and officers of forest department. Mine owners must be given some orientation training on wildlife and habitat management.

Cash awards and incentives

In recognition of commendable performance in the field of forest, wildlife and environmental protection, cash awards, uniforms should be given to the field staff to maintain high morale. Fast promotions should be given to deserving candidates showing excellence in the field of forest and wildlife 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 from 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 shushera forest.

Encroachments

Instances expansion of illegal settlements must be strictly checked. After joint verification with Mining Dept., Revenue and Forest authorities illegal holdings, encroachments etc. should be demarcated by pillar posting / outside 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.F.s. and D.P.F.s. and old ones should be revived. Since these will be benefited by Eco-

development programme due attention must be given in this regard. The competitions 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., DFFs and KFs.)

10.3.3(a) Water Resource Management

This region receives an average annual rainfall over 1150 mm. During pinch summer months water becomes a limiting factor for wild life. Although many perennial streams are running yet the people from hattings 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 and feasibility 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.F's for domestic cattle use. In Kheserra & Village wood lots water holes can be created for cattle use. In karenacher 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 wild life 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 wild life and thus serves as good corridor linkage. Hence measures viz. improvement of regeneration of Riperian vegetation as

Syzygium, Mango, Forest Manedakendu, which are liked by herbivores, must be enriched.

Mesic Sites

These are biodiversity hot spots and should be protected

10.3.3(a) 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 5 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 step 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. Yellow logs are important cover and denning 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 or 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 vary in 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 microhabitat for bats, birds (swallows swifts), and bees.

Management considerations

Unique habitats are fragile environments and little or nothing can be done to improve their 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 for animals like sambar (Cervus unicolor), chousal (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 likewise, 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 adenophorum, Lantana Camara, Parthenium, 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(a)(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 448 fruit bearing species viz. Bombax, Emblica, Terminalia chebula, T. belerica, Syzygium cumini, Buchanania lanzan, Zyzyphus species, Bauhinia species, Mitragyna parviflora, Helicteris isora, Ficus species, Wrightia tinctoria, Carissa opaca, Moringa tinctoria, Mango, Kendu, Jackfruit. Besides providing ample food for herbivores these trees provide excellent resting and roosting cover for birds.

Eco-restoration areas would be man forest 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 hutings / 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 open forest animal, Sambar 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 Kanghar Division and in Bondi division as per latest census. But its co predators viz. Hyena, Wolves, Wild dogs 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 sub full grown elephant consumes about 250 Kg of green fodder daily and by the process may destroy 3 to 5 times that much vegetation. It also needs a duty of water to drink 80-100 Litres and even in

bathe in river and forest pools and to wallow in the mire and dust itself 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 obscure 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, Angarh division, Dhenkanal division, Banra division, Devgarh division, and Karanjia 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 invidiate as possible. A well-managed elephant conservation unit will be an excellent abode for numerous other sympatric species. Above all the phenomenon species the elephant, which is an integral part of Indian culture and religion, and therefore, it is possible to easy 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.F.'s,

Udaina and Kuis including corridor-linking forests of Sarunda, Bonai, 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 prey 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 interest of wildlife the silvicultural practices prescribed should be slightly modified in the following manner.

1. Modification of silvicultural practices (viz. Removal of unimportant species, undergrowth, etc.) should be done wherever possible, so as to conserve food and shelter for wildlife.
2. Discontinuous stocking, giving adequate horizontal stratification 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 as they 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 communities 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 endogenous, because the structure of altered forest is akin to the

various stages of succession under natural conditions. Thus, by linking the individual 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 strong, 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 places

(A) Areas with semi perennial water holes

(1) Vegetative silt traps - storage capacity of water holes is reduced due to silt deposition. Since desilting is costly vegetative silt traps on the upstream sides is recommended. Preferably perennial grass species should be planted in series across the width of nains. The storage capacity of natural water holes can be maximised by deepening and enlarging their size.

(2) Inverted Sandhorns - these are to be provided on the down stream side of the water hole and just adjacent to it. The structure should be built in the underground and should of single brick wall 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 streams & rise-volts. Palatable grass species like Apluda, Schima, Themeda & Heteropogon need to be increased by suitable habitat manipulation. Similarly by artificial seeding small meadows can be developed by using poagrass mixed with leguminous grass viz. Berseem, Napier grass Pennisetum Kurka & Typha elegantia grass can be raised in moist valleys. But during summer the highly combustible dry biomass of grasses will pose a potential fire hazard. It is proposed to go for an alternate cutting and burning in a mosaic pattern to prevent fire. Seeding (seed + manure + earth ball) in the form of pellets of palatable species after soil preparation will improve the situation and grass will be established quickly. Dichanthium annulatum & Cenchrus ciliaris species

are good for heavy 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 Veterinary 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 & draught 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 carry out systematic research and monitoring work with respect to wildlife health, to carry out effective vaccination programme, to involve in animal translocation, capture of problematic wild life, rescue of wildlife,

tranquilisation physical restraints with modern tranquilisation equipment (gun & immobilisant) a small veterinary unit should be established in the line of Nandankanan Biological park at Berhil 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.

Proposal for construction of Rescue center cum Rehabilitation station

It is proposed to construct one Rescue center at Kiandaonar (Bonai Division) and to upgrade the existing Rehabilitation at Laxmidungari 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 auxiliary 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 Karanjpadu RF, Kadalibadi R.F., Ghatiari R.F., Tatiba R.F., Pendrasoli R.F. of Bihar, forests of Kolna range of Dona. forest Division, Bhuyan & Jhangpurh range & Keonjhar range of Keonjhar Division & Karanjia Division. It is linked to Similipal Forest with Ghatagaon range of Keonjhar Division. (Ate 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 wile 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 a 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 Kraughur and Bandi 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 sufficient 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 Jada or Bahal in Kara 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 recordall 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 horn, 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

This reported in District Level Committee [illegible] about 2 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.F's 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 wing		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 Centres:

One Officer,

One assistant.

Librarian	-	One
Computer technician	-	One

Local people should be engaged as firewatcher etc.

N.B If 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 good patrolling and supervision of various Wildlife Vans will be needed for Eco-development &

habitat improvement work. Additional staff and funds, 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 km. 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 incidences.
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 or 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 on 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 along with 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	22.0

7.	Secret funds for informers etc.	0.5	0.5	0.5	5.0
		25.5	13.0	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 marden Fire fighting vehcile	25.0	10	10.5	90.0
		33.0	7.0	4.0	72.0

Sl. No.	The Schedule of operation and budget	Allotment of 10 years			Total Rs. (in lakhs)
		1st	2nd	3rd to 10th per year	
	Habitat Management				
A	Water Resourse Management	5.0	3.0	2.0	24.0
1.	Creation of new & maintenance of existing water points, wallowing grounds including cross dams on the nala.	2.0	1.5	1.0	11.5
2.	provision for artificial supply of drinking water during peak 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.	0.5	0.5	0.5	5.0
C.	Creation & Maintenance of Salt licks	25.0	10.0	5.0	75.0
D.	Planting of fodder & fruit bearing species creation of nurseries both permanent & temporary with all necessary infrastructure & equipment.	2.0	1.5	1.0	11.5
E.	Relocation of encroachers (Seperate fund will be borne by state Govt.) Ring fencing of encroachment / villages on priority basis has to be done	3.0	2.0	1.0	13.0
F.	Improvement of Riparian zone, plantation, construction of gabion and spurr for streamline control etc.	3.0	1.5	1.0	12.5
G.	Weed eradiction-wages & implements.	10.0	8.0	7.0	74.0
H.	Habitat narrised linking by improvement of vegetal cover	10.0	8.0	7.0	74.0
I.	Rehabilitation of degraded forests work.	62.5	37.5	25.5	312.0

Soil & Moisture conservation measures.					
1.	Watershed management programmes i.e. treatment of catchment with forest trees, cashew, horticulture species, Agri. species & grass.	10.0	8.0	7.0	74.0
2.	Water harvesting structure and check dam.	15.0	10.0	8.0	69.0
3.	Contour, trenches, staggered trenches	5.0	3.0	1.0	16.0
4.	Peripheral bunding & contour bunding	2.0	2.0	1.0	12.0
5.	Construction & maintenance of other soil conservation measure & water conservation measures. Viz. 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.				
1.	Purchase and maintenance of four Commander jeeps, two for patrolling two for inspection etc.	16.0	2.0	2.0	34.0
2.	Purchase and maintenance of two mini truck.	14.0	1.0	1.0	23.0
3	Purchase and maintenance of 12 motor cycle	5.0	2.0	2.0	23.0
4	Purchase of 30 bicycles	0.5	0.0	0.0	0.5
6	Purchase and maintenance of two Tractors with trolley and accessories for habitat improvement work	5.0	0.5	0.5	10.5
5	Maintenance of POL of these vehicles, wages for drivers (hired).	10.0	10.0	10.0	100.0
		51.5	15.5	15.5	191.0
	Eco-tourism				
1	Interpretation centre/visitor centre with all inputs and maintenance.	10.0	5.0	2.0	31.0
2.	Signages/Interpretive displays, wayside exhibits, Nature trail, Botanical garden, Lawn and maintenance etc	5.0	3.0	2.0	24.0
3	Camping equipment / campsites and maintenance.	5.0	2.0	1.0	15.0
4.	Wages for persons to look after these.	2.0	2.0	2.0	20.0
5.	Purchase and maintenance of two mechanised Boats for Tourism	4.0	2.0	2.0	22.0

	and protection inside Hadagarh Wildlife Sanctuary	26.0	14.0	9.0	112.0
Eco-development planning/ peripheral dev. Activity					
1.	Agro forestry (PPRP), Silvipasture, fuelwood planting & Horticulture 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 Khasarus/ 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 efficient 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, tasser 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, Toco sheet, Village sheet etc.	1	0.5	0.2	3.1
13.	Construction of Van Chetana Kendras/Awareness center and maintenance	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	5.0
3.	Construction of veterinary unit with lab & equipment and maintenance/ 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	6.5
8.	Wages for computer operators and field research assistants.	2.0	2.0	2.0	20.0
		38.0	16.8	9.2	125.4
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					
1.	Stationery, Furniture, Office contigency	24.0	12.0	6.5	68.0
2.	Misc. expenditure & Office expenses including cost of census operation	2.0	1.5	1.0	11.5
		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 27,161.008 ha. lease hold area,13 Working mines in Keonjhar Circle having 2319.0563 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 , 35 Non working mines having 9951.4961 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. Pattnaik	Murbeda	35.378	Iron Ore	ML-1
2	Dr. S Pradhan	Daitarani	52.992	Iron Ore	ML-2
3	TISCO	JODA EAST	670.007	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	1600.673	Iron Ore	ML-11
7	K.N.Ram(MESCO)	Raida-I	104.68	Iron Ore	ML-13
8	Keypee Enterprise	Thakurani	228.040	Iron Ore	ML-15
9	A. Jodha	Belegonda	326.508	Iron Ore	ML-19
10	K.C. Pradhan	Lakraghat	10.72	Iron Ore	ML-24
11	Dr. S. Pradhan	Balite	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	Ramebari Banaikela	1150.550	Mn. Ore	ML-37
18	O.M.C.	Raida Block-D	129.499	Mn. Ore	ML-38
19	TISCO	Katamati	403.324	Mn. Ore	ML-43
20	OMDC	Bolanai	1276.865	Iron & Mn	ML-44
21	TISCO	Joda West	1437.719	Iron & Mn.	ML-45
22	O.M.C	Serenda Bhedarsahi	1734.517	Mn. Ore	ML-46
23	OMC/IDC	Raida Block-C	197.810	Iron & Mn.	ML-47
24	Bhanj Minerals (P) Ltd.	Chourdjharan	242.313	Iron & Mn.	ML-51
25	B.P.M.E.L.	Raida	254.952	Iron & Mn.	ML-55
26	Kashaleswar Minerals	Kalaparbat	9.814	Mn. Ore	ML-58
27	K.C. Pradhan	Hanumatte	61.015	Iron & Mn.	ML-59
28	S.D.Sharma	Raika	26.243	Iron & Mn.	ML-62
29	D.R.Pattnaik	Thakurani	121.385	Iron & Mn.	ML-66
30	Dr. S. Pradhan	Dagardjharan	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-58
32	Essel Mining & Ind. Ltd.	Kasia	194.195	Iron, Limestone & Dolomite	ML-70
33	K.N.Ram & Co.	Raida-II	74.866	Iron Ore	ML-80
34	OMDC	Bailiburu	21.520	Iron Ore	ML-82
35	N.M.D.C	Kiriburu	1051.581	Iron Ore	ML-88
36	Tarini Minerals	Deoihar	34.365	Iron Ore	ML-96
37	Dr. S.Pradhan	Kalaperbat	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	Sarjaturpa	138.900	Iron Ore	ML-8
42	K.M.Corporation	Jururi	27.170	Iron & Mn.	ML-9
43	R.P.Sao	Goli	365.026	Iron Ore	ML-12
44	K.J.S Ahluwalia	Nuagaon	767.284	Iron Ore	ML-14
45	K.C.Pradhan	Chainkpur	112.697	Iron	ML-16
46	Sirazudin & Co.	Bajda	335.890	Iron Ore	ML-17
47	O.M.C	Balsa,Palsa, Jajang	866.595	Iron Ore	ML-18
48	K.M.C.	Jururi	135.570	Iron & Mn.	ML-20
49	K.M.C	Jururi	12.690	Iron	ML-21
50	Mineral Trading Syndicate	Bhalubasa	52.322	Iron Ore	ML-22
51	T. B. Lal	Jajang	39.897	Iron & Mn.	ML-23
52	Patnaik Minerals	Jaribahal	17.150	Mn	ML29
53	TISCO	Gurada & Jururi	643.612	Mn	ML-30
54	O.M.D.C	Bhodrasahi	999.706	Mn	ML-31
55	Rungta Sons Pvt Ltd.	Kulasahi	226.624	Mn.	ML-33
56	O.M.C	Debru	1130.419	Iron	ML-34
57	M.L.Rungta	Kulipati	715.639	Mn	ML-39
58	K.M.C	Jururi	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	Ketemati	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 & Lengdota	456.10	Iron & Mn	ML-49
63	H.G.Pandya & Others	Jajang	100.137	Iron & Mn	ML-50
64	A.Ray & B.Ray	Jaichuri	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	Khandadeuli	1292.433	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	C.J.S. Ahluwalia	Kendudihi	40.306	Iron & Mn	ML-65
73	N.Patnaik	Jajang Khandadeuli	66.368	Iron	ML-96

TOPO SHEET NO. 73-G/9

74	B.K. Mohanty	Farsala	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	Renangase	32.921	Quartzite	ML-72

ML = Mining Lease FL = Prospecting License

LIST OF GRANTED M.L. & P.L. IN KEONJHAR CIRCLE (Working)

Sl. No.	Name of the lessee	Location	Area in Ha.	Minerals	Remarks
TOPOSHEET NO. 73 - G 10 & 6					
01	B.L. Neelia	Medrangajori	69.80	Pyrophillite	ML No.357
02	B.L. Neelia	Nikarpani & Ambadanera	122.4876	Pyrophillite Quartz & Quartzite	PL No. 615 & ML No 587
03	K.S. Sahu (U.M.P.L)	Nitigete	3.92	Pyrophillite & Quartzite	ML No.554
04	G.P. Behera (S. Pratap)	Ambedahara	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-458
07	D.M.Minerals	Meainapur	142.04	Pyrophillite, Quartz & Talc	ML No.408
08	G.P. Behera	do-	35.00	Pyrophillite	ML No. 590
09	S.C. Malik	Kodjase	196.452	P.Q. & Q	RML No.516
10	Gandhamardan Sponge Industries	Pulutipani	100.1632	Iron Ore	ML-577
TOPOSHEET NO. 73 - K/7					
11	TMFA	Kusaki	40.463	Chromite	ML No. 586
12	FACOR	Bauia	187.03	-do-	RML No.517
13	OMC	Bangur	148.89	-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	Dolomite 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	2466.32	Iron	ML-1
02	M/s F.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.	Mahulsukna	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-20
09	M/s K.C.Pradhan	Nuagaon	39.868	Mn.	ML-21
10	M/s. S.D. Sharma	Nuagaon	12.942	Sand & 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	Seldihi	336.065	Iron & Mn.	ML-30
15	Sh.U.C. Mishra	Kumanda	43.067	Bauxite	ML-31
16	M/s Tarini Minerals (P) Ltd.	Tcherei	29.610	Iron & Mn.	ML-32
17	-do-	Nuagaon	7.85	Mn.	ML-33
18	M/s Orind Ltd	Tantra Raikela	106.138	Bauxite	ML-36
19	M/s Gitarani Mohanty		67.582	Iron	ML-37
20	Smt. Kavita Agarwal	Tantra	72.566	-do-	ML-38
21	M/s S.C. Bednraj	Bhaledungri	110.479	Soapstone	ML-39
22	M/s C.P. Sharma	Raikela	69.600	Iron	ML-42
23	M/s O.M.M. (P) Ltd	Tantuloh	33.610	Mn.	ML-45
24	M/s S.N. Mohanty	Nuagaon	29.257	Iron & Mn.	ML-47

TOPO SHEET No. 73 G/6

Sl no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with toso Ref-No
25	TISCO	Malda	1734.272	Iron & Mn	ML 3A
26	-do-	-do-	99.650	-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.	Nacidih	121.405	-do-	ML-12
34	B.T.Co. Ltd.	Nacidih	73.855	-do-	ML-13
35	-do-	Teheron	137.480	do	ML-14
36	Natican. Enterprise	Sen Indpur	75.000	-do-	ML-15
37	S.N. Mohanty	Gonua	14.159	-do-	ML-17
38	Rungta Mines(P) Ltd	Kolmong	210.528	Mn	ML-18
39	Rungta Sons(P) Ltd	Orughat	82.916	Iron	ML-19
40	-do-	Sen Indpur	147.100	Iron	ML-20
41	K.C. Prachar	Gonua	12.530	Iron & Mn.	ML-25
42	Matardin Sharda	Beldih Khajurdih	31.566	-do-	ML-26A
43	-do	Dalita	32.2748	-do-	ML-26B
44	M.G.Mohanty	Petabaila	19.425	-do-	ML-27
45	S.N.Mohanty	Jaldini	336.065	Iron & Bauxite	ML-30
46	Maitri Shukla	Gonua	102.890	Iron & Mn.	ML-34
47	O.R. Bej Pandya	Gonua	109.890	-do-	ML-35
48	Sun Alloys Minerals Ltd.	Patmunda	81.197	Mn	ML-40
49	J.N.Pe Trulk	Bhanjiku i	18.000	Iron	ML-41
50	O.M.M(P) Ltd.	Sen Pandi	28.670	Mn	ML-43
51	Rungta Mines (P)	Kanthar Kore	73.653	Mn	ML 44
52	S.A.Helen	Orughat	25.847	Iron	ML-45

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	Bhaldungri	155.430	Soapstone	ML-23
54	M/s J.C. Budhraj	-do-	110.479	-do-	ML-39
55	M/s JK & KP Jhajhanwala	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	TOSA R.F	15.1638	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	Ulibaru	62.726	Iron & Mn. & Quatzite	ML-74
2	B.K.Mohanty	Ulibaru	56.940	Iron ,Mn & Limestone	ML-75
3	T.B.Lal	Kosiu Barpara	77.497	Iron Ore	ML-78
4	S.N. Mohanty	Khintapani	19.378	Iron	ML-79
5	Jagdish Mishra	Ulibaru	30.313	Iron	ML-90
6	Dr. S.Pradhan	Bulaneri	12.505	Iron	ML-92

TOPO SHEET NO. 73 - F/5

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	Remarks
7	O.M.C.	Raida Sidhamath	78.711	Iron Ore	ML-94
8	M.R.Das	Ulibaru	3.076	Mn. Ore	ML-95
9	B.C.Deb	Dadwan	114.934	Iron & Mn.	ML-97
10	M.R.Das	Deojhar	3.537	Iron Ore	ML-99
11	S.L.Sarac & M.L. Sarda	Thakurani	947.046	Iron	ML-102
12	K.C Pradhan	Bolani	17.10	Iron Ore	ML-105
13	Kushaleswar Minerals	Reiko	6.228	Iron & Mn.	ML-108

TOPO SHEET NO. 73 - G/9

Sl. No	Name of Lessee	Location	Area in Hectares	Minerals	Remarks
14	R.P Sao	Chermalon	141.122	Mn	ML-32
15	K.C. Pradhan	Paredipada	12.10	Iron & Mn	ML-60
16	Prugat (P) Ltd.	Khuntpani	18.615	Iron & Mn	ML-69
17	O.M.C	Benspani	380.40	Iron	ML-76
18	O.M.C	Sekradihi	364.356	Iron Ore	ML-77
19	M.H.Reddy	Topachi	26.476	Iron	ML-81
20	M/S O.M.S	Laidapada	28.328	Mn	ML-81A
21	D.C.Jain	Dalpahar,Bl-A	85.961	Iron	ML-83
22	D.C Jain	Dalpahar Bl-B	0.697	Iron	ML-84
23	-do-	Dalpahar Bl-II	7.697	Iron	ML-85
24	-do-	Dalpahar Bl-III	1.012	Iron	ML-86
25	-do-	Dalpahar Bl-C	2.002	Iron	ML-87
26	O.M.C	Tirirgpahar	79.30	Iron	ML-89
27	Rungta & Sons	Bandhabeda	26.226	Iron Ore	ML-91
28	O.M.C	Perulipada	170.170	Iron & Mn	ML-93
29	FACOR	Katasahi	10.674	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	Sarubeda	145.357	Iron Ore	ML-107
34	T.P.Mohanty	Nalkerea	69.976	Iron & Mn.	PL-109
35	T.P.Mohanty	Nalkerga	29.226	Iron & Mn.	PL-110
36	T.D. Lal	Brchinarjihori	429.017	Iron & Mn.	PL-111
37	S.N.Paul	Katasahi	31.345	Mn	PL-112
38	R.B. Thakur	Katasahi	96.568	Iron & Mn.	ML-112A

TOPO SHEET NO. 73-F/12

39	Achil Ch. Mohanta	Ramchandrapur	38.30	Chinaclay	PL-113

TOPO SHEET NO. 73-G/9

40	Black Stone Mining	Dhalakuchada	205.870	Pyrophillite	PL-105

LIST OF GRANTED M.L. & P.L. IN KEONJHAR CIRCLE
(Non-Working)

Sl No.	Name of the lessee	Location	Area in Ha.	Minerals	Remarks
TOPOSHEET NO. 73 - G/5					
01	MESCO Steel Ltd.	Kodkala & Lohebeda	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 Surret	P.L NO. 674
	S.Goenka	Balabhadrapur	365.764	-do-	P.L NO. 684
05	-do-	Kolenga	1234.00	-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	P.L No.107
09	OMC	Block-C (Suakati)	99.805	Iron Ore	ML
10	OMC	Suakati	10.21	Iron Ore	ML-255
11	Keonjhar Minerals	Anjore	29.228	Pyrophillite	ML
12	B.L.Newatia	Medinapur	43.483	Pyrophillite,Quartz & Quartzite	ML No.494
13	R.K. Agarwal	Talkapur & Sunderia	365	Soapstone, Asbestos & Jasper	ML-332
14	R.G.Chorwar	Kansa	212.240	Pyrophillite,Quartz & Quartzite	PL No.493
15	D.B.Patnaik	Jamudiha	171.239	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,Barpasi & Kendsore	49.732	Asbestos	ML No. 367
21	Narayani Sahu	Lalipada	145.33	IronOre	ML
22	P.C. Mahapatra	Upar-Semanta	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	Jaliha	129.199	Pyrophillite	PL No.97
25	Orissa Industries Ltd.	Philjahr	6.182	Quartz	PL No.70
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	Karchenali	13.05	Quartz	ML
29	P.K.Singh	Narda	2.99	Quartzite & Quartz	PL No.397
30	D.K.Raut	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	Haribar Sahu	Tukuripada kusumjori	174.559	Pyrophillite, Steatite,Q&Q	PLNO.439
33	Haribar Sahu	Tukuripada	93.08	Pyrophillite, Steatite,Q&Q	PLNO.488
TOPOSHEET NO.73-G/11					
34	Sipra Das	Handa	42.9311	Pyrophillite, Quartzite & Quartz	PLNO.557
35	I. L. Manik	Khajuribani Block-A	142.50	Pyrophillite	PL No.454(A)
36	-do-	Khuntamare	46.495	Pyrophillite	PL No. 454(B) PLNo.517
37	Ambika Mines & Minerals	Alanga	162.41	Quartz Quartzite & Steatite	
38	Rajesh Kr. Bhuyan	Alanga	96.5077	Pyrophillite, Steatite & Talc	PLNo.463

39	Minerals & Metals (P) Ltd.	Pithagula	18.79	Steatite	PL No.524
40	Minerals & Metals (P) Ltd	Kulodhankun	44.86	Steatite	PL No.523
41	K.B. Pani	Rampakota	32.43	Quartz & Quartzite Pyrophillite	PL No.100
42	A.K. Behera	-do-	24.766	Pyrophillite, Quartz & Quartzite	PL No.101
43	R.S. Rathor	Remaakote & Pithagula	34.511	Pyrophillite	PL No.453
44	A.K. Jain	Rebana	4.597	Pyrophillite	PL No.471
45	-do-	-do-	4.552	Pyrophillite	PL No.473
46	Utkal Minerals	Rampakota	80.075	Pyrophillite	PL No. 316
47	K.B. Pani	Rebana	3.3936	Pyrophillite	PL No.634
48	Harbar Sahu	Maregala	114.537	Pyrophillite & Red Ocher	PL No. 499
49	R.K. Mahanta	Panasia	25.919	Steatite	PL No.535
50	Utkal Minera.	Rebana	25.500	Pyrophillite	PL NO. 100
51	R.K. Mahanta	Hunda	83.519	Quartz Quartzite & Pyrophillite	PL No. 521
52	B.S. Barik	Gurlinanda	70.723	Pyrophillite Steatite, Q. & Qt.	PL No. 673
TOPOSHEET NO. 73 - K/7 Restricted					
53	OMC	Bangur, Madhapur & Bidyadharpur	206.00	do	PL No. 410
54	OMC	Baula	207.35	-do-	RML No.444
55	OMC	Bandapanka	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)

FO SHEET No 73 6/1

Sl. no.	Name of the lessee	Location	Area in Hectares	Name of Minerals	Remarks with Lapo Ref. No.
1	M/s SAIL	DO-	3.240	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	Tantigoom	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	143.675	Iron	ML -54
7	A.M.T.C	Domuhuri	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	Kumila	1212.47	Iron	ML-63A
14	M/s O.M.C Ltd.	Ranthe	408.2731	Iron	ML-63D
15	T.P.Minerals & Industry	Bhutuda	40.619	Mn.	ML-66
16	Orind Ltd.	Kusundih	102.790	Bauxite	ML-67
	SAIL	Tantra	117.440	Bauxite	ML-68
18	M/s O.M.C Ltd.	Uskunda	660.570	Iron	New lease-63C
19	M/s O.M.C Ltd.	Kalta	294.472	Iron &Mn.	New-63D
20	M/s M.G.Mohanty	Kusundihi	153.972	Mn.	-do-62B
21	M/s Pangida Trading & Agencies	Bandra Redkela	40.104	Iron & Mn	PL-70
22	M/s Orissa Cement Ltd.	Kamanda & Kusumdih	16.610	Bauxite	PL-73
23	M/s Mines Minerals & Chemicals	Lusi	25.583	Iron & Mn.	PL-74
24	M/S Pangida Trading & Agencies Ltd	Sidmoa Tentulidih	63.648	Bauxite	PL-75

25	M/s Mangalam Carbide Ltd.	Kilinda Bachhuin Tentabchal	287.446	Iron & Mn	PL-76
26	Sh. Bakhsi Singh	-do-	41.613	-do-	PL-83
27	M/s Mangalam Carbide Ltd.	Dergula	31.262	-do-	PL-83A
28	Sh. Bakhsi Singh	Tantra Tensa	24.586	-do-	PL-86
29	M/s Mangalam Carbide Ltd.	Tantra	13.236	-do-	PL-88
30	Sh.Ganesh Agarwal	Kenarda	21.477	-do-	PL-89
31	Sh.S.Sahoo	Sidimbri & Ranaj	45.972	Bauxite & Iron	PL-90
32	M/s S.Lal & Co.	Kansarda	46.120	Iron	PL-93
33	Sh.Rajesh Vig	Kusumdih	21.909	Iron & Mn.	PL-94
34	Sh.H.G.Pattanaik	Jeldini	16.910	-do-	PL-95
35	Sh.N.K.Paul	-do-	55.505	-do-	PL-96
36	Sh.R.C. Agrawal	Lusi & Kansara	21.562	-do-	PL-97
37	Sh. Basudev Das	Raisuan	27.728	Iron & Mn	PL-99
38	Sh. N.K. Agarwal	Bardhal	102.345	-do-	PL-100
39	Sh.R.G. Jhunjhunwala	Dergula	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 tebo Ref-No
41	O.M.C	Kalta	294.972	Mn	ML NEW-63D
42	M/S N.Iaonal Ispat Nigam	Kodalia Sen R.shibenua Hanjibneng a	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	Gonda	3.604	Mn	ML-65
45	M/s M.G.Mohanty	Patabeda	28.397	Iron	PL-71
46	Sh. Sayed Abdulla Hallin	Oraghat	45.00	Iron & Mn.	PL-72

47	M/s Penguin Trading & Agencies Ltd	Saunbong Bejdilu	106.509	-do-	PL-77
48	M/s C.P. Sharma & Sons	Rarisal	17.806	-do-	PL-78
49	Sh. Subhas Agarwala	Sonai Sun Indian Sangyach	15.277	Iron Ore & Bauxite	PL-79
50	M/s M.G. Mohanty	Patrouda	14.000	Iron & Mn.	PL-80
51	M/s Kondadhara Mining & Minerals (P) Ltd.	Bed Patuli Patrouda	30.513	-do-	PL-81
52	Sh. P.C. Agarwal	Sangigarh	30.259	-do-	PL-82
53	Sh. Sayed Abdula Halim	Bed Tadpur	18.030	-do-	PL-84
54	Sh. L.S. Merik	Teherai	19.368	Baux Ir.	PL-91
55	Sh. N.K. Paul	Teherai	12.356	Iron & Mn.	PL-92
56	Sh. N.K Agarwal	Kalmang	57.593	Iron & Mn.	PL-98
57	M/s National Enterprises	Acaghat	15.074	Iron	PL-101
58	Sh. Shrinivas Sahoo	Kora 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	Kasiroa	418.353	Iron	ML-53
62	-do-	Bhangpali	141.675	Iron	ML-54
63	M/s M.G. Mohanty	Ranisar	67.484	Iron & Mn.	ML-57A

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	Charbera Mushpashi	442.329	Soapstone	PL-103
65	M/s Indian Metals Co.	Shivrajpur Jamredichi	53.646	-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	Bedcoandeab huin Sanbaranobh jin	153.673	Quartzite	PL-102
67	-do-	-do-	104.452	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
68	Sh. Baksh. Singh	Uskuda	149.668	Iron	P.L-85
69	M/s O.M.C. Ltd.	Kurmitra	1242.470	-do-	ML-63A
70	-do-	Uskuda	560.570	-do-	New Lease630

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.9447/-	2nd Year(Rs.) @ Rs.4667/-	3rd year to 10th year per year rate(Rs) @ Rs.313/-	Total (Rs.)
1	S.R. Patnaik	Mugibada	15.378	Iron Ore	145153.37	7180.90	4813.31	69920.79
2	Dr. S.Pradhan	Bainpani	82.592	Iron Ore	249930.05	24753.48	16585.20	207125.07
3	TISCO	JODA East	670.907	Iron Ore	6332413.81	313937.58	209352.55	2528590.71
4	SAIL	Bolani	1240.395	Iron Ore	12458924.98	518178.86	347340.74	5173624.82
5	C.M.D.C	Bhadrasahi	101.600	Iron Ore	977108.40	46484.30	32425.80	405637.80
6	S.P.M.L.L.	Thakurani	1600.373	Iron Ore	15111324.17	749236.55	501075.25	6292078.87
7	K.M.Sahu(VISCO)	Radhi-I	104.63	Iron Ore	958717.02	43990.24	27704.04	405926.03
8	Kanjee Enterprise	Thakurani	228.040	Iron Ore	2152069.75	100772.72	71076.52	955004.54
9	A.Lenka	Balanpani	176.508	Iron Ore	2087233.95	162806.74	102197.00	1270615.33
10	K.C.Pradhan	Lekhapani	10.72	Iron Ore	101119.88	5078.33	3355.35	41979.52
11	Dr. S. Pradhan	Bolta	34.780	Iron Ore	328804.00	16253.00	10875.75	136205.00
12	Bhoj Minerals(P) Ltd.	Deojhar	399.070	Iron Ore	3768174.58	186741.96	124493.95	1562507.32
13	S.R. Patnaik	Kalyanjhat	25.532	Iron Ore	241197.65	11906.24	8023.13	100375.34
14	TISCO	Manmora	16.349	Mn. Ore	154435.49	7651.33	5117.24	64022.98
15	O.M.C.	Daki	265.260	Mn. Ore	2504405.44	124141.88	83025.38	1038758.16
16	S.P.M.E.L.	Daki	267.260	Mn. Ore	2527356.64	125277.88	83803.50	1048548.19
17	TISCO	Somahati Sengiele	2150.550	Mn. Ore	10315119.70	539457.40	250122.19	4135579.80
18	O.M.C	Gelda Block-D	120.459	Mn. Ore	1137247.05	60535.53	40533.19	511116.08
19	TISCO	Kalamati	403.324	Mn. Ore	3807327.85	190755.63	125240.41	1595415.76
20	OMDC	Bailong	1276.665	Iron & Mn.	12055380.58	597572.82	398658.75	5000209.34
21	TISCO	Joda West	1437.719	Iron & Mn.	13577700.74	672052.49	450606.05	5639107.80

22	O.M.C.	Sonadra Bhoramshi	173417	Mn. Ore	1697364.05	511763.55	642906.82	3752066.57
23	OMC/IDC	Roka Block-C	192,810	Iron & Mn	1890112.54	50255.04	60345.83	756063.80
24	Bhanj Minerals (P) Ltd.	Tagarighorana	242,313	Iron & Mn.	2287743.47	113402.48	78543.57	648847.17
25	R.T.M.E.	Bolda	254,952	Iron & Mn.	2405774.65	113317.54	79799.88	613392.03
26	Kushalesswar Minerals	Kalapahar	9,014	Mn. Ore	93941.47	4592.05	3071.78	32401.57
27	R.C. Prachan	Hatamatia	51,015	Iron & Mn.	579968.16	22555.07	19097.70	233934.76
28	S.D. Sharma	Roka	76,243	Iron & Mn.	2417330.30	122371.72	8214.05	102187.59
29	H.P. Patnaik	Indramal	121,385	Iron & Mn.	1140017.44	56936.16	17899.87	475342.50
30	Dr. S. Prachan	Tagarighatar	19,700	Iron & Mn.	173552.30	8701.60	5853.10	73725.20
31	GAIL	Bora	1767,093	Iron & Mn. Ore	1657015.72	536359.52	659362.71	6968108.19
32	Basel Mining & Ind. Ltd.	Kasia	194,195	Iron, Limestone & Dolomite	1863321.02	90953.73	60763.35	7604171.54
33	K.N. Rem & Co.	Raidoli	74,966	Iron Ore	75873.50	25037.20	23432.05	392175.20
34	OMDC	Bagusani	21,520	Iron Ore	20314.98	10073.36	5736.75	847212.37
35	N.M.D.C.	Kiriburu	1051,991	Iron Ore	9930170.06	432327.44	225270.01	4119557.93
36	Tata Minerals	Dandhar	34,365	Iron Ore	37410.65	16092.52	10793.25	194873.34
37	Dr. S. Prachan	Kalapahar	177,453	Iron & Mn.	1675135.65	60348.04	55342.79	824905.55
38	Garnetic Minerals	Jambahal	106,524	Iron Ore	1009559.10	49257.91	37345.72	417187.74
39	O.M.C.	Khandabandh	356,331	Iron Ore	3457957.52	1714331.55	1168655.34	1204472.63
40	S.C. Pathi	Gurusada	49,775	Iron Ore	46920.54	23795.17	15379.69	164512.02
41	Narayan Sons	Bansiterpa	138,900	Iron Ore	1311121.90	55005.20	45475.70	347512.40
42	K.M. Corporation	Junan	27,170	Iron & Mn.	256843.45	12715.56	5504.21	108397.72
43	B.P. Sao	Gopi	345,026	Iron Ore	3245334.54	170532.17	116253.14	1431441.52
44	K.J.S. Ahluwalia	Nuamundi	767,284	Iron Ore	7243165.10	339098.01	240155.80	3074654.14
45	K.C. Prachan	Chamkour	147,697	Iron	1347035.97	63787.20	44864.16	558307.45
46	Sirajuddin & Co.	Bolda	335,890	Iron Ore	3170380.19	157196.52	106133.87	1375315.24

48	K.M.C.	Jerum	35,570	Iron & Mn.	127970.05	448.76	42433.41	530802.12
49	K.M.C.	Jerum	12,690	Iron	11979.36	503.92	3971.97	49694.04
50	Minerals Trading Syndicate	Bhalulxasa	62,322	Iron Ore	56831.97	23168.70	16008.79	244052.96
51	T. B. Lal	Jajang	39,597	Iron & Mn.	37652.77	16671.80	12187.76	156239.60
52	Patnaik Minerals	Joribahal	17,150	Mn	15185.80	8026.20	5207.95	67150.40
53	TISCO	Suruda & Jerum	649,612	Mn	607569.73	301210.47	201450.56	2520334.50
54	C.M.D.C	Bhadrasahi	959,706	Mn	943722.46	457852.41	312907.48	3014840.70
55	Rungta Sons Pvt.Ltd.	Kutasahi	926,624	Mn.	210935.00	105060.02	70533.31	507459.58
56	O.M.C	Dubna	1135,419	Iron	1071633.54	531976.00	355339.15	4446200.60
57	M.L.Rungta	Kalimati	715,638	Mn	679563.22	334913.05	223995.01	2802442.02
58	K.M.C	Jerum	54,754	Mn	51537.78	29824.87	17735.00	214416.05
59	K.M.C	Jerum	39,456	Mn	27246.45	16455.41	12345.72	154509.70
60	S.N.Pal	Kalimati	9,697	Iron	9185.86	4503.13	3006.79	37801.20
61	O.M.C	S.G.B.K.	1011,462	Iron & Mn	954920.13	473364.22	316597.91	3960983.19
62	Essel Mining Ind. Ltd.	Jilling & Langalata	456,10	Iron & Mn	420586.40	213454.80	142739.22	1785087.50
63	H.G.Pandya & Others	Jajang	100,137	Iron & Mn	94520.33	46884.12	31342.08	392135.49
64	A.Ray & B.Ray	Jaldhari	182,108	Iron & Mn	171509.95	85229.54	56999.82	713134.95
65	Rungta Mines (P) Ltd.	Jajang	659,35	Iron & Mn	631605.40	313255.80	209606.66	2621174.00
66	S.C.Pradhan	Bensponi	41,562	Iron & Mn	39347.81	19507.13	13046.47	163075.71
67	TISCO	Khandbandh	1293,433	Iron & Mn	1221003.75	606328.64	404044.53	5056083.83
68	M.R.Das	Shulapala	5,139	Iron & Mn	4551.22	2405.05	1608.51	20124.32
69	B.B.Das	Kandrapani	10,255	Iron & Mn	9590.72	4793.34	3209.02	40158.53
70	S.N.Mohanty	Unchbali	9,63	Iron & Mn	9020.72	4506.84	3014.15	37711.08
71	Essel Mining Ind. Ltd	Unchbali	107,306	Iron & Mn	101988.86	53219.21	33680.70	423210.30
72	K.J.S. Ahluwalia	Kendudihi	40,306	Iron & Mn	38046.50	10553.21	12615.72	157200.50
73	N.Patnaik	Jajang	66,366	Iron	62551.39	31060.22	20773.13	259597.09

		Kerrchestal			27094.48	15417.84	2973.71	1133.772
		Pretal	95.670	Quarterly	3698.08	1413.79	570.57	4095.12
75	S.K. Vergara	Chantal	9.07	Quarterly	3197.42	1917.12	1034.27	4357.93
76	S.L. Chase	Chantal	37.921	Quarterly	10018.55	10.17257.12	2171.06.94	13085.07
77	S.N. Vergara	Pretal						
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. 4687/-	3rd year to 10th year per year rate (Rs.) @ Rs 3127/-	Total (Rs.)
01	B.L.Nayak	Nagragaon	53.80	Pyrophillite	50787.20	75378.40	16833.40	316840.80
02	B.L.Nayak	Thakpara & Amlasahara	112.4675	Pyrophillite Quartz & Quartzite	106108.28	52544.20	35209.52	440001.44
03	K.S.Sons (O.M.P.L)	Nagalia	3.92	Pyrophillite & Quartzite	3700.48	1834.56	1220.96	15333.72
04	G.P.Benera (G.Pradeep)	Ambadohara	24.4025	Pyrophillite	23035.58	11420.37	7597.88	95380.16
05	O.M.C	Block-5	1590.867	Iron Ore	1501775.48	744835.78	497041.37	6228830.17
06	OMC	Block-A	618.575	Iron Ore	583953.74	289493.87	192514.20	2421343.57
07	R.K.Minerals	Modhapur	142.04	Pyrophillite,Quartz & Talc	134086.76	66474.72	44188.52	555228.64
08	S.P.Behera	-do-	35.00	Pyrophillite	33040.00	16380.00	10885.00	137080.00
09	S.C.Mohanty	Kadipasa	196.452	P.Q. & Q	185406.69	91471.94	61178.49	766293.03
10	Sandhamadan Sponge Industries	Pahalipani	100.1032	Iron Ore	94534.06	46875.38	31351.08	392729.30
11	TMPA	Nuasahi	40.400	Chromite	38201.74	18908.02	12886.48	158473.55
12	FACOR	Barbil	137.03	-do-	129458.37	67520.04	56640.39	772409.45
13	OMC	Sonapur	145.85	-do-	137842.10	65250.60	46551.35	571148.60
TOTAL					3,295,250.15	1,521,026.55	1,017,297.32	12,270,220.47

FINANCIAL FORECAST FOR WORKING LEASES
JAJPUR CIRCLE OF KEONJHAR DIVISION

Sl.No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year(Rs.) @ Rs.5447/-	2nd Year(Rs.) @4468/-	3rd year to 10th year per year rate @ Rs.3157/-	Total(Rs.)
1	GMC Ltd.	Saitery Block (Ore Proved)	05.60	Iron	90246.40	44740.80	26922.60	374356.80
TOTAL					90246.40	44740.80	26922.60	374356.80

[illegible] AL FORECAST FOR WOA [illegible] LEASES
K[illegible]RA CIRCLE OF BONAI D[illegible]SION

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	Kalta, Sarsoon	2486.82	Iron	2347558.08	1103031.76	778374.56	19739387.12
02	M/s E.M.T Ltd	Koira	90.143	-do-	85094.59	42185.92	28214.75	352999.94
03	M/s. S.N. Mohanty	Raikela	13.315	-do-	17289.36	8571.42	5752.90	71721.54
04	M/s O.M.M. (P) Ltd.	Chokari	51.476	Mn	48593.34	24090.77	16111.99	201590.02
05	-Do-	Gurandih	31.549	-do-	29782.26	14764.93	9874.94	123543.50
06	M/s. A.M.T.C. Ltd.	Mahulsukha	399.484	-do-	376924.10	186854.91	124375.53	1553356.14
07	-do-	Narayan West	349.254	Iron & Mn.	329595.78	163450.67	109319.60	1367578.07
08	M/s National Enterprises	Raikela	45.932	Iron	43339.01	21496.18	14376.72	179809.71
09	M/s K.C.Pradhan	Nuagaon	39.888	Mn.	37654.27	18667.59	12484.94	156221.41
10	M/s. S.D. Sharma	Nuagaon	12.942	Iron & Mn.	12217.29	5056.86	4050.35	50650.37
11	-do-	Raikela	14.955	Iron	14096.75	6980.64	4674.03	58477.33
12	M/s Penguin Trading & Agencies Ltd.	-do-	45.274	-do-	42607.17	21108.13	14453.64	180840.75
13	M/s Jindal Steel and Power Ltd.	Tentra Raikela, Bonaigarh	257.847	do-	261157.57	139392.40	93225.11	1166355.23
14	M/s S.N.Mohanty	Jaldihi	336.065	Iron & Mn.	317245.35	157276.42	105185.35	1316301.64
15	Sri D.C. Mishra	Kamanda	43.067	Bauxite	40635.35	20155.36	13473.87	168690.37
16	M/s Tenni Minerals (P) Ltd.	Tahanal	29.810	Iron & Mn.	28140.84	13951.00	9332.53	116796.55
17	-do-	Nuagaon	7.85	Mn	7410.40	3673.50	2457.33	30749.83
18	M/s Orind Ltd	Tentra	106.136	Bauxite	100181.27	49672.58	33221.15	415836.41

19	M/s Gitanjali Mohanty	Rourkela	67.582	Iron	63797.41	31078.38	21153.17	264551.11
20	Smt. Kavita Agarwal	Tentre	72.566	-do-	68507.30	33960.69	22713.15	284168.45
21	M/s T.C. Sudhraj	Bhaldungri	110.475	Soapstone	104259.10	51704.17	34579.93	432033.75
22	M/s C.P. Sharma	Rourkela	69.606	Iron	65708.06	32575.51	21785.52	272577.10
23	M/s O.M.M. (P) Ltd.	Tentulikh	35.610	Mn	33615.84	16655.46	11146.03	139445.78
24	M/s. S.N. Mohanty	Nuaagan	29.257	Iron & Mn.	27618.61	13692.28	9157.44	114570.41
25	TISCO	Malda	1734.272	Iron & Mn.	1637152.77	811535.30	542627.14	6791400.15
26	-do-	-do-	95.650	-do-	90293.60	44764.20	29939.45	374593.40
27	-do-	-do-	109.420	-do-	103292.48	51208.56	34248.46	428488.72
28	-do-	-do-	86.975	-do-	82104.40	40704.30	27222.15	340594.10
29	-do-	-do-	95.230	-do-	89947.15	44592.44	29822.26	373129.22
30	O.M.M. (P) Ltd	Palmunda	507.316	Mn	792106.30	377523.60	252609.91	3161449.46
31	-do-	Bhaniphusum	8.490	Mn	6077.11	3977.06	2559.57	33276.17
32	M.G. Mohanty	Gorua	82.083	Iron & Mn.	77450.35	38474.04	25591.28	321437.03
33	Freegrade & Co (P) Ltd.	Nadidih	121.405	-do-	114600.32	56917.54	37929.77	476421.00
34	B.I.Co. Ltd	Nadidih	73.855	-do-	69719.12	34604.14	23116.60	290215.15
35	-do-	Tehera	137.480	-do-	179751.72	64340.64	43031.24	538371.06
36	National Enterprise	San Indpur	75.000	-do-	70800.00	35150.00	23475.00	293750.00
37	S.N. Mohanty	Gorua	14.159	-do-	13356.10	6626.41	4431.77	55440.64
38	Rungta Mines(P) Ltd.	Kalimera	210.528	Mn	198730.43	98527.10	65895.25	824427.65
39	Rungta Sons(P) Ltd.	Orenjhat	82.916	Iron	78272.70	38804.60	25952.71	324589.06
40	-do-	San Indpur	147.100	Iron	138862.40	68842.00	46042.30	575543.60
41	K.C. Pradhan	Gorua	12.530	Iron & Mn.	11826.52	5864.04	3921.80	49037.43
42	Mohandin Sharda	Bolani Kharjundih	31.566	-do-	29790.20	14772.59	9880.16	123512.46
43	-do-	Dalite	32.2748	-do-	30461.61	15151.41	10133.31	126779.72
44	M.G.Mohanty	Ferabeda	19.425	-do-	18337.20	9090.90	6080.03	76058.30
45	S.N.Mohanty	Jaldi N	336.065	Iron & Bauxite	317245.36	157278.42	105156.33	1315000.54

46	Sun Alloys Minerals Ltd.	Parpunda	1,197	Mn	764	38000.20	25414.89	31790
49	J.N.Jaitnaik	Bhanjabali	18,000	Iron	19292.00	8424.00	9534.00	70485.00
50	O.M.M(P) Ltd.	Sun Pandi	29,570	Mn	27054.49	15417.56	8973.71	119271.72
51	Gupta Minerals (P) Ltd	Kanther Kera	73,650	Mn	69328.43	34460.00	23055.35	236425.15
52	S.A.Helim	Gogina	25,847	Iron	24299.57	12096.40	8050.11	101218.05
53	M/s S.D. Sharma	Bhakdwari	155,430	Soapstone	140725.97	72741.24	43849.59	608863.88
54	M/s J.C. Budhraj	-do-	110,479	-do-	104297.18	51704.17	34379.93	492635.76
55	M/s JK & KP Jhujhunwala	Kulgher	24,167	Quartzite	22813.65	11315.15	7554.97	94637.97
56	M/s SAIL	TSDA R.F.	15,1835	Iron	14323.51	7105.22	4752.53	59453.76
57	-do-	-do-	22,9982	Iron	21710.30	10762.16	7193.44	90060.95
58	Meradin sarada	Manda Jada, Gatua, Sidan	55,6037	Iron & Mn.	52469.89	10762.16	7193.44	120540.54
TOTAL					5317407.61	4033702.65	3009940.06	3850444.12

FINANACIAL FORECAST FOR LEASES

LIST OF NON-WORKING MINES OF JODA CIRCLE

S.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	Ulburu	82.726	Iron & Mn. & Quartzite	59213.34	29355.77	19633.24	248635.02
2	B.K.Mohanty	Ulburu	56.942	Iron Mn & Limestone	53331.05	26547.02	17832.22	222977.34
3	T.B.Lal	Kusa Bereada	77.497	Iron Ore	73157.17	36288.00	24278.66	303476.25
4	S.N.Mohanty	Kaptipan	15.379	Iron	14515.83	7196.00	4813.31	60220.25
5	Jradhan Mishra	Ulburu	30.515	Iron	28804.27	14280.00	9550.57	119465.51
6	Dr. S.Pradhan	Daitarpur	17.505	Iron	17204.72	8532.34	3914.07	48980.50
7	O.M.C.	Raica Sichemath	78.711	Iron Ore	74303.18	36836.76	24636.84	308232.76
8	A.R.Das	Ulburu	3.076	Mn. Ore	2903.74	1439.57	962.79	12049.62
9	B.C.Deb	Dadwa	314.934	Iron & Mn.	103497.70	53786.11	26374.34	450081.54
10	M.R.Das	Deojhar	11.537	Iron Ore	10890.95	5399.42	2811.08	45175.89
11	S.K.Sarda & M.L. Sarda	Thakurani	947.046	Iron	894011.42	443217.53	296453.40	3703032.14
12	K.S.Pradhan	Bolani	17.10	Iron Ore	15147.45	8002.90	5352.30	66862.65
13	Kisholeswar Minerals	Ralka	6.225	Iron & Mn	5879.23	2914.70	1949.30	24356.85
14	R.P.Das	Chormaida	141.122	Mn	133216.17	66045.10	44171.19	552033.75
15	K.C.Pradhan	Pareajoda	12.10	Iron & Mn	11422.40	5662.80	3787.20	47363.00
16	Fragon (P) Ltd.	Khantapani	18.619	Iron & Mn	17572.56	8711.52	5825.30	72806.34
17	O.M.C.	Dungoni	350.40	Iron	330697.60	163927.20	109632.00	1369846.40
18	O.M.C.	Sekmadih	554.356	Iron Ore	523252.09	259416.31	173543.43	2170015.10
19	M.Rehman	Topadih	26.475	Iron	24993.34	12390.77	8288.39	103630.32

20	M/S. O.M.S	Laidapada	28.323	Mn	25741.63	13257.50	6356.35	110932.45	
21	D.C.Coin	Daipchar Bl-A	39.961	Iron	84023.15	42301.75	20187.79	352207.28	
22	D.C.Coin	Daipchar 81-B	0.697	Iron	587.97	326.20	213.15	2729.40	
23	-do-	Daipchar 81-D	7.697	Iron	7265.07	3602.20	2409.10	33741.45	
24	-do-	Daipchar 81-E	1.012	Iron	953.33	472.62	316.76	3982.90	
		Daipchar 81-C	2.002	Iron	1669.69	826.94	620.69	7835.83	
25	-do-	Tirinapahar	79.30	Iron	72855.20	37112.40	23820.00	310536.60	
26	O.M.C.	Ronchhabda	26.226	Iron Ore	24767.34	12273.77	8203.74	102701.02	
27	Rungta & Sons	Perulieda	170.170	Iron & Mn	151640.45	79530.56	53203.21	666365.77	
28	O.M.C	Kalaschi	12.674	Iron	12909.78	6399.43	4279.96	53547.39	
29	FACOR	Unchabali	105.127	Iron	100170.39	49603.74	33213.28	415537.35	
30	Smt. Indrani Patnaik	Unchabali	10.117	Iron & Mn	9550.46	4734.76	3160.62	39518.17	
31	B.N.Mohanty	Chermida	416.835	Mn	363491.74	195079.79	130459.39	1632025.35	
32	O.M.C.	Gurubaca	149.297	Iron Ore	140349.01	69431.05	46435.74	580905.31	
33	C.S.T.L	Nalbanga	69.073	Iron & Mn	65059.23	33749.70	21509.[illegible]	274033.05	
34	T.P.Mohanty	Nalbanga	25.226	Iron & Mn	27530.34	12677.77	9147.74	114449.32	
35	T.P.Mohanty	Sraharchhari	439.917	Iron & Mn	405847.85	207201.16	134564.62	1683654.97	
36	P. Lal	Kalaschi	31.346	Mn	70600.02	14655.63	9611.30	120750.94	
37	S.N.Paul	Kalaschi	95.568	Iron & Mn	61160.19	45193.62	30225.78	375160.79	
38	P.P. Thakur	Ramchandrapur	38.30	Chinaclay	35155.20	17924.40	11997.32	149992.80	
39	Anil Ch. Mohanta	Dhabakuchuda	205.870	Pyrophillite	104341.28	40247.15	64437.21	806125.59	
40	Black Stone Mining				4322532.29	2142952.32	1433225.51	17911162.69	
TOTAL									

FINANACIAL FORECAST FOR LEASES

LIST OF NON-WORKING MINES OF KEONJHAR CIRCLE

S. No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year (Rs.)	2nd Year (Rs.)	3rd year to 12th year per year rate(Rs.)	Total (Rs.)
01	MESCO Steel Ltd.	Redakoin & Jahabeda	101.480	Iron Ore	1039707.12	515492.64	344793.24	4710325.53
02	DO-	Bhalhari & Sunira	494.987	-do-	457267.73	331553.92	354531.95	1973350.33
03	S.P. Goenka	Silkheswari	1050.00	Industrial Garnet	891000.00	491400.00	323640.00	4116630.00
04	G.Goenka	Emabandapur	363.764	-do-	343350.22	170241.55	113655.13	1524455.07
05	-do-	Kalanga	1236.00	-do-	1166764.00	578440.00	385868.00	2840175.00
06	H.N. Ratnar	Dolimpur	2.7559	Pyrophillite & Soapstone	2601.57	1290.75	862.60	10792.10
07	-do-	-do-	132.486	Pyrophillite	125056.78	62025.49	41466.12	518915.16
08	S.P. Patnaik	Jamudiha	20.50	Pyrophillite	15352.00	5594.00	6419.50	86428.00
09	OMC	Block-C (Bucketi)	99.305	Iron Ore	942159.92	467070.74	312359.97	3909311.33
10	OMC	Sinkati	16.21	Iron Ore	17190.24	8522.38	5699.72	71310.36
11	Keonjhar Minerals	Angara	25.225	Pyrophillite	27521.23	13675.70	9148.30	114456.55
12	S.L.Neutia	Medapur	43.483	Pyrophillite,Quartz & Quartzite	41047.55	20350.24	13610.16	170270.45
13	R.K. Agarwal	Telaipur & Sundaria	365	Soapstone, Asbestos & Tasser	383440.00	190180.00	126505.00	1587030.00
14	R.K.Thanwar	Kurda	212.240	Pyrophillite,Quc	200084.98	99328.32	66401.12	831131.44

				Iron & Quartzite					
15	D.B.Patnaik	Jamkhandi	171720	PQ & Q	151085.32	80163.33	63813.45	179787.72	
16	-do-	-do-	71273	-do-	20179.51	9979.10	6374.10	23576.57	
17	B.L.Nayalia	-do-	76777	-do-	79671.49	3633.64	24031.20	30866.73	
18	S.P.Patnaik	-do-	20 5087	-do-	193517.7	3998.07	6410.22	80312.07	
19	S.N.Das	Quartzite	55 7455	P.Q. & Q	26317.85	12515.94	8371.37	104735.17	
20	B.L.Nayalia	Sagalpur,Barasi & Kendapara	49.232	Asbestos	46479.01	23040.66	16439.62	197722.51	
21	Narayan Sahu	Lakheda	141.33	Iron Ore	193413.62	80142.44	44238.29	253468.28	
22	P.C.Mahapatra	Upper Sarenta	69.70	P.Q. & Q	65123.80	32510.60	21815.10	279945.70	
23	D.M.Minerals	Jhirunda & Gandhamardan	241.653	Iron	720195.15	1130855.54	75635.98	946333.73	
24	A.K.Gridhar	Jaldha	129.159	Pyrophyllite	121893.86	50405.13	40438.25	50943.75	
25	Orissa Industries Ltd.	Phulgumi	6.182	Quartz	8339.81	2692.16	1934.07	24703.71	
26	A.C.Dutta	Tenar	416.000	Steatite	397724.60	194608.00	102208.00	462905.00	
27	S.K.Das	Kendapitha	1.7806	Quartzite & Quartz	1630.60	803.32	557.35	5612.99	
28	M.P.Singh	Kendami	13.05	Quartz	12314.20	6107.43	4084.59	51038.80	
29	P.K.Singh	Nanda	2.55	Quartzite & Quartz	2125.18	1092.49	804.57	11317.24	
30	D.K.Raut	Asha	13.55	P.Q. & Steatite	12157.12	6842.04	2475.74	54745.56	
31	M.B.Chakra	Bandua	5.00	Quartz	4730.00	2340.00	1503.00	16687.00	
32	Hariharsahu	Tokarpada Kusumjori	174.559	Pyrophyllite, Steatite,Q&Q	164758.12	81353.51	54638.07	5835.3.04	
33	Hariharsahu	Tikaripada	53.03	Pyrophyllite, Steatite,Q&Q	37567.37	42561.44	29134.04	384531.28	
34	Bisra Das	Hanas	42.0331	Pyrophyllite, Quartzite & Quartz	40578.34	20087.76	13437.43	168178.79	
35	T.L.Mahir	Khola-Sari	42.50	Pyrophyllite	104520.10	35600.00	14502.50	338.80.00	

		Stock-A			43691.23	21759.66	14552.04	100079.42
35	-do-	Khuntamara	46 498	Pyrophillite	132315.24	75767.48	50934.33	432367.58
37	Amalco Mines & Minerals	Alinga	157 4.	Quartz Quartzite & Steatite				
					93250.7?	46108.20	13835.04	133793.31
38	Rajesh Ku. Bhuyan	Alinga	58.577	Pyrophillite, Steatite & Talc				
					17727.76	4793.72	5891.27	73507.64
39	Minerals & Metals (P) Ltd.	Pithagola	16.79	Steatite				
					47247.64	20954.48	14847.10	175671.70
40	Minerals & Metals (P) Ltd.	Kulallankum	44.56	Steatite Quartz & Quartzite				
					35022.93	15185.49	10136.05	127674.23
41	K.B. Pahi	Rampakote	32.45	Pyrophillite	23375.10	11590.49	7721.78	100[illegible]
42	A.K. Banerji	-do-	24.766	Pyrophillite, Quartz & Quartzite				
					22578.58	10151.15	10501.94	105145.08
43	K.B. Sarkar	Rampakote & Pirkaoli	34.501	Pyrophillite				
					4351.61	2122.69	1478.34	17945.21
44	A.K. Jain	Kohore	4.557	Pyrophillite	4297.09	2130.34	1424.78	17925.63
45	-do-	-do-	4.552	Pyrophillite	75591.74	37475.57	25083.73	312577.92
46	Uttkal Minerals	Rampakote	60.079	Pyrophillite	3203.56	1539.20	1051.20	13351.34
47	K.B. Pani	Rebana	1.6226	Pyrophillite	100122.93	53643.32	35350.08	445320.68
48	Harihar Sahu	Mangola	124.537	Pyrophillite & Red Ocher				
					23781.75	11789.41	7565.05	95561.46
49	R.K. Mohanta	Panasa	35.159	Steatite	24072.00	11934.00	7661.50	96858.00
50	Uttkal Mineral	Rebana	35.500	Pyrophillite	78647.94	39085.69	25741.45	327360.4[illegible]
51	R.K. Mohanta	Hunde	53.339	Quartz Quartzite & Pyrophillite				
					60742.31	30085.36	22135.30	276951.27
52	B.S. Sarkar	Sodinarna	70.773	Pyrophillite Steatite,				

53	GWC	Sangur, Madhuban & Bidyadharpur	208.00	S & CT	198352.00	97 4.50	65134.00	614528.00
54	GWC	Paule	207.36		195747.84	97044.48	84900.69	812031.73
55	GWC	Banisanka	1582.633		1494005.55	740672.24	495364.13	6157500.52
TOTAL					9305.518.32	4643730.17	3135754.23	35858494.73

FINANACIAL FORECAST FOR LEASES

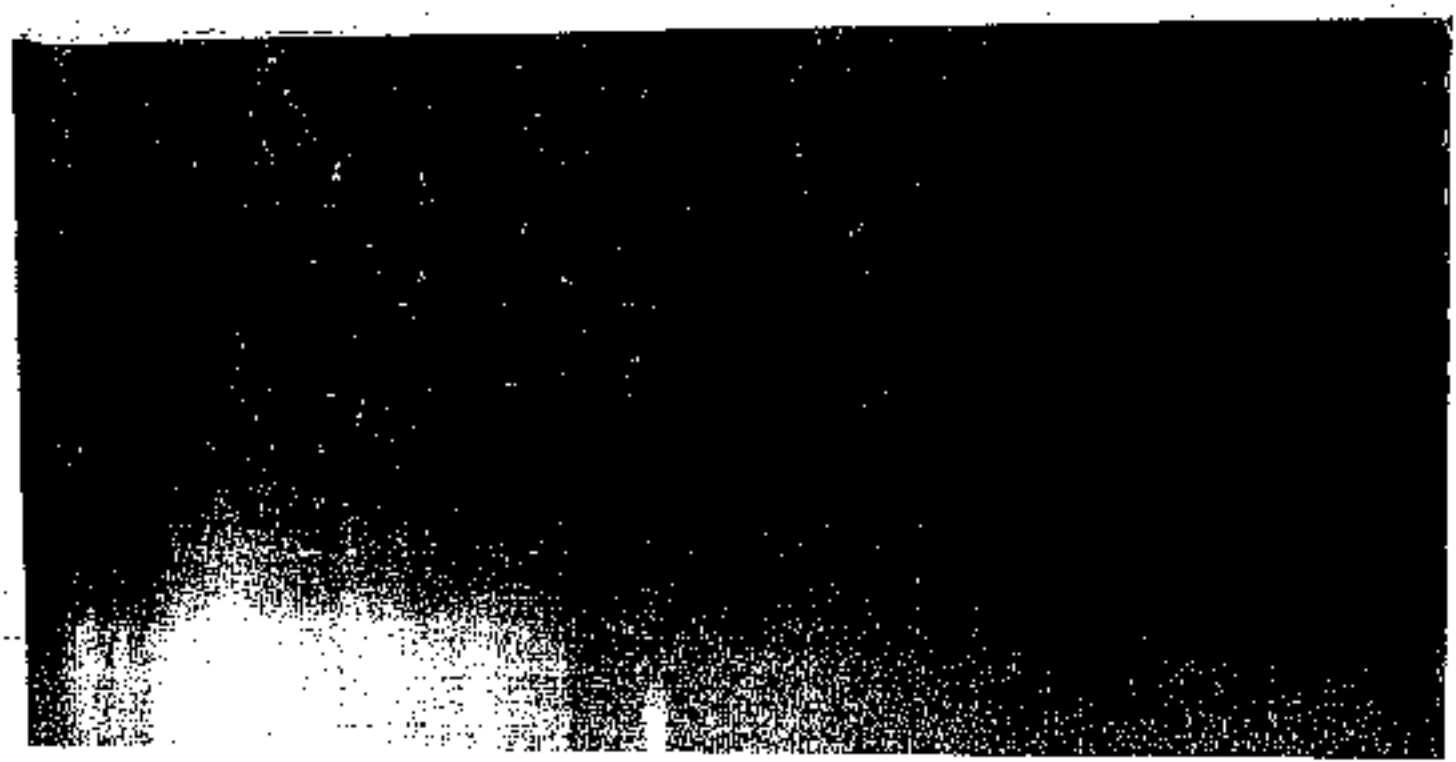
LIST OF NON-WORKING MINES OF BONAI CIRCLE

Sl. No.	Name of Lessee	Location	Area in Hectares	Minerals	1st year @ Rs.944/-	2nd year @ Rs.488/-	3rd year to 10th year per year rate @ Rs.317/-	Total (Rs.)
1	M/s. SAIL	-do-	8.140	Iron	2954.16	7459.52	903.52	[illegible]
2	M/s. SAIL	-do-	77.340	-do-	72978.96	36475.57	24588.22	[illegible]
3	-do-	-do-	15.848	-do-	14933.07	7466.80	4702.53	[illegible]
4	M/s K. J. S. Ahluwalia	Jantikoran	29.575	Iron & Mn.	27918.80	13941.70	8750.98	[illegible]
5	M/s G.M.C. Ltd.	Kasnira	105.351	Iron	994915.23	497459.20	130944.49	[illegible]
6	M/s G.M.C. Ltd.	Bhangasola	141.675	Iron	133741.20	66902.90	44344.26	[illegible]
7	E.M.I.L.	Gomlai	167.642	Mn.	158282.95	79190.28	48274.85	[illegible]
8	E.M.I.Ltd.	Sarkunda	160.900	Mn.	151868.60	75931.32	50301.76	[illegible]
9	Deepcon & Co. (P) Ltd.	Sarkunda	393.556	Mn	371516.09	185784.27	123157.03	[illegible]
10	U.C. Mishra	Kamonda	50.700	Mn	47850.60	23925.50	15999.10	[illegible]
11	Sri Kanta Agrawal	Kusumdih	47.484	Mn.	44824.50	22397.25	14852.41	[illegible]
12	B.I. Co. Ltd.	Kusumdih	57.176	Mn	49734.14	24418.57	16331.06	[illegible]
13	M/s G.M.C. Ltd.	Kumira	1202.47	Iron	1145571.68	557435.94	372608.11	[illegible]
14	M/s G.M.C. Ltd.	Gonthe	408.5731	Iron	385975.71	191352.63	127977.25	[illegible]
15	T.F. Minerals & Industry	Bhutuan	41.419	Mn.	39344.34	19002.54	12713.75	[illegible]
16	Grind Ltd.	Kusumdih	102.750	Bauxite	97003.76	48505.72	32170.27	[illegible]
17	SAIL	Tentra	117.440	Bauxite	111990.36	54961.92	36764.72	[illegible]
18	M/s G.M.C. Ltd.	Gokunda	560.570	Iron	529178.00	257346.75	172458.11	[illegible]
19	M/s G.M.C. Ltd.	Kolte	294.472	Iron & Mn.	277981.57	137612.90	92169.74	[illegible]
20	M/s M.S. Mohanty	Kusumshi	153.977	Mn.	145945.57	72058.90	48193.24	[illegible]
21	M/s Penguin Trading & Agencies	Bandhan Ankeda	40.104	Iron & Mn	37988.10	18798.67	12551.55	[illegible]
22	M/s Orissa Cement	Kamanda &	16.910	Bauxite	15947.54	7857.09	5254.53	[illegible]

	Ltd	Kirkumdih						
23	M/s Mines Minerals & Chemicals	Lusi	25,503	Iron & Mn.	24150.35	11972.84	3007.46	100195.03
24	M/S Penguin Trading & Agencies Ltd.	Sirlimar Tamulidihi	88,548	Bauxite	82513.71	41487.23	27746.87	347 45.47
25	M/s Mangalam Carbide Ltd	Kumdal Bedbhum Tentulbahal	287 442	Iron & Mn	271352.91	134528.65	59577.22	1175624.17
26	Sri Rakhi Singh	Lusi	44 613	-do-	42134.67	22878.88	10903.37	174701.2
27	M/s Mangalam Carbide Ltd	Dangua	31 202	-do-	29911.23	14830.02	9705.01	122421.97
28	Sri Bakshi Singh	Tentul Tenga	24,533	-do-	23229.18	11505.25	7635.47	99279.18
29	M/s Mangalam Carbide Ltd	Tentul	17 336	-do-	17559.19	8247.25	4174.17	69220.17
30	Sri Ganesh Agarwal	Kamanda	21,477	-do-	20274.29	10051.24	5722.40	84122.82
31	Sri S Sahoo	Sigimbe & Kunug	45 972	Bauxite & Iron	43357.67	21514.90	14189.34	180578.35
32	M/s Steel & [illegible]	Kamanda	98,120	Iron	65425.24	32520.16	15061.55	1284[illegible]
33	Sri Rajesh Jaiswal	Kirkumdih	21,509	Iron & Mn.	20304.50	10256.21	5732.13	84229.24
34	Sri H.S. Pattanaik	Kendal	16,510	do-	15583.04	7913.80	6252.33	60219.39
35	Sri N.K. Patel	-do-	55,505	-do-	52365.72	25976.34	17373.07	217357.53
36	Sri P.C. Agarwal	Lusi & Kendal	21,562	-do-	20354.53	10097.02	5745.91	84135.79
37	Sri Bangey Das	Raisuan	27 725	Iron & Mn	26178.23	12978.73	5678.39	103522.35
38	Sri N.K. Agarwal	Gandha	102,345	-do-	96613.86	47937.43	32033.99	400763.02
39	Sri R.S. Chauhan	Dangua	28 449	Iron	26855.86	13319.13	3504.54	111400.23
40	Sri Bangey Das	Raisuan	17 613	Iron & Mn.	16631.57	7258.65	4585.37	57140.37
41	G.M.C	Kalta	294 972	Mn	278453.57	138046.55	92329.24	1[illegible]110.33
42	M/S Nizabel Ispat Nigam	Kendalin, Sari Risk benus Hanabhanga	1650,000	Iron & Mn.	1749400.00	603800.00	579000.00	7746[illegible]
43	M/s Mangalam Carbide Ltd.	Shanjepali	106 837	Bauxite	100854.13	45938.72	33439.68	47337.26
44	M/s S.N. Mohanty	Sanua	3 604	Mn	3402.16	1595.57	1125.95	14112.24

					95006.77	13281.00	9996.29	1[illegible]202.68
45	M/s M.G.Mohanty	Patabera Dhaghat	28.397	Iron	42650.00	21060.00	14055.00	176370.00
46	Sh. Sayed Abdulla Salim		45.00	Iron & Mn	1020[illegible]2.10	90955.41	34028.52	4[illegible]87.84
47	M/s Penguin Trading & Agencies Ltd.	Kalimang Beldih	103.509	-do-	16200.66	8353.21	5573.29	69778.00
48	M/s C.P. Sharma & Sons	Rankai Sonua	37.506	-do-	14471.49	7349.64	4731.70	5[illegible]624.77
49	Sh. Subhas Agarwala	Sari Dungri Sonajhari	15.277	Iron Mn & Bauxite	15216.00	6552.00	4382.00	54874.00
50	M/s M.G. Mohanty	Puteasahi	14.020	Iron & Mn	75804.27	14280.04	8540.07	113484.61
51	M/s Kanakdhara Mining & Minerals (P) Ltd.	Bad Sagali Patmunda	30.513	-do-	92558.83	14158.40	9459.10	1[illegible]3470.75
52	Sh. P.C. Agarwal	Sonajhari	30.253	-do-	17020.32	9438.04	5843.39	72805.46
53	Sh. Sayed Abdulla Salim	Sud Jaipur	18.030	-do-	16252.35	9054.22	6362.10	75645.79
54	Sh. L.S. Manik	Tekerai	19.395	Bauxite	11664.06	5782.51	3607.42	48395.10
55	Sh. N.K. Paul	Tekerai	12.356	Iron & Mn.	54373.51	26355.85	18026.17	225553.77
56	Sh. N.K. Agarwal	Kurmahi Adagbat	57.596	Iron & Mn	14229.84	7014.63	4718.16	59029.76
57	M/s National Enterprises		15.074	Iron	6455.76	2709.72	1512.27	22873.04
58	Sh. Shrinivas Sahoo	Karra Tekerai	5.79	Iron & Mn.	5341.76	1656.72	1108.02	13862.04
59	Sh. G.L. Agarwal	Sonua	9.640	-do-	21955.20	10904.40	7292.00	91242.50
60	M.S. Ahluwalia	Sonua	23.300	Iron & Mn.	394925.22	195739.20	130944.40	1636[illegible]0.38
61	C.M.C	Kashipur	418.353	Iron	133741.20	58303.92	44344.29	854799.30
62	-do-	Bhaijapali	141.675	Iron	93704.30	31597.51	21172.40	284[illegible]57.34
63	M/s M.G. Mohanty	Ramdal	67.484	Iron & Mn	417559.88	207500.57	130448.48	1732150.34
64	Sh. M.R. Das	Jhunbera Nusipasali Shimaliga	442.579	Soapstone				
65	M/s Indian Marble Co.	Jamirdi	50.546	-do-	4769	2370.00	1652.20	[illegible]

65	M/S Matadin Sharda	Bardaberdanbhum	164.573	Quartzite	164834.66	70558.06	51229.65	641272.91
		Senbendhabhum						
67	-do-	-do-	102.452	Sandstone	97865.59	48415.54	32980.48	405326.54
68	Sh. Bakshi Singh	Uskudn	148.669	Iron	140639.93	63576.52	46533.08	582481.72
69	M/s O.M.C. Ltd.	Kurmitra	1312.470	-do-	1146955.62	567435.98	379503.11	4750457.40
70	-do-	Uskuda	863.570	-do-	630299.22	202546.70	175458.41	2190313.20
TOTAL					10751703.29	5347965.20	3579743.73	44753507.65



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/Semi-evergreen 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 Ulibura, Kora, Siddhanath, Thakurani etc. areas moist peninsular valley sal is generally noticed. Extensive dry peninsular sal forest is also observed at different places of Siddhanath 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 which 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 (Patali)
2. Alstonia scholaris (Chhatiwan)	6. Mangifera indica(Am)
3. Ficus benghalensis (Bargad)	7. Madhuca longifolia (Mahuf)
4. Salmalia malabarica (Semal)	8. Diospyros melanoxylon (Kendu)

- Avenue trees and ornamentals :

(on roadsides)

1. Pithecellobium dulce	11. Spathodea campanulata
2. Eucalyptus sp.	12. Erythrina variegata
3. Polyalthia longifolia Var. Pendula	13. Acacia 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. racemosa	19. Pterospermum acerifolium
10. Artocarpus heterophyllus	

- Roadside thickets and shrubberies on waste land in and around colony :

1. Ipomoea carnea
2. Lantana camara (Putus)
3. Calotropis gigantea
4. C. procera (Akaon)
5. Ziziphus spp. (Bayer)
6. Argemone mexicana (Sarpuni)
7. Solanum torvum (Kunara)
8. Vitex negunda (Nirgundi)
9. Dodonaea viscosa

- scrubland vegetation:

(* Very abundant)

1. Ipomoea carnea
2. Ziziphus nummularia (Bayer)
3. * Lantana camara
4. Hyptis suaveolens (Ganga tulsi)
5. * Chromolaena odoratum
6. Argemone mexicana (Sarpuni)
7. Calotropis spp.
8. Vitex negunda (Nirgundi)
9. Holarrhena antidysenterica

- Village shrubberies and orchards :

1. Alangium salvifolium
2. Madhuca longifolia
3. Mangifera indica
4. Terminalia alata
5. Planera aquatica
11. Ziziphus nummularia
12. Artocarpus heterophyllus
13. Ficus religiosa
14. Psidium guajava
15. Bambusa spp.
6. Carica papaya
7. Azadirachta indica
8. Schleichera oleosa
9. Ipomoea carnea
10. Vitex negunda
16. Calotropis procera
17. Chromolaena odoratum
18. Lantana camara
19. Hyptis suaveolens

- Plantations :

1. Acacia auriculiformis
2. Cassia siamea (Chakunda)
3. Melia dubia (Mohan m)
7. Polyalthia longifolia
4. Azadirachta indica (Nim)
5. Tectona grandis (Sagon)
6. Alstonia scholaris (Chhatiwan)

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. Sinclaia arborea
2. Adina cordifolia
3. Callicarpa arborea
4. Alstonia scholaris
5. Ficus benghalensis
6. Ficus rumphii
7. Sysygium cumini
8. Mangifera indica
9. Cleistanthus collinus
10. Mitragyna parvifolia
11. Buchanania lanzan
12. Mallotus Philippensis
13. Trema orientalis
14. Macaranga peltata
15. Bridelia retusa
16. Wendlandia heyneii
17. Wrightia arborea
18. Albizia odoratissima
19. Cassia fistula
20. Lagerstroemia parviflora
21. Lannea coromandelica
22. Artocarpus heterophylus
23. Careya arborea
24. Pterocarpus marsupium

- Shrubs & Herbs :

1. Hyptis suaveolens

- Climbers

1. Bauhinia vahlii
2. Combretum roxburghii
3. Butea parviflora

There are many 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, Carissa diocuma, several saplings of Holarrhena

antidysenterica and Cassia fistula, dried up weedy undergrowth of Hyptis suaveolens and Chromolaena odoratum, several herbaceous elements like Spermacoce hispidum, 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 heyneii	16. Cassia fistula
7. Anogeissus Latifolia	17. Ficus benghalensis
8. Acacia sp.	18. Treina 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. Selinum 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 Koro 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 Koro 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 Nakurani Colony areas, towards the east, are practically devoid of forests and natural vegetation.

10 Km. Buffer Zone :

The Koro 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. Hymenodictyon orixense
2. Boswellia serrata	5. Holoptelea integra
3. Cochlospermum religiosum	6. Woodfordia fruticosa

The Kore river harbours patches of semi-evergreen forests on its banks. Representative species of this forest include Ficus virens, Anogeissus acuminata, Lannea coromandelica, Grewia asiatica & Syzygium cumini.

The forests of Sidhanath RF, leading up the ghat road from Bindraban 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. Pretium serratum	7. Aegle marmelos
4. Adina cordifolia	

- Shrubs :

1. Flemingia chappar	3. Desmodium triquetrum
2. Woodfordia fruticosa	

- Climbers :

Combretum roxburghii, Mallotus extensus & Bauhinia vahlii.

The Sidhanath RF towards Kundra role is degraded with open inferior Sal forests in the undulating mines area. Dendrophthoe 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 Jhila side. Secondary forest patches are evident here and there.

The Thakuran RF in this zone is usually Moist Peninsular Sal forest type. The region from Ganeikela to Deojuri and beyond to Mungbidira 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 Baba Jamda town and further northern areas are mostly non-forested and whatever forests are present are of poor quality.

Two rare species viz., Michela champaca and Ixora undulata have been recorded from the Sarcada 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 Mongoose (Herpestes edwardsi), Rufous tailed Hare (Lepus nigricollis-ruficaudatus) and few bats and rats. Occassional appearance 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 decaocto, S. tranquebarica, S. chinensis) Rosecringed Parakeet (Psittacula krameri), Grey Pheasant (Centropus sinensis),

Indian Cuckoo (Cuculus micropterus), Koel (Eudynamys scolopacea), Drongo (Dicrurus adsimilis), Myna (Acridotheres tristis, Sturnus O), crows (Corvus splendens C. macrorhynchos), Tailor Bird (Orthotomus sutorius), Purple sunbird (Nectarinia asiatica), Coppersmith (Megalaima haemacephala), etc.

COLD BLOODED VERTEBRATES

Reptiles

The reptile fauna comprise geckos (Hemidactylusarooki, D. flaviviridis, Gecko gecko), skink (Mabuya carinata), Rock lizard (Psammophilus dorsalis), 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 (Rhacophorus 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 Sinha (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] Sinha, 1977 : Back to the wolfs : 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 scavengers who give valuable finish of the carcass remains of an abandoned kill of major carnivores or the carcasses 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)
Tragulidae	:	Tragulus meminna, Mouse Deer (greatly reduced in number
Bovidae	:	Tetracerus quadricornis, Four-horned Antelope (very rarely seen),

Bos gaurus, Gaur (mainly confined to Karonpada and Tholkabad blocks in limited number).

The Barking Deer (Muntiacus muntjack) 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

- Cercopithecidae

Macaca mulatta, Rhesus Macaque (Population very good)

Presbytis entellus, Langur (Population very good).

Lagomorpha

- 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 study 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 Porahat Forest Divisions of Bihar or to the Jonai 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 hermaphrodites), Common Grey Mongoose (Herpestes edwardsi), Giant Flying Squirrel (Petaurista petaurista) an Indian

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Shah , 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. 39-47.

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 noticed.

Birds

The species of birds commonly seen in the area includes Jungle crow (Corvu macrorhynchos), House crow (Corvus splendens), Pied Myna (Sturnus contra), Common Myna (Acridotheres tristis), Koel (Eudynamys scolopacea), Indian Cuckoo (Cuculus micropterus), Brain fever Bird (Cuculus various), Black Drongo (Dicrurus adsimilis), Purple Sunbird (Nectarinia asiatica), rose ringed Parakeet (Psittacula cynocephala), Alexandrine Parakeat (Psittacula eupatria), Barbet (Megalaima zeylanica), Coppersmith (Megalaima haemacephala), Blackwinged kite (Elanus caeruleus), Pariah kite (Milvus migrans), Whitebacked Vulture (Gypus bengalensis) and various other birds as babblers, flycatchers, bee-eater, pigeons, doves, owlets, etc. The peacock Fowl (Pavo cristatus) is found in certain areas of the forest. Birds like Grey Partridge (Francolinus pondicerianus), Common Quail (Coturnix coturnix), Red Jungal Fowl (Gallus gallus), Red Spurfowl (Galloperdix spadicea), Green Pigeon (Treron

phoenicuroides), house swift (Apus affinis), Common Grey Hornbill (Tockus birostris), Grey shrike (Lanius excubitor), Golden Oriole (Oriolus oriolus), Racket - tailed Drongo (Dicrurus paradiseus), scarlet Minivet (Pericrocotus flammeus), Small Minivet (Pericrocotus cinnamomeus), Tura (Aegithina 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 leschenault), H. brook, H. flaviviridis, Gecko gecko, etc.) Chamelion (Chorsaelon zeylanicus), skinks Mabya carinata, M. macularia, etc.) and various snakes as Python molurus, Dendrelaphis tristis, Ahaetulla nasuta, Bungarus caeruleus, Naja naja, Vipera russel's and others. The occurrence of the Asian Elongated Tortoise (Indotestuda 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 (Ferropterna breviceps), Ornate Microhylid (Microhyla ornata), Marbled Balloon Frog (Uperodon systoma), Tree Frogs (Rhacophorus leucomystax, Polypedates maculatus), Caecilian (Ichthyophis glutinosus), etc.

Terrestrial Invertebrates

Some terrestrial invertebrates, the occurrence of which are very common, are listed below :

Annelids

Leech	:	Hirudinaria sp
Earthworm	:	Pheretima sp.

Arthropoda

Crickets	:	Gryllus linaculatus De Geer
		Teleogryllus testaceus (Walker)
Grasshoppers	:	Aulocobothrus indytes Walker
		Eucophocera pnemorsa Stal
		Hieroglyphus banian (Fabricius)
Butterflies	:	Euploia nais (Forester)
		Precis almana (Linnaeus)
		Precis atlites (Linnaeus)
Odonate	:	Pantala flavescens (Fabricius)
		Tholymis tillarga (Fabricius)
		Orthetrum sabina (Drary)
Termites	:	Odontotermes bellahunisensis Holmgren and Holmgren
		Microtermes obesi Holmgren

Scorpions and centipeds are also commonly seen.

Mollusca

land gastropods	:	Achitina fulica (Bowdich)
		Ariophanta interrupta (Benson)
		Rachis praetermissus (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 study 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) - Common Langur, Presbytis entellus (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 bengalensis(Kerr) Tiger, Panthera tigris (Linnaeus)
* Elephant, Elephas maximus (Linnaeus)
* Mouse-Deer, Tragulus meminna (Erxleben) Four-horned Antelope, Tetraceros quadricornis (Blainville) Sambar, Cervus unicolor (Smith).

Birds : Redheaded Merlin, Falco chicquera (Daudin) Shahin Falcon, Falco peregrinus (Sundeva) II

* Peacock, Pavo cristatus Linnaeus Indian Pied Hornbill, Anthracoceros 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 (Show) 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)
* Russel's Viper, Vipera russelli (shaw)
* Rat snake, Ptyas mucosus (Linnaeus)

Checkered Keel Back, Xenochrophis Piscator (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 interconnected 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 perennial streams viz., the Baitarani, Suna, Champua, Kundra and the Tikkarla. The water of these streams are being used for drinking purpose. Swamps of seasonal nature have been observed in some places along the nalas and rivers. The water bodies other than river is also found in this range area

Plankton

Aquatic microbiota consists mainly of phyto and zooplankton. Plankton are floating organisms, mostly microscopic, which are drifted by current. The study records twenty three types of plankton of which twenty are phytoplankton and rest zooplankton. The study reveals that the density of phytoplankton species are higher than those of zooplankton, among the phytoplankton, 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. Saro 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, lakes and ponds indicates that out of 26 identified taxa, 10 are rooted in the water and the remaining 18 are fringe vegetation. They are rich specially along the combined flow of Jhikarin and Champua nala near Belani 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) 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 0.1 to 2.1 in the entire area.

1.Species Diversity Index

$$H = -\sum_{i=1}^{s} (p_i)(\log_2 p_i)$$

s = number of species

p_i = proportion of total samples belonging to ith species.

$$= \frac{n_i}{N}$$

n_i = 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	1.07	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 Pongosu; AE 5 = Downstream Pongosu; AE 6 = Ilsikarin, AE 7 = Champua; AE 8 Kona near Zindi

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.

E5.3: 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 under the jurisdiction 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 twentieth 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 the loss of large chunks of natural forested tracts and associated 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 some 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 ores 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. They are 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 Contour bund gardening 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 alone

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 photosynthetic 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 termites 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). lead 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., Samta (Jamkela) , Koina (Manoharpur), Gua and Susunguda (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 overwhelming 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 optimum 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 1880 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/C4]
- Moist Mixed Deciduous Forest [3c/C3a]
- Northern/Tropical Wet Evergreen/SemiEvergreen Forest [2B/c3]
- Tropical Riparian Fringe Forest [3S1]

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 Exora undulata have been recorded from the Meghahatuburu 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 Sasangdaburu 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 fauna resources. Elephant (Elephas 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, 26 sp. of birds, 7 sp. of reptiles and 5 sp. of fishes. However, the EMP for Kiriburu & Meghatoburu Iron ores Mines of SAIL provides a list of 65 mammals, 268 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	Occasional	Sporadic	Rare	Total	I	II	III	IV	V
Mammals	10	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 19 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 max mus	Karmpada RF, Ghatkuri RF
	RF-A.1.2 Indian Pangolin	Manis 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 pemina	Karampada RF, Ghatkuri RF
	A.1.10 Gaur	Bos gaurus	Karampada RF, Thelkaped RF
	A.1.11 Four-horned Antelope	Tetraceros quadricornis	Ghatkuri RF, Karampada RF
A.2 Birds	A.2.1 Redheaded Merlin	Falco Chicquera	Kiriburu RF
	A.2.2 Shahin Falcon	Falco peregrinus	Kiriburu RF
	A.2.3. Pea Fowl	Pavo cristatus	Karampada RF, Ghatkuri RF

A. Schedule I	Common Name	Scientific Name	Recorded/Reported /Sighted from
	A. 2.4 Indian Pied Hornbill	Anthroceros elaboricus	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 mulatta	Karampada RF
	B.1.2 Hanuman Langur	Presbytis entellus	Kiriburu
	B.1.3. Asiatic Jackal	Canis aureus	Kiriburu
	B.1.4 Bengal Fox	Vulpes 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	Kundi
B.2 Reptiles			
	B.2.1 Common Indian Monitor	Varanus bengalensis	Kirtibura RF
	B.2.2 Rat Snake	Ptyas mucosus	Kundi
	B.2.3 Checkered keel Deck	Xenochrophis piscator	Kirtibura RF
	B.2.4 King Cobra	Ophiophagus hannah	Goa
	B.2.5 Russel's Viper	Vipera russelli	Kundi

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 trees)

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 heyneii, Aegle marmelos, Woodfordia fruticosa, Maghania serratata.

III (Grasses)

Themeda triandra, Thysanolaena maxima, Heteropogon contortus, Imperata cylindrica

IV (Climbers)

Bauhinia vahlii, Butea superba

Habitat

On hill top and plateau above 800 m msl, in the, 'F' area of the Bulani Mines.

1.2 Moist Peninsular Low-level Sal

(Category C 2e (ii))

I (Tall trees)

Shorea robusta, Terminalia alata, Adina cordifolia, Mitragyna parvifolia, Anogeissus latifolia, Bridelia retusa, Albizia procera, Hymenodictyon orixense, Pterocarpus marsupium, Salmalia malabarica, Gmelina arborea.

II (Medium & Small trees)

Wendlandia heyneii, Clerodanthus collinus, Dalbergia latifolia, Syzygium cumini, Dillenia pentagyna, Dillenia aurea, Diospyros spp., Mallotus philippensis.

II (a) (Bamboos)

Dendrocalamus strictus

III(Shrubs)

Grewia tiliaefolia, Woodfordia fruticosa, Clerodendrum viscosum, Ziziphus oenoplia.

IV (Grasses)

Tricholaena quadrivalvis, Physcholaena maxima, Imperata cylindrica, Heteropogon contortus.

V (Climbers)

Combretum roxburghii, Butea superba, B. parviflora, Bauhinia vahlii, Millettia extensa

Habitat

On lower hills adjacent to the i) Southeastern part of the Thakurani RF, ii) [illegible] area of Balomdinnas at an altitude about 700m and some of the lower slopes below 'F' area; iii) parts of Kero RF

1.3 Moist Peninsular Valley Sal Forests

[Category C 2c (ii)]

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 cerasoides, Syzygium cumini, Schleichera oleosa, Odgenia orientalis, Apiosamixis polystachya, Milusa 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, Thelneda triandra, Chrysopogon maximus.

V (Climbers)

Bauhinia vahlii, Millettia extensa, Butea superba, Dioscorea spp., Combretum roxburghii, Acacia intsia.

Habitat

Valley bottoms with deep loam soils, i) of large portion of Karo RF, Siddhamath, Tinkarani and Ulibari RF of Champa Range, ii) base of the hills below 'I' area, in the 'b' area of Belani Ore Mines.

2. Northern dry mixed decidious forests

(Category 1A c2)

I & II (Large & medium trees)

Anogeissus latifolia, Boswellia serrata, Adina cordifolia, Mitragyna parviflora, Hymenodictyon orixense, Aegle marmelos, Chloroxylon sweitenia, Schleichera oleosa, Lannea coromandelica, Schrebera sweitenioides, Lagerstroemia parviflora, Bridelia retusa, Bauhinia malabarica, Madhuca longifolia, Diospyros montana, Cochlospermum gossypium.

II (a)(Bamboos)

Dendrocalamus strictus.

III(Shrubs)

Petalidium barleroides, Helicteres isora, Strobilanthes auriculatus, Woodfordia fruticosa

IV(a)(Herbs)

Eranthemum purpurescens, Rungia pectinata, Hemigraphis latebrosa, Justicia spp., Eulophia campestris, Habenaria spp., Geodorium dilatatum, Flemingia spp., Dendrobium spp., Vanda tessellata.

V(Grasses)

Eulalia trispicata, Eulaliopsis binata, Apluda mutica.

Habitat

On steep slopes with soils having low moisture content. I), in several patches Ulihiri RF and the southern part of Karo RF near Pocheri and beyond Haramuta towards Pindulipos. The forest of the undulating hilly terrain south of Bhadrasahi in the Siddharath RF.

3. Dry Peninsular Sal Forests

(Category 5B Ck)

I & II (Large & medium trees)

Shorea robusta, Boswellia serrata, Cochlospermum religiosum, Dillenia aureea, Buchanania lanzan, Syzygium caryophyllifolium, Madhuca longifolia, Diospyros melanoxylon, 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, Pseudopogonotherum contortum, Thysanolaena maxima.

Habitat

Areas with comparatively dry soil, specially on exposed dry rocky hill sides and ridges, I) in the Siddhanath RF, ii). in small restricted areas in Kara RF near Pecheri Nala;

4. Moist mixed deciduous forests

(Category 3C/c3a)

I(Large & medium trees)

Terminalia alata, T. belerica, Diospyrou peregrina, Mangifera indica, Anogeissus acuminata, Schinalia mulobarica, Adina cordifolia, Bridelia retusa, Dillenia pentagyna, Hymenodctyum orixense, Kydia Calycina, Mallotus philippensis, Polyalthia cerasoides, Aphanamixis polystachya, Anthocephalus cadamba, Litsea nitida, Micromelum integerrimum.

III(Shrubs)

Alangium salvifolium, Flemingia sp., Cipadessa fruticosa, Petalidium barlerioides, Crossandra oppositifolia, Fagosetron hengladensis.

IV(a)(Herbs)

Raellia beddomei, Dicadiscanthus 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 1) portion of 'C' area of Balani Ore Mines.

5. [illegible]

(Category : 2B/CJ)

I & II (Large & medium trees)

Firmiana colorata, Ficus spp., Aphanamixis polystachya, Michelia champaca, Actinodaphne angustifolia, Macaranga peltata, Senna indica, Mangifera indica, Gluchidion spp., Bischofia javanica, Amoora rohituka, Crataeva nadansanii, Linociera intermedia, Micromelum integerrimum Xylosma longifolium, Albizia Stipulata, Barringtonia acutangula, Premna calycina, Sideroxylum tomentosum.

III(Shrubs)

Ficus peltata, Angiopteris evecta, Hiptage madhablota, Ficus sarmentosa, Antidesma depressa, Cissa robusta, I. sambucina, Daedalacanthus nervosus, Grewia disperma.

IV(a)(Herbs)

Nephrodium spp., Lecanopteris crispa, Curcuma aromatica, Hibiscus purpureus, Triumfetta pilosa, Strobilanthes sesbani, Carex phacota, Curculigo recurvata, Gastrochilus longiflora.

VI(Climbers)

Mezoneuron cucullatum, Entada pursaetha, Clematis gouriana, sciadapsus officinalis, Vitis auriculata, Mucuna fabricata, Smilax leptostachya.

Habitat

Along the streams in the deep and deep valleys, i) near Ghagra falls on Kara River in the surrounding forests of Kara RF, ii) in the Sidahanath RF by the side of the nala.

6. Tropical Riparian Fringing Forests

(Category : 4B1)

I & II (Tall, medium & small trees)

Syzygium heyneanum, S. cumini, Homonoia riparia, Gluchidion velutinum, Ficus spp., salmalia malabarica, Terminalia arjuna, T. alata

III (Shrubs)

Woodfordia fruticosa, *Alangium salvifolium*.

IV (a) (Herbs)

Ludwigia spp., *Polygonum* spp., *Cycthocline purpurea*, *Lepidagathis fasciculata*.

IV (b) (Grasses)

Panicum repens, *Phragmites Karka*, *Saccharum* Spp., *Ischaemum biflorum*.

Habitat

In the deep and damp valleys, in 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.	Schrebera 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	6.00	0.01	52.18
8.	Diospyros melanoxylon	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	Frequency	Density	Abundance	Dominance	I V I
1.	Chromolaena odorata	25.00	34.388	00.00	2.26	61.64
2.	Lantana camara	75.00	33.02	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	50.20
7.	Croton oblongifolius	50.00	0.99	11.50	1.28	52.27
8.	Canthium dicoccum	75.00	3.03	23.67	30.26	108.31
9.	Flacourtia indica	50.00	0.25	3.00	0.09	50.35
10.	Flemingia chappar	4.00	31.09	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	0.39	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.	Pygmaeocremna herbacea	25.00	19.70	40.00	-	-
4.	Blumea malis	25.00	5.91	12.00	-	-
5.	Cynodon archicides	25.00	3.94	7.00	-	-
6.	Nephrolepis 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	37.00	0.02	34.14
3.	Millettia extensa	75.00	9.69	11.33	0.017	84.71
4	Bauhinia vahlii	50.00	9.97	2.63	0.156	0.13
5	Canavalia virosa	75.00	3.42	12.00	-	-
6.	Smilax hyalifolia	50.00	9.12	16.00	0.002	59.12
7.	Ichnocarpus frutescens	25.00	21.37	75.00	0.01	46.36
8.	Merremia tridentata	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	25.37	220.79
2.	Bauhinia lanzan	100.00	7.50	20.33	0.56	108.06
3.	Schleichera oleosa	56.67	4.31	17.50	5.72	76.70
4.	Diospyros melanoxylon	100.00	11.81	32.00	0.51	112.32
5.	Mitrasa 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.	Terminalia 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	6.50	0.10	68.86
11.	Careya arborea	66.67	0.25	1.00	0.003	66.92
12.	Mitragyna parviflora	66.67	0.49	2.00	0.02	67.18
13.	Phyllanthus emblica	66.67	2.46	11.00	0.05	69.18
14.	Boswellia serrata	33.33	0.37	3.00	0.02	33.72
15.	Terminalia tomentosa	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	0.001	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	1.05	7.50	0.02	66.94
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.	Maynea 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 valkii	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 lat. folia	Dhaura
iii)	Madhuca larg folia	Mahul
iv)	Bridelia retusa	Kasi
v)	Cleistanthus collinus	Dhera
vi)	Dalbergia sissoo	Bel: sissoo
vii)	Syzygium cumini	Jamun
viii)	Gmelina arborea	Gambhari
ix)	Lagerstroemia parviflora	Sidha'
x)	Dugeinia dogeinensis	Bandhan
xi)	Pterocarpus marsupium	Piasal
xii)	Schleichera oleosa	Kusum
xiii)	Shorea robuste	Sal
xiv)	Mitragyna orixense	Mitikinia
xv)	Terminelia arjuna	Arjuna
xvi)	Terminelia alata	Asan
xvii)	Xylia xylocarpa	Kangada

15.9 : Appendix - 5

ECONOMICALLY AND MEDICINALLY IMPORTANT PLANTS FROM CHAMPUA RANGE

SI.NO	Scientific Name	Use
i.	Shorea robusta (Sal)	Seed oil edible, medicinal
ii.	Bauhinia lanzan (Char)	Fruit edible
iii.	Alstonia scholaris (chimtina)	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	Madhuca latifolia (Sandia 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 reticsa (Chopri)	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 (Mahua)	Seed oil for cooking & indus. trial uses; flowers edible, yields alcoholic, bark medicinal
xix.	Phyllanthus emblica (Anla)	Fruits edible, medicinal

Sl. No	Scientific Name	Local Name
xx.	Terminalia bellirica (Bahada)	Fruits medicinal
xxi.	Holarrhena antidysenterica (Kurein)	Bark medicinal.
xxii	Syzygium cumini (Jamu)	Fruit edible, medicinal.
Xxiii.	Croton oblongifolius (Masund)	Bark root medicinal.
xxiv.	Cassia fistula (sunari)	Firewood; charcoal, bark for tanning; flowers edible; leaves & fruits medicinal.
xxv.	Zizyphus mauritiana (Barkah)	Fruits edible, medicinal
xxvi.	Mangifera indica (Amba)	Fuelwood; fruit edible.
Xxvii.	Alangium salvifolium (Anjalu)	Bark, root & fruit medicinal; fruit edible.
Xxviii	Psidium guajava (Amrud)	Fruit ediblexxixVitex negundo (Nirgundi)Roots & leaves medicinal; whole plant insect repellent.
xxx.	Calotropis gigantea (Akanda)	Bast fibre; leaves & decoction medicinal
xxxi	Dioscorea belophylla (Kanta alu)	Roots edible.
Xxxii.	Thespesia lampas (Bun-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	Celastrus colinus (Karada)	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 Emballonuridae				
Taphozous 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 (Blyth)	Tickell's Bat	Kiriburu	Rare	
Scotophilus kuhlii (Horsfield)	Greater Yellow Bat Kiriburu	Common		
Order Primates		Siddhanath R.F		

Family Cercopithecidae				
Macaca mulatta(Inuwersan ii)	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	Siddhanath R.F.	Rare	I
Canis aureus Linnaeus	Asiatic Jackal	Siddhanath R.F	Sporadic	II
Vulpes bengalensis (shaw)	Bengal Fox	Kiriburu	Common	II
Cuon alpinus (Pallas)	Dhole Wild Dog	Siddhanath R.F.	Rare	II
Family Ursidae				
Melursus ursinus (Shaw)	Sloth Bear	Siddhanath R.F.(R)	Common	I
Family Mustelidae				
Mellivora capensis(Schreber)	Ratel or Honey Badger	Kiriburu	Rare	I
Family Viverridae				
Viverricula indica (Desmarest)	Small Indian Civet	Siddhanath R.F.	Occasional	II
Herpestes edwardsi (Geoffroy)	Indian Grey Mongoose	Siddhanath R.F.	Common	IV
Family Hyaenidae	Striped Hyaena	Different areas	Sporadic	III
Hyaena Hyaena(Linnaeus)				

Family Felidae		Siddhanath R.F.	Occassional	II
Felis chaus Guldenstaedt	Jungle Cat			
Felis bengalensis Kerr	Leopard Cat	Siddhanathe R.F		
Panthera pardus (Linnaeus)	Leopard		Occassional	I
Order Proboscidia				
Family Elephantidae				
Elephas maximus Linnaeus	Indian Elephant	Siddhanath R.F.	Common	I
Order Artiodactyla				
Family Suidae				
Sus scrofa Linnaeus	Wild Boar	Siddhanath R.F.	Rare	III
Family Tragulidae				
Tragulus meminna (Erxleben)	Mouse Deer	Siddhanath	Rare	I
Family Cervidae				
Muntiacus muntjac (Zimmermann)	Barking Deer	Siddhanath	Sporadic	III
Cervus unicolor Kerr	Sambar	Siddhanath	Rare	III
Family Bovidae				
Order Lagomorpha				
Family sciuridae				
Petaurista petaurista (Pallas)	Common Giant Flying Squirrel	Siddhanath	Rare	II
Ratufa indica(Erxleben)	Indian Giant Squirrel	Siddhanath	Rare	II
Family Hystricidae				
Hystrix Indica Kerr	Indian Crested Porcupine	Different areas	Rare	IV

15.11 : Appendix - 7

BIRDS RECORDED BETWEEN 5 TO 10 KM BUFFER ZONE OF BOLANI ORE MINES

Scientific Name	Common Name	Area of Record	Status	Wild Life Schedule
Order Ciconiformes				
Family Ardeidae				
Ardeola grayii (Sykes)	Pond Heron	Kiriburu	Rare	IV
Ixobrychus cinnamomeus (Gmelin)	Chestnut Bittern	Kiriburu F.R (L)	Rare	IV
Bubulcus ibis (Linnaeus)	Cattle egret	Different parts	Sporadic	IV
Order Falconiformes				
Family Accipitridae				
Elanus caeruleus (Desfontaines)	Blackwinged Kite	Different Places(s)	Common	IV
Milvus migrans (Boddaert)	Pariah Kite	Different places (s)	Occassional	IV
Accipiter virgatus (Temminck)	Besra sparrow hawk	Kiriburu	Rare	IV
Buteo buteo(Linnaeus)	Buzzard	Kiriburu	Rare	IV
Sarcogyps calvus (Scopoli)	Black Vulture	Kiriburu	Rare	IV
Aquila rapax(Temminck)	Tawny Eagle	Kiriburu	Rare	IV
Aquila pomarina Brehe	Lesser potted Eagle	Kiriburu	Common	IV
Ictinaetus malayensis (Temminck)	Black Eagel	Different places(s)	Common	IV
Gyps bengalensis (Gmelin)	Whitebacked Vulture	Different places(s)	Occassional	IV
Circus melanoleucos (Pennant)	Pied harrier	Siddhunath R.F.		
Order Falconiformes				
Family Falconidae				
Falco chicquera Daudin	Redheaded Merlin	Kiriburu	Rare	I
Falco peregrinus Sundevall	Shaheen falcon	Kiriburu	Rare	I
Order Gallformes				

Family Phasianidae				
Francolinus francolinus (Linnaeus)	Black Partridge	Siddhanath R.F.	Rare	IV
Francolinus pondicerianus (Gmelin)	Grey Partridge	Different areas(R)	Rare	IV
Coturnix coturnix (Linnaeus)	Common Quail	Siddhanath R.F.(R)	Rare	IV
Coturnix coromandelica (Gmelin)	Rain quail	Kiriburu	Rare	IV
Perdicula asiatica (Latham)	Jungle Bush Quail	Different areas(R)	Rare	IV
Perdicula erythrorhyncha (Sykes)	Painted Bush Quail	Kiriburu	Rare	IV
Gallopardix spadicea (Gmelin)	Red spurfowl	Kiriburu	Rare	IV
Gallopardix lunulata	Painted Spurfowl	Kiriburu	Rare	IV
Valerianeres				
Gallus gallus (Linnaeus)	Red Junglefowl	Siddhanath R.F.(R)	Sporadic	IV
Pavo cristatus (Linnaeus)	Peafowl	Siddhanath R.F.	Sporadic	I
Order Gruiformes				
Family Turnicidae				
Turnix sylvatica (Desfontaines)	Little Bustard quail	Kiriburu	Rare	IV
Turnix suscitator (Gmelin)	Common Bustard Quail	Kiriburu	Rare	IV
Family Rallidae				
Amaurornis phoenicurus (Pennant)	Whitebreasted Waterhen	Kiriburu	Rare	IV
Order Charadriiformes				
Family Charadriidae				
Family Burhinidae				
Burhinus oedicnemus (Linnaeus)	Stone Curlew	Kiriburu	Rare	IV
Family Glareolidae				
Cursorius coromandelicus (Gmelin)	Indian Courser	Kiriburu	Rare	IV

Order Columbiformes				
Family Pteroclididae				
Pterocles indicus (Gmelin)	Painted Sandgrouse	Kiriburu	Rare	IV
Family Columbidae				
Treron pompadora (Gmelin)	Greyfronted GreenPigeon	Kiriburu	Rare	IV
Treron phoenicoptera (Latham)	Yellow legged GreenPigeon	Siddhanath R.F.	Rare	IV
Streptopelia orientalis (Latham)	Rufous Turtle Dove	Bindrasohi	Sporadic	IV
Chalcophaps indica (Linnaeus)	Emerald Dove	Kiriburu (Susunda) Forest Range (L)	Rare	IV
Psittacula krameri (Scopoli)	Roseringed Parakeet	Different places	Common	IV
Order Cuculiformes				
Family Cuculidae				
Cuculus micropterus Gould	Indian	Siddhanath R.F.(s)	Sporadic	IV
Eudynamys scolopacea (Linnaeus)	Koel	Different places(s)	Common	IV
Taccocua leschenaultia (Lesson)	Sirkeer Cuckoo	Different places(s)	Sporadic	IV
Centropus sinensis (Stephens)	Crow Pheasant	Different places	Common	IV
Order Strigiformes				
Family Strigidae				
Tyto alba (Scopoli)	Barn Owl	Kiriburu	Rare	IV
Otus scops (Linnaeus)	Scops Owl	Kiriburu	Rare	IV
Otus bakkamoena pennaceus	Collared Scops Owl	Kiriburu	Rare	IV
Bubo bubo(Linnaeus)	Eagle-Owl	Kiriburu	Rare	IV
Bubo coromandus (Latham)	Dusky Horned Owl	Kiriburu	Rare	IV
Strix ocellata (Lesson)	Mottled Wood Owl	Kiriburu	Rare	IV
Strix leptogrammica Temminck	Brown Wood Owl	Kiriburu	Rare	IV
Order Caprimulgiformes				
Family Caprimulgidae				

Caprimulgus affinis Horsfield	Franklin's Nightjar	Kiriburu	Rare	IV
Order Apodiformes				
Family Apodidae				
Apus affinis (J.E. Gray)	House Swift	Belepada	Common	IV
Cypsiurus parvus (Lichtenstein)	Palm Swift	Kiriburu	Sporadic	IV
Order Coraciiformes				
Family Alcedinidae				
Alcedo atthis (Linnaeus)	Common Kingfisher	Different water bodies	Occassional	IV
Halcyon smyrnensis (Linnaeus)	White-breasted Kingfisher	Different water bodies	Occassional	IV
Family Meropidae				
Merops leschenaulti Vieillot	Chestnut-headed	Kiriburu	Rare	IV
Merops philippinus Linnaeus	Blue-tailed Bee-eater	Kiriburu	Sporadic	IV
Merops orientalis Latham	Green Bee-eater	Ulibura	Sporadic	IV
Family Coraciidae				
Coracias benghalensis (Linnaeus)	Indian Roller	Nagamundi	Rare	IV
Order Piciformes				
Family Capitonidae				
Megalaima lineata (Vieillot)	Lineated Barbet	Kiriburu	Rare	IV
Megalaima haemacephala P.L. Sclater	Coppersmith	Different places(s)	Common	IV
Family Picidae				
Microtemnus brachyurus (Vieillot)	Rufous Woodpecker	Kiriburu	Rare	
Picoides nanus (Vigors)	Pygmy woodpecker	Kiriburu	Rare	IV
Hendricus canente (Cassin)	Heartspotted Woodpecker	Kiriburu	Rare	IV
Chrysocolaptes lucidus (Scopoli)	Large Goldenbacked Woodpecker	Siddhanath R.F.	Occassional	IV

Order passeriformes				
Family alaudidae				
Pitta brachyura (Linnaeus)	Indian Pitta	Kiribaru	Rare	IV
Eremopterix grisea (Scopoli)	Ashy-crowned Finch lark	Siddhamath R.F.	Common	IV
Ammomanes phoenicurus (Franklin)	Rufous-tailed Finch Lark	Siddhamath F.F.	Common	IV
Family hirundinidae				
Hirundo concolor Sykes	Dusky Crag Martin	Kiribaru	Rare	IV
Hirundo rustica Linnaeus	SwallowIndian cliff Swallow	Siddhamath F.F.(s) Kiribaru	Occassional Rare	IV. IV
Hirundo flavicula Blyth				
Family Oriolidae				
Oriolus oriolus (Linnaeus)	Golden Oriole	Ulibaru R.F.(s)	Occassional	IV
Family Dicruridae				
Dicrurus adsimilis (Bechstein)	Black Drongo	Different places(s)	Common	IV
Dicrurus hottentottus (Linnaeus)	Hair-crested Drongo	Siddhamath R.F.(S)	Rare	IV
Dicrurus paradiseus (Linnaeus)	Greater Racket-tailed Drongo	Ulibru R.F	Occassional	IV
Family Artamidae				
Artamus fuscus Vieillot	Ashy Swallow-shrike	Kiribaru	Rare	IV
Family Sturnidae				
Sturnus contra (Linnaeus)	Pied Myna	Different places(s)	Common	IV
Acridotheres tristis (Linnaeus)	Common Myna	Different places(s)	Common	IV
Acridotheres fuscus (Wagler)	Jungle Myna	Siddhamath R.F.	Sporadic	IV
Gracula religiosa Linnaeus	Hill Myna	Siddhamath R.F.	Sporadic	IV
Family corvidae				
Dendrocitta vagabunda	Indian tree	different places(s)	IV	

(atthum)	pie			
Corvus splendens vieillot	house Crow	Different places (S)	common	IV
Scientific Name	Common Name	Area of record	status	Wild Life Schedule
Corvus macrorhynchos Wagler	Jungle Crow	Different places (S)	common	IV
Family Campephagidae				
Tephrodornis gularis Raffles	Woodshrike	Kiriburu	Rare	IV
Coracina melaena (Rappell)	Black headed Cuckoo shrike	Kiriburu	Rare	IV
Pericrocotus flammeus (Forster)	Scarlet-Minivet	Different places (S)	Common	IV
Pericrocotus roseus (Vieillot)	Rosy Minivet	Siddhamalli R.F.(S)	Occassional	IV
Pericrocotus cinnamomeus (Linnaeus)	Small Minivet	Different places(S)	Common	IV
Pericrocotus erythropygius Jerdon	White-bellied Minivet	Kiriburu	Rare	IV
Family Irenidae				
Aegithina tiphia (Linnaeus)	Common Iora	Different places (S)	Common	IV
Family Pycnonotidae				
pycnonotus melanicterus (Gmelin)	Blackheaded Yellow Bulbul	Kiriburu	Occassional	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	Different places (S)	Sporadic	IV
Family Muscicapidae				
Dumetia hyperythra (Franklin)	Rufousbellied Babbler	Siddhamalli R.F.	Rare	IV
Turdoides striatus (Dumont)	Common Babbler	Different places(S)	sporadic	IV

Turdoides striatus striatus (Jerdon)	Jungle Babbler	Siddhamath R.F.	Common	IV
Alcippe poioicephala (Jerdon)	Quaker Babbler	Different places (S)	Sporadic	IV
Muscicapa tickelliae (Blyth)	Tickell's Blue Flycatcher	Siddhamath R.F.	Occasional	IV
Terpsiphone paradisi (Linnaeus)	Paradise Flycatcher	Siddhamath R.F.	Rare	IV
Cisticola exilis (Vigors & Horsfield)	Fantail Warbler	Kirubaru	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
Copsychus malabaricus (Scopoli)	Shama	Different places (S)	Common	IV
Zoothera wardii (Blyth)	Pied Ground Thrush	Siddhamath R.F.	Rare	IV
Turdus unicolor Tickell	Tickell's Thrush	Kirubaru	Occassional	IV
Family Paridae				
Parus major cinereus	Grey Tit	Different places(S)	Sporadic	IV
Family Sittidae				
Sitta frontalis Swainson	Velvet fronted Nuthatch	Siddhamath R.F.	Rare	IV
Family Motacillidae				
Anthus similis Jerdon	Brown Rock Pipit	Kirubaru	Rare	IV
Family Muscicapidae				
Dicaeum zeylanicum (Linnaeus)	Purple-rumped Sunbird	Kirubaru	Rare	IV
Nectarinia asiatica (Latham)	Sunbird	Different places(S)	Common	IV
Aethopyga siparaja (Raffles)	Yellowbacked Sunbird	Kirubaru	Rare	IV
Arachnothera longirostris (Latham)	Little Spiderhunter	Kirubaru	Rare	IV

Family zosterops idae (Zosterops palpebrosa (Temminck)	White-eye	Different places(S)	Common	TV
Family Ploceidae Passer domesticus (Linnaeus)	House Sparrow	Different places(S)	Common	TV
Lonchura kelnarti (Jerdon)	Rufous-breasted Munia	Kiriburu	Rare	TV

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REPTILES RECORDED BETWEEN 5 TO 10 KM. BUFFER ZONE OF BOLANI ORE MINES

Scientific Name	Common Name	Area of Record	Status	WildLife Schedule
Order Testudines				
Suborder Thecophora				
Family Testudinidae				
Indotestudo elongata Blyth	Asian Elongated Tortoise	Kiriburu	Sporadic	
Order Squamata	Suborder Sauria			
Family Gekkonidae	Eublepharis hardwickii Gray	Fat-tailed Gecko	Kiriburu	Sporadic
Gecko gecko (Linnaeus)	Tuk tuk	kiriburu	Sporadic	
Family Agamidae				
Sitana ponticeriana Cuvier	Fan Throated Lizard	Kiriburu	Sporadic	
Family Chamaeleonidae				
Chamaeleo zeylanicus Laurenti	Indian Chameleon	Gidiburu	Occasional	
Family Scincidae				
Mabuya carinata (Schneider)	Common Striped Skink	Uaiburu R.F	Common	
Scincella sikkimense (Blyth)				
Riopa punctata (Gmelin)	Snake Skink	Kiriburu	Occasional	
Family Lacertidae				
Ophisaurus koellensis	Leschenault's Ophisaurus	Kiriburu	Rare	
Family Varanidae				
Varanus bengalensis (Gmelin)	Common Indian Monitor	Siddhanath R.F Kiriburu	Rare	II
Family Passeridae				
Passer domesticus (Linnaeus)	House Sparrow	Different places(S)	Common	IV

Scientific Name	Common Name	Area offerred	Status	Wild Life Schedule
Lonchura atricapilla (Jerdon)	Rufous backed Munia	Kiriburu	Rare	IV
Varanus flavescens (Gray)	Yellow Monitor	Kiriburu	Rare	I
Suborder Serpentes				
Family Typhlopidae				
Ramphotyphlops braminus (Daudin)	Common Blind Snake	Kiriburu	Occassional	
Typhlops acutus (Gunther)	The Beaked Blind Snake	Kiriburu R.F.	Occassional	IV
Family Boidae				
Python molurus (Linnaeus)	Indian Python Siddhanath 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	Siddhanath R.F.	Rare	IV
Family Viperidae				
Trimeresurus gramineus (Shaw)	Bamboo Pit Viper	Kiriburu	Rare	IV

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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 bufaridae				
Bufo melanostictus (Schneider)	Common Indian Toad	Ulburu R.F.	Common	
Family Ranidae				
Rana cyanophylyctis (Schneider)	Skipping Frog	Siddhanath R.F.	Common	IV
Rana limnocharis (Wiegmann)	Paddy-field Frog	Siddhanath R.F.	Common	IV

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MAMMALS RECORDED WITHIN 5 KM RADIUS OF BOLANI ORE MINES

Scientific Name	Common Name	Area of Record	Status	Wildlife Schedule
Order Insectivora				
Family soricidae				
Suncus murinus (House)	house Shrew	Throughout	Common	
Order Chiroptera				
Family Pteropodidae				
Cynopterus sphinx (Vahl)	Short-nosed Fruit Bat	Ulsoru 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 kuhlii Leach	Lesser Yellow Bat	Different places	Common	
Scotophilus heathi (Horsfield)	Greater Yellow bat	Different places	Common	
Order Primates				
Family Cercopithecidae				
Macaca radiata (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	Common Name	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	Haramuta	Occassional	II
Family Herpestidae				
Herpestes edwardsi (Geoffroy)	Indian Gray Mongoose	Haramuta	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				
Elephas 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	Kara R.F.	Sporadic	III
Cervus unicolor Kerr	Sambar	Kara R.F.	Rare	III
Order Lagomorpha				
Family Leporidae				
Lepus nigricollis ruficaudatus	Red-naped Hare	Uliburu R.F. Haramuta	Occassional	IV
Order Rodentia				
Family Sciuridae				
Petaurista petaurista (Pallas)	Common Giant Flying Squirrel	Kara R.F.	Rare	III
Funambulus palmarum (Linnaeus)	Three-Striped Palm Squirrel	Haramuta	Sporadic	IV
Ratufa indica (Erxleben)	Indian Giant Squirrel	Kara R.F.	Rare	III
Family Hystricidae				
Hystrix indica Kerr	Indian Crested Porcupine	Kara R.F.	Rare	IV
Family Muridae				
Rattus blanfordi (Thomas)	Blanford's Rat	Kara R.F.	Occassional	V
Rattus rattus (Linnaeus)	House Rat	Haramuta	Common	V
Mus musculus Linnaeus	House Mouse	Haramuta	Common	V
Mus booduga (Gray)	Little Indian Field Mouse	Uliburu R.F.	Common	V
Bandicota bengalensis (Gray)	Lesser bandicoot Rat	Haramuta	Common	V
Tatera indica (Hardwicke)	Indian Gerbil	Uliburu R.F.	Occassional	V

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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. Ulburu R.F.	Common	IV
Psittacula cyanocephala (Linnaeus)	Bloosomheaded Parakeet	Karo R.F.	Rare	IV
Order Cuculiformes				
Family Cuculidae				
Cuculus varicus Vahl	Common Hawk-Cuckoo	Ulburu R.F.	Rare	IV
Cuculus micropterus Gould	Indian Cuckoo	Karo R.F.	Sporadic	IV
Cacomantis passerinus (Vahl)	Indian PlaintiveCuckoo	Ulburu 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 (Pennant)	Collared scops Owl	Karo R.F.	Rare	IV
Glaucidium radiatum (Tickell)	Jungle Owlet	Different places	Common	IV
Athene brama (Temminck)	Spotted Owlet	Ulburu R.F.	Common	IV
Order Caprimulgiformes				
Family Caprimulgidae				
Caprimulgus indicus	Indian	Ulburu R.F.	Occassional	IV

Istreon	Jungle Nightjar			
Caprimulgus asiaticus Latham	Indian Little Nightjar	Karo R.F.	Occassional	IV
Order Apodiformes				
Family Apodidae				
Apus affinis (J.E. Gray)	House Swift	Haromutu	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
Melaragaris capensis	Stork billed kingfisher	Pandoliposi	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 benghalense (Linnaeus)	Lesser Golderbacked Woodpecker	Karo R.F.	Sporadic	IV
Picoides mahrattensis (Latham)	Yellowfronted Red Woodpecker	Karo R.F.	Sporadic	IV
Chrysocolaptes guttacristatus (Scopoli)	Large Golderbacked 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	Ghuru R.F.	Sporadic	IV
Ammomanes phoenicurus (Franklin)	Rufous tied Finch-Lark	Karo R.F.	Sporadic	IV
Family Laniidae				
Lanius cristatus Linnaeus	BrownShrike	Haramuta	Occassional	IV
Family Oriolidae				
Oriolus oriolus (Linnaeus)	Golden oriole	Karo R.F.	Occasional	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 Pandolipoti		Occassional	IV
Family Sturnidae				
Sturnus contra Linnaeus	Pied Myna	Different places	Common	IV
Acridotheres tristis (Linnaeus)	Common Myna	Different places	Common	IV
Family Corvidae				
Dendrocitta vagabunda (Latham)	Indian Tree Pie	Karo R.F.	Sporadic	IV
Corvus splendens Vieillot	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 Iora	Different places Common		IV
Family Pycnonotidae				
Pycnonotus leucogenys (Linnaeus)	Redwhiskered Bulbul	Haramata	Sporadic	IV
Pycnonotus cafer (Linnaeus)	Redvented Bulbul	Uliburu R.F.	Common	IV
Family Muscicapidae				
Turdoides caudatus (Dumont)	Common Babbler	Uliburu R.F.	Sporadic	IV
Turdoides striatus Grissac Jerdon	Jungle Babbler	Karo R.F.	Common	IV
Terpsiphone paradisi (Linnaeus)	Paradise Flycatcher	Karo R.F.	Rare	IV
Hypothymis azurea (Boddaert)	Blacknaped-Blue Flycatcher	Karo R.F.	Rare	IV
Cisticola juncidis (Rafinesque)	Fantail Warbler	Uliburu R.F.	Rare	IV
Prinia hodgsonii Blyth	Franklin'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 varelii (Blyth)	Pied Ground Thrush	Tindolipasi	Rare	IV
Family Paridae				

Scientific Name	Common Name	Area of Record	Status	Wild Life Schedule
Parus major (Linnaeus)	Grey Tit	Kara R.F.	Sporadic	IV
Parus xanthogenys Vigors	Black spotted Yellow	Kara R.F.	Sporadic	IV
Family Motacillidae				
Motacilla maderspatensis Gmelin	Large Pied Wagtail	Kanmate	Rare	IV
Family Nectarinidae				
Nectarinia asiatica (Latham)	Purple sunbird	Different places	Common	IV
Family Zosteropidae				
Zosterops palpebrosa (Temminck)	White Eye	Dilburu R.F.	Sporadic	IV
Family Ploceidae				
Passer domesticus (Linnaeus)	House Sparrow	Different places	Common	IV
Lonchura malabarica (Linnaeus)	Whitethroated Munia	Dilburu R.F.	Occassional	IV
Lonchura punctulata (Linnaeus)	Spotted Munia	Kara 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 Squamata				
Suborder Sauria				
Family Gekkonidae				
Hemidactylus brooki Gray	Brook's Gecko	Horamutu	Common	
Hemidactylus flaviviridis Rüppell	House Gecko	Horamutu	Common	
Hemidactylus leschenaulti Duméril & Bibr	Bark Gecko	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 Gunther	Indian Chameleon	Karo R.F.	Rare	
Family Scincidae				
Mabuya carinata (Schneider)	Common Skink	Different places	Common	
Order Serpentes				
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	Ulipara R.F.	Occassional	II
Coelognathus radiatus (Boulenger)	Common Indian Bronzeback	Horamutu	Common	IV
Dendrelaphis tristis (Daudin)	Whip snake	Ulipara R.F.	Common	IV
Lycodon aulicus (Linnaeus)		Karo R.F.	Common	IV

Family Elapidae				
Bungarus fasciatus (Schneider)	Banded Krait	Kara R.F.	Rare	LV
Bungarus caeruleus (Schneider)	Common Indian Krait	Hanamutu	Rare	LV
Naja naja (Linnaeus)	Indian Cobra	Kara R.F.	Rare	ST
Family Viperidae				
Vipera russeli Shaw	Russell's viper	Uiibaru R.F.	Rare	TT

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	Ulitaru	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 : Apperdix - 14

CHECK LIST OF PHYTO-PLANKTONS AND ZOO-PLANKTONS RECORDED

PHYTOPLANKTONS

Chlorophyceae

1. Eudorina elegans
2. Pedostrum simplex
3. Chlorococcum sp.
4. Scenedesmus sp
5. Siragonium sp.
6. Spirogyra sp.
7. Cosmerium sp.
8. Closterium sp.Cyanophyceae
9. Oscillatoria sp.

Bacillariophyceae

10. Fragilaria oceanesis
11. Melosira subcate
12. Gomphonema sp
13. Pinnularia sp
14. Cymbella sp
15. Navicula sp
16. Nitzschia sp
17. Tabellaria sp.
18. Diatoma sp
19. Fontelaria 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. stagnatum	Polygonaceae
2.	Polygonum hydropiper	Polygonaceae
3.	Ludwigia perennis	Onagraceae
4.	Centella asiatica	Apiaceae
5.	Phyllanthus virgatus	Euphorbiaceae
6.	Eriocaulon rivulare	Eriocaulaceae
	Crinum defixum	Amaryllidaceae
9.	Panicum repens	Poaceae
2.	Eragrostis tenella	Poaceae
10.	Nitella sp.	Characeae

B. Along the stems

1.	Syzygium heyneanum	Myrtaceae
2.	Homurcia riparia	Myrtaceae
3.	Zyzygium cumini	Myrtaceae
4.	Glochidion velutinum	Euphorbiaceae
5.	Pongamia pinnata	Fabaceae
6.	Terminalia arjuna	Combretaceae
7.	Salix tetrasperma	Salicaceae
1.	Terminalia alata	Combretaceae
	Salmalia malabarica	Bombacaceae
0.	Woodfordia fruticosa	Lythraceae
1.	Ludwigia sol.	Onagraceae
2.	Polygonum sp.	Polygonaceae
3.	Cyathula prupurea	Asteraceae
4.	Panicum repens	Poaceae
5.	Phragmites karka	Poaceae
6.	Saccharum sp.	Poaceae
7.	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 aequipinnatus(Mc Clelland)	Giant Danio
• Danio rerio (Hamilton)	Zebra fish
• Rasbora daniconius (Hamilton)	Common Rasbora
Cirrhinus reba (Hamilton)	Reba
Esomus danrica (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)	Mahseer
Fmily Cobitidae	
Lepidocephalus guntea (Hamilton)	Loach
• Noemacheilus denisonii Day	Loach
Order Siluriformes	
Family Bagridae	
Mystus cavasius (Hamilton)	Tengra
Rita rita(Hamilton)	Ritha
Family Pangasidae	
Pangasius pangasius (Hamilton)	
Family Clariidae	
• Clarias batrachus (Linnaeus)	Magur
Scientific Name	**Common Name**
Family Heteropneustidae	
• Heteropneustes fossilis (Bloch)	Singi
Order Channiformes	
Family Channidae	
• Channa orientalis (Schneider)	Cheng
• Channa punctatus (Bloch)	Lata
• Channa marulius (Hamilton)	Giant Snake head(R)

Order perciformes	
Family Nandidae	
Pradiscodis (Hamilton)	Mud-perches
Family Centropomidae	
Chanda ranga (Hamilton)	Glass fish
Order Mastacembliformes	
Family Mastacembelidae	
Mastacembelus armatus (Lacepede)	Eel

AMPHIBIA

Frogs	Rana tigerina Daudin	-	Indian Bull Frog
	Rana cyanophlyctis Schneider	-	Skipping Frog
	Rana limnocharis wiegmann	-	Puddy-field Frog

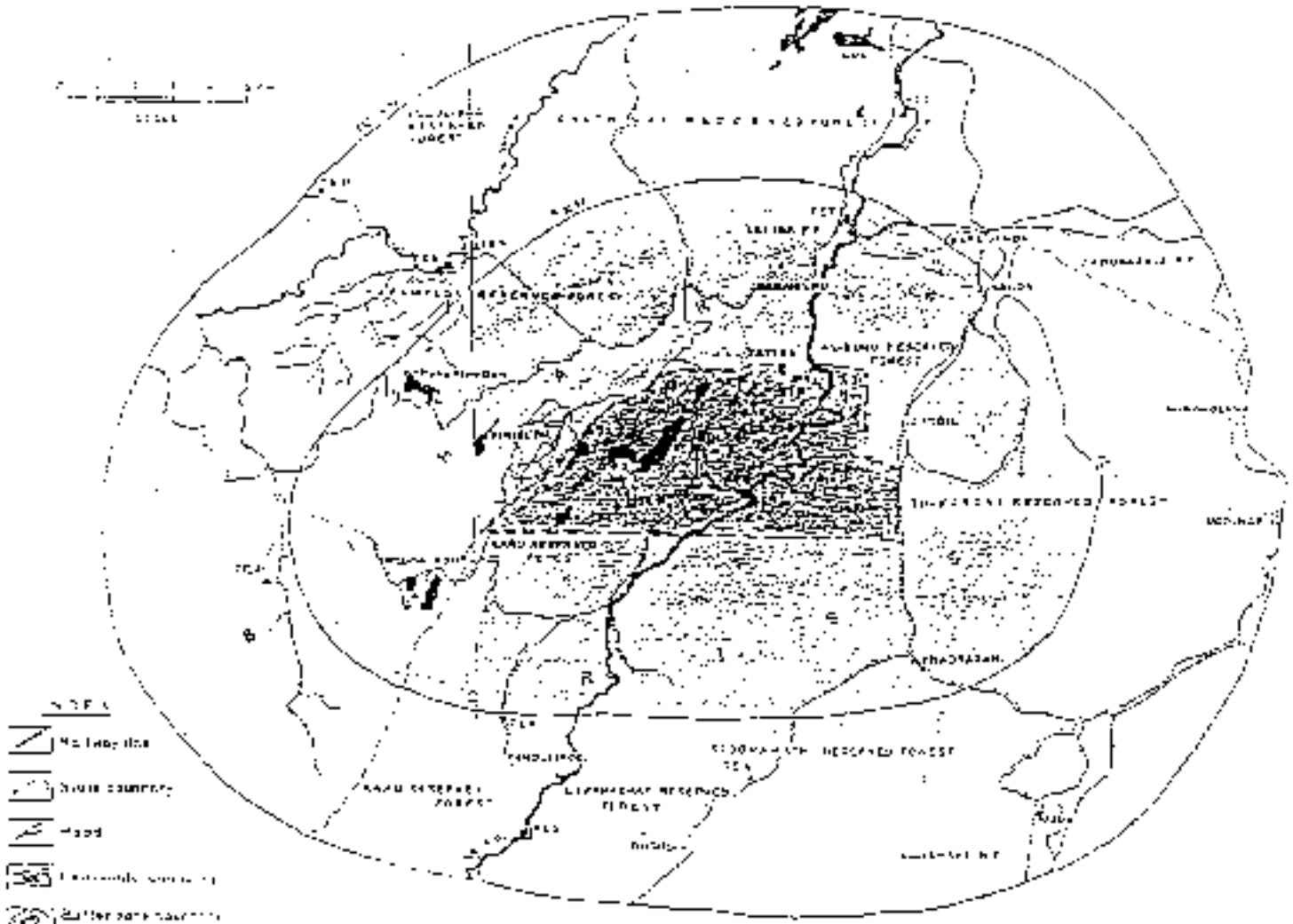
MOLLUSCA

Bivalve :	Lamellidens marginatus (Lamark)
Gastropod :	Pila globosa (Swainson)

CRUSTACEA

Shrimp :	Macrobrachium sp.
Crab :	Paratelphusa sp.

MAP SHOWING AQUATIC AND TERRESTRIAL ECOLOGICAL SAMPLING LOCATION FALLING WITHIN THE CORE AND BUFFER ZONES OF BOLANI ORE MINES



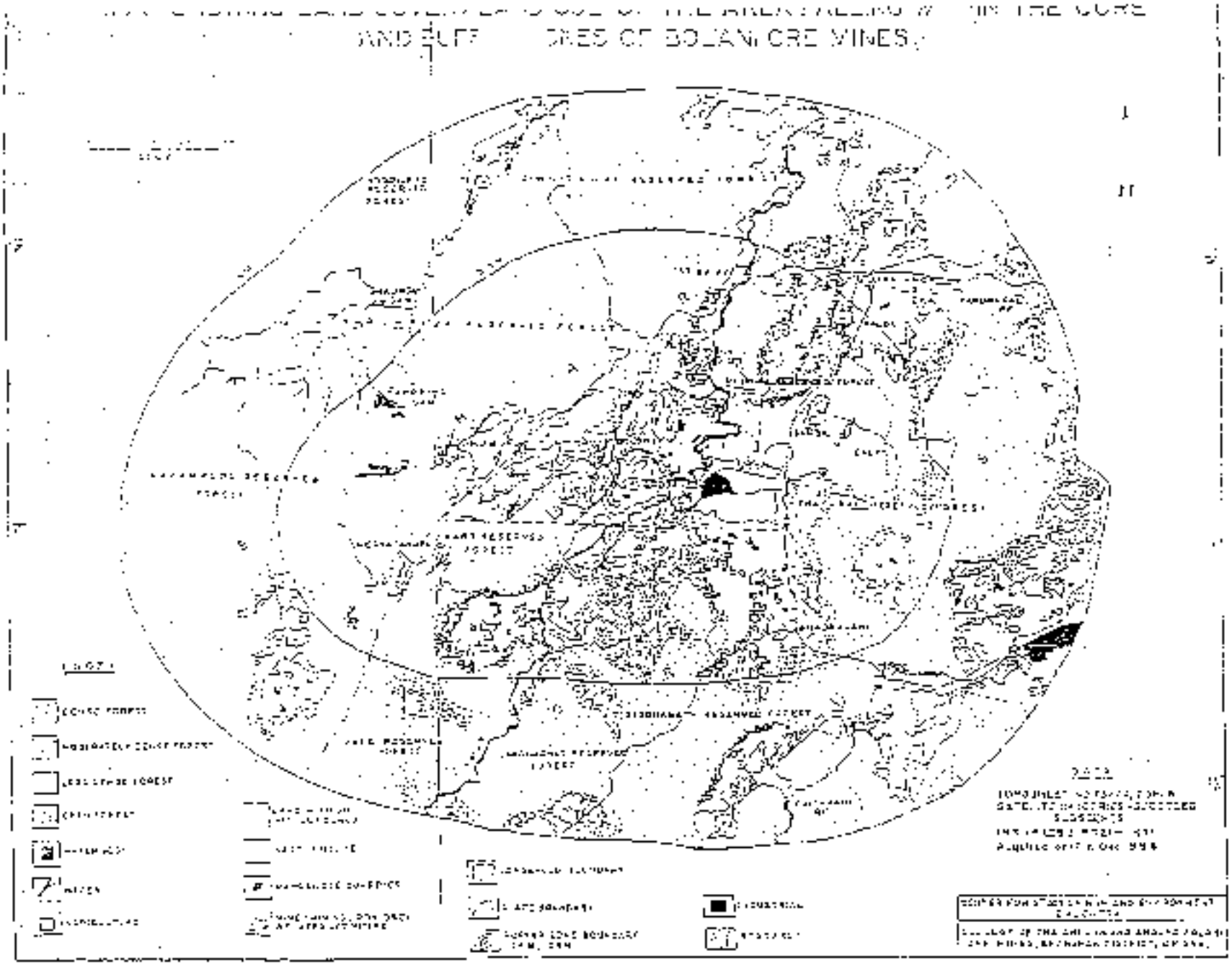
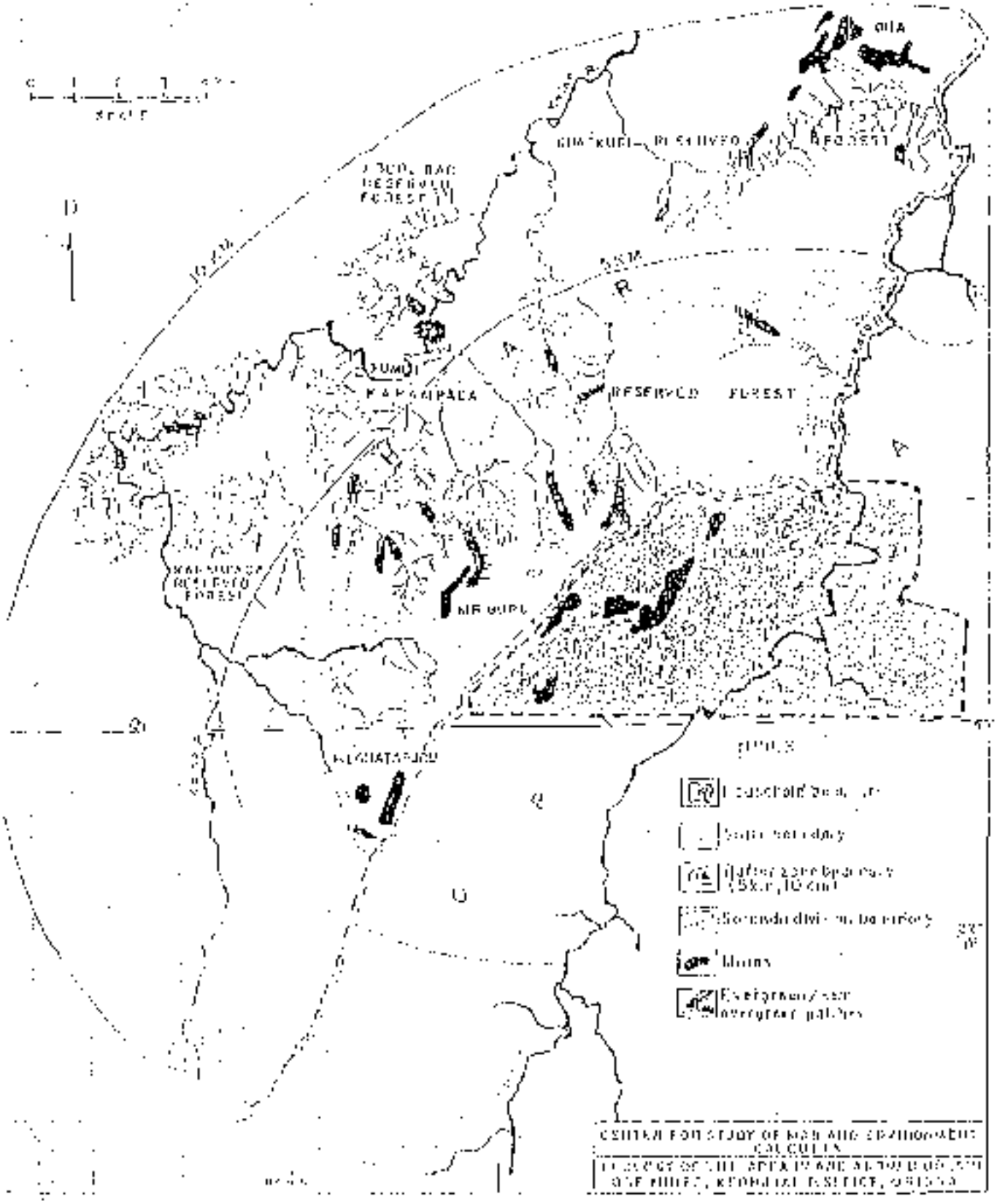


EXHIBIT – A

MAP SHOWING EVERGREEN/SEMI EVERGREEN PATCHES IN SARANDA (FOREST) DIVISION FALLING WITHIN BUFFER ZONES OF ROLANI ORE MINES



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AREA AND POPULATION OF [illegible] DISTRICT [illegible]

TOTAL [illegible]	[illegible]	WORKERS TO TOTAL POPULATION	AREA	[illegible] TO TOTAL WORKERS	TOTAL WORKERS	MAIN WORKERS	MARGINAL WORKERS	NON-WORKERS
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CLASSIFICATION OF MAIN WORKERS

Cultivators	Agricultural Labourers	Live Stock, Forestry, Fishing, Hunting, Plantation, Orchards & Allied Activities	Mining And Quarrying	Manufacturing Processing Servicing & Repair: Household Industry	Manufacturing Processing Servicing & Repair: Other Than Household Industry
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

APPENDIX-II

BLOCKWISE LAND UTILISATION PATTERN OF KEONJHAR DISTRICT (1994-95)

(Area in Hect.)

Name of the Block	Misc. Tree crops & groves not included in net sown area	Permanent Pastures & other grazing land	Culturable waste land	Forest Area	Land put to non agricultural uses in Hec.	Barren & Uncultivable land	Current fallows	Other fallows	Net sown area
Telkoi	242	1,594	942	[illegible]	2,072	2,902	1,972	1,928	15,162
Harichandanpur	1,[illegible]	1,966	1,[illegible]	18,[illegible]	5,518	4,155	6,850	[illegible]	20,287
Ghasipura	1,417	2,135	1,216	342	4,851	1,276	1,482	597	12,374
Anandapur	730	1,905	1,451	2,672	2,994	1,428	3,172	1,535	14,992
Patna	586	479	1,090	1,[illegible]	10,751	102	377	1,382	11,616
Ghasipura	1,439	2,008	866	9,[illegible]	2,572	1,[illegible]	3,550	1,[illegible]	17,117
Keonjhar/Sadar	1,398	1,104	1,859	3,264	7,016	3,[illegible]	5,719	2,579	22,155
Banspal	1,209	1,422	1,798	1,[illegible]	3,[illegible]0	75,649	1,571	1,347	832
Ira	245	3,125	[illegible]	2,[illegible]	1,870	3,[illegible]	1,105	2,403	9,334
Champua	1,416	1,960	1,292	12,[illegible]	2,[illegible]	7,[illegible]	5,379	1,[illegible]	7,493
Joda	1,627	1,[illegible]	1,037	6,[illegible]	2,476	1,[illegible]	7,065	2,437	7,[illegible]
Saharada	838	1,093	909	1,[illegible]	3,379	1,137	6,323	2,229	9,052
Ghasipura	1,345	1,076	1,636	2,[illegible]	3,087	1,[illegible]	3,937	2,975	18,043
Total	5,152	23,675	18,867	1,34,219	51,064	95,660	55,233	25,598	2,19,365

APPENDIX-III

LIVESTOCK AND ANIMAL HUSBANDRY CENSUS 1995 OF NAGAONSAR DISTRICT

Category	Keonjhar Sadar Division		Anandapur Sub Division		Champua Sub-Division		Keonjhar District		
	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Total
Total Cattle	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Buffaloes	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Sheep	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Goats	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Pigs	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Fowl	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Source :- Directorate of Animal Husbandry and Veterinary Services, Orissa.

Appendix-II

Collection of Minor Forest Products in Neighbouring Bandi Forest Divisions

Name of Minor Forest Products		Collection Time
Common Name	Scientific Name	
Mahua Flower	Madhuca indica	April - May
Mahua Fruit	Madhuca indica	Round the year
Tendu Leaves	Diospyros melanoxylon	May - June
Amla fruit	Emblica officinalis	Dec - Jan
Sal Leaves	Shorea robusta	Sept - Nov
Chiraunji (Sharmani)	Buchanania lanzan	March - May
Gum	Sterculia urens	Round the year
Gum	Boswellia serrata	Round the year
Gum	Acacia senegal	Round the year
Gum	Acacia leucophloea	Round the year
Gum	Acacia catechu	Round the year
Gum	Butea monosperma	Round the year
Gum	Anogeissus latifolia	Round the year
Gum	Terminalia tomentosa	Round the year
Gum	Terminalia arjuna	Round the year
Gum	Terminalia chebula	Round the year
Gum	Madhuca indica	Round the year
Gum	Sterculia urens	Round the year
Gum	Shorea robusta	Round the year
Gum	Dichrostachys cinerea	Round the year
Gum	Syzygium cumini	Round the year
Gum	Woodfordia fruticosa	Round the year
Gum	Butea monosperma	Round the year
Gum	Pongamia pinnata	Round the year
Gum	Wrightia tinctoria	Round the year
Gum	Mangifera indica	Round the year
Gum	Ficus Glomerata	Round the year
Gum	Polyalthia cerasoides	Round the year
Gum	Melaina monosperma	Round the year
Gum	Acacia concinna	Round the year
Gum	Cassia fistula	Round the year
Gum	Anacardium occidentale	Round the year

Appendix-4

Population Structure of Bonai Division

Name of the C.D. Block / Village / Town	Scheduled Caste	Scheduled Tribes	Others	Total population
	Total	Total	Total	
Sagar (Rural)	6402	29210	19799	55121
Gurundia (Rural)	2617	20192	8178	31337
Lahunipara (Rural)	3662	24922	20271	48855
Kalta (Rural)	3207	4252	12993	19652
Forest Villages within C.D. Block	21	4649	93	4763
Town (Urban)	[illegible]	[illegible]	5313	4799
Total	15909	83201	67605	164135

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
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	NIL	[illegible]	NIL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NIL	NIL	[illegible]
[illegible]	NIL	NIL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NIL	[illegible]	[illegible]
1984	NIL	[illegible]	NIL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NIL	[illegible]	[illegible]
1985	[illegible]	[illegible]	NIL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NIL	[illegible]	[illegible]
1986	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1987	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1988	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NA	NA	NA	NA	NA	[illegible]
1989	NIL	NIL	NIL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	NIL	[illegible]	[illegible]
NORMAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

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	2	0	0	5	0	0	5	101.2	7	2.	55	0	18.23
Feb.	81.2	16	51	0	21	9	0	1	31	11	12.	0	0.5	0	18.56
Mar.	15	7	20.5	2	57	7	0	1	0.	4.2	0.	0	39.5	0	10.50
Apr.	14.	27	45	0	20	0	33	71	125	11	9	65	31	0	23.53
May	53.7	59	27	52	79	81	163	59	75.2	150.	61.	24	78	164.5	80.69
Jun.	221.4	53	222	445	257	163	149	312	201	54	344	415.5	109.5	324.45	255.14
Jul.	301.7	499	346	340	300	539	235	372	721	253.2	210.1	247	214.5	299.15	343.02
Aug.	251.5	265.5	235	330	174	504	309	235	330	377.2	300.2	504.5	202.5	317	302.60
Sep.	122	271	251.7	125	343	155	81	335	180	315	59.	158.2	201.5	414.25	221.52
Oct.	30	27	95	15	157	117	29	31	85.2	132.	79.5	55.5	147	378.25	102.61
Nov.	80	2	3	0.	18	15	7	0	7.2	95.2	0	25.5	124	0	27.45
Dec.	40	0.	0	0	0	24.	0	0	0	0	0	70.	0	0	9.57
TOTAL	1357.7	1190.5	1303.5	1143	1522	1545	1037	1546.	2095	1550	1047.8	1565.2	1411	2117.8	1473.74
RAIN FALL															
TOTAL NO. OF RAINY DAYS	113	79	83	73	134	67	70	92	105	84	76	91	97	106	89.64

APPENDIX - VIII

Meteorological data Recorded in Regional Research station Judia farm, Keonjhar.

Orissa University of Agriculture & Technology.

Month	1995 Temp in °C min.	max.	RH(%) (11.30hrs)	Rainfall (mm)	1996 Temp in °C min.	max.	RH(%) (11.30hrs)	Rainfall (mm)	1997 Temp in °C min.	max.	RH(%) (11.30hrs)	Rainfall (mm)	1998 Temp in °C min.	max.	RH(%) (11.30hrs)	Rainfall (mm)
Jan	2.5	22.0	44.1	63.9	10.7	27.2	52.7	11.3	5.3	27.5	52.3	24.5	7.3	29.5	70.5	95.8
Feb	12.9	27.9	34.8	20.6	11.7	32.1	51.5	27.4	12.5	29.3	35.2	4.7	10.2	31.1	73.2	4.6
Mar	17.1	32.2	31.2	11.2	16.5	27.1	33.2	4.0	15.	36.4	40.5	65.3	11.2	35.3	54.6	28.2
Apr	20.5	37.2	52.1	12.5	20.3	37.7	39.7	62.6	15.1	38.3	48.2	130.1	16.6	38.6	59.1	53.3
May	23.1	34.8	47.0	269.4	23.4	40.7	40.3	50.6	27.3	35.7	42.5	66	19.7	42.8	55.7	56
Jun	23.7	33.6	63.5	159.3	22.9	34.0	60.7	224.7	23.9	38.7	63.2	254.4	17.7	43.6	68.4	168
Jul	23.1	30.2	71.8	155.2	22.7	31.5	76.3	177.1	22.5	31.2	75	311.0	21.5	34.5	70.5	154.5
Aug	21.6	29.3	75	315.7	21.7	29.8	82.7	327.3	22.7	31.1	78.2	218	22.1	32.5	80.2	98.5
Sep	21.0	29.4	73	169.8	21.0	32.2	73.	20.5	21.5	31.4	79.8	120.5	21.2	32.4	84.2	249.2
Oct	27.6	30.3	68.4	11.3	17.2	33.0	76.3	12.5	17.5	33.0	57.8	41.3	17.4	32.4	83.4	191.6
Nov	13.	28.5	75.9	105.9	12.1	29.9	45.2	0	10.1	29.4	68.3	23.6	13.7	29.6	78.5	64.1
Dec	9.0	25.5	68.2	Nil	7.0	26.5	36.9	0	11.0	26	72.7	57.4	5.7	29.3	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. D. Block	No. of Cattles.	No. of Buffaloes	No. of Goats	No. of Sheep	Total No. Live Stock
Bonai	33393	1529	11711	2156	48883
Gurundia	37644	2127	23439	2478	65688
Kora	37570	4463	28970	4951	74070
Lahunipada	36159	4723	25957	3243	70083
Total	145063	12846	88063	12838	258927

(Source : District Statistical Office, Sundergarh on the basis of 1991 census.)

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	1993	June	1[illegible]6.90	147.5
2	1991	July	[illegible]7.91	156.0
3	1992	June	9.6.92	112.0
4	1993	June	[illegible]6.93	104.0
5	1994	July	5.7.94	103.5
6	1995	May	[illegible].5.95	95.5
7	1996	August	[illegible]8.96	88.0
8	1997	August	[illegible]8.97	108.0
9	1998	September	[illegible].98	96.0
* 10	1999	October	29.10.99	[illegible]
* 11	1999	October	30.10.99	655.0
* 12	1999	October	31.10.99	52.0

* Indicates rain fall during Super cyclone of 1999.

SOURCE :- M/S FACOR ROURLA.

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	45.0	27.0	40.0	32.0	40.0	27.0
June	40.0	27.0	40.0	25.5	35.0	26.0
July	35.0	24.0	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.	25.0	15.5	25.0	15.0	*	*

* Temperature data for these months are not recorded.

ANNEXURE - III - A

COLLECTORATE : JAJPUR

Ph. 06728-22207 (O), 22330 (R), FAX - 22087

Email: dm[illegible]@[illegible].com, website: www.[illegible]

ST & SC DEV. SECTION

No. 1339 /Date. 19.07.14

To

The Divisional Forest Officer,
Cuttack Forest Division, Chatakul,
Nuapatna, Cuttack.

Sub:- Issuance of certificate under Forest Rights Act, 2006 in favour of Sukurangi Chromite Mines of OMC Ltd.

Ref:- Your Office Letter No. 6934 Dt. 12.06.2013 & Letter No. 8309 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 hectares) in Form-I, for the other than forest 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

Encl:- As above.

District Welfare Officer,
Jajpur

Memo No. 1680 / Date. 19.7.14

Copy submitted to the Managing Director, Orissa Mining Corporation Limited, Bhubaneswar, Post Box No. 34, 751001 for information and necessary action.

District Welfare Officer,
Jajpur

FORM-I

(for projects other than linear projects)

Government of Odisha

Office of the District Collector, Jajpur

No. 1236 ... Date. 19.12.16

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, Sarasahi, Sukurangi, Tailangi, Kamarada & Forest Block- 27 (Mahagiri DPF) villages in Sukinda tehsil.

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 Committees, 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 implications, 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 Ottapal, Sendabil, Sukwangi, Tellangi, Kamarada & Forest Block- 27 (Maragini 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;

(e) the diversion of forest land for facilities managed by the Government as replied 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-Agriculture Communities, where applicable have been specifically safeguarded as per Section 3 (1) (e) of the FRA

(Anil Kumar Gupta, IAS)
Collector & District Magistrate,
Jaipur

Encl. As above

PROCEEDING OF THE DISTRICT LEVEL COMMITTEE MEETING ON DIVERSION OF FOREST LAND FOR USE OF NON-FOREST PURPOSE UNDER ST & OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006 HELD ON DT 18.12.2014 AT 4.00 PM IN THE RESIDENTIAL OFFICE OF COLLECTOR.

****

The District Level Committee was convened on dt 18.12.2014 for conferment of Diversion of Forest Land for use of Non-Forest purpose under ST and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The Collector cum-Chairman presided over the meeting in presence of the following members.

1. Sri Anil Kumar Samal, IAS, Collector-cum-Chairman, DLC, Jajpur
2. Sri Sudarsan Behera, OFS-I (SB), DFO, Cuttack
3. Sri Maheswar Panigrahi, OAS (S), Sub-Collector, Jajpur
4. Smt Sabita Behera, ZP Member, Zone No.12
5. Smt Tapaswini Mallik, ZP Member, Zone No.39
6. Sri Sambit Garanayak, Block Development Officer, Sukinda
7. Sri Saroj Kumar Behera, Tahasildar, Sukinda
8. Miss Chetna Sethy, OWS, District Welfare Officer, Jajpur.
9. Sri Padan Charan Jena, ADWO, Jajpur.

Initiating the discussion, the Chairman desired to know about the verification report prepared by Tahasildar, Sukinda and on the recommendation of Gram Sabha of Saruabil, Kamarda, Talangi, Ostapal, Sukurangi villages and Forest Block 27 and their consent for the proposed Diversion of Forest Land for use of Non-Forest purpose proposed of Sukurangi Chromite Mines by Ms/OMC Ltd

The DWO apprised before the Committee that, the Gram Sabha of Kalapani and Kansa G.P. have recommended the proposal for diversion of forest land measuring 179.38 ha for use of non-forest purpose by Ms/OMC Ltd for Sukurangi Chromite Mines before the SDLC along with the consent of the Gram Sabha for approval. The detailed village wise position is given below:

Name of the Agency	Name of the GP	Name of the village	Area applied for
OMC	Kansa	Saruabil	95.56 ha
		Kamarda	23.57 ha
		Talangi	2.10 ha
		Ostapal	40.85 ha
	Kalapani	Sukurangi	2.60 ha
		Forest Block-27	14.61 ha
		Total	179.38 ha

On perusal of Gram Sabha proceeding forwarded by Block Development Officer, Sukinda, it is revealed that, a detailed and elaborate discussion was made in the Gram Sabha/Pali Sabha regarding Forest Rights Act, 2006. The implementation of

displacement process and its implication and rehabilitation was also explained to them in Odia vernacular. Further, it is seen that the people present in the Gram Sabha have agreed and given their consent with recommendation for diversion of forest land of above extent for non-forest use by user agency.

After threadbare discussion it was on unanimously decided by the SDLC for diversion of forest land of 179.38 ha for use of non-forest purpose by OMC Ltd.

Further, the said proposal was also approved by the SDLC giving proper safeguard to the individuals and community claims as per Section 3 (1) (i) & 4 (1) , 3 (2) under Forest Rights Act, 2006 and recommended to DLC for approval. The detailed elaborate discussion was made on the recommendation of the SDLC and the District Level Committee unanimously decided and approved the decision proposal agreeing with the terms and condition with Gram Sabha as well as SDLC

The Meeting ended with vote of thanks to the chair and the members present

Collector cum-Chairman,
Jajpur

Memo No /Date
Copy forwarded to all members for information and necessary action.

Collector cum-Chairman,
Jajpur

Memo No. /Date
Copy forwarded to Tahasildar, Sukinda/Block Development Officer, Sukinda for information and necessary action.

Collector cum Chairman,
Jajpur

Memo No. /Date
Copy forwarded to Director (ST)–cum-Additional Secretary to Govt., ST & SC Development Department, Odisha, Bhubaneswar for information and necessary action.

Collector cum-Chairman,
Jajpur

MEMBERS PRESENT IN THE DISTRICT LEVEL COMMITTEE MEETING ON SCHEDULE TRIBES AND OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006 IN THE OFFICE OF COLLECTOR, JAJPUR

Sl. No.	Name & Designation of the Members	Signature	Mobile No.
1	Sri Anil Kumar Samal, Collector cum Chairman, DLC, Jajpur		9437031784
2	Sri Sucarsan Behera, OFS I (SB), DFO, Cuttack		9437167493
3	Sri Maheswar Panigrahi, OAS (S), Sub-Collector, Jajpur		9437137919
4	Smt. Sabita Behera, Z.P. Member, Zone No. 12, Dharmasala		9556622403
5	Smt. Tapaswini Mallik, Z.P. Member, Zone No. 30, Sukinda		9437657133
6	Sri. Sambit Garanayak, Block Development Officer, Sukinda		
7	Sri Saroj Kumar Behera, Tahasildar, Sukinda		9439136350
8	Miss Chetna Satpy, OWS, Dist. Welfare Officer, Jajpur		
9	Sri Padan Charan Jena, ADWO, Jajpur		

PROCEEDING OF THE SUB-DIVISIONAL LEVEL COMMITTEE ON DIVERSION OF FOREST LAND FOR NON-FOREST PURPOSE UNDER S.T. & OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006 HELD ON DT 03.12.2014 IN THE OFFICE CHAMBER OF SUB-COLLECTOR, JAJPUR

****

The Sub-Divisional Level Committee meeting on Diversion of Forest Land for use of Non-forest purpose and approval of the individual claims under Schedule Tribe and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 was held on dt 03.12.2014 at 10.00 AM under Chairmanship of Sub-Collector, Jajpur

The following members of the committee were present.

1. Sri Maheswar Panigrahi, OAS (I), Sub-Collector-cum-Chairman, SDLC, Jajpur
2. Sri Pratap Kumar Behera, OFS, ACF, Cuttack
3. Sri Kamadeba Dehury, P.S. Member of Sukinda P.S.
4. Sri Pandu Tiyu, P.S. Member of Badachana P.S.
5. Sri Sati Dehury, P.S. Member of Dharmasala P.S
6. Sri Sambit Garanayak, Block Development Officer, Sukinda.
7. Sri Saroj Kumar Behera, Tahasildar, Sukinda
8. Sri Rama Chandra Behera, DWS, District Welfare Officer, Jajpur.
9. Sri Padan Charan Jena, ADWO, Jajpur.

At the outset, the Chairman welcomed all members present and advised the DWO to make aware the members on purpose of the meeting. Initiating the discussion, DWO intimated that Gram Sabha of Sarubili, Kamarda, Talangi, Sukurangi, Ostapal and Forest Block 27 have recommended the diversion proposal of M/s OMC Ltd. for use of non-forest purpose under Forest Rights Act classified as Jungle Kisam. The detailed village wise position is given below:

Name of the Agency	Name of the GP	Name of the village	Area applied for
OMC	Kansa	Sarubili	95.56 ha
		Kamarda	23.57 ha
		Talangi	2.19 ha
		Ostapal	40.85 ha
	Kaliapani	Sukurangi	2.60 ha
		Forest Block-27	14.61 ha
		Total	179.38 ha

On perusal of Grama Sabha proceedings forwarded by Block Development Officer, Sukinda, it is revealed that, detailed and elaborate discussion was made in the Gram Sabha/Palli Sabha regarding Forest Rights Act, 2006 and implementation of displacement and its implication and rehabilitation was explained to them in Odia vernacular. Further, it is seen that the people present in the Gram Sabha had agreed and given their written consent with recommendation for diversion of forest land of above extent for non-forest use by the OMC authorities.

At last, it was found that 9 nos. of individual ST Dwellers & 1 nos. of Individual Other Traditional Forest Dwellers are in possession in Saruabil village. The same has been confirmed by the R.I., Kandakadapal in his enquiry report. The detail encroacher list as prepared by R.I., Kandakapal was placed before the committee.

After threadbare discussion, it was unanimously decided for diversion of the forest land of 179.38 ha within Sukurangi ML for use of non forest purpose by OMC Ltd. Hence, the committee unanimously decided to send the diversion of forest land for use of non-forest purpose by M/s OMC Ltd. to District level committee.

The meeting ended with vote of thanks to the chair.

Sub-Collector-Cum Chairman, SDLC
Jajpur

Memo No. [illegible] /Date [illegible]
Copy forwarded to all members for information and necessary action

Sub-Collector-Cum-Chairman, SDLC
Jajpur

Memo No. [illegible] /Date [illegible]
Copy forwarded to Tahasildar, Sukinda/BDO, Sukinda for information and necessary action.

Sub-Collector-Cum-Chairman, SDLC
Jajpur

Memo No [illegible] /Date [illegible]
Copy forwarded to Collector, Jajpur for favour of kind information and necessary action

Sub Collector-Cum Chairman, SDLC
Jajpur

MEMBERS PRESENT IN THE SUB-DIVISIONAL LEVEL COMMITTEE MEETING ON DIVERSION OF FOREST LAND TOR NON-FOREST PURPOSE UNDER S.T. & OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006 HELD IN THE OFFICE OF SUB-COLLECTOR, JAJPUR

Sl. No.	Name & Designation of the Members	Signature	Mobile No.
1	Sri Maheswar Panigrahi, OAS (I), Sub Collector-cum-Chairman, SDLC, Jajpur		9437137919
2	Sri Pratap Kumar Behera, OFS, ACF, Cuttack	Pratap Kumar Behera	7978150197
3	Sri Kamadeba Dehury, F.S. Member of Sukinda P.S		
4	Sri Pandu Tiyu, P.S. Member, Badachana P.S.		
5	Mrs. Sata Dehury, P.S. Member, Dharmasala P.S.		
6	Sri Sambit Garanayak, Block Development Officer, Sukinda		
7	Sri Saroj Kumar Behera, Tahasildar, Sukinda		9439136504
8	Sri Rama Chandra Behera, DWS, DWO Jajpur		
9	Sri Padan Charan Jena, ADWO, Jajpur		

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Sarabil

Place: Courtyard of Siba temple, Sarabil

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 Sarabil 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 Sarabil attended the meeting. Smt. Anaya Debury, Sarpanch, 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 Sarabil Revenue village for non-forest purpose in Sukinda Chromite mines of Odisha Mining Corporation Ltd. The villagers were apprised about the objectives of the present meeting and legal provision 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 Sarabil village for non-forest purpose. Very few people objected the proposal. Vast majority of villagers demanded developmental work under CSR 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 non-forest purpose in Sukinda Chromite Mines of Odisha Mining Corporation Ltd was accepted in the meeting.

The meeting was closed 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 Ramel Section	Sd/- Welfare Extension Officer Sukinda Block	Sd/- Sr. Manager, Mining Sukinda Chromite Mines	

Sarpanch
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. Abalya 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 apprised 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 Dikangi village under CSR. Senior Manager, Sukurangi Chromite 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 non-forest purpose.

Hence the proposal of use of 23.57 hectare forestland for non-forest 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/- RI, Kankadapal	Sd/- Executive Officer Kansa G P	Sd/- Sarapanch Kansa Gram Panchayat	Sd/- Forester Kansa Sector
Sd/- Forest Beat Officer Kansal Sector	Sd/- Welfare Extension Officer Sukinda block	Sd/- Sr. Manager, Mining Sukurangi Chromite Mines	

Abalya Dehury
Sarapanch
Kansa G P

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Tabingi Gram Panchayat: Kansa

Place: Open ground near Tabingi 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. Abaiya 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. 2762 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 Kansa da 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 as 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 Tehsildar 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 Gram Panchayat	Sd/- Sr. Manager, Mining Sukurangi Chromite Mines	Sd/- Welfare Extension Officer Sukinda Block

Abaiya 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: 1 P.M.

A meeting of Gram Sabha/Palli Sabha under Forest Rights Act 2006 was held today on 06.09.2013 at 1 PM as scheduled earlier as per letter no. 1107 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 Kansal, 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 5.43 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 5.43 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 Kalinganj 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 6.63 acre in Sukurangi village and 36.[illegible] acre in Forest Block-27 for Sukurangi Mines and 29.71 acres forestland from Sukurangi village for South Kalinganj 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 Kalinganj Mines.

The meeting was ended with vote of thanks by the President to the villagers, Government officers and Officers of Orissa Mining Corporation Ltd attending the meeting.

Sd/- President Forest Rights Committee	Sd/- Secretary Forest Rights Committee	Sarpanch Kalinganj G.P	Sd/- Revenue Inspector Kukudapal
Sd/- Revenue Inspector Gopalprasadpur	Sd/- Revenue Supervisor Sukinda Tahasil	Sd/- Executive Officer Kalinganj G.P	Sd/- Forest Section Officer Kansal Section
Sd/- Manager (Mining) South Kalinganj 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. Alaiya Debury, 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. 2282 Dated 15.09.2014 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 Karkadapal 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. 5 persons oppose 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.K. Karkadapal	Sd/- Executive Officer Kansa G.P.	Sd/- Sarapanch Kansa Gram Panchayat	Sd/- Forester Kansa Section
Sd/- Forest Section Officer Bansal Section	Sd/- Welfare Extension Officer Sukinda Block	Sd/- Sr. Manager Mining Sukurangi Chromite Mines	

Alaiya Debury
Sarapanch
Kansa G.P.

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ଦୀର୍ଘ ଅଭିଯୋଗକୁ ଆଧାର କରି ଜିଲ୍ଲା ପ୍ରଶାସନ ପକ୍ଷରୁ ଶ୍ରୀ ଏ.ଏ. ଚକ୍ରବର୍ତ୍ତୀଙ୍କ ନେତୃତ୍ୱରେ ତଦନ୍ତ ଆରମ୍ଭ କରାଯାଇଛି ।

ଏ ସମ୍ବନ୍ଧରେ ଜଣାଯାଉଛି ଯେ ଗତ ୨୦୧୨ ମସିହା ମାର୍ଚ୍ଚ ୧୫ ତାରିଖରେ ଜିଲ୍ଲା ସଦର ଥାନାର ଅଧିକାରୀ ଜଣେ ଅଭିଯୋଗକାରୀଙ୍କ ଘରେ ପ୍ରବେଶ କରି ତାଙ୍କ ପୁଅଙ୍କୁ ଧରି ଥାନାକୁ ନେଇ ଯାଇଥିଲେ । ଅଭିଯୋଗକାରୀ ଜଣଙ୍କ ଜିଲ୍ଲାର ଅନେକ ଅଧିକାରୀଙ୍କ ସହିତ ଘନିଷ୍ଠତା ରଖିଥିବାରୁ ଏହି ଘଟଣାକୁ ଜିଲ୍ଲା ପ୍ରଶାସନ ଗୁରୁତ୍ୱ ଦେଇଛି । ଏହି ଘଟଣାକୁ ଜଣେ ଅଭିଯୋଗକାରୀ ଜଣଙ୍କ ଦ୍ୱାରା ଜିଲ୍ଲା ପ୍ରଶାସନ ପକ୍ଷରୁ ଅଭିଯୋଗ ଦାୟର କରାଯାଇଛି । ଏହି ଅଭିଯୋଗ ଆଧାରରେ ଜିଲ୍ଲା ପ୍ରଶାସନ ପକ୍ଷରୁ ଅଧିକାରୀ ଜଣଙ୍କ ବିରୁଦ୍ଧରେ ତଦନ୍ତ ଆରମ୍ଭ କରାଯାଇଛି । ଏହି ତଦନ୍ତ ଆରମ୍ଭ ହେବା ପରେ ଅଭିଯୋଗକାରୀ ଜଣଙ୍କ ଜିଲ୍ଲା ପ୍ରଶାସନ ପକ୍ଷରୁ ଅଭିଯୋଗ ଦାୟର କରାଯାଇଛି । ଏହି ଅଭିଯୋଗ ଆଧାରରେ ଜିଲ୍ଲା ପ୍ରଶାସନ ପକ୍ଷରୁ ଅଧିକାରୀ ଜଣଙ୍କ ବିରୁଦ୍ଧରେ ତଦନ୍ତ ଆରମ୍ଭ କରାଯାଇଛି । ଏହି ତଦନ୍ତ ଆରମ୍ଭ ହେବା ପରେ ଅଭିଯୋଗକାରୀ ଜଣଙ୍କ ଜିଲ୍ଲା ପ୍ରଶାସନ ପକ୍ଷରୁ ଅଭିଯୋଗ ଦାୟର କରାଯାଇଛି । ଏହି ଅଭିଯୋଗ ଆଧାରରେ ଜିଲ୍ଲା ପ୍ରଶାସନ ପକ୍ଷରୁ ଅଧିକାରୀ ଜଣଙ୍କ ବିରୁଦ୍ଧରେ ତଦନ୍ତ ଆରମ୍ଭ କରାଯାଇଛି ।

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Forest Section Officer
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Welfare Extension Officer
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Sr. Manager Mining
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52- Mahesoma Mohanta

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Tanu Mishra 238
Ranjit Nesek 239
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Purnima Hembram 242
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Basanti Munda 246
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Sonu Pingua 248
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Sujata Munda 250
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Sanjay Kr. Pradhan 252
Rashmi Oraon 253
Anil Oraon 254

Abhijit Dawang
Secretary
Sem. Tana Parchara

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Sunisoeki 258

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Suwado Paakhan 262

Akanya Dhanu

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Krishna Behera 269

Sudam Pradhan 264

Rajendra Pradhan 266

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Rabindra Sahoo 268

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Manoranjan Sahoo 270

Hara Bana Sahoo 271

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Sk. Md. Ali 274

Shiva Kumar Shetty 275

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Sk. Mamtaj Ali 279

S.K Samim Ali 279

Sk Babur Ali 280

Sk Akbar Ali 281

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288 Bhagaban [illegible]

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290 Lalunga [illegible] Sahu

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294 Ganesh Sahu

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298 Samata Rout

299 Lalmohan Patra

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302 Kalpana Patra

303 Gokul Hansda

304 [illegible]

305 Chandra Sahoo

306 Nilad [illegible]

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313 [illegible] Mohapatra

314 Manashi Mohapatra

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317 Ranjan Kumar Sahu

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352 [illegible] Kar Mahanta

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355 Gokula Nayak

356 Madhava Mohanta

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358 Bidyaraushe Singh

359 Dharakanta Sahoo

360 Ratna Kara Nayak

361 [illegible]

362 [illegible] Mohanta

363 Bidyadhara Mohanta

364 Gopabandhu Das

365 Baidehi Patra

366 [illegible]

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368 Kartikeswar Behera

369 [illegible]

Abhiyan Samanya
President
Sunar Sena Parishad

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387 L.T.I. [illegible]
388 Pradeep Nayak
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390 L.T.I. [illegible]

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396 Mohammad [illegible] Hasan
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398 Sudhansu Sekhar Mishra
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402 Universal [illegible]

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104 [illegible] LTI [illegible]

105 Jagdish Pradhan

106 [illegible] LTI [illegible]

107 Chinta Pradhan

108 Bijay Kumar Pradhan

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Sarpanch
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Bhagirathi Dalwai
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Sarpanch Panchayat

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Analya Das

Chief Judicial Magistrate

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Alokpa Bhattacharjee
Secretary
Tezpur Press Club

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[illegible] James Barua

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Anaiya Dowari

535 [illegible]
536 [illegible] Prasad

537 [illegible] L.T.I. of [illegible]

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54[illegible] Manohar [illegible]

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Singhai Barwar

P. Barwa

Sanjay Munda

Banjay Munda

Narendra Das

Johnson Sahu

Atulya Danuna

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ଶ୍ରୀଯୁକ୍ତ ଜିଲ୍ଲାପାଳ, ଗଞ୍ଜାମ

ଆବେଦନ ନଂ. ୪୮ ତାରିଖ ୨୦-୨୪

ମହାଶୟ, ଗତ ୨୦୧୧ ମସିହାରେ ମୁଁ ଗଞ୍ଜାମ ଜିଲ୍ଲାର ଚିକିତି ଗ୍ରାମର ଅଧିବାସୀ ଥିଲି । ମୁଁ ଏବେ ଚିକିତି ଛାଡି ଅନ୍ୟତ୍ର ରହୁଛି । ମୋର ଚିକିତି ଗ୍ରାମରେ ଥିବା ସମୟରେ ମୋର ଜମି ଥିଲା । ସେହି ଜମିରେ ମୋର ଘର ଥିଲା । ଏବେ ସେହି ଜମିରେ ଘର ନାହିଁ । ସେହି ଜମିରେ ମୋର ଚାଷ ଥିଲା । ଏବେ ସେହି ଜମିରେ ଚାଷ ନାହିଁ । ଏବେ ସେହି ଜମିରେ ଜଙ୍ଗଲ ଗଜିଛି

[illegible]

Passed for payment of Rs. [illegible]
(Rupees [illegible] only)

Adhyaksha
Sarpanch
Kasba Jama Panchayat

Passed by me Rs. [illegible]

Executive Officer
Kasba [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

[illegible]

[illegible]

ଉପରୋକ୍ତ ମତେ ଆଜି ତାରିଖ ୨୯.୦୩.୨୦୨୨ ମସିହା ଅପରାହ୍ନ ୩ଟା ରେ ଆମ ଗ୍ରାମ ପଞ୍ଚାୟତ ଅଫିସ୍ ଠାରେ ଗ୍ରାମ ପଞ୍ଚାୟତ ସ୍ତରୀୟ ଜୈବ ବିବିଧତା ସମିତି ର ପ୍ରଥମ ବୈଠକ ଅନୁଷ୍ଠିତ ହୋଇଥିଲା । ଏହି ବୈଠକରେ ଉପସ୍ଥିତ ସଦସ୍ୟମାନଙ୍କୁ ଜୈବ ବିବିଧତା ଆଇନ୍ ୨୦୦୨ ମସିହା ଅନୁସାରେ ଜୈବ ବିବିଧତା ସମିତି ଗଠନ ଉଦ୍ଦେଶ୍ୟ, ଜୈବ ବିବିଧତା ରେଜିଷ୍ଟର ପ୍ରସ୍ତୁତି ଉଦ୍ଦେଶ୍ୟ, ଜୈବ ବିବିଧତା ରେଜିଷ୍ଟର ପ୍ରସ୍ତୁତି ପ୍ରକ୍ରିୟା ଆଦି ବିଷୟରେ ବୁଝାଇ ଦିଆଯାଇଥିଲା । ଗ୍ରାମ ପଞ୍ଚାୟତ ଜୈବ ବିବିଧତା ରେଜିଷ୍ଟର ପ୍ରସ୍ତୁତି ପାଇଁ ଗ୍ରାମ ବାସୀଙ୍କୁ ସୂଚନା ଦିଆଯାଇ ପ୍ରସ୍ତାବ ଗୃହୀତ ହୋଇଥିଲା ।

ଜଳ ଉତ୍ସ, ଜଳାଶୟ ଉଦ୍ଧାର ଏବଂ ସୁରକ୍ଷା ଦ୍ୱାରା ଭୂତଳ ଜଳସ୍ତର ବୃଦ୍ଧି ପାଇବା ଦ୍ୱାରା ଗ୍ରାମ ପଞ୍ଚାୟତ ଜଳ ଜୀବନ ମିଶନ୍ ରେ ଗ୍ରାମ ପଞ୍ଚାୟତର ଜଳ ଆବଶ୍ୟକତା ପୂରଣ ହେବା ଆଦି ବିଷୟରେ ଆଲୋଚନା ହୋଇଥିଲା ।

ଶେଷରେ ସଭାପତି ଧନ୍ୟବାଦ ଅର୍ପଣ କରି ସଭାର ସମାପ୍ତି ଘୋଷଣା କରିଥିଲେ ।

FORESTER
KANSA SECTION

Revenue Inspector
Kankadahal

Executive Officer
Kansa G. P

Kansa Gram Panchayat

Block Development Officer
KANKADAHAL BLOCK

Sub Divisional Officer
Kankadahal

[illegible]

Kousumakanta

Somnath Mohanty

Sonu Pavera

[illegible]

Simanchi [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Ruta [illegible]

Bijay [illegible]

[illegible] of Reader Bhagat

[illegible]

10 [illegible]

12 [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Arunya Banerjee
[illegible]
Education [illegible]

[illegible]

Mahanand 25

[illegible] 26

[illegible] 27

[illegible] 28

[illegible] 29

[illegible] 30

[illegible] 31

[illegible] 32

[illegible] 33

[illegible] 34

[illegible] 35

[illegible] 36

L.T.P. Nabin Kisku 37

L.T.P. Gokaro Kisku 38

L.T.P. Gobin Tiria 39

L.T.P. Ramakanta Sidhu 40

L.T.P. Indramani Gagrai 41

L.T.P. Gopapa Gagrai 42

[illegible] 43

Dipu [illegible] 44

L.T.P. [illegible] 45

[illegible]

[illegible]

[illegible]

ITP Sarumati Nagahawa 47

[illegible] 48

ITP Mina Lamay 49

[illegible] 50

ITP Saramati Gajamaidi

ITP Manju Gajamai 52

ITP Hiramani Kalsi 53

ITP Malka Moranti 54 55

[illegible] 56

[illegible] 57

[illegible] 58

[illegible] 59

[illegible] 60

ITP Maina Murmu 61

Jaitini Mahakud 62

Jaitini Chandra 63

[illegible] 64

ITP Sambari Dhanwa 65

ITP Pangti Sidhar 66

Anantyadas Chairman
Mayurbhanj
Kelai Panchayat

[illegible]

LTP Kayni Pradhan

LTP Gangi Gogoi

LTP Champa Dehingia

Purkanta Gekkan Bete

Kadal Hailsom

Purnam Ch. Medhi

LTP. Ramai Hanshum

[illegible]

Biros Bohmon

[illegible]

LTP [illegible]

LTP [illegible]

[illegible]

L.T.P. Balaram Siyalia

[illegible]

[illegible]

LTP. Sanjay Lahan

LTP. Tara Lahan

Parbati Kumari [illegible]

Bhagya Dhiraj
Secretary
Education Panchayat

Anjan Mondal

Kalandinee Kishku

741

(1)

[illegible] 118

[illegible] 118

[illegible] 119

[illegible] 121

[illegible] 122

[illegible] 123

[illegible] 124

[illegible] 125

[illegible] 126

[illegible] 127

[illegible] 128

[illegible] 129

[illegible]

[illegible] 129 [illegible]

[illegible] 1230

Budhu [illegible] 1221

[illegible] 1222

[illegible] 1223

[illegible] 1224

[illegible] 1225

[illegible] 1226

[illegible] 1227

Lambodhar [illegible] 1228

[illegible] 1229

[illegible] 1230

[illegible] 1231

[illegible] 1232

[illegible]

[illegible] 1234

[illegible] 1235

[illegible] ADVOCATE [illegible]

[illegible] 179
[illegible] 179
[illegible] 179
[illegible] 179
PRAFULLA HERUMBAM 179
[illegible] SINGH 179

[illegible]

[illegible] 179
[illegible] 179
Dana' Bahadur 179
[illegible] 179
Sangram Hemborom 179
Lokanath Sharma 179

[illegible] 179
[illegible] 179
[illegible] 179
Chandrakirti Hemborom 179
Ramesh Kanna 179
[illegible] 179
[illegible] 179
[illegible] 179
[illegible] 179
Ajoy Kanna 179
[illegible] 179

[illegible]
[illegible]
Executive Engineer

[illegible]

[illegible]

Rolandi Riske [illegible]

[illegible]

[illegible]

[illegible]

[illegible] 203
[illegible] 208
[illegible] 207
[illegible] 209
Ramesh Lamsal 210
Pushpa Kumari Gautam 212
Kavita Sahu 213
Bobbi Handa 214

[illegible]

[illegible]

[illegible]

[illegible]

Secretary
Naren Grama Panchayat

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

Secretary
Naren Grama Panchayat

[illegible]

Secretary
Naren Grama Panchayat

[illegible]

Present for payment of Rs. [illegible]
(Rupees [illegible] only)

[illegible]
Secretary
[illegible]

Passed for payment [illegible]

[illegible]

[illegible] 750 [illegible]

FORESTER
KANSA SECTION

Revenue Inspector
Kankadapa

Executive Officer
Kanas G

752

[illegible]

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]
6. [illegible]
7. [illegible]
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9. [illegible]
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23. [illegible]
24. [illegible]
25. [illegible]
26. [illegible]
27. [illegible]

[illegible]

Sabyasachi Dubey 29
Tapan Dubey 30
Hiranmoy Kumar Dubey 29
Sunil Kumar [illegible] 30
Manoj Kumar 31
Ranjan Dubey 32
Sudipta Dubey 33
Sunil Kr 37
Deepak Kumar 37
Vijay Mandhani
Sujit Pal 38

Sanjay Hemb[illegible]

Ranjan Hembram

[illegible]

Kande munda

[illegible] munda

Radhika Munda

[illegible] Munda

Manoj Kumar Munda

Kanan [illegible]

[illegible]

Sumanta Hemb

755

[illegible]

[illegible]

[illegible]

[illegible] Panchayat

[illegible]

[illegible]

[illegible] Panchayat

[illegible] Panchayat

[illegible]

Received for payment of Rs. 500/-
(Rupees Five hundred) only

[illegible]
[illegible]
[illegible]

Received Rs. [illegible] 500/-

[illegible]
[illegible]

[illegible]

[illegible]

[illegible]

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[illegible]

[illegible]

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[illegible]

ଜଙ୍ଗଲ ଅଧିକାର ଆଇନ୍ ୨୦୦୬ ଅନୁସାରେ ଜଗମୋହନିଆ ଗ୍ରାମସଭା ବୈଠକର ବିବରଣୀ

ତାରିଖ : ୦୭-୦୧-୨୦୧୩ ସମୟ : ଅପରାହ୍ନ ୩ ରୁ ୩-୦୦ଟିକା

ସ୍ଥାନ: ଗୁରୁଡ଼ିଙ୍କି ଅଗ୍ରଡୋଗା

ଆଜି ତା ୦୭-୦୧-୨୦୧୩ ରିଖ ଅପରାହ୍ନ ୩ ରୁ ୩-୦୦ଟିକା ସମୟରେ ଗୁରୁଡ଼ିଙ୍କି ଅଙ୍ଗନୱାଡ଼ି କେନ୍ଦ୍ରର ପରିସର ମଧ୍ୟରେ ଜିଲ୍ଲାପାଳ , ମାଲକାନଗିରି ଙ୍କ କାର୍ଯ୍ୟାଳୟ ପତ୍ର ସଂଖ୍ୟା- ୧୩୦୬, ତା ୨୬-୦୭ ୨୦୧୩ ରିଖ ଓ ଗୋଷ୍ଠିଉନ୍ନୟନ ଅଧିକାରୀ, ଚିତ୍ରକୋଟ ପତ୍ର ସଂଖ୍ୟା-୧୯୦୬, ତା ୦୧-୦୮ -୨୦୧୩ ରିଖ ଅନୁସାରେ ଆଗରୁ କରିଥିବାପରି ଉକ୍ତ ଜାଇଜରପଲ୍ ସ୍ୱତନ୍ତ୍ରକରି ନିମନ୍ତେ ଏବଂ ଜିଲ୍ଲାପାଳ, ମାଲକାନଗିରି ଙ୍କ କାର୍ଯ୍ୟାଳୟ ପତ୍ର ସଂଖ୍ୟା-୨୨୯୬, ତା ୨୫-୦୭-୨୦୧୩ ରିଖ ଓ ଗୋଷ୍ଠିଉନ୍ନୟନ ଅଧିକାରୀ, ମୁଡ଼ିଖାଲ ପତ୍ର ସଂଖ୍ୟା ୨୯୦୪, ତା ୦୧-୦୮-୨୦୧୩ ରିଖ ଅନୁସାରେ ଗୁରୁଡ଼ିଙ୍କି ଖଣିର ଡାଇଭରସନ୍ ପ୍ରୟୋଜନ୍ ନିମନ୍ତେ ମରାଗଣ, କାଳିଆପାଣି ଗ୍ରାମ ପଞ୍ଚାୟତର ଗ୍ରାମାଞ୍ଚଳରେ ପୂର୍ବ ନିର୍ଦ୍ଧାରିତ କାର୍ଯ୍ୟସୂଚୀ ଅନୁସାରେ ଏକ ଗ୍ରାମସଭା (ଜଙ୍ଗଲ ଅଧିକାର ଆଇନ୍ ଧାରା -୨କ ଅର୍ଥାତ୍ ଜିଲ୍ଲାସ୍ତରୀୟ ସମିତି) ବୈଠକ ଆୟୋଜନ କରାଯାଇଥିଲା ଉକ୍ତ ଗ୍ରାମସଭାରେ ନିମ୍ନଲିଖିତ ବ୍ୟକ୍ତି ଏବଂ ପଦାଧିକାରୀ ମାନେ ଉପସ୍ଥିତ ଥିଲେ ।

୧. ମରାଗଣ, କାଳିଆପାଣି ଗ୍ରାମବାସୀ
୨. ଜଙ୍ଗଲଅଧିକାର କମିଟିର ସଭାପତି
୩. ଜଙ୍ଗଲରକ୍ଷକ କମିଟିର ସଭ୍ୟମାନେ
୪. ଜଙ୍ଗଲଅଧିକାର କମିଟିର ସଭ୍ୟା ସଭ୍ୟ ଓ ସଭ୍ୟା ବୃନ୍ଦ
୫. ଗ୍ରାମବାସୀ ବୃନ୍ଦ

ଏହା ବ୍ୟତୀତ, ଉକ୍ତ ସଭାରେ ନିମ୍ନଲିଖିତ ସରକାରୀ କର୍ମଚାରୀ ଓ ଓଡ଼ିଶା ଜଳ ବିଦ୍ୟୁତ ପ୍ରସାରଣ କମ୍ପାନୀ ମାନେ ଉପସ୍ଥିତ ଥିଲେ ।

୧. ସମେତ ସଂଗ୍ରହାଳୟ ଅଧିକାରୀ ଓ ଏଥନୋଲଜି ଗବେଷକ,ଏସ୍.ସି.ଏସ.ଟି ଏ.,ଭୁବନେଶ୍ୱର
୨. ଦଳପତି, ରାଁଗୋଡ
୩. ରାଜସ୍ୱ ପରିଦର୍ଶକ, ମୁଣ୍ଡିଗଡ
୪. ରେଞ୍ଜ୍ ଫରେଷ୍ଟର,ଗୋବିନ୍ଦପଲ୍ଲୀ
୫. ବୀଟ୍ ଫରେଷ୍ଟର, ବାଙ୍କଡମାଳ
୬. ପଞ୍ଚାୟତ ନିର୍ବାଚିତ ଅଧିକାରୀ, କାଳିଆପାଣି ଗ୍ରାମପଞ୍ଚାୟତ

୭. ଗଣିତିକିଆଳିକ, ସାଗର କାଳିଆପାଣି ଖଣି

୮. ବିଶିଷ୍ଟ ପରିଦର୍ଶନକାରୀ, ସୁନ୍ଦରଗଡ଼ି ଖଣି

ଉକ୍ତ ପ୍ରମାଣପତ୍ରରେ ଓଡ଼ିଶା ଖଣି ନିଗମ ଦ୍ୱାରା ପ୍ରସ୍ତୁତିକୃତ ସାଉଥ କାଳିଆପାଣି ଖଣି ଏବଂ ସୁନ୍ଦରଗଡ଼ି ଖଣି ର ଜାରିକରଣର ପ୍ରସ୍ତାବର ସମ୍ଭାବ୍ୟତା ଓ ତାହାର କାର୍ଯ୍ୟ କରିବା ସମ୍ବନ୍ଧରେ ବିଷୟ ଆଲୋଚନା ପାଇଁ ବୈଠକରେ ନିମ୍ନମତେ ଆଲୋଚନା କରାଯାଇଥିଲା । ଏହି ବ୍ୟତୀତ ଅନୁଧ୍ୟାନ ଜରୁରୀ ଏବଂ ଆବଶ୍ୟକ ପରିବେଶଗତ ଛାଡପତ୍ର (ଜେଏଲ ସ୍ୱତନ୍ତ୍ର ଅନୁମତି ଆଦେଶ ୨୦୦୨) ର ପାଳନ ନୀତିଗତ ଭାବରେ ଆଲୋଚନା କରାଯିଲା ।

୧. ସାଉଥ କାଳିଆପାଣି ଖଣି ନିମନ୍ତେ ଗ୍ରାମ ସଭା ବୈଠକର ବିବରଣୀ :

ଉକ୍ତ ଖଣି ନିଗମ ପରିଚାଳିତ ସାଉଥ କାଳିଆପାଣି ଖଣି ର ଜାରିକରଣର ପ୍ରସ୍ତାବକୁ ନିମନ୍ତେ ମୁଣ୍ଡଗଡ଼ି ମୌଜାରେ ୨୯୧.୭୧ ଏକର ଜଙ୍গଲ ଜମିକୁ ଅଣ ଜଙ୍ଗଲ ଉଦ୍ଦେଶ୍ୟରେ ବ୍ୟବହାର ପାଇଁ କରିଥିବା ଆବେଦନ କୁ ତାହାର ନିକଟସ୍ଥ ସମସ୍ତ ଗ୍ରାମମାନଙ୍କରେ ଶୁଣାଣି ନିମନ୍ତେ ଉପସ୍ଥାପନ କରାଯାଇ

ରାଜସ୍ୱ ନିରୀକ୍ଷକ, ରାଜଗାଙ୍গପୁର ଙ୍କ ଦ୍ୱାରା ଜଙ୍ଗଲ ଅଧିକାର ଆଇନ୍ ପଦ୍ଧତିରେ ଗଠିତ ପର୍ଯ୍ୟବେକ୍ଷଣ ଦଳ ଦ୍ୱାରା ବୈଠକରେ ଉପସ୍ଥାପିତ କରାଯାଇଥିଲା । ଓଡ଼ିଶା ଖଣି ନିଗମ ପରିଚାଳିତ ସାଉଥ କାଳିଆପାଣି ଖଣି ଆବେଦନ କରିଥିବା ଜାରିକରଣର ପ୍ରସ୍ତାବକୁ ସେ ମୌଜା ସୁନ୍ଦରଗଡ଼ି ର ୨୯୧ ଏକର ଜଙ୍ଗଲଜମି ଅର୍ନ୍ତଭୁକ୍ତ ଥିବା ।

ରାଜସ୍ୱ ନିରୀକ୍ଷକ, ରାଜଗାଙ୍গପୁର ଉପସ୍ଥାପିତ ବିବରଣୀ ରୁ ଜଣାପଡ଼ିଲା ଯେ ମୌଜା ସୁନ୍ଦରଗଡ଼ି ପ୍ରସ୍ତାବିତ ଜାରିକରଣର ଉପରି ମଧ୍ୟରେ ମୌଜାଟି ମେଳ ପଡ଼ି ବାସ କରୁ ନାହାନ୍ତି ।

୨. ସୁନ୍ଦରଗଡ଼ି ଖଣି ନିମନ୍ତେ ଗ୍ରାମ ସଭା ବୈଠକର ବିବରଣୀ ଗ୍ରାମ ସଭା ବୈଠକର ବିବରଣୀ

ଓଡ଼ିଶା ଖଣି ନିଗମ ପରିଚାଳିତ ସୁନ୍ଦରଗଡ଼ି ଖଣି ର ଜାରିକରଣର ପ୍ରସ୍ତାବକୁ ନିମନ୍ତେ ଏହି ମୌଜାରେ ୬.୪୩ ହେକ୍ଟର ଏବଂ ଫରେଷ୍ଟ ବ୍ଲକ-୨୬ ରେ ୩୬.୧୦ ଏକର ଯୋଗାଇ ୪୨.୪୩ ଏକର ଜଙ୍ଗଲ ଜମିକୁ ଅଣ ଜଙ୍ଗଲ ଉଦ୍ଦେଶ୍ୟରେ ବ୍ୟବହାର ପାଇଁ କରିଥିବା ଆବେଦନ କୁ ତାହାର ନିକଟସ୍ଥ ସମସ୍ତ ଗ୍ରାମମାନଙ୍କରେ ଅବଗତି ନିମନ୍ତେ ଉପସ୍ଥାପନ କରାଗଲା ।

ରାଜସ୍ୱ ନିରୀକ୍ଷକ, ରାଜଗାଙ୍গପୁର ଦ୍ୱାରା ଜଙ୍ଗଲ ଅଧିକାର ଆଇନ୍ ପଦ୍ଧତିରେ ଗଠିତ ପର୍ଯ୍ୟବେକ୍ଷଣ ଦଳ ଦ୍ୱାରା ବୈଠକରେ ଉପସ୍ଥାପିତ କରାଯାଇଥିଲା । ଓଡ଼ିଶା ଖଣି ନିଗମ ପରିଚାଳିତ ସୁନ୍ଦରଗଡ଼ି ଖଣି ପାଇଁ ଆବେଦନ କରିଥିବା ଜାରିକରଣର ପ୍ରସ୍ତାବକୁ ସେ ମୌଜା ସୁନ୍ଦରଗଡ଼ି ର ୨୯୧ ଏକର ଜଙ୍ଗଲଜମି ଅର୍ନ୍ତଭୁକ୍ତ ଥିବା ଏବଂ ଅବଶିଷ୍ଟ ୩.୬୦ ହେକ୍ଟର ଫରେଷ୍ଟ ବ୍ଲକ-୨୬ ରେ ଅର୍ନ୍ତଭୁକ୍ତ

ପରନ୍ତୁ ତାହାସତ୍ତ୍ୱେ, ଆଜିରପର୍ଯ୍ୟନ୍ତ ଚାରୁଗୁଡ଼ିଏ ବିଚାରଣୀ ରୁ ଜଣାଯାଇଛି ଯେ ମୌଜା ମୁଚୁରଙ୍ଗି ଏବଂ ଫରେଷ୍ଟ କୁପ-୨୭ ରୁ ପ୍ରସ୍ତାବିତ ଓ ଉଭୟପକ୍ଷ ଜନତା ମଧ୍ୟରେ ଚର୍ଚ୍ଚାର ବାଧ୍ୟ ବିଚେଷ୍ଟ ନିଜ ପାଶ ରହୁ ନାହିଁ ।

ଉକ୍ତ ଗ୍ରାମ ମଧ୍ୟରେ ଆଦିବାସୀ ଜାତିଭାଇମାନେ ଚାଷ ଏବଂ ମୁଚୁରଙ୍ଗି ଗଛ ପାଇଁ ଚାଲିଆସିଛନ୍ତି ପ୍ରସ୍ତାବିତ ଜମିର ଦୀର୍ଘ ଦିନ ଧରି ବସବାସ ଓ ଚାଷ ଆବାଦ କରାଯାଇ ଆସୁଥିବା ଗ୍ରାମବାସୀ ଏମାନଙ୍କୁ ଉଚ୍ଛେଦ କରାଯାଇ ଦିଆଯାଉଥିଲା । ଏଣୁ ମୁଚୁରଙ୍ଗି ମୌଜାର ୨.୯୩ ଏକର ଓ ଫରେଷ୍ଟ କୁପ-୨୭ ର ୩.୧୦ ଏକର (ମୋଟ୍ ୬୯.୧୩ ଏକର) ମୁଚୁରଙ୍ଗି ଗଛ ପାଇଁ ଏବଂ ମୁଚୁରଙ୍ଗି ମୌଜାର ୨୯୦.୭୮ ଏକର ଚାରଣ ଜମିଥିବାରୁ ଗଛ ପାଇଁ ପ୍ରସ୍ତାବିତ ଆଉଜଗଡ଼ ପ୍ରକଳ୍ପର ମୂଳାବିତ ଉକ୍ତ ଜଙ୍ଗଲ ଜମିକୁ ଦେଇ ଜାତୀୟ ଉଦ୍ୟାନ ରେ ବ୍ୟବହାର କରାଯାଇଛି ଗ୍ରାମବାସୀ ମାନଙ୍କର କୌଣସି ଅସୁବିଧା ମଧ୍ୟରେ ନାହିଁ ବରଂ ଗ୍ରାମବାସୀ ଉପସ୍ଥିତ ଗ୍ରାମବାସୀ ମାନେ ମତ ପ୍ରକାଶ କରେ । ଗ୍ରାମବାସୀଙ୍କ ଉପସ୍ଥିତ ସମସ୍ତ ଦାବୀ ଦାବୀ ଉକ୍ତ ପ୍ରସ୍ତାବକୁ ସମର୍ଥନ କରିଥିବାରୁ ମୁଚୁରଙ୍ଗି ଗଛ ଏବଂ ଚାରଣ ଜମିଥିବାରୁ ଗଛ ଗୁଡ଼ାକର ସଂରକ୍ଷଣ କରିବା ପାଇଁ ଜୈବବିବିଧତା ସମ୍ପତ୍ତି ପ୍ରକାଶ ପାଇଛି ।

ପରିଶେଷରେ ମୁଚୁରଙ୍ଗି ଉପସ୍ଥିତ ସମସ୍ତ ଗ୍ରାମ ପଞ୍ଚାୟତ , ଗ୍ରାମବାସୀ ଏବଂ ଓଡ଼ିଶା ଗଛ ନିଗମ କର୍ତ୍ତୃପକ୍ଷଙ୍କୁ ଧନ୍ୟବାଦ ଅର୍ପଣ ସଭା ସମାପ୍ତ କରାଯାଇଛି ।

ସଭାପତି
ଜିଲ୍ଲାପାଳ ମହୋଦୟ

ସଦସ୍ୟ
ଜିଲ୍ଲାପାଳ ମହୋଦୟ

ସଦସ୍ୟ
ଜିଲ୍ଲାପାଳ ପ୍ରତିନିଧି

Revenue Officer
Kaniguda

ସଦସ୍ୟ
ସରପଞ୍ଚ

ସଦସ୍ୟ
Revenue Inspector
SURIGUDA TAHASIL

Executive Officer
Kaniguda G.P.

ସଦସ୍ୟ
ବିଡ଼ିଓ
Forest Section Officer
Rensal Section

ସଦସ୍ୟ
ଗ୍ରାମ ପଞ୍ଚାୟତ ସଚିବ

ସଦସ୍ୟ
ଗ୍ରାମ ପଞ୍ଚାୟତ ସଚିବ

ଗ୍ରାମ ପଞ୍ଚାୟତ ସଚିବ
ଗ୍ରାମ ପଞ୍ଚାୟତ ସଚିବ

1) Gadadhar Pathak (W.M.)
2) Swapna Debnath
3) Bimalendra Deb Roy
4) Bijoya Saha
5) [illegible]
6) [illegible]
7) [illegible]
8) [illegible]
9) [illegible]
10) [illegible]
11) [illegible]
12) Manas Dhar
13) [illegible]
14) [illegible]
15) Bijaya Ku Debnath
16) Sankar Debnath
17) [illegible]
18) [illegible]
19) [illegible]
20) [illegible]
21) [illegible]
22) [illegible]
23) [illegible]

Sub-Divisional Officer
Sadar, Agartala

76

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[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible] Rama Chandra Dehury

[illegible] Sharanidhar Dehury

[illegible] Kailash Chandra Dehury

[illegible]

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KALLAPANI G.P.

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Sarpanch
KALIAPANI G.P.

[illegible]

Bhagawan Singh

[illegible]

Dhanamunda
Secretary
KALAPAHA G.P.

[illegible] 769

Sarpanch
KALLAPAM G.P.

[illegible]

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[illegible] Munia
Sarapanch
KALIAPANI G.P.

771

[illegible]

772

Sarapanch
KALAPAHI G.P.

[illegible]

Jinajarunda
Sarpanch
KALLAPANI G.P.

Markanda Parida

Sakti Dawan Ali

774

Sarpanch
KALIAPANI G.P.

[illegible]

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Sarpanch
KA[illegible] G.P.

227/ [illegible] Behera

228/ [illegible]

229/ [illegible]

230/ [illegible]

231/ Manoj Behera

232/ Nabin Behera

233/ Subash Behera

234/ Gobinda Behera

235/ Narasingha pradhan

236/ pankaj Behera

237/ Laxman Behera

238/ Narayan Pradhan

239/ [illegible]

240/ [illegible]

241/ [illegible]

242/ [illegible]

243/ [illegible]

244/ [illegible] [illegible]

Sarpanch
KALIAPANI G.P.

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] Dinesh Kumar Singh

[illegible] [illegible] Singh

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible] Kumar Das

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible]

[illegible] [illegible] [illegible] [illegible]

[illegible] G.P.

Sarpanch

[illegible]

[illegible]

[illegible]

N.K [illegible]

[illegible]

[illegible]

[illegible]

Sibani Behera

[illegible]

[illegible]

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[illegible]

[illegible]

[illegible]

Sarpanch
ALIAPADA G.P.

Gokhra Behera
Jayadhra Mohanty
Rajeeb Mohanty
Sanjeeb Mohanty
Pradip Kumar Sahu
Manoja Mohanty
Gridharmohan
Anjitha Sahu
Rohini Das
Deepak Kumar Das
Bishnu Das
Susanta Mohanty
Tarsini Kumar Nahak
Lopamudra Sahu
Sujata Das
Sudipta Das
Sagar Nagar Das
Pradipta Das
Prem Sahu

[illegible]

322/ [illegible]

323/ [illegible]

324/ [illegible]

325/ [illegible]

326/ [illegible]

327/ [illegible]

328/ [illegible]

329/ [illegible]

330/ [illegible]

331/ [illegible]

332/ [illegible]

333/ [illegible]

334/ [illegible]

335/ [illegible]

336/ [illegible]

337/ [illegible]

Indra Munda
Sarpanch
KALIAPANI G.P.

(50)

[illegible]

339) [illegible]

340) [illegible]

341) [illegible]

342) [illegible]

343) [illegible]

344) [illegible]

345) [illegible]

346) [illegible]

347) [illegible]

348) [illegible]

349) [illegible]

350) [illegible]

351) [illegible]

352) [illegible]

Superintendent
Sorting
VALIPALLI G.P.

OFFICE OF THE PANCHAYAT SAMITI, SUKINDA
Phone No. 06726 [illegible] FAX No. 06726 [illegible]
E Mail Id- [illegible]

Letter No. 9089 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. 307 Dt 17-09-2013

Sir,

With reference to the letter on the captioned subject and as per the I.O Letter No 1359 Dt 21-01-2013 of the Chief Secretary, Odisha for diversion of 291.41 hectare of Forest Land in respect of Nort Kaliapani Mines (Within NL granted area in Forest Block No 27, Kaliapani) and 5.41 Acres of forest land in Mauza Sukinda) as well as 26.16 Acres of forest land in Forest Block No 27, Kaliapani (both Within the ML granted area of OMC Ltd) towards mining activities of OMC, one Pallisabha(Gram Sabha) was convened in the premises of Arthalma of Kaliapani village for the purpose issuance of Certificate of No objection and consent in favour of the proposed diversion but Only all the requirements as prerequisite and with required quorum.

The proposed diversion was concurred by the quorum 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 relevant documents enclosed herewith for taking further action of issuance of Certificate.

Block Development Officer
Sukinda

List of enclosures

1- Gramsabha resolution in original form page 1 to 20
2- Photo copy of notice
3- Still photo video graph copy of Gram sabha proceedings
4- Receipt of Drum beat Charges
5- Enquiry Report of R I along with Map & Land Schedule
6- Notice Copy

Memo No. 9088 Date 7-10-13

Copy forwarded to Tahasildar, Sukinda / Regional Manager OMC Limited, Jajpur Road for information and necessary action.

Block Development Officer
Sukinda

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[illegible] ପ୍ରାଥମିକ ବିଦ୍ୟାଳୟ, [illegible] ପ୍ରାଥମିକ ବିଦ୍ୟାଳୟ, [illegible] ଗ୍ରାମର [illegible] ଏ.ସି.ଏ.ଟି.ଏ. [illegible] ଦ୍ୱାରା ଦୁଇଟି ବିଦ୍ୟାଳୟ

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2 [illegible] 08/04/023/026924

3 [illegible]

4 [illegible]

5 [illegible]

6 [illegible]

7 Ravi Bohra

8 [illegible]

9 Ravi [illegible]

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11 [illegible]

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14 [illegible]

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18 [illegible] 08/04/023/026902

19 [illegible] 08/04/023/026074

20 [illegible] YE3 0000659

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22 Abhisam [illegible] OKR3207103

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Secretary

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45- [illegible] GKR 8209160
46- [illegible] YBJ 0282485
47- [illegible] YBJ 0523191

48- [illegible] GKR 155 7859
49- [illegible] YBJ 0523118
50- [illegible] GKR 157 7864
51- [illegible] YBJ 0592720
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53- [illegible] GKR 3209384
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55- [illegible] GKR 3209495
56- [illegible] YBJ 0015594

57- [illegible] YBJ 0414650
58- [illegible] OR/04/023/0081120
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60- [illegible] GKR 1404157
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62- [illegible]
63- [illegible] OR/04/021/0252299

64- [illegible] OR/04/003/0267321
65- [illegible]
66- [illegible]

66 - [illegible] OR/01/[illegible]

67 Sunita Hembram [illegible] KR 1549997

68 [illegible] OR/01/023/028312

69 [illegible] OR/01/023/0265584

70 [illegible] OR/01/023/[illegible]

71 Babita Mohanta GKR 352883

72 [illegible]

73 Kusumi Mahanta YBT [illegible]

74 Sebati Mahanta GKR [illegible]

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76 [illegible]

77 [illegible] OR/01/023/026075

78 Bibi Behera

79 [illegible]

80 [illegible]

81 [illegible]

82 Tikri Behera

83 [illegible] OR/01/023/028812

84 [illegible]

85 L. T. [illegible] Behera [illegible] Behera

86 [illegible] OR/01/023/026717

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101 L.T. Lasiman Hansda ...

102 L.T. chouni ...

103 L.T. Sharmila ...

104 L.T. madhi murmu

105 ... murmu ...

106 ... 4870015579

107 L.T. Gurucharan mahantary 4870015787

108 Buddhadev mahanta ...

109 Bhagaban mahanta ...

110 Ranjan ... 4870...

111 Chandramani Dalai 48701148831

112 ...

113 ...

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115 ...

116 ...

117 ...

118 Santosh ...

120 Ravindra ...

121 L.T. [illegible]

122 Madhuri Behera

123 [illegible]

124 [illegible] Dehury

125 [illegible] Rahang

126 L.T. [illegible] Dehury OR/OU/[illegible]

127 L.T. Kumar Dehury

128 Bandhu [illegible]

129 Raju Dehuri [illegible]

130 L.T. [illegible] Mohanty

131 L.T. [illegible] Dehury OR/OU/[illegible]

132 [illegible] OR[illegible]

133 [illegible] OR/OU/[illegible]

134 L.T. [illegible]

135 L.T. [illegible]

136 L.T. [illegible] Dehury YR7001551[illegible]

Gitanjali Basu

137 L.T Aswini Delwary YB105006 60

138 L.T Chandra Delwary OR/04/032/026106

139 Mahendra Delwary

140 L.T Ashwini Delwary OR/04/033/026060

141 Sisir Kumar Sahu OR/04/033/026059

142 L.T Hrishikesh Mahanta OR/04/033/026058

143 Himansu Mohan GIKR06-1489

144 L.T Chandrawati Mahanta GIKR15-0571

145 L.T Sri Delwary OR/04/023/026805

146 L.T Bhubaneswar Delwary

147 OR/04/023/026804

148 Nirmala Kalita Mahanta

150 Nil Sarma

Ashoka Delwary

Ostapal Grama Basi

151. Gangadhar Munda OR/09/535/626200

152. Singar Munda OR/09/023/020040

153. Dhananjay Sahadigna

154. Sahra Munda OR/09/023/

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Ostapal
Gram Sabha

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168. Kamala Kanta [illegible]

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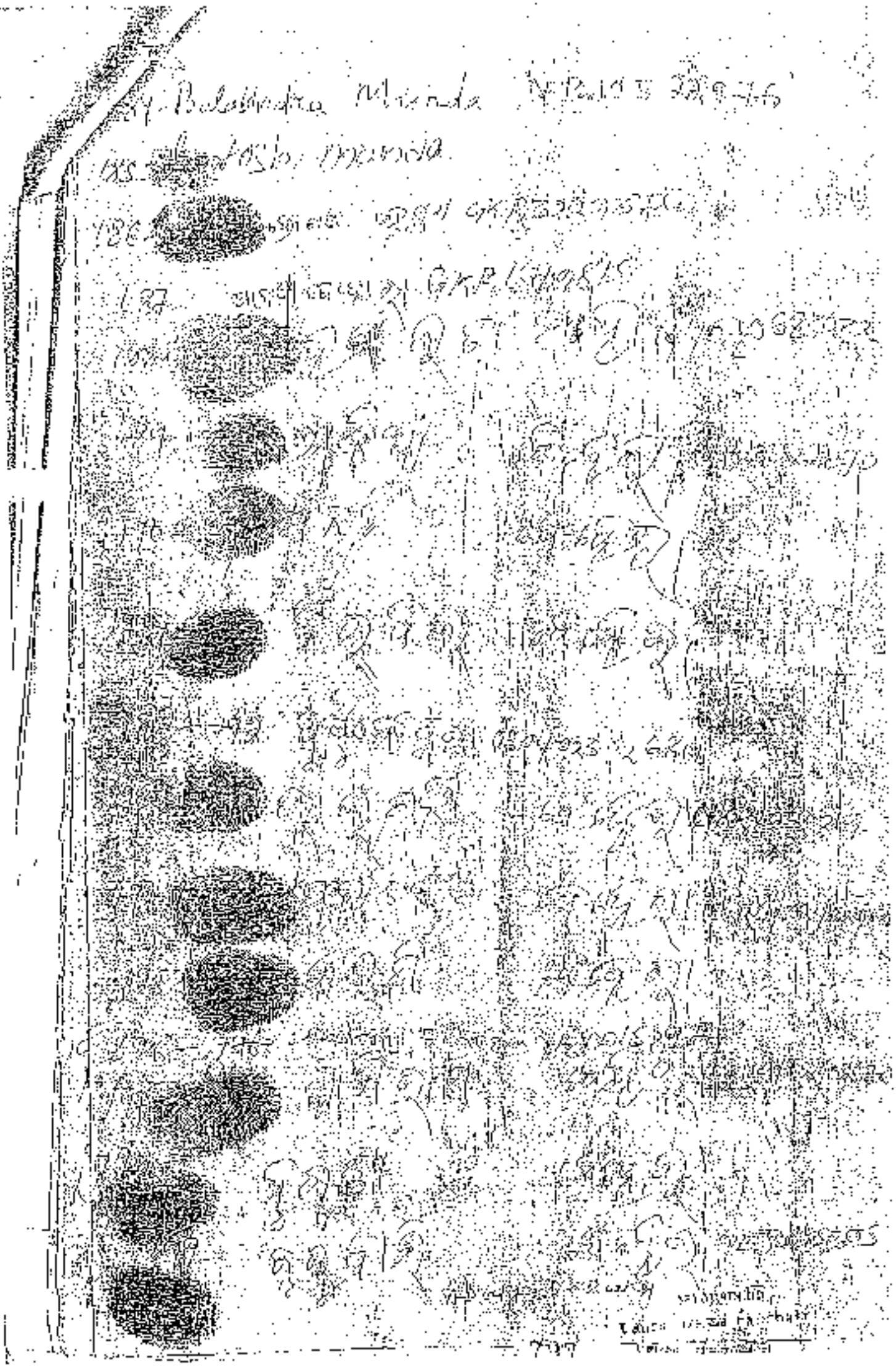

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Roy Hahnak Behera [illegible]

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Panchayat

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Laxman Dehuri

Kabita Pradhan

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Sarpanch

[illegible] Grama Panchayat

Jagannath Mohanty.

Shankar Choudhury

Madhusudan Mahapatra

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Bijaya Behera

Pandit Jena

Prabhakar Behera

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Raghunath Mohanty

[illegible] -- Prabhakar Mohanty

Nabakishore Mohanty

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[illegible] Kanchalima Mohanty

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[illegible] -- Manoj Mohanty

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Ranjeet Kumar Mohanty

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Advocate
Cuttack Jajpur Panchayat

Ramesh Dehury

Himanshu Mahanta

Ramesh Mahanta

Sangeetha Deburi

Lt. Kamala Deburi

B. Nagar Deburi

Sharad Pradhan

Lt. Sita Deburi

Bhabati Deburi

Lt.

Kalabaru Gadi

Lt. Sambari Pradhan

SAMPUT BAHAN

Amiya Deburi

Chairman

Gram Panchayat

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[illegible] Ershad Ahmed Rehman

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Lalchand Adga

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Vakjabandhu Dahey

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Sumon Barman

Reena Adda

Mahmud Pinky

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Ranjan Bhattacharjee
[illegible]
Cooch Behar Panchayat

Shri Chandan Gagoi

Smt Bedang Minda

Bimalpur

Smt Ramapanda

Mong Bahora

Smt Madhura Hembram,

Tapan Hembram

Anupu Deburi

Smt Nanda Pochaer

Abhijit Deshmukh
Teacher
Sri Sri Ma Sarada Pathshala

Babula Deshmukh

ବାବୁଲା ଦେଶମୁଖ

ଶ୍ରୀ ବାବୁଲା

L.T.I of

Raja Raghav

ରାଜା ରାଘବ

ଶ୍ରୀକାନ୍ତ ଦେଶମୁଖ

Srikanta Deshmukh

ଶ୍ରୀ ଶ୍ରୀକାନ୍ତ

L.T.I of

Dayanidhi Lohar

ଦୟାନିଧି ଲୋହାର

Gopabandhu

ଗୋପବନ୍ଧୁ

ଶ୍ରୀ ଗୋପବନ୍ଧୁ

Anil Dehury

Senior Home Purchaser

L.T.I of

Nirakar Nada

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Rahma [illegible]

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Lakshmi [illegible]

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Ram [illegible]

[illegible]

Ram Behera

Sarba [illegible]

[illegible]

Manoj Dehury
[illegible]

Smt. Padmabati Dehuri

Ganesh Dehuri

Smt. Rakhani Dehuri

Jagannath Dehuri

Lata Mahanta

Smt. Labha Behari

Principal
Govt. Women's College, Phulbani

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[illegible] L.T.P. 04
Pulanti [illegible]

[illegible] L.T.P. 04
Bhanati [illegible]

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Gandhari Dubey

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Bhagwan Dewan
[illegible]
Tarna Panchayat

[illegible] : 813

Anadha Dehuri

LTI of Kettabari Harad

LTI of Kadamani

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LTI of Rajmati Sodar

LTI of Manmohan Rana

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Mukundar Munda

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LTI of Madani Munda

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Sankar Prasad

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LTI of Bairi Munda

Anadha Dehury

[illegible]

[illegible] Panchayat

Rasini Pradhan

[illegible]

[illegible] Mukta

[illegible]

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L.T.I. [illegible]

Nirmalan Dehuri

L.T.I. [illegible]

Basanta Mahanta

L.T.I. [illegible]

Sri Mandhata [illegible]

[illegible]
[illegible]
[illegible] Panchayat

COLLECTORATE : JAJPUR
Ph. 06728-222071 (O), 222330 (R), FAX - 222027
email: [illegible] web site: www.[illegible]
(ST & SC DEV. SECTION)

No. ___ / Date ___

To

The Divisional Forest Officer,
Cuttack Forest Division, Chatakul,
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. 7216 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 (67.83 hectares) in Form-II for projects other than Linear 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. 696 / Date 28/9/16
Copy forwarded to the Regional Manager, M/s. OMC Ltd. Jajpur Road for information and necessary action.

District Welfare Officer,
Jajpur

FORM-II

(As prescribed under Rule 6 of the Rules)

Government of Odisha

Office of the District Collector, Jajpur

No. 542 Date 4/12/17

TO WHOMSOEVER IT MAY CONCERN

In compliance of the Ministry of Environment and Forests (MoEF) Government of India's letter No.11-9/99-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 in short) on the forest land proposed to be diverted for non-forest purposes, it is certified that 87.84 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 & Sergaon village in Sukinda tehsil.

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 87.84 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 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 alternative measures, if any, being understood

the purpose and details of proposed diversion a copy of the certificate issued by the Gram Sabha of Kalapani village is enclosed (as mentioned above).

(d) the discussion and decision on such proposals will take 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) (b) of the FRA.

/-sd/- As above

(Satya Ranjan Mallick)
Collector & District Magistrate,
Jajpur

PROCEEDING OF THE DISTRICT LEVEL COMMITTEE MEETING ON DIVERSION OF FOREST LAND FOR USE OF NON FOREST PURPOSE UNDER ST & OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006 HELD ON 27.02.2016 IN THE RESIDENTIAL OFFICE OF COLLECTOR

* * * * * *

The District Level Committee was convened on 27.02.2016 for conferment of Diversion of Forest land for use of Non-Forest purpose under ST and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The Collector-cum-Chairman presided over the meeting in presence of the following members.

1. Sri Sudarsan Behera, OFS-I (SB), DFO., Cuttack
2. Sri Maheswar Panigrahi, OAS (S), Sub Collector, Jajpur.
3. Smt. Sabita Behera, ZP Member, Zone No. 10
4. Smt. Tapaswini Mallik, ZP Member, Zone No. 39
5. Block Development Officer, Danagadi
6. Sri Nabakrishna Jena, OAS (I), Tahasildar, Sukinda
7. Miss Chetna Sethy, OWS, District Welfare Officer, Jajpur
8. Sri Padan Charan Jena, ADWO, Jajpur
9. Sri Bijay Kumar Behera, Regional Manager, M/s OMC Ltd

Initiating the discussion the Chairman cessed to know about the verification report prepared by Tahasildar, Sukinda and is the recommendation of Gram Sabha of Sukurangi & Saruabil village and their consent for the proposed Diversion of Forest Land for use of Non-Forest purpose of Sukarangi Chromite Mines by M/s. OMC Ltd.

The DWO apprised before the committee that, the the Gram Sabha of Kaliapani & Karsa G P has recommended the proposal for diversion of Forest Land measuring Ac. 217.02 & 87.83ha. for use of non-forest purpose by M/s. OMC Ltd for Sukurangi Chromite Mines before the SDLC alongwith the consent of Gram Sabha for approval. The detailed village wise position is given below.

Name of the Agency	Name of the GP	Name of the Village	Area applied for
M/s. OMC Ltd.	Kaliapani	Sukurangi	Ac. 170.10
	Karsa	Saruabil	Ac. 46.92
		Total	Ac. 217.02

On perusal of Gram Sabha proceeding forwarded by Block Development Officer, Sukinda it revealed that, a detailed and elaborate discussion was made in the Gram Sabha/Pati Sabha regarding Forest Right Act, 2006. The implication of displacement process and its mitigation and rehabilitation was also explained to them in oriya vernacular. Further it is seen the people present in the Gram Sabha have agreed and given their written consent with recommendation for diversion of forest land of [illegible] for non forest use by user agency. Finally, it was found that 9 nos. of individual ST Dwellers & 1 nos. of Individual Other Traditional Forest Dwellers are in possession in Kandhi village. The same has been confirmed by the R.I. Kandhi/Jagatpur in his enquiry report. The detail micro-plan as prepared by R. I. Kandhi/Jagatpur was placed before the committee. The Chairman wanted to know the decision of the SDLC regarding the encroachers. The DMO apprised before the committee that, the SDLC has passed orders that, one undertaking should be given by the user agency with a confirmation that the dwellers will not be restrained from their habitational area and if it is required for their displacement the user agency will take all remedial steps for their rehabilitation before restoring them. Accordingly, the user agency has submitted undertaking not to displace the dwellers residing the same portion of the proposed mining area for diversion. The said undertaking placed before the committee for consideration.

After thorough discussion, it was unanimously decided by the SDLC for diversion of the forest land of Ac. 217.02 for use of non forest purpose by OMC Ltd. subject to the condition that 09 nos. of ST & 1 no. of OTFD beneficiaries who would be displaced due to diversion of forest land are to be covered with ex-gratia and ameliorative measures in conformity with the Gram Sabha resolution.

Further, the said proposal was also approved by the SDLC giving proper safeguard to the individuals and community claims as per Section 3 (1) (i) & 3(1)(e), 3(2) under Forest Rights Act, 2006 and recommended to DLC for approval. The detail elaborate discussion was made on the recommendation of the SDLC. The District Level Committee unanimously decided and approved the decision proposal [illegible] with the mentioned condition as with Gram Sabha as well as SDLC.

Therefore, all rights of individual claims under Forest Rights Act, 2006 [illegible] through the SDLC were also taken into consideration by the DLC which were

unanimously scrutinized and approved. The forest [illegible] of land [illegible] by the Gram Sabha was duly scrutinized by the [illegible] and it was [illegible] to make it equivalent for proportionate distribution to the [illegible] families of the ratio of 10 dec. of homestead propose.

The detailed village wise position is given below.

Name of the Tahasil	Name of the Village	No. of application received	Area covered (as per revenue record)
Danagadi	Chanpajpara	56	Ac. 5.44
	Sainkula	25	Ac. 2.45
	Total	81	Ac. 7.89

The committee unanimously approved for delivery of individual Forest Rights title to the 81 Forest Dwellers, who were found eligible in respect of the vested forest land.

The Meeting ended with vote of thanks to the Chair and the members present.

Collector-cum-Chairman,
Jajpur

Memo No. 357 /Date. 27/2/16

Copy forwarded to all members for information and necessary action

Collector-cum-Chairman,
Jajpur

Memo No. 358 /Date. 27/2/16

Copy forwarded to Tahasildar, Sukinda/ Block Development Officer, Sukinda for information and necessary action.

Collector-cum-Chairman,
Jajpur

Memo No. 359 /Date. 27/2/16

Copy forwarded to the Director (ST)-cum Additional Secretary to Govt., ST & SC Development Department, Odisha, Bhubaneswar for information and necessary action.

Collector-cum-Chairman,
Jajpur

PROCEEDING OF THE SUB-DIVISIONAL LEVEL COMMITTEE ON DIVERSION OF FOREST LAND FOR NON FOREST PURPOSE UNDER S.T & OTHER TRADITIONAL FOREST DWELLERS (RECOGNITION OF FOREST RIGHTS) ACT, 2006 HELD ON 10.07.2016 IN THE OFFICE CHAMBER OF SUB-COLLECTOR, JAJPUR

The Sub Divisional Level Committee meeting on Diversion of Forest Land for use of Non-Forest purpose and approval of the individual claims under Scheduled Tribe and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 was held on 10.07.2016 at 10.00 AM under Chairmanship of Sub-Collector, Jajpur.

The following members of the committee were present.

1. Sri Ajay Kumar Sahoo, DFS, ACF, Cuttack
2. Sri Kamadeba Dehuri, P.S. Member of Sukinda P.S
3. Sri Panda Tiyu, P.S Member of Badacana P.S
4. Sri Sati Dehury, P.S. Member of Dharmasala P.S
5. Sri Nanda Kishore Jena, OAS-I, Tahasildar, Sukinda
6. Miss Chetna Sethy, OWS District Welfare Officer Jajpur
7. Sri Padan Charan Jena, ADWO, Jajpur
8. Sri Bijay Kumar Behera, Regional Manager, OMC

At the outset, the Chairman welcomed all members present and advised the DWO to make aware the members on purpose of the meeting, initiating the discussion DWO intimated that Gram Sabha of Kalapani and Kansa have recommended the diversion proposal of M/s. OMC Ltd. for use of non-forest purpose under Forest Rights Act. classified as Jungle Kisam. The detailed village wise position is given below.

Name of the Agency	Name of the GP	Name of the Village	Area applied for
OMC	Kalapani	Sukurangi	Ac. 170.10
	Kansa	Saruabil	Ac. 46.92
		Total	Ac. 217.02

On perusal of Grama Sabha proceeding forwarded by Block Development Officer, Sukinda, it is revealed that detailed and elaborate discussion was made in the Gram Sava/Palli Sava regarding Forest Right Act., 2006 and implementation of displacement and its implication and rehabilitation was explained to them in odiya vernacular. Further, it is seen the people present in the Gram Sabha had agreed and given their written consent with recommendation for diversion of forest land of above extent for non-forest use by the OMC authorities. At last, it was found that 9 nos. of individual ST Dwellers & 1 nos. of Individual Other Traditional Forest Dwellers are in possession in Saruabil village. The same has been confirmed by the R.I. Kandakadaba in his enquiry report. The detail encroachers list as prepared by R.I. Kandakapal was placed before the committee.

After threadbare discussion, it was unanimously decided for diversion of the forest land of Ac. 217.02 for use of non-forest purpose by OMC Ltd. subject to the condition that 09 nos. of ST & 1 no. of OTFD beneficiaries who would be displaced due to diversion of forest land are to be covered with ex-gratia and ameliorative measures in consideration of the resolution of Gram Sava under the Act. The Chairman of the committee asked the User Agency to submit an undertaking regarding the matter before the Collector. Further, it was decided that, the Tahasildar, Sukinda may be intimated to collect the individual claims of the 9 nos. of ST & 1 no. of OTFD families under Forest Rights Act, 2006 and submit the same with demarcation of the forest land outside the lease area of M/s. OMC Ltd. within one month for settlement of their claims.

Hence the committee unanimously decided to send the diversion of forest land for use of non-forest purpose by M/s OMC Ltd. to District level Committee

Thereafter, the DWO intimated that 31 nos. of individual claims in respect of Champajhara and Sainkula villages under Danagadi Tahasil were received with the recommendation of Forest Rights Committee and Gram Sava of the respective villages for approval and issuance of titles after due approval of the District Level Committee.

The detailed village wise position is given below:

Name of the Tahasil	Name of the Village	No. of application received	Total Area in acres
Danagadi	Champajhara	56	Ac. 16.93
	Sainkula	25	Ac. 8.74
	Total	81	Ac. 25.67

After joint verification by the revenue and forest officials for determining the possession of actual extent of forest land, the team found 81 nos. of claim cases eligible for vesting of individual rights under Scheduled Tribe and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The committee verified the joint verification report of the revenue and forest officials and case record submitted by Tahasildar, Danagadi and found it was in order. After verification of the case records submitted by Tahasildar, Danagadi, the Sub-Collector-cum Chairman of the committee decided that, the extend of the land may be reduced on basing of the actual possession of the claimant i.e Homestead propose only. The District Welfare Officer apprised before the committee that as per Sec 4(6) of the FRA 2006 a claimant is eligible for a maximum land upto 4 (four) hectors. The A.C.F. Cuttack verified each case record prepared by the Tahasildar, Danagadi and suggested that as advised by the Chairman the case records may be revised as per actual possession of

the tenants before holding of District Level Committee. Accordingly, the Chairman of the Committee rectified the areas as submitted by the Tahasildar, Danagadi and then advised the BDO to rectify the case records in co-ordination with Tahasildar, Danagadi.

It was also resolved unanimously by the Sub-Divisional Level Committee to recommend 81 nos. of claim cases belonging to Schedule Tribe community covering total extent of Ac. 7.96 of land (as per revised extent of land) to District Level Committee for consideration and approval. The village wise breakup is as follows

Name of the Tahasil	Name of the Village	No. of application received	Area covered (as per revise case record)
Danagadi	Champajhara	56	Ac. 5.44
	Sarisula	25	Ac. 2.45
	Total	81	Ac. 7.89

The meeting ended with vote of thanks to the chair.

Sub-Collector-Cum-Chairman, SDLC
Jajpur

Memo No. 303 / Date. 18-2-16
Copy forwarded to all members for information and necessary action.

Sub Collector-Cum-Chairman, SDLC
Jajpur

Memo No. 304(4) / Date. 18.2.16
Copy to Tahasildar, Sukinda & Danagadi/BDO, Sukinda & Danagadi for information and necessary action.

Sub-Collector-Cum-Chairman, SDLC
Jajpur

Memo No. 305 / Date. 18.2.16
Copy submitted to the Collector, Jajpur for favour of kind information and necessary action.

Sub-Collector-Cum-Chairman, SDLC
Jajpur

CUTTACK CORATE [illegible]

[illegible]

[illegible]

[illegible]

To

The [illegible] Divisional Officer,
[illegible]

Sub: Diversion of Salandi Forest land over [illegible] pertaining to Subsurface Corporate Mines of M/S. [illegible] in the Cuttack Forest Division

Ref: Letter No. [illegible] DFO [illegible]
Letter No. 7931 DL 10.09.15 of D.F.O., Cuttack

Sir,

In partial reference to the letter on the captioned subject, I am directed to forward herewith the duly filled in application for diversion of [illegible] forest land over the proposed area [illegible] for [illegible] under Forest Right Act, 2006 in favour of [illegible] Corporate Mines [illegible]

In view of the above facts, it is requested that you be pleased to [illegible] the following [illegible] to be provided. [illegible] and [illegible] of [illegible] of [illegible]

(i) Complete [illegible] in [illegible] and [illegible] Legal [illegible] [illegible] be [illegible] for [illegible] for decision.
(ii) Particulars Proforma [illegible] be recorded [illegible] Clause [illegible] [illegible]
(iii) [illegible] of [illegible] to be obtained in prescribed [illegible] [illegible] the purpose and [illegible] of [illegible] [illegible] [illegible]
(iv) [illegible] [illegible] [illegible]
(v) Application [illegible]
(vi) [illegible] the TEC number along with [illegible] [illegible] [illegible]
(vii) [illegible]
(viii) Money receipt showing to payment of charges [illegible] be kept
(ix) [illegible] Forest Officer.
[illegible]

[illegible]

Divisional Forest Officer
[illegible]

[illegible]

S. No.	Name of the Tank	Name of the Village	Total Area to be [illegible]
1	2	3	4
1	Sunda Talab	Sunda Sukapura	As 10.02 [illegible] As 217.07 ha [illegible]
		Total	

Memo No. [illegible] / Date [illegible]

Copy submitted to the Tehsildar, Sahara for [illegible] information. He is requested to expedite co-operation to the BDO [illegible] concerning the pollution [illegible] in [illegible] village.

Signature [illegible]
Jaipur

Memo No. [illegible] / Date [illegible]

Copy submitted to the Managing Director, Udaipur Mining Corporation Limited, Shubh Shikar Bhawan No. 41, Sector [illegible] for information and necessary action.

Signature [illegible]
Jaipur

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Sukurangi

Gram Panchayat: Kaliapani

Place: Manas 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, Rajpur 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 Sukinda 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 as 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 land is used for the mine.

Hence the proposal for use of 170.1 Acres forestland for non-forest purpose by M/s Orissa 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/- Sarapanch Kaliapani G.P	Sd/- Forester Rasol Section
Sd/- Manager (Mining) Sukurangi Chromite Mines	[illegible]	Sd/- Welfare Extension Officer Sukinda Block

MINUTES OF THE MEETING OF GRAM SABHA/PALLI SABHA UNDER FOREST RIGHTS ACT 2006

Name of village: Sarnabil

Gram Panchayat: Kansa

Place: Sarnabil Shiba Temple

Date: 18.12.2015 Time 2.00 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. 1853 Dt. 20.10.2015 of Welfare Section, Collectorate, Jajpur and letter no. 2442 Dt. 01.10.2015 of Block Development Officer, Sukinda. Ward Members of Sarnabil, and villagers were present in the meeting. Sarpanch Kansa G.P; Member, Panchayat Samiti of Kansa G.P; Executive Officer, Kansa G.P, Revenue Inspector Kankadapal, Forester Rasel; Welfare Extension Officer Sukinda Block, Regional Manager, OMC Ltd, Jajpur Road; Mines Manager, Sukurangi Chromite Mines also attended the meeting.

Smt. Abalya Debury, Sarpanch, 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.

Proposals

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 Sarnabil village of Sukinda Tehsil for non forest purpose to 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 ST families and 1 non-ST 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 above-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 that 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 16.92 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 land is used for the mine.

Hence the proposal for use of 16.92 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/-
Sarpanch
Kansa G.P.

Sd/-
Forester
Rajan Section

Sd/-
Manager (Mining)
Sukinda Chromite Mines

Sd/-
Welfare Extension Officer
Sukinda Block

Sarpanch
Kansa G.P.

[illegible]

[illegible]

[illegible] - [illegible]

[illegible]

[illegible]

[

No. 71 dt. 16/12/15

To
The Tahasildar, [illegible]

Sub: Submission of proposal regarding [illegible] for issuance of [illegible] for [illegible] land for non-forest use in connection of [illegible] of [illegible].

Ref: Tahasildar, [illegible] Memo No. [illegible] dt. [illegible]

Sir,

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

[illegible]

Name of the [illegible] Diversion of [illegible] over [illegible]
[illegible] belonging to [illegible] Chandil [illegible] Ltd.
Reg:- Tahsil office Seraikela Memo No: 3672 dt. [illegible]

Name of the Encroacher/occupant	Occupation	No of [illegible]	Caste	Details of [illegible]	[illegible]	Khata No	Plot No	Area	Land Revenue	Remarks
1	2	3	4	5	6	7	8	9	10	11
Somchom Dehuri S/o-Manu Dehuri	Labour	1	S.T. (Bhatia)	12½	Sonadi	[illegible]	[illegible]	3[illegible]	[illegible]	[illegible]
Soni Charan Dehuri S/o-Lokeswar Dehuri	-do-	5	-do-	3½	-do-	-do-	-do-	3[illegible]	-do-	[illegible]
Akshaya Pradhan S/o-Sanatan	-do-	5	-do-	5½	-do-	-do-	-do-	3[illegible]	-do-	[illegible]
Budhu Mahato S/o-Prasanna	-do-	7	B.C. (Gowala)	7½	-do-	-do-	-do-	[illegible]	-do-	[illegible]
Dharani Sonar S/o-Late Pradhan	-do-	6	S.T. (Munda)	12½	-do-	-do-	-do-	3[illegible]	-do-	[illegible]
Naren Soren S/o-Late Thakur	-do-	5	S.T. (Oraon)	30½	-do-	-do-	-do-	[illegible]	-do-	[illegible]
Ajit Biswas S/o-Late Budhuma	-do-	7	S.T. (Munda)	30½	-do-	-do-	-do-	[illegible]	-do-	[illegible]
Suna Munda S/o-Rauta Munda	-do-	5	-do-	[illegible]	-do-	-do-	-do-	[illegible]	-do-	[illegible]
Ganga Barai S/o-Sukraram	-do-	6	-do-	12½	-do-	-do-	-do-	[illegible]	-do-	[illegible]
Rupsing Chatar S/o-Dubala	-do-	7	-do-	30½	-do-	-do-	-do-	[illegible]	-do-	[illegible]

Land diversion Land
village - Sonadi
Khata - ST - Raiyati
Plot No. 122 - Total [illegible] 25 [illegible]
Land [illegible]

[illegible]

Land schedule regarding 5 years expired lease area 207.02ha [illegible] to [illegible] Chromite [illegible] LTD

Sl. No.	Khata No.	Status	Plot No.	Name	Total area of the Plot (in Acres)	Leased Area (in Acres)	RECORD	Khata No.	Status	SALE LAND SCHEDULE Plot No.	Area	Total area of the Plot (in Acres)	Proposed diversion area (in Acres)	Remarks (Under)
[illegible]	55	Reserve	401	[illegible]	[illegible]	[illegible]	[illegible]	44	Applied	271	Purina Padia	[illegible]	[illegible]	Govt
[illegible]	50	Reserve	402	[illegible]	[illegible]	[illegible]	[illegible]	44	Reserve	272	Purina Padia	[illegible]	[illegible]	Govt
										273	Purina Padia	[illegible]	[illegible]	Govt
										274	Purina Padia	[illegible]	[illegible]	Govt
										275	Purina Padia	[illegible]	[illegible]	Govt
										276	Purina Padia	[illegible]	[illegible]	Govt
										277	Purina Padia	[illegible]	[illegible]	Govt
										278	Purina Padia	[illegible]	[illegible]	Govt
										279	Purina Padia	[illegible]	[illegible]	Govt
										280	Purina Padia	[illegible]	[illegible]	Govt
										281	Purina Padia	[illegible]	[illegible]	Govt
										282	Purina Padia	[illegible]	[illegible]	Govt

Land schedule regarding diversion of forest land over an area 217.03 hectare pertaining to Sukinda Chromite Mines, DMC LTD

MOUZA	Khata No	Status	DAG LAND SCHEDULE 1955-56 Plot No	Area	Total area of the Plot	Jenkins in Hectare Acres	RECORD Khata No	Status	SUBSIDIARY SCHEDULE Plot No	Nature	Total Area of the Plot	Proposed diversion area Plot	Recorded Tenant
Sukinda								Not Recorded	203	Parbata Pathara	1.00	1.17	Govt.
									204	Parbata Pathara	2.75	2.34	Govt.
									205	Parbata Pathara	3.07	2.84	Govt.
									206	Parbata Pathara	4.01	2.15	Govt.
									207	Parbata Pathara	3.50	3.50	Govt.
									330	Parbata Pathara	1.05	0.51	Govt.
									506	Parbata Pathara	6.48	1.06	Govt.
									507	Parbata Pathara	[illegible]	1.22	Govt.
									508	Parbata Pathara	3.57	3.23	Govt.
									509	Parbata Pathara	5.40	1.29	Govt.
									510	Parbata Pathara	4.02	2.15	Govt.
									526	Parbata Pathara	3.40	1.22	Govt.
									407	Parbata Pathara	3.40	3.30	Govt.
										Parbata			Govt.

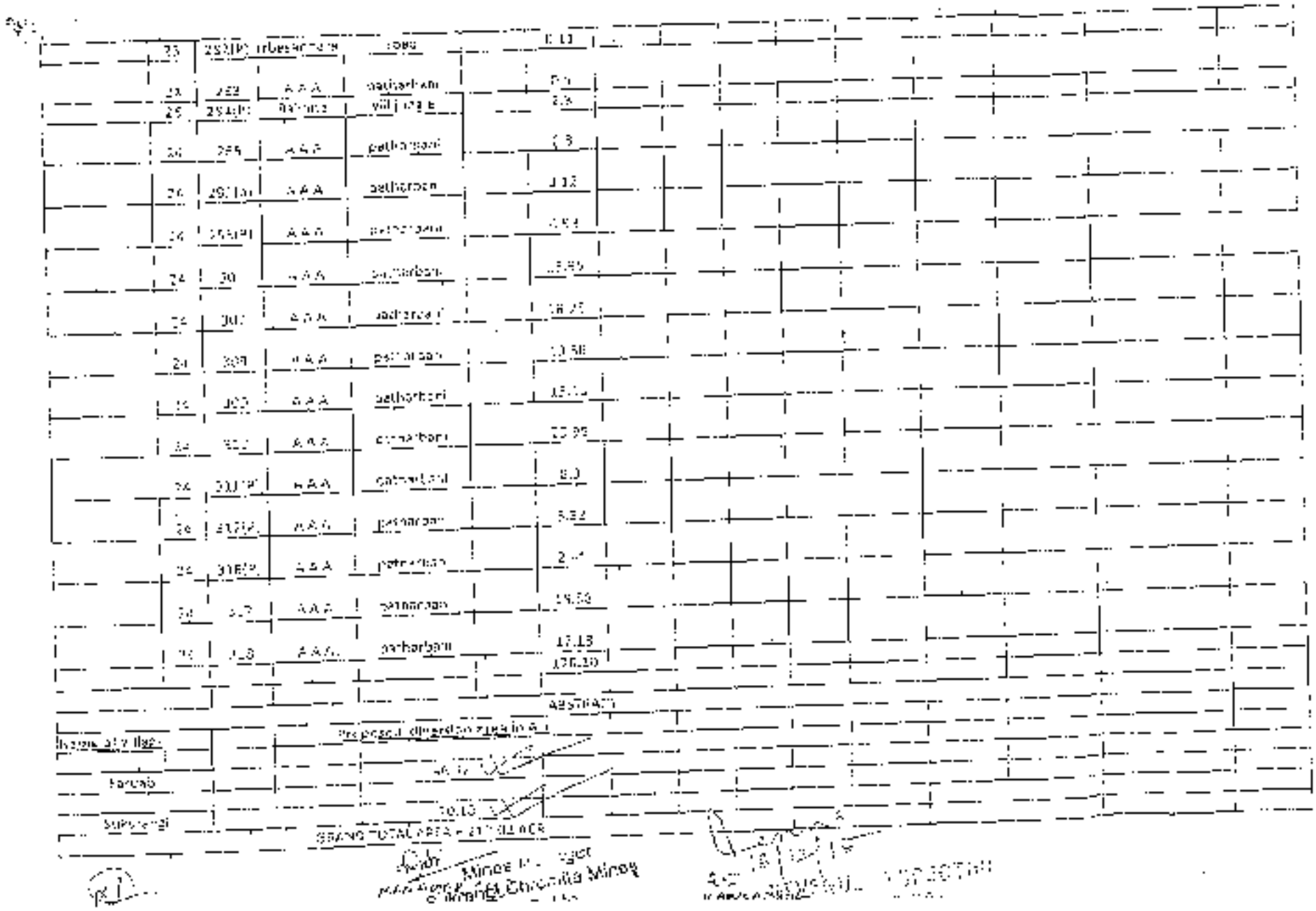
Contd...

Land schedule regarding Diversion of forest land over an area 217.02acr pertaining to Sukurugi Chromite Mines, OMC LTD

Section	Old Land Schedule - 1995 - 26						Record	Sabik Land Schedule						Proceedings Terms
	Village No	Status	Plot No	Kasam	Total area of the plot	Leased area in acres	Village No	Status	Plot No	Kasam	Total area of the plot	Proposed diversion area in acr		
Sukurugi									320	Purusha Padia	0.56	0.26		Govt.
							34	Anabadi			Total	28.25		
	55	Reserve	278	Puga	38.00	2.70	Govt.	34	Anabadi	321	Purusha Padia	0.61	0.02	Govt.
									317	Purusha Padia	0.70	0.82		Govt.
Sukurugi									316	Purusha Padia	0.39	0.50		Govt.
									282	Purusha Padia	2.96	0.55		Govt.
											Total	2.20 acr		

Land schedule regarding Diversion of forest land over an area 217.02acr pertaining to Sukurugi Chromite Mines, OMC LTD

Section	Old Land Schedule - 1995 - 26						Record	Sabik Land Schedule						Proceedings Terms
	Village No	Plot No	Name of the tenant	Kasam	Total area of the plot	Leased area in acres	Village No	Status	Plot No	Kasam	Total area of the plot	Proposed diversion area in acr		
Sukurugi	34	267	N.A.A	pathalam		0.06	34	Anabadi	175	Sajungal	175.55	170.1		Govt.
		23.12	A.A.A	Lathe Land		1.00								
		271	N.A.A	pathalam		0.03								
	35	275	Urbasacharal	Puan		0.7								
	24	276	A.A.A	pathalam		15.70								
	24	277	A.A.A	pathalam		1.05								
	35	275	Urbasacharal	Puan		0.25								
	24	279	A.A.A	pathalam		1.02								



OFFICE OF THE PANCHAYAT SAMITI, SUKINDA
Phone No. [illegible] FAX No. [illegible]
E-Mail ID [illegible]

Letter No. [illegible] Dt. [illegible] / 2016

To

The Sarpanch, Kalapani Gram Panchayat
The Sarpanch, Kalapani Gram Panchayat

Subject: Conveyance of Pathi Sabha/ Gram Sabha for issuance of Certificate under Forest Right Act 2006 for diversion of balance forest land over 162.47 ha. for non forest use in connection with Sukinda Chromite Mines of M/S OMC Ltd under Cuttack Forest Division

Ref: Letter No. 1553 Dt. 30.09.2016 of DWO, Jajpur, Sukinda and Letter No. 1120 Dt. 31.08.2016 of MD OMC Ltd & Letter No. 953 Dt. 06.09.2016 of DFO, Cuttack

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 Sukinda Chromite Mines of M/S OMC Ltd, Pathi Sabha needs to be convened in the respective village of your GP with the consent and no objection of the local inhabitants with 2/3rd quorum in favour of the proposed diversion for issuance of certificate under FRA 2006.

In the above context it is requested to convene the Pathi Sabha in the respective villages of your jurisdiction in an early date by following due procedure as per FRA-2006 and running wide publicity.

It is noteworthy that the following parameters mentioned under points a to h to be strictly adhered during the process of convening Pathi Sabha and to be recorded in the proceedings of the said Pathi Sabha. The proceedings of Pathi Sabha along with other requisite documents should be submitted in an early date for taking further action in 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) Pathi Sabha resolution be in favour of local village(s) duly signed by the Sarpanch and minutes present.
c) Letter of willingness be obtained for proposed diversion with clear that they have understood the purpose and results of proposed diversion and its implication and compensatory measures.
d) It is to be ensured that there is 50% female in the meeting.
e) Application of individual / community claims can be filed at any
f) It is to be ensured that FRC members and / or the representatives of User agencies are present in Pathi Sabha.
g) Video recording along with photo of Pathi Sabha must be ensured.
h) Money receipt supporting the payment of charges to the department must be kept.
i) Wide publication of Pathi Sabha notice at conspicuous and public places like school, Haat Market and Panchayat Office.

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Yours faithfully

Block Development Officer
Sukinda

LAND SCHEDULE

Sl. No.	Name of the Taluk	Name of the Gram Panchayat	Name of the Village	Forest Area for diversion
1	2	3	4	5
1	Sukinda	Kaniya	Sarabal	Ac.48.92
2	Sukinda	Kalapathi	Sukinda	Ac.170.10
		TOTAL		Ac.219.02 or 87.83 ha

Memo No. 2341/3 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 finding out whether any Scheduled Tribe or any Other Traditional Forest Dwellers as per guidelines of FRA is residing/cultivating the said area individually or commonly basis and ensure execution of the land report in early date.

3. Convey to Regional Manager, OMC Ltd, Jajpur Road for information the necessary action.

4. Copy submitted to the D.F.O., Jajpur for favour of kind information and necessary action with reference to his No.1863 Dt.22-09-2015.

5. Copy to P.A. to the Collector & District Magistrate, Jajpur for Favour kind information of Collector & District Magistrate.

Block Development Officer
Sukinda

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Forester
Range Section

Welfare Extension Officer
SURINGA BLOCK

Manager (Mining)
Subsidiary Coal & Mines
THE OIL LTD

ଗୃହ ବିଭାଗର ଅଧିସୂଚନା
ଭୁବନେଶ୍ୱର

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ପ୍ରେରକ,

ଶ୍ରୀଯୁକ୍ତ ରାଜୁଲାଲ ବାଡ଼ୁଆଣୀ
ଯୁଗ୍ମ ସଚିବଙ୍କ ଦପ୍ତର, ଓଡ଼ିଶା

ବିଷୟ — ଦୁର୍ଘଟଣାରେ ଆହତ ବ୍ୟକ୍ତିଙ୍କୁ ତୁରନ୍ତ ଚିକିତ୍ସା ଦେବା ଆଇନ ଅନୁସାରେ ପୋଲିସ ଅଧିକାରୀ ନିଯୁକ୍ତି।

ମହାଶୟ,

ଆମର୍ଯ୍ୟାଦ୍ ଅଛି ଯେ ସଡ଼କ ଦୁର୍ଘଟଣାରେ ଆହତ ବ୍ୟକ୍ତିଙ୍କୁ ତୁରନ୍ତ ଚିକିତ୍ସା ଦେବା ଆଇନ ୨୦୦୦ ମସିହା ଜାନୁୟାରୀ ୧ତାରିଖରୁ କାର୍ଯ୍ୟକାରୀ ହେବାର ଅଛି। ଏହି ଆଇନ ଅନୁସାରେ ଦୁର୍ଘଟଣାରେ ଆହତ ବ୍ୟକ୍ତିଙ୍କୁ ଚିକିତ୍ସା ଦେବା ପାଇଁ ଜିଲାସ୍ତରରେ ଜଣେ ପୋଲିସ ଅଧିକାରୀ ନିଯୁକ୍ତି କରାଯିବା ଆବଶ୍ୟକ। ଏହି ଆଇନ ଅନୁସାରେ ଦୁର୍ଘଟଣାରେ ଆହତ ବ୍ୟକ୍ତିଙ୍କୁ ଚିକିତ୍ସା ଦେବା ପାଇଁ ଜିଲାସ୍ତରରେ ଜଣେ ପୋଲିସ ଅଧିକାରୀ ନିଯୁକ୍ତି କରାଯିବା ପାଇଁ ଆପଣଙ୍କୁ ଅନୁରୋଧ କରାଯାଉଛି। ଏହି ଆଇନ ଅନୁସାରେ ଦୁର୍ଘଟଣାରେ ଆହତ ବ୍ୟକ୍ତିଙ୍କୁ ଚିକିତ୍ସା ଦେବା ପାଇଁ ଆପଣଙ୍କ ଦ୍ୱାରା ନିଯୁକ୍ତି ହେବାକୁ ଥିବା ପୋଲିସ ଅଧିକାରୀଙ୍କ ନାମ ନିମ୍ନରେ ଦିଆଯାଇଛି।

୧. ଚିକିତ୍ସା / ଅଧିକାରୀଙ୍କ ନାମ, ପଦବୀ
୨. ଚିକିତ୍ସା / ଅଧିକାରୀଙ୍କ ସମ୍ପୂର୍ଣ୍ଣ ଠିକଣା ଏବଂ ଟେଲିଫୋନ୍ ନମ୍ବର
୩. ଚିକିତ୍ସା / ଅଧିକାରୀଙ୍କ ଜିଲା ନାମ
୪. ଚିକିତ୍ସା / ଅଧିକାରୀଙ୍କ ଜିଲା କୋଡ୍
୫. ଚିକିତ୍ସା ଆରମ୍ଭ ତାରିଖରୁ ନିଯୁକ୍ତି

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ଗୃହ ସଚିବ
ଓଡ଼ିଶା ସରକାର

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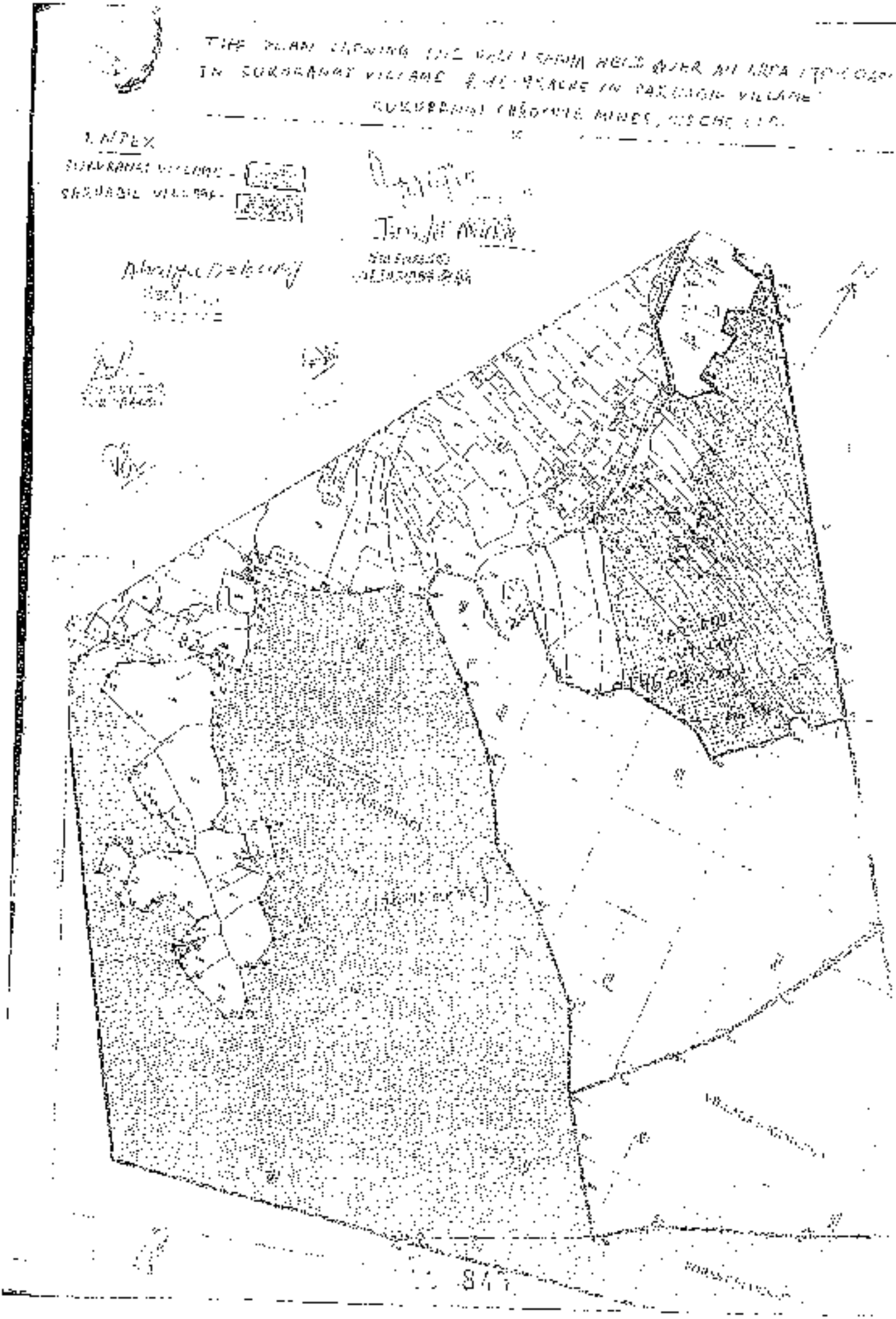
Forester
General Section

Block Extension Officer
MUKINTIA BLOCK

Director (Mining)
Government of Orissa Mines
Govt. Orissa LTD.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Soumya Hill
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Ajay Mahakud
Yeshwanta Mahakud
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KALIAPANI O.P.

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Gunu Kanta Debroy

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Sub-Postmaster
Sub-Postoffice
KALIAPANI (S.O.)

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Indra Mohanta

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Sumi Mudu

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Chakradhar Munda

Phulmani Kisku

Sarapanch
KALIAPANI G.P.

Kabi Singh
Dinesh Kumar Singh
Prasanjeet Dehuri
Sugatana Dehuri
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Sarapanch
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(9) Babulakoi Debnath

(10) Dipali Debnath

(11) Pabita Debnath

(12) Rabindra Debnath

(13) Kalpana Debnath

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161. Bisikesan Dehury

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170 Rajkumar Singh

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Sarpanch
KALIAPANI G.P.

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Sushanta Dehuri

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Sarpanch
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KALIAPANI G.P.

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Golaukha Behari Sahoo
Pratap Samal
Manoja Mohanty
Gopal Sahoo
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Sukanta Sahoo
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Tapan Kumar Mahanta
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Jogendra Mohanty
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Tapan Nayak
Secretary
ALLAPAHAR G.P.

Sarpanch
KALIAPANI G.P

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Geeta Singh

Pankaj Dehury

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[illegible] Prafulla Kumar Hembram

[illegible] [illegible] Jayanti Malani

Sarpanch
KALIAPANI G.P

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[illegible] Pankaj Debnath

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[illegible] Prema Chandra Debnath

[illegible] Gandhan Debnath

[illegible] Gopal Chandra Debnath

[illegible] Binay Debnath

Sanjanda
Sarpanch
KALIAPANI G.P.

Chaitanya Pradhan
Bijay Kumar Pradhan
Ashok Kumar Pradhan
Kiran
Radhika Pradhan
Pragati Pradhan
Pramod
Himanshu
Rajmohan
Pradhan
Prajwalita Pradhan
Rohit
Hemanta Pradhan
Saroj
Satyabrata Pradhan
Soumya Sethi
Ranjan Mohanty

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Ganesh [illegible]

Rasmi [illegible]

Sama Hembram

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Tara Marla

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Babuli Pradhan

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[illegible] Behera
Sarpanch
[illegible] G.P.

Kunda paulkar

Kusaji paulkar

Mala paulkar

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Gandhi [illegible]

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Kori adhari

Bhakti adhari

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Chandan [illegible]

Vanaki adhari

Sukhalhamapadhar

Pushpalata Dehury

Laxmi Thakurani

Jayanti [illegible]

Kani paulkar

Minta adhari

Bhaskar Behera

Gopal Pradhan

Sukla Lahar

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Ganga Pradhan

Zalaka Sahu

Manika Pradhan

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Alaka Dehury

Ravi Kumar

Chandrasekharan

Lingaraj Pradhan

Laxmi Dutta

Sanjit Mohanty

Manibhai Patra

Chitaranjan Pradhan

Dilipkumar Thakur

Ranjan Kumar Sahoo

Kulamani Pradhan

Pradeep Kumar

Sukanta Kumar

Bhagirathi

Gangadhar

Lalan Sahoo Pradhan

Abhaya Dehury
Karapani
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Sd/ Sangeeta Sahu

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Sd/ Babuli Pradhan

Sd/ L.T.I. of Chamelin Pradhan

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Abhijit Pathak

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Akanya Dubey
Section
Officer

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OFFICE OF THE REGIONAL CHIEF CONSERVATOR OF FORESTS, ANGUL CIRCLE,
AT/PO- HAKIMPADA, ANGUL- 759143, ODISHA. Phone-06764-296010 (O), 296011(Res),
Email Id: rccfangul@gmail.com.

Memo No. 6455 / SF/FC-10/2022. Dated. 28-10-22.

To

The Divisional Forest Officer,
Cuttack Forest Division.

Sub:- Diversion of balance forest land of 162.422a including 24.150 ha of forest land to be maintained as safety zone (as per Subik 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 scheme.**

Ref:- Your Memo No. 7061 dated 26.10.2022.

As per condition No. xxviii of the stage-I approval order of the above project and observation No. v of Govt. of India, MoEF & CC (FC Division) communicated vide letter dated 18.5.2022, the scheme for Gap Planting and Soil Moisture Conservation measures to restock and rejuvenate the degraded open forests located within 100 mtr from outer perimeter of Sukurangi Chromite Mines of M/s- OMC Ltd. submitted vide your memo under reference is approved by the undersigned for **Rs.1,21,11,623 /-** at the wage of **Rs.333/-** per man-day.

Two copies of approved scheme is sent herewith and you are requested to raise demand on the user Agency to deposit the approved amount in proper head of account and submit point-wise compliance on the observation made by GoI, MoEF & CC along with revised CAMPA Format to this office immediately for further action.

Encl: As above.

Regional Chief Conservator of Forests
Angul

Memo No. 6455/1 dated. 28.10.22.

Copy along with a copy of the above approved scheme forwarded to the 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 his Memo No.10362/9F(MG)377/2016 dated 20.05.2022.

Encl: As above.

Regional Chief Conservator of Forests
Angul.

Memo No 6457 dated. 28.10.22

Copy forwarded to the Executive Director, F&E, Odisha Mining Corporation Ltd., OMC House, Po Box No-34, Bhubaneswar for information and necessary action.

Regional Chief Conservator of Forests
Angul

SCHEME FOR

GAP PLANTING AND SOIL MOISTURE CONSERVATION MEASURES TO RESTOCK AND REJUVINATE THE DEGRADED OPEN FORESTS LOCATED WITHIN 100 MTR FROM OUTER PERIMETER OF SUKURANGI CHROMITE MINES

OF

OMC LTD.

IN SUKINDA VALLEY

UNDER CUTTACK FOREST DIVISION

OF

M/S ODISHA MINING CORPORATION LTD.
(A GOVT.OF ODISHA UNDERTAKING)
A Gold category State PSU
OMC HOUSE, BHUBANESWAR-751001

(As per condition No. xxviii of the Stage-I Forest Clearance granted by MoEF & CC, Govt. of India vide F.No.8-22/2016-FC dt 14.09.2017 & as per the condition no. (v) of the observation by MoEF & CC vide letter F. No. 8-22/2016 (FC) dt. 18.05.2022)

(@ onetime cost norm basis)

CHAPTER- I

INTRODUCTION

Stage-I approval for diversion of balance forest land over 162.42 ha. for non-forest purpose at Sukurangi Chromite Mines of OMC Ltd. has been accorded vide F.No.8-22/2016-FC dt. 14.9.2017 of MoEF & CC subject to fulfillment of certain conditions. Condition no. (xviii) of the said approval is given as under:

"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 0.4), if any located in the area 100m 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".

In compliance, OMC submitted that the Sukurangi mining lease is surrounded by other mining leases 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. The same had been recommended by State Forest Dept. to MoEF & CC for grant of Stage-II FC.

MoEF & CC vide letter no. 8-77/2016 (FC) dt. 13.05.2022 has sought information pertaining tom Stage-I FC compliance submitted by OMC. Condition no. (v) of the said approval is given as under:

"In compliance to condition no. (xxvii) of the Stage I approval, it is reported that condition provision of condition are not applicable as the mine is surrounded by other leases leaving no blank area available within 100 meter of perimeters from the boundary of lease implying that a cluster of mines is formed as per the extant guidelines of the Ministry. Whether the State Government has explored the possibility to ensure the compliance of this condition along with outer 100 meter perimeter of the cluster so formed".

In this context, it has been explored to ensure the compliance of the above stated condition along with 100 meter perimeter of the cluster of the Sukurangi Chromite Mines. The details are given as under:

Sl. No.	Location of Cluster	Lessee	Area in Ha.	Status of Working
1	Kalapani	OMC	571.245	Non-working
2	Bhimtangar	FACOR	23.872	Working
3	Sukinda	TISCO	406.000	Working
4	Sukinda Dump	TISCO	99.792	Active
5	OB Dump	OMC	168.948	Non-working
6	South-Kalapani	OMC	552.457	Working
7	Sukurangi	OMC	282.709	Working
8	Sarubili	TML	246.858	Working
9	Komarda	TML	307.240	Working
10	Tailangi	OMC	65.683	Non-working

The south-eastern of Sukurangi ML over 18.608 ha (Length: 1860.80mm X 100M) comes under Mahagiri DPF and is covered with vegetation having more than 0.4 density for which there is no feasibility for taking up plantation & Soil Moisture Conservation as per the observation made by MoEF & CC.

The north-eastern part of the ML shares common boundary with Talangi Mines of M/s IDC and Sarubil Mines of M/s TML and the south-western part of the ML shares common boundary with South-Kalapani ML of M/s OMC Ltd. Hence, there is no feasibility of plantation either bordering to north- eastern or south-western part of Sukurangi ML. Therefore, the north western part of the ML is the only space available for plantation.

But, on field verification, it is observed that the area over 13.704 ha (1371 meter x 100 meter) within 100mtr perimeter of the boundary of ML area is occupied partly by the local people and comes under private land. Finding no other alternative for undertaking plantation in Sukurangi cluster, equivalent area adjacent to South-Kalapani Mines (Shown in the map) inside Mahagiri DPF has been proposed.

CHAPTER- II

DETAILS OF LAND IDENTIFIED FOR PLANTATION OVER 13.704 HA IN ANR MODEL @ 1000 PLANTS/HA

IDENTIFICATION OF DEGRADED FOREST LAND

II (1) Details of identified Forest land:

An area of 13.704 ha of degraded forest land within 100 mtr from the outer perimeter of proposed OB dump area of South Kaliapani and Sukuranga Chromite Mines of OMC Ltd. has been identified for plantation. The area shall be taken up for plantation in AR model @ 1000 plants/ha. The location map on Survey of India Topo Sheet is enclosed as Plate-I.

II (2) Character of existing vegetation of the identified site:

The prevailing forest growth in part of the forest land has been categorized under forest type- 3C/C_{2e} Moist Peninsular Valley Sal. The vegetation consists of Sal and its associates like Jamu, Sanari, Asana, Karada, Dhaura etc.

II (3) Suitability of the identified site:

The identified site is a degraded patch with existing vegetation of Sal and Sal associates. Gaps are sporadically spread over the forest block. The topography of the area is undulating in the identified area. The soil is mostly hard to sandy loam. The average maximum temperature is 42^0 to 45^0 C and minimum 5^0 to 10^0 C and annual rainfall varies from 1100 mm to 1800 mm. The maximum rainfall is received during the rainy season from July to September.

CHAPTER-III

DELINEATION OF PROPOSED AREA ON SUITABLE MAP

III (1) - GPS COORDINATES AND GPS MAP OF THE PLANTATION SITE

The area has been demarcated through GPS survey and GPS survey data showing latitude and longitude of each point and their chainage with bearing is also enclosed in the map prepared thereon

The GPS survey data with chainage map is enclosed as **Plate- II.**

CHAPTER- IV

AGENCY RESPONSIBLE FOR PLANTATION OVER 13.704 Ha.

IV (1) - AGENCY RESPONSIBLE FOR PLACEMENT OF FUNDS

The user agency shall provide funds to carry out plantation as per approved scheme. The funds to be deposited in CAMPA Account by the User Agency.

The Territorial Wing of the Forest Department i.e. Divisional Forest Officer, Cuttack Forest Division shall be assigned with the task for execution of plantation work.

CHAPTER- V

DETAILS OF WORK SCHEDULE PROPOSED OVER 13.704 HA

A. PLANTING PLAN: Planting Plan reflects the species specific treatment of the identified site. Choice of species is based on the geo morphology of the site, soil texture, structure, fertility and depth, proneness of the site to water logging etc.

Species to be planted:-

1. *Syzylum cumini* (Jamu)
2. *Haldina cordifolia* (Kadama)
3. *Anogeissus latifolia* (Dhaura)
4. *Dalbergia sissoo* (Sissoo)
5. *Azadirrechta indica* (Neem)
6. *Gmelina arborea* (Gambhar)
7. *Terminalia chebula* (Harida)

B. PRE-PLANTING OPERATION

B (I)-RAISING OF PLANTATION STOCK- NURSERY-

Nursery will be raised including seedlings for 10% causality replacement i.e. 1100 seedlings per hectare will be raised.

B (II)-SURVEY, DEMARCATION & PILLAR POSTING, GPS READING WITH MAPPING-

The planting area has been surveyed and demarcated with four feet height RCC pillars at inter visible distance with GPS coordinates, forward and backward bearing, pillar No. and distance between pillars inscribed in it. A GPS map in the scale of 1:1000 has been prepared along with GPS co-ordinates, forward & backward bearing, pillar to pillar distance and pillar numbers reflected in the map.

C. PLANTING OPERATION

Planting of seedlings will be taken up in the month of July. The polythene covering the ball of earth will be carefully removed before planting. Care will be taken to see that the ball of earth is not broken while doing so. The seedling with the ball of earth will then be placed firmly in the pit and buried at such a depth that the root collar is well below the surface of the soil. The soil around the plant will be well compacted with the heel as a final step so that there is a proper bond between the plant and the surrounding soil. The earth close to the collar will be slightly elevated so that rain water does not accumulate very close to the plant.

D. POST PLANTING OPERATION

D (1) CASUALTY REPLACEMENT

The entire area will be gone over in the same order as plantation was carried out and casualties, if any, will be replaced as soon as the main plantation operation is over.

D (2) WEEDING AND SOIL WORKING

Regular and efficient weeding will start immediately in the month of Aug- Sept

D (3) MANURING AND INSECTICIDE APPLICATION

On degraded sites urban compost or farmyard manure, wherever available, will be added to the soil while refilling the pits. As regards artificial fertilizers, the minerals required and dosage will be applied in the month August to September as per the schedule and dosage provided in the Cost Norm.

D (4) PROTECTION AGAINST FIRE AND GRAZING

Fire line tracing will be ensured to protect the plantation from fire and watch & ward will be provided as per the approved norm for protecting the plantation & protect the plant site from grazing by domestic animals using Bamboo Twig fencing around the plantation site over an area 13.704ha.

D (5) SOIL MOISTURE CONSERVATION ACTIVITIES

Soil Conservation measure structures like Staggered Trench, Percolation pit, Contour trench, graded earthen bund, LBCD will be carried out. The detail cost structure is enclosed as **Annexure-3.**

D (6) WATERING

Watering of the planted trees will be carried out. The detail cost structure is enclosed as **Annexure-4.**

CHAPTER-VI

REQUIREMENT OF FUNDS

For implementation of all prescriptions outlined above, **Rs 1, 21, 11,623.00** (Rupees One Crore Twenty-One Lakh Eleven Thousand Six Hundred Twenty-Three) only will be required as detailed below.

1.	AR plantation @ 1000 plants/Ha with 10 years maintenance amounting to Rs.2, 47,719/- per Ha. Expenditure for 13.704 ha (13.704 x Rs.2,47,719) = Rs 33,94,741.17	Rs 33,94,741.17
2	Bamboo twigs continuous fencing @ Rs. 1,03,110/ per 250 Rmt for 13.704ha including maintenance to be carried out:- Expenditure for ha (Rs. 1,03,110/-x 13.704 ha) = Rs 14,13,019.44	Rs 14,13,019.44
3	SMC activities over 13.704 ha @ Rs.35,634/- per ha	Rs. 4,88,378.33
4	Water provision over 13.704 ha @ Rs. 4,97,339/- per ha	Rs. 68,15,533.65
	TOTAL PLANTATION COST	Rs 1,21,11,622.59 Or say **Rs 1,21,11,623.00**

(Rupees One Crore Twenty-One Lakh Eleven Thousand Six Hundred Twenty-Three) only

NB:- The cost norm for AR plantation @ 1000 plants per ha, the cost norm for Bamboo Twigs continuous fencing for Block Plantation are taken @ onetime cost norm.

Divisional Forest Officer,
Cuttack Forest Division

Approved for Rs. 1,21,11,623/-

Regional Chief Conservator
of Forests, Angul Circle.

CHAPTER-VII

PROVISION OF FUNDS AND FUND UTILIZATION

Rs 1, 21, 11,623.00 (Rupees One Crore Twenty-One Lakh Eleven Thousand Six Hundred Twenty-Three) shall be deposited by M/s OMC Ltd on approval of the scheme to the Ad-hoc CAMPA Account and the funds will be utilized for raising plantation over 13.704 ha of degraded forest land by the Divisional Forest Officer, Cuttack Forest Division on allotment by the Principal Chief Conservator of Forests, Odisha, Bhubaneswar.

Divisional Forest Officer
Cuttack Forest Division

BASE COST NORM FOR AFFORESTATION (AR PLANTATION) @1000 PLANTS PER HECTARE
(18 Months old seedling)

1. MODEL	BLOCK
2. NO. OF PLANTS PER HA.	1,000
3. TOTAL AREA TO BE PLANTED (in HA.)	33.704
4. SPACING TO BE ADOPTED	[illegible]
5. TOTAL NOS. OF PLANTS TO BE PLANTED	33,704
6. Wage Rate (Per MD)	333.00

Sl. No.	Item of Works	Period of execution	Mandays	Labour Cost @ Rs.333/-	Material Cost	Total in Rs
1	2	3	4	5	6	7
	Pre-Planting Operation (0th Year)					
1	Survey, Demarcation and Pillar Posting	Nov/Dec	2	666.00	0	666.00
2	Preparation of Fieldwork Map (Digital Map)	Nov/Dec	1	333.00	100	433.00
3	Site preparation (Cleaning & removal of obstacles)	Nov/Dec	12	3,996.00	0	3,996.00
4	Creation of 4.00 m Wide Inspection Path	Feb/Mar	1	333.00	0	333.00
5	Alignment and marking of pits	Feb/Mar	1	333.00	0	333.00
6	Digging of pits (45 cm x 45 cm x 45 cm) in hard & gravelly soil	Feb/Mar	40	13,320.00	0	13,320.00
7	Construction of Temporary Labour Shed, Drinking water facility and First Aid etc	Jan/Mar	0	0.00	3500	3,500.00
	Total		57	19,981.00	3,600.00	23,581.00
	1st Year/ Planting Year					
1	Refilling of pits by digging the dugout soil of the pits, application of Organic compounds/ OMM/ FYM & mixing in the same property	Jun/July	7.5	2,497.50	5,000.00	7,497.50
2	Transportation of 18 months old polybag seedlings in hired truck/ tractor from the Permanent Nursery to planting site including loading & unloading. (Average load of 10 Rim) & stacking the seedlings @ Rs.0/- per Seedling (31100 nos.)	July/Aug	7	0.00	6,500.00	6,500.00
3	Watering the polybag seedlings at planting site	July/Aug	2	666.00	0.00	666.00
4	Conveyance of polybag seedlings on head load from the stacking site to individual cup cut pits within the planting site, spraying insecticide, termicide & planting after scraping the soil with other applied materials & providing the soil properly around the planted seedlings	July/Aug	22.5	7,492.50	0.00	7,492.50
5	Cost of Fertilizer & Insecticides: (a) NPK / Bio fertilizer @250 gms/ plant as basal dose = 50 kg @ Rs.20/- per kg = Rs.1000.00 (b) Urban Vermicompost Site Khata/ any other fertilizer in two subsequent doses @ Rs.750.00 (c) Insecticide/ Bio-pesticide @ 3 gms/ plant = 5 kg @ Rs.150/- per kg = Rs.750.00	July/Aug	0	0.00	3,000.00	3,000.00
6	Casualty Replacement @ 10% (100 nos.)	July/Aug	2.5	832.50	0.00	832.50
7	Tal Weeding & Manuring	Aug/Sept	12	3,996.00	0.00	3,996.00

Sl. No.	Item of Works	Period of execution	Manidays	Labour Cost @ Rs.333/-	Material Cost	Total in Rs.
1	2	3	4	5	6	7
8	2nd Weeding, Soil working (1m. Diameter around the plants) and Manuring	Oct/Nov	15	4,995.00	0.00	4,995.00
9	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	999.00	0.00	999.00
10	Watch & Ward including watering as per requirement	Aug-Mar	12	3,996.00	0.00	3,996.00
	Total:-		78.5	26474.5	14600	40,074.50
	2nd Year Maintenance					
1	Transportation of 100 seedlings from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs 0/- per seedling.	Jul	0	0.00	600.00	600.00
2	Casualty Replacement @ 10%	Jul	2.5	832.50	0.00	832.50
3	Cost of Fertilizer & Insecticides:- (a) Cost of insecticide Bin-packed @ 5 gms/plant = 0.5 kg @ Rs 150/- per kg = Rs.75/- (b) Urea NPK Bio fertilizer Vermi compost Mix Khaira/any other fertilizer @ Rs 2500/-	Aug/Sep	0	0.00	2,875.00	2,875.00
4	Weeding (Complete weeding), Manuring & Soil working (1m. Diameter around the plants)	Sept/Oct	15	4,995.00	0.00	4,995.00
5	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	999.00	0.00	999.00
6	Watch & Ward including watering as per requirement	Apr-Mar	18	5,994.00	0.00	5,994.00
7	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc				1,000.00	1,000.00
	Total:-		38.5	12820.5	4,475.00	17295.5
	3rd Year Maintenance					
1	Cost of fertilizer (Urea NPK Bio-fertilizer Vermicompost Mix Khaira/ any other fertilizer)	Sept/Oct	0	0.00	2,800.00	2,800.00
2	Weeding, Manuring & Soil working (1m. Diameter around the plants)	Sept/Oct	15	4,995.00	0.00	4,995.00
3	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	999.00	0.00	999.00
4	Watch & Ward including watering as per requirement	Apr-Mar	18	5,994.00	0.00	5,994.00
5	Maintenance of Temporary Labour Shed, Drinking water facility and First Aid etc	Apr-Mar			1,000.00	1,000.00
	Total:-		36	11,988.00	3,800.00	15,788.00
	4th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m. long) including maintenance of inspection path	Feb/Mar	3	999.00	0.00	999.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,994.00	0.00	5,994.00
	Total:-		21	6,993.00	0	6,993.00

Sl. No.	Item of Work	Period of execution	Manhrs	Labour Cost @ Rs.1334/-	Material Cost	Total in Rs.
1	2	3	4	5	6	7
	5th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	103.00	0.00	900.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,994.00	0.00	5,994.00
	Total:-		21	6,993.00	0	6,993.00
	6th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m. length) including maintenance of inspection path	Feb/Mar	3	900.00	0.00	900.00
2	Pruning of branches, Singling out of multiple shoots	Jan/Mar	3	900.00	0.00	900.00
3	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,994.00	0.00	5,994.00
	Total:-		24	7,992.00	0	7,992.00
	7th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) including maintenance of inspection path	Feb/Mar	3	900.00	0.00	900.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,994.00	0.00	5,994.00
	Total:-		21	6,993.00	0	6,993.00
	8th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) including maintenance of inspection path	Feb/Mar	3	900.00	0.00	900.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,994.00	0.00	5,994.00
	Total:-		21	6,993.00	0	6,993.00
	9th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) including maintenance of inspection path	Feb/Mar	3	900.00	0.00	900.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,994.00	0.00	5,994.00
	Total:-		21	6,993.00	0	6,993.00
	10th Year Maintenance					
1	Fire line tracing (2 m. wide fire line over 400 m length) including maintenance of inspection path	Feb/Mar	3	899.00	0.00	899.00
2	Watch & Ward including maintenance of fencing	Apr-Mar	18	5,994.00	0.00	5,994.00
	Total:-		21	6,993.00	0	6,993.00

TOTAL COST FOR 1 HA.

Sl. No	Year	No. persons days	Labour Cost @ Rs.[illegible]	Material Cost (Rs.)	Monitoring Evaluation, Learning Documentation and other Contingency (5%) of (4+6)	Cost of Seedlings @ Rs.63.0486/- per seedlings	Total Cost (Rs.)
1	0th year	57	18051	3600	973	0	23,564.00
2	1st year	115	25474.6	14600	1916.6	6335.0 40	1,00,346.40
3	2nd year	38.5	12030.5	4436	871.4	5004.86	22,421.85
4	3rd year	36	11668	1400	749	0	13,537.00
5	4th year	21	6993	0	300	0	7,293.00
6	5th year	21	6993	0	326	0	7,319.00
7	6th year	24	7997	0	373	0	8,365.00
8	7th year	21	6990	0	329	0	7,319.00
9	8th year	21	6993	0	326	0	7,319.00
10	9th year	21	6993	0	326	0	7,319.00
11	10th year	21	6993	0	326	0	7,319.00
	Total:-	363	1,13,214.10	23,436.00	6,291.00	63,680.42	2,16,130.52

TOTAL PROJECT COST FOR 13.704 HA.

Sl No.	Year	No. Mandays	Labour Cost @ Rs.[illegible]	Material Cost (Rs.)	M&E & Other Contingency (5%) of (4+6)	Cost of Seedlings @ Rs.63.0486/- per seedlings	Total Cost (Rs.)
1	0th year	791.13	260115.63	49531.42	15033.35	0	3,22,784.31
2	1st year	1013.05	340169.56	200078.42	26231.12	1049076.82	13,75,147.93
3	2nd year	501.00	175569.15	61226.4	11257.84	72697.60	8,20,851.17
4	3rd year	409.99	164383.55	82275.2	12283.0	0	2,58,939.85
5	4th year	287.78	95632.07	0	4407.5	0	1,00,299.57
6	5th year	287.78	95632.07	0	4407.5	0	1,00,299.57
7	6th year	329.30	106622.07	0	5111.33	0	1,11,833.36
8	7th year	287.78	95632.07	0	4407.5	0	1,00,299.57
9	8th year	287.78	95632.07	0	4407.5	0	1,00,299.57
10	9th year	287.78	95632.07	0	4407.5	0	1,00,299.57
11	10th year	287.78	95632.07	0	4407.5	0	1,00,299.57
	Grand Total:-	4966.03	1,63,31,108.94	3,93,903.48	93,093.84	8,72,373.82	23,81,980.03
	OR						23,81,980.00

(Rupees Twenty-three Lakhs Eighty-One Thousand Nine Hundred Fifty-Nine Only)

Page 3 of 6

Matrix for Model-1 A Conventional CA Plantation (AR) 1000 plants

Sl. No.	Commencement Year	I	Ib	II	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII	XVIII	XIX	XX	XXI	Total Cost (10 Years)
Base Norm		23554	100346	25422	16537	7319	7319	8365	7319	7319	7319	7319											
1	2023-23	23554	103064	25822	19144	8896	9341	11310	10299	10813	11354	11922											247719
2	2023-24		24732	110632	27114	20104	9341	9808	11770	10813	11354	11922	12518										260102
3	2024-25			25968	116164	28469	21106	9808	10299	12559	11354	11922	12518	13144									273113
4	2025-26				27267	121972	29893	22151	10299	10813	12977	11922	12518	13144	13801								286766
5	2026-27					28630	128070	23269	10813	11354	12625	12518	13144	13801	14491								301105
6	2027-28						30062	124474	32557	24433	11934	13922	14307	13144	13801	14491	15216						316160
7	2028-29							31565	141298	34605	25654	11922	12518	13022	13801	14491	15216	15976					331968
8	2029-30								33143	148257	36535	26937	12518	13144	15773	14491	15216	15976	16775				348566
9	2030-31									34800	155570	38152	28794	13144	13801	16562	15216	15576	16775	17614			365994
10	2031-32										16540	163454	40089	29668	13801	14491	17390	15976	16775	17614	15495		384294

(Rupees Two Lakh Forty-Six Thousand Six Hundred Seventeen) Only

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

FENCING FOR COMPENSATORY PLANTATION RAISED INSIDE THE FOREST AREAS USING BAMBOO TWIGS @ THRONS (250 HA/HA)

1. MODEL	[illegible]
2. TOTAL AREA TO BE FENCED(250 Rmt./Ha.)	03.704 Ha.
3. Wage Rate [Per MD]	333.00

WAGE RATE Rs.326/-PER DAY

SL No.	Item of work	Preferable Period of Execution	Man days	Wages	Material cost	Total Cost (Rs./Ha.)
	0th Year (PPO)					
1	NIL		0	0	0	0
	1st Year Maintenance					
1	Taking an average permeter of 250 Bamboo @ 35.35 mt (Half Chandle Bamboo Twiga at @ 120 / Bundle) Labour rate of @ = 30 (Nos approx)	Sep/Oct	20	9,990.00	14,133.00	24,123.00
2	Bamboo pieces of a length 2.5 [illegible] 2mtr. Spacing in the fixed; 2" under & 2" above ground) 7500 – 375 + 1 = 126 Nos. of Bamboo Poles 1 Bamboo (approx) 24" height = 3 Pieces 126/3 = 42 Bamboos @ 200/ Bamboo	Sep/Oct	-	-	8,400.00	8,400.00
3	Preparation of Bamboo Poles, Digging of Holes 1' 2 Ft depth & fixing Bamboo poles @ 30 poles/MD	Sep/Oct	6.5	2,161.50	-	2,161.50
4	Cost of Bamboo for fixing the Bamboo twiga (6W Fence with double side row twiga Bamboo better (One 6" above ground and other one 6" above ground) 250/12 = 21 Bamboo @ 200 / Bamboo	Sep/Oct	-	-	4,200.00	4,200.00
5	Making Bamboo better, Finishing the Better & Tying the Bamboo double strand on Coir rope @ Rs. 15/ Rmt	Sep/Oct	9	2,997.00		2,997.00
6	Cost of coir rope @ Rs.0.125 Kg/ Rmt 500 × 0.125 Kg = 62.5 Kg @ Rs 70/Kg	Sep/Oct		-	4,375.00	4,375.00
7	Making one Bamboo Twiga gate with Bamboo Bamboo			-	500.00	500.00
	Total		45.5	15,151.50	31,608.50	46,759.00
Rate per running mt. 46759 / 250 = 187/Rmt						
	2nd Year Maintenance					
1	Repair & Maintenance of Bamboo Twiga fence including Material cost	Feb/Mar	20	6,660.00	1,500.00	8,160.00
Rate per running mt. 8160 / 250 = 32.64/Rmt or Rs 33/ Rmt						
	3rd Year Maintenance					
1	Repair & Maintenance of Bamboo Twiga fence including Material cost	Feb/Mar	20	6,660.00	5,675.00	12,335.00
Rate per running mt. 12335 / 250 = 47.94/Rmt or Rs 48/-Rmt						
	4th Year Maintenance					
1	Repair & Maintenance of Bamboo Twiga fence including Material cost	Feb/Mar	20	6,660.00	5,675.00	12,335.00
Rate per running mt. 12335 / 250 = 47.94/Rmt or Rs 48/-Rmt						
	5th Year Maintenance					
1	Repair & Maintenance of Bamboo Twiga fence including Material cost.	Feb/Mar	20	6,660.00	5,675.00	12,335.00
Rate per running mt. 12335 / 250 = 47.94/Rmt or Rs 48/-Rmt						

TOTAL COST FOR 1 HA(250Rmt.)

Year	No. of MD	Labour Cost	Material Cost	Total
0th Year	-	-	-	4.04
1st Year	45.50	15,151.50	31,603.50	46,755.00
2nd Year	30	6660.00	1500.00	8,160.00
3rd Year	30	6660.00	5675.01	12,335.00
4th Year	30	6660.00	5675.00	12,335.00
5th Year	30	6660.00	5675.00	12,335.00
TOTAL :-	135.5	41,291.50	50,133.50	91,325.00

TOTAL COST FOR 13.704 HA(3.426 Rkm)

Year	No. of MD	Labour Cost	Material Cost	Total
0th Year	0	0	0	0
1st Year	623.5	2,03,636.16	4,33,863.88	6,40,292.04
2nd Year	234	91,268.44	38,556.06	1,11,824.64
3rd Year	234	91,268.64	77,770.20	1,69,038.84
4th Year	234	91,268.64	77,770.20	1,69,038.84
5th Year	234	91,268.64	77,770.20	1,69,038.84
TOTAL:-	1719.85	5,72,713.72	6,87,029.48	12,59,740.20
4HA	1720	5,72,713.00	6,87,029.00	12,59,740.00

(Rupees Twelve Lakh Fifty-Nine Thousand Seven Hundred Forty)Only

Matrix for Fencing Model-F-I (Bamboo Twig)

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		0	46760	8160	12335	12335	12335																
1	2022-23	0	49098	8996	14279	14993	15743																103118
2	2023-24		0	51553	9446	14993	15743	16530															108262
3	2024-25			0	54131	9919	15743	16530	17357														113679
4	2025-26				0	56837	10414	16530	17357	18224													119363
5	2026-27					0	59679	10935	17357	18224	19136												125331
6	2027-28						0	62663	11482	18224	19136	20092											131597
7	2028-29							0	65796	12056	19136	20092	21097										138177
8	2029-30								0	69086	12659	20092	21097	22152									145086
9	2030-31									0	72540	13292	21097	22152	23259								152340
10	2031-32										0	76167	13956	23152	23259	24422							159957

(Rupees One Lakh Three Thousand One Hundred Ten) Only

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

SMC Works Model-C			
Cost Norms for creation of Afforestation with stabilization of Soil & Conservation of Moisture (1000 Plants/ Ha).			
Sl. No.	Items of work	Preferable Period of Execution	Total Cost (Rs.)
0th Year (Pre-Planting Operation)			
1	Nil		0
1st Year			
2	Soil Conservation measure structures like Staggered Trench, Percolation pit, Contour trench, Graded earthen bund, LBCD, Wire mesh LBCD, Sub surface Dyke & WHS as per the slope & site requirement or LS.	Apr/Sept	20,215.00
2nd Year			
3	Maintenance of SMC structures @ 15 % of initial year cost.	Apr/Jul	3,032.00
3rd Year			
4	Maintenance of SMC structures @ 15 % of initial year cost.	Apr/Jul	3,032.00
4th Year			
5	Maintenance of SMC structures @ 15 % of initial year cost.	Apr/Jul	3,032.00
5th Year			
6	Maintenance of SMC structures @ 15 % of initial year cost.	Apr/Jul	3,032.00
Total			32,343.00

Abstract for 1 ha.					
Sl. No.	Year	No. person days	Labour Cost @ Rs.333/- Perday	Material Cost	Total Cost (Rs)
1	0th Year	0	0.00	0.00	0.00
2	1st Year	0	0.00	20,215.00	20,215.00
3	2nd Year	0	0.00	3,032.00	3,032.00
4	3rd Year	0	0.00	3,032.00	3,032.00
5	4th Year	0	0.00	3,032.00	3,032.00
6	5th Year	0	0.00	3,032.00	3,032.00
Total		0	0.00	32,343.00	32,343.00

Abstract for 13.704 ha.					
Sl. No.	Year	No. person days	Labour Cost @ Rs.333/- Per day	Material Cost	Total Cost (Rs)
1	0th Year	0	0.00	0.00	0.00
2	1st Year	0	0.00	277026.36	2,77,026.36
3	2nd Year	0	0.00	41,550.53	41,550.53
4	3rd Year	0	0.00	41550.53	41,550.53
5	4th Year	0	0.00	41550.53	41,550.53
6	5th Year	0	0.00	41550.53	41,550.53
	Total	0	0.00	443228.47	4,43,228.47
	OR				4,43,228.00
	(Rupees Four Lakh Forty-Three Thousand Two Hundred Twenty-Eight)only				

Matrix for (SMC) for 1Ha.

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		0	20,215	3,032	3,032	3,032	3,032																35434
1	2022-23	0	21126	3543	3519	3655	3830																17415
2	2023-24		0	22287	3513	3685	3870	4063															19236
3	2024-25			0	23401	3685	3870	4064	4266														41259
4	2025-26				0	24575	3875	4067	4266	4480													43123
5	2026-27					0	25803	4067	4266	4480	4704												45183
6	2027-28						0	4067	4266	4480	4704	4939											47151
7	2028-29							0	28445	4480	4704	4939	5186										50040
8	2029-30								0	29867	4704	4939	5186	5445									52647
9	2030-31									0	31360	4939	5186	5445	5717								55239
10	2031-32										0	32928	5186	5445	5717	6000							

(Rupees Thirty-Five Thousand Six Hundred Thirty-Four) Only

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Water Model-W-II

Water provision to Plantation

Diesel Pump set with Bore well (1 pump set + Bore well for 5 ha plantation), Wage Rate @ 333/-

Year of Installation (0th Year)

1	Cost of Bore well	1,50,000.00	
2	Cost of Diesel pump Set 5 HP	60,000.00	
3	Diesel pump set & accessories like	30,000.00	
4	Water Storage Tanks/ Flexible pipes	15,000.00	
	Total	**2,55,000.00**	
Cost of Water per Plant(2,55,000/5000)=Rs.51/-			51,000.00
Cost of Water per Ha.=Rs.51,000/-			

1st Year Watering

1	Recurring expenditure i.e. Diesel, Mobil, Engine Oil, Etc for pumping Water-21x1000=	21,000.00
2	Watering 1000 plants (Nov-Mar) @200plants/MD with7 days rotation 20 MD x 5Month=100 MDx333=	33,300.00
	Total	54,300.00

2nd Year Watering

1	Recurring expenditure i.e. Diesel , Mobil, Engine Oil, Etc for pumping Water-21x1000=	21,000.00
2	Maintenance of pump set etc@15% of the installation Cost	7,650.00
3	Watering 1000 plants (Nov-Mar) @200plants/MD with7 days rotation 20 MD x 8 Month=160 MDx333=	53,280.00
	Total	**81,930.00**

3rd Year Watering

1	Recurring expenditure i.e. Diesel , Mobil, Engine Oil, Etc for pumping Water-21x1000=	21,000.00
2	Maintenance of pump set etc@15% of the installation Cost	7,650.00
3	Watering 1000 plants (Nov-Mar) @200plants/MD with7 days rotation 20 MD x 8 Month=160 MDx333=	53,280.00
	Total	81,930.00

4th Year Watering

1	Recurring expenditure i.e. Diesel , Mobil, Engine Oil, Etc for pumping Water-21x1000=	21,000.00
2	Maintenance of pump set etc@15% of the installation Cost	7,650.00
3	Watering 1000 plants (Nov-Mar) @200plants/MD with7 days rotation 20 MD x 8 Month=160 MDx333=	53,280.00
	Total	81,930.00

5th Year Watering

1	Recurring expenditure i.e. Diesel , Mobil, Engine Oil, Etc for pumping Water-21x1000=	21,000.00
2	Maintenance of pump set etc@15% of the installation Cost	7,650.00
3	Watering 1000 plants (Nov-Mar) @200plants/MD with7 days rotation 20 MD x 8 Month=160 MDx333=	53,280.00
	Total	81,930.00

Abstract for 1 km.					
Sl. No.	Year	No. person days	Labour cost @ Rs.333/- per day	Material Cost	Total cost (Rs.)
1	0th Year	0	0.00	51,000.00	51,000.00
2	1st Year	100	33,300.00	21,000.00	54,300.00
3	2nd Year	160	53,280.00	28,650.00	81,930.00
4	3rd Year	160	53,280.00	28,650.00	81,930.00
5	4th Year	160	53,280.00	28,650.00	81,930.00
6	5th Year	160	53,280.00	28,650.00	81,930.00
	Total	740	2,46,420.00	1,86,600.00	4,33,020.00

Abstract for 13.704 km.					
Sl. No.	Year	No. person days	Labour cost @ Rs.333/- per day	Material Cost	Total cost (Rs.)
1	0th Year	0.0	0.00	6,98,904.00	6,98,904.00
2	1st Year	1370.4	456343.20	2,87,784.00	7,44,127.20
3	2nd Year	2192.6	730149.12	3,92,619.60	11,22,768.72
4	3rd Year	2192.6	730149.12	3,92,619.60	11,22,768.72
5	4th Year	2192.6	730149.12	3,92,619.60	11,22,768.72
6	5th Year	2192.6	730149.12	3,92,619.60	11,22,768.72
	Total	10141.0	3376939.68	25,57,166.40	**59,34,106.00**
				Or	59,34,106
		(Rupees Fifty-Nine Lakh Thirty-Four Thousand One Hundred Six)Only			

Matrix for Watershed WH (Disc. Pump set = 10 Horse all) over 1 Ha.

SL No.	Consumption 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 Year		51000	54509	81362	86970	81920	81910																497329
1	2022-23	51000	51015	90223	94844	89536	104566																522186
2	2023-24		53550	95856	94844	90536	104566	139798															548876
3	2024-25			96138	62805	95886	104566	139794	115281														576222
4	2025-26				25006	69022	104566	139791	119284	127048													604519
5	2026-27					61951	69822	109194	115284	127048	127102												634746
6	2027-28						46900	72767	115284	121048	127102	133455											666107
7	2028-29							68145	76406	121048	127109	133455	140128										699896
8	2029-30								76703	82226	127139	133455	140128	147135									734757
9	2030-31									35550	84257	133455	140128	147135	154491								771016
10	2031-32										79118	88445	140128	147135	154491	162316							

(Rupees Four Lakh Ninety-Seven Thousand Three Hundred Thirty-Nine) Only

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
AT: - GHATAKULA, NUAPADA, CUTTAK - 753010
Tel:- 0671-2340443 FAX: - 0671-2347611 Email: - dfo.cuttack@odisha.gov.in

Memo No 1128 /SF (Forest Diversion) 523 /2018
Dated, Cuttack the 29 th October, 2022

To

The Executive Director (F & E),
Odisha Mining Corporation Ltd.,
OMC House, Bhubaneswar-751001

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, Sarabil, Sukurangi, Talangi and 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: - Memo No.4457 dt.28.10.2022 of the RCCF, Angul Circle, Angul to your address.

In inviting a reference to the memo cited above on the captioned subject, it is to inform you that, as per the condition No. V of stage-I approval order, the scheme for plantation over degraded forest land within 100 meters from the outer perimeter of the mining lease area of Sukurangi Chromite Mines of M/s OMC Ltd. has been approved by the Regional Chief Conservator of Forests, Angul Circle, Angul with financial outlay for Rs. 1, 21, 11,623.00/- at the wage rate @333/- per Manday with 10 years maintenance.

In view of above, it is requested to make arrangement to deposit the amount Rs. 1, 21, 11,623.00/- (Rupees One Crore Twenty-One Lakh Eleven Thousand Six Hundred Twenty-Three) only 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.

Further, you are once again requested to submit point wise compliance raised in by the Ministry of Environment, Forest & Climate Change, Govt. of India.

Yours Faithfully

Divisional Forest Officer
Cuttack Forest Division

Copy for kind information to:
(i)The Principal Chief Conservator of Forests (Nodal), O/o the PCCF & HoFF, Odisha, Bhubaneswar.
(ii)The Regional Chief Conservator of Forests, Angul Circle, Angul

AGENCY COPY

यूनियन बैंक Union Bank

NEFT / RTGS CHALLAN for CAMPA Funds

Date 04-11-2022

Agency Name.	ODISHA MINING CORPORATION LTD
Application No	SRH710243
MoEF/SG File No.	8-22/2016-FC
Location	ORRISA
Address	OMC HouseKhordha
Amount(in Rs)	12111620/-

Amount in Words One Crore Twenty One Lakh Eleven Thousand Six Hundred and Twenty Three Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name	ORRISA CAMPA
IFSC Code:	UBIN0996335
Pay to Account No.	158325884716243 Valid only for this challan amount.
Bank Name & Address:	Union Bank Of India FCS Centre,2311, III Floor, Jalitha Towers, Mission Road, Bengaluru-560027

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

BANK COPY

यूनियन बैंक Union Bank

NEFT / RTGS CHALLAN for CAMPA Funds

Date . 04-11-2022

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	SRH710243
MoEF/SG File No.	8-22/2016-FC
Location	ORRISA
Address:	OMC House Khordha
Amount(in Rs)	12111620/-

Amount in Words One Crore Twenty-One Lakh Eleven Thousand Six Hundred and Twenty-Three Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name.	ORRISA CAMPA
IFSC Code.	UBIN0996335
Pay to Account No.	158325884716243 Valid only for this challan amount
Bank Name & Address:	Union Bank Of India FCS Centre 2311, III Floor Jalitha Towers, Mission Road, Bengaluru-560027

- This Challan is strictly to be used for making payment to CAMPA by NEFT/RTGS only

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 and reference id to Email. icsbin@unionbankofindia.bank , epurse@unionbankofindia.bank , ubin0903710@unionbankofindia.bank

S. Mohapatra
Dy. General Manager (HM)

7/11/22

UBINT 22311142327

II

MAP SHOWING 100 Mtr OF OUTER PERIMETER OF MINING LEASES AROUND SUKURANGI CHROMITE MINES

No. F45N12

MAP SHOWING 100 Mm OF OUTER PERIMETER OF MINING LEASES AROUND SUKU/RANGI CHROMITE MINES

Annexure-V

COMPLIANCE TO THE OBSERVATION BY NA-CAMPA

Sl. No.	Observation by NA CAMPA	Compliance by OMC
(a)	The transaction number of the remittance of Rs. 4,95,80,000.00 [UTR No. ANDBH16046319514 dated 15.02.2016] is required to be rechecked;	An amount of Rs. 4,95,80,000.00 has been deposited towards NPV vide UTR No. ANDBH16046319514 dt. 15.02.2016 The copy of the demand letter and proof of the deposit is enclosed as **Appendix-A**
(b)	Rs 98,00,000 00 [DD No. 495472 dated 26.08.2009] and Rs. 1,45,42,942.00 [UTR No. ANDBH17313741863 dated 21 10.2017] have not been received in Corporation Bank;	An amount of Rs. 98,00,000/- towards Site Specific Wildlife Conservation Plan (SSWLCP) has been deposited in CAF, Orissa, A/c No., CA 1585 in corporation Bank, Lodhi Road, New Delhi vide DD No. 495809 to 495818 dt. 01.06.2010. The copy of demand letter and proof of the deposit such as DDs are enclosed as **Appendix-B.** An amount of Rs. 1,45,42,942/-towards SSWLCP has been deposited in A/c No. 150821098471201436 7, Union Bank of India, Lodhi Complex Branch, New Delhi vide UTR No. ANDBH17313741863 dt. 10.11.2017. The copy of the demand letter and proof of the deposit is enclosed as **Appendix-C.**
(C)	The complete transaction number of Rs. 3,33,09,938.00 has also not been mentioned in the prescribed proforma.	An amount of Rs. 3,33,09,938/-towards SSWLCP has been deposited in A/c No. 150825884710701 dt 24.12.2021, Union Bank of India, Lodhi Complex Branch, New Delhi vide UTR No. UBIN1 21358136793 dt. 24.12.2021. The copy of the demand letter ahd proof of the deposit is enclosed as **Appendix-D.**

OFFICE OF THE
DIVISIONAL FOREST OFFICER, CUTTACK FOREST DIVISION
GOPATAKULA, NIAPALLA, MADHUPATNA, CUTTACK-753010
E-mail: cdfcuttack@gmail.com, Fax-0671-2317611

No. 726 /Misc./2016
Dated, Cuttack the 25th January, 2016

To

The Dy. General Manager (Coal)
Power of Attorney Holder,
Orissa Mining Corporation Ltd.
OMC House, Post Box NO.34,
Bhubaneswar-751001.

Sub:- Payment of NPV in respect of Sukinda Chromite Mines of M/s OMC Ltd.

Ref:- Letter No.F.No.11-309/2014-FC dt.01.01.2015 of Govt. of India, MoEF&CC.

Sir,

1. Whereas the total area held by OMC under VU is 582.709 ha. out of which 767.21 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:

   1. Revenue Forest: 253.001 ha
   2. Mahagiri DPS: 14.209 ha
   Total:-767.210 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. 25.07.2006) 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. 6,07,78,300.00 on dt. 28.08.2005 towards cost of NPV against the approved area over 104.79ha.

5. Whereas the lessee further paid Rs. 6,39,86,600.00 towards NPV demand for balance area over 177.760 ha. of forest land on dt.07.07.2010 at the rate of Rs. 7,50,000/- per ha (density less than 0.4). Thus the total NPV paid by lessee comes to Rs.12,47,64,800.00

Contd... 2/2

6. Whereas, Principal Chief Conservator of Forests, Odisha vide Memo No. 15685/PS (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 28.05.2008. Hence accordingly excess amount of Rs. 1,57,18,500.00 was paid by the Lessee as mentioned below:

a.	NPV paid for approved forest area over 104.79 ha prior to 28.05.2008	= Rs. 5,07,78,200.00
b.	NPV paid for the balance forest area over 177.760 ha. (including 4 fold forest area @ 2,10,000/- per ha.)	= Rs. 6,89,86,500.00
c.	NPV required to be paid after 28.05.2008 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. 6,89,86,500.00
	(a + b)	= 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 0.1 canopy density for which the NPV for Rs. 4,95,80,200.00 (Rupees Four crores ninety five lakhs eighty thousand) only is due as per the following calculation:

a.	NPV to be paid for area over 39.15 ha (104.79 - 77.760) @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 date of this order. The amount should be deposited through RTGS/NEFT mode either in Compensatory Afforestation Fund (CAF) Odisha SB Account No. 50301025222 IFSC Code COBA0000378 at Corporation Bank, CGO Complex, Lodhi Road, New Delhi or in SB Account No. 34490200105428 Union Bank of India Sarojini 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 Under payment or any the differential is to be submitted by the Lessee.

10. You are hereby 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
Angul Forest Division
Angul

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: OMMCOCORP, Bhubaneswar Tel: +0674-2374101(10L) (PABX) 2394411, 2393689, 2393697

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.	344902010139428
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 CN AB,OMC

Please remit the amount as per the aforesaid details, by debiting my/our Account for the amount of remittance plus your charges.

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.co.in/wholesale/corporate/rtgs (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.co.in/wholesale/rtgs/rtgs_time_cross_settlement_charges.htm.

Yours sincerely,

ANDBH 1094501 9511

Stamp and signature of Authorized Signatory

For Bank's Use Only

Account Debited by	
Debit authorized by	
Entered into RTGS	
Authorized into RTGS	

Cable: ORMINCORP, Bhubaneswar

Tel: +0674 2395431, 2395269, 2293309 (PBX), 2392747 (Du)
Fax: 0674-2391629, 2308890, 2304772

The Orissa Mining Corporation Ltd.
(A Government of Orissa Undertaking)
OMC HOUSE, BHUBANESWAR -751001

OMC

No. 19949 /OMC/F&B/10 Date: 3/6/10

To

The Divisional Forest Officer,
Cuttack Forest Division,
Ghatakula, Nuapara,
Cuttack.

Sub: Payment towards cost of implementation of Site Specific Wildlife Conservation Plan in respect of Sukrangi Chromite Mines of OMC Ltd

Ref: Your letter memo No.2957 dt 28.08.09 & No 2760 dtd.21.5.2010.

Sir,

In inviting a kind reference to your letters under reference, the DD bearing No.495472 dtd. 26.08.09 deposited vide our office letter No.14542 dtd.27.08.09 for an amount of Rs. 98,00,000/- towards **implementation of Scheme of Site Specific Wildlife Conservation Plan in respect of Sukrangi Chromite** mining lease of OMC in Jajpur district is hereby revalidated and submitted herewith through Demand Drafts bearing Nos.495809 to 495818 (10 nos.) 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, BRSR
b)	Drawee Branch:	CAF, Orissa, A/C No.CA-1585 in Corporation Bank, Lodhi Road, New Delhi
c)	Amount:	Rs. 98,00,000/- (Rupees Ninety Eight lakh) only.
d)	Demand Draft No.:	No.495809 to 495818 dtd.01.06.2010.

Yours faithfully,

Encl: Demand Drafts in original.

Sd/-

Manager(G)F&B

Memo No. 10750 /OMC/F&B/10 Date: 03/6/10

Copy submitted to the PCCF (WL) and Chief Wild Life Warden, 5th Floor, BDA Apartment, Prakruti Bhawan, Nilakantha Nagar, Nayapalli, Bhubaneswar – 12.

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.

Manager(G)F&B

O/C

Andhra Bank

On Demand Pay

COMPENSATORY AFFORESTATION FUND CAT ORISSA

Rupees

Rs. 30,000.00

For Value Received

For Andhra Bank

Manager

Countersigned

Manager

"495011" 000011000:

Andhra Bank

On Demand Pay

COMPENSATORY AFFORESTATION FUND CAT ORISSA

Rs. 30,000.00

For Value Received

For Andhra Bank

Manager

Countersigned

Manager

"495010" 000011000:

Andhra Bank

On Demand Pay

COMPENSATORY AFFORESTATION FUND CAT ORISSA

Rs. 30,000.00

For Value Received

For Andhra Bank

Manager

Countersigned

Manager

"495004" 000011000:

आंध्रा बैंक ANDHRA BANK

O.N.C. Campus Branch 1059

On Demand Pay

COMPENSATORY AFFORESTATION FUND(CAF)ORISSA

Rupees

or Order

Rs. 9,20,000.00

For Value Received

For Andhra Bank

ANDHRA BANK

AERO CITY

SERVICE CENTRE NEW DELHI

Manager

"495414" 000016000:

16

आंध्रा बैंक ANDHRA BANK

1059 O.N.C. CAMPUS

On Demand Pay

COMPENSATORY AFFORESTATION FUND(CAF)ORISSA

Rupees

or Order

Rs. 80,000.00

For Value Received

For Andhra Bank

ANDHRA BANK

AERO CITY SERVICE CENTRE NEW DELHI

Manager

01-06-2010

1059 O.N.C. CAMPUS

"495413" 000016000:

16

01-06-2010

COMPENSATORY AFFORESTATION FUND(CAF)ORISSA

आंध्रा बैंक ANDHRA BANK

1059 O.N.C. CAMPUS

On Demand Pay

COMPENSATORY AFFORESTATION FUND(CAF)ORISSA

Rupees

or Order

Rs. 60,000.00

For Value Received

For Andhra Bank

ANDHRA BANK

AERO CITY SERVICE CENTRE NEW DELHI

Manager

"495412" 000016000:

16

A22

Andhra Bank

On Demand Pay

COMPENSATORY AFFORESTATION FUND(CAF) ORISSA

NOC No. 1508 IN CORPN BANK LODHI ROAD

Rupees

or Order

Rs.

For Value Received

Andhra Bank

Authorised Signatory

Manager

Andhra Bank

On Demand Pay

COMPENSATORY AFFORESTATION FUND(CAF) ORISSA

NOC No. 1508 IN CORPN BANK LODHI ROAD

Rupees

or Order

Rs.

For Value Received

Andhra Bank

Authorised Signatory

Manager

Andhra Bank

On Demand Pay

COMPENSATORY AFFORESTATION FUND(CAF) ORISSA

NOC No. 1508 IN CORPN BANK LODHI ROAD

Rupees

or Order

Rs.

For Value Received

Andhra Bank

Authorised Signatory

Manager

ANDHRA BANK

01-06-2010

Demand Pay Order

COMPENSATORY ALLOWANCE (UNION GOVT. OFFICERS)

IN CORP. BANK TOWER

For Value Received

Andhra Bank

SERVICE CENTRE, NEW DELHI

195810

Authorised Signatory

Andhra Bank

Authorised Signatory

Authorised Signatory

Manager

"475611" 000041000"

10

ANNEXURE - C

OFFICE OF THE DIVISIONAL FOREST OFFICER, CUTTACK FOREST DIVISION
GEATAKULA, NUAPADA, CUTTACK-753010
E-mail: d-dfo.cuttackforestdivision@yahoo.com, Fax-0671 2347611

No. 1778 / SF (Misc)
Dated, Cuttack the 16th October, 2017.

To

The Executive Director (F&E),
Odisha Mining Corporation Ltd.
OMC House, Post Box No. 34, Bhubaneswar - 751 001.

Sub:- Implementation of Regional Wildlife Management Plan in the Mining sites at Project cost.

X-Ref:- Payment of cost of Regional Wildlife Management Plan in respect of lease of Sukurangi Chromite Mines of M/s OMC Ltd.

Ref:- Letter No.10F(Cons) 108/2015-22675/F&E dt.05.12.2016 and Letter No.10F(Con) 195/2016-20247/F&E dt.03.10.2017 of Govt. of Odisha, Forest & Environment Dept.

Sir,

In pursuance of the letter under reference of Govt. of Odisha, Forest & Environment Dept., and as per condition no.(B) vide letter No. 10F(Con)195/2016-20247/F&E dt.03.10.2017, this is to inform that the cost of Regional Wildlife Management Plan is to be paid @ Rs 58,000/- (Rupees Fifty Eight Thousand) only per hectare for the mining lease area with immediate effect as calculated below:-

(i)	Total Mining Lease Area-	382.709 ha.
(ii)	Amount required to be paid @ Rs.58,000/- per ha.-	2,21,97,122/-
(iii)	Amount already paid earlier @ 20,000/- per ha	76,54,180/-
(iv)	Balance amount to be paid-	1,45,42,942/-

hence, it is requested to make arrangement for payment of the above differential amount of Rs.1,45,42,942/- (Rupees One Crore Forty Five lakh Forty Two thousand Nine hundred Forty Two) only towards differential cost of Wildlife Management Plan over 382.709 ha. of ML area in respect of Sukurangi Chromite Mines of M/s OMC Ltd. through e-payment module and submit the proof/evidence of the said deposit for onward transmission.

Yours faithfully,

Divisional Forest Officer,
Cuttack Forest Division.

PTO

13543/2017/F & E

Amount Rs 3,12,21,963

16-11-2017

AGENCY COPY

NEFT/RTGS CHALLAN for Ad-HOC CAMPA

Date : 21-10-2017

Agency Name	ODISHA MINING CORPORATION LTD
Application No	109847120144367
Location	ORRISA
Address	OMC House Khordha
Amount(in Rs)	14542942/-

Amount in Words: One Crore Forty-Five Lakh Forty-Two Thousand Nine Hundred and Forty-two Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	CORP0000633
Pay to Account No.	150821098471201 4367
Bank Name & Address:	Corporation Bank FCS Bangalore, * Note : The proceeds of the payment will be credited to the respective CAMPA State Account

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 : 21-10-2017

Agency Name	ODISHA MINING CORPORATION LTD
Application No.	109847120144367
Location	ORRISA
Address:	OMC House Khordha
Amount(in Rs)	14542942/-

Amount in Words: One Crore Forty Five Lakh Forty-Two Thousand Nine Hundred and Forty Two Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	CORP0000633
Pay to Account No	150821098471201 4367
Bank Name & Address:	Corporation Bank FCS Bangalore. * Note : The proceeds of the payment will be credited to the respective CAMPA State Account

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

Manager (Finance)
The Odisha Mining Corporation Ltd
Bhubaneswar

Manager (Finance)
The Odisha Mining Corporation Ltd.
Bhubaneswar

Sno.	Proposal Detail	Application_No	Application No (New)	Date of IN-PRINCIPLE	Amount to be Paid/Amount Paid (in Rs.)				Payment Status	Payment Detail		Demand Letter
61	FP/CR/NZ/101535/2015 (../view-report.aspx?pid=FP/CR/NZ/101535/2015) Dalai Conveyor Corridor (2.5 MTPA)	MIN101535201593	5610353537	27 Nov 2017	Cat: 0/-, PCA: 0/-, Safety Zone: 0/-, NPV: 9990000/-, Other Charges1: 0/-, Other Charges2: 0/-, Other Charges3: 0/-, Total: 9990000/-	Addl CA: 0/-, CAT: 0/-, Addl PA: 0/-, Other Charges: 0/-			Paid	Fund Demand Verified by Nodal Officer On: 27 Nov 2017, Bank Name: Corporation Bank, Mode of Payment: NEFT/RTGS (Challan), Challan Generated On: 27 Nov 2017, Transaction Date: 01 Dec 2017		Demand Letter (../viewuploadedpdf.aspx?pdf=/Uploadedfiles/Demand/DCL.pdf), Generated Challan (../UserAccount/Neft_Challan/Corp.aspx?pid=MIN101535201593)
62	FP/NR/MIN/10335/2015 (../view-report.aspx?pid=FP/NR/MIN/10335/2015) Dalai Conveyor Corridor (7.5 MTPA)	MIN101335201577	5310131177	27 Oct 2017	CA: 0/-, PCA: 0/-, Safety Zone: 0/-, NPV: 0/-, Other Charges1: 0/-, Other Charges2: 0/-, Other Charges3: 0/-, Total: 5335000/-	Addl CA: 0/-, CAT: 0/-, Addl PA: 0/-, Regional Wildlife Management Plan: 5335000/-			Paid	Fund Demand Verified by Nodal Officer On: 25 Oct 2017, Bank Name: Corporation Bank, Mode of Payment: NEFT/RTGS (Challan), Challan Generated On: 27 Oct 2017, Transaction Date: 17 Nov 2017		Demand Letter (../viewuploadedpdf.aspx?pdf=/Uploadedfiles/Funds/pdf/101335122752123OT24RWLMP/Jaiprakash C.pdf), Generated Challan (../UserAccount/Neft_Challan/Corp.aspx?pid=MIN101335201577)
63	FP/CR/CG/8471/2014 (../view-report.aspx?pid=FP/CR/CG/8471/2014) Surajpur Limestone Mines	MIN847120142167	1096471201435/	14 Sep 2017	CA: 0/-, PCA: 0/-, Safety Zone: 0/-, NPV: 0/-, Other Charges1: 0/-, Other Charges2: 0/-, Other Charges3: 0/-, Total: 1454294/-	Addl CA: 0/-, CAT: 0/-, Addl PA: 0/-, Regional Wildlife Management Plan: 1454294/-			Paid	Fund Demand Verified by Nodal Officer On: 20 Oct 2017, Bank Name: Corporation Bank, Mode of Payment: NEFT/RTGS (Challan), Challan Generated On: 21 Oct 2017, Transaction Date: 10 Nov 2017		Demand Letter (../viewuploadedpdf.aspx?pdf=/Uploadedfiles/Funds/pdf/101471122121142354WRegionalWLHPSJaisingh.pdf), Generated Challan (../UserAccount/Neft_Challan/Corp.aspx?pid=MIN847120142167)

OFFICE OF THE DIVISIONAL FOREST OFFICER: CUTTACK FOREST DIVISION
CHATAKULA: NIAPARA: CUTTACK

Memo No 12355
Dated, Cuttack 22-7-09

To
The General Manager (Forest & Environment)
M/S O.M.C Ltd. Bhubaneswar.

Sub: (i) 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.

(ii) Approval of site specifiWild life Conservation Plan of Chromite Mining in Sukrangi Chromite Mines of M/S Orissa Mining Corporation (O.M.C) Limited.

Ref: Memo No 4416 dt.21.7.2009 of Conservator of Forests (Wildlife), O/O the Pr.C.C.F(Wildlife) and Chief Wild Life Warden, Orissa, Bhubaneswar to this office endorsing copy to you vide his memo no.4418 of even date.

Dear Sir,

With reference to the subject cited above, this is to inform you that the site specific Wild Life Conservation Plan in respect of Sukrangi Chromite mines of M/S O.M.C Ltd. has been approved by P.C.C.F (W.L) and Chief Wild life Warden Orissa with financial outlay of Rs.154 lakhs for the following activities

(1)	For activities to be implemented by User Agency-	Rs. 56.00 Lakhs
(2)	For activities to be implemented by the DFO, Cuttack-	Rs. 98.00 Lakhs
	Total	Rs.154.00 Lakhs

Hence you are requested to make payment of Rs.98,00,000/- (Rupees Ninety Eight Lakhs) only towards cost of site specific Wildlife Conservation Plan in respect of Sukrangi Chromite mines of M/S Orissa Mining Corporation (O.M.C) Limited at Jajpur Dist. through Bank Draft in favour of **"Compensatory Afforestation Fund (CAF)-Orissa, Account No.C.A 1585 in Corporation Bank, Lodhi Road, New Delhi".**

The Bank Drafts amounting to Rs. 98,00,000/-(Rupees Ninety Eight Lakhs) only may be submitted to this office immediately for onward transmission.

Yours Faithfully,

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Memo No. /DL
Copy forwarded to the Conservator of Forests, Angul Circle, Angul for favour of kind information with reference to memo no. 4417 dt.21.07.2009 of the Conservator of Forests (Wildlife), O/O the Pr.C.C.F (Wildlife) and Chief Wild Life Warden, Orissa, Bhubaneswar to his address.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

Memo No. /DL
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 memo no.4415 dt.21.07.2009 of the Conservator of Forests (Wildlife), O/O the Pr.C.C.F.(Wildlife) and Chief Wild Life Warden, Orissa, Bhubaneswar to his address.

DIVISIONAL FOREST OFFICER
CUTTACK FOREST DIVISION

OFFICE OF THE DIVISIONAL FOREST OFFICER, CUTTACK FOREST DIVISION
AT - CHATAKPUR, NUAPADA, CUTTACK 753010
Tel: 0671-2318845 FAX: 0671-2318613 email: dfo.cuttackforest@odisha.gov.in

No. 8/[illegible] of Forest Division, [illegible]
Dated, Cuttack the 25 / 11 November 2021

To

The Executive Director (E & B)
Odisha Mining Corporation Ltd
OMC House, Bhubaneswar-751001

Sub:- Diversion of Balimila forest land of 162.82 ha including 54.130 ha of forest land to be maintained safety zone (as per Stark 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 in Sukinda Chromite Mines of M/s Odisha Mining Corporation Ltd spread over village Bir Kanchida, Dhanpal, Sarubol, Sukumunda, Tailanga and Forest Wind No. 27 of Mahagiri DPF in Sukinda Tehsil of Jajpur District under Cuttack Forest Division, Odisha during extended period of mining lease up to 31.03.2021 as per MMDR amendment Act, 2015. Site Specific Wildlife Conservation Plan reg.

Ref:- (i) Letter No. 8425 Dt. 16.10.2020 of the PCCF (WL) & CWLW, Odisha, Bhubaneswar.
(ii) This office Letter No. 9224 Dt. 19.10.2020.
(iii) File No. FC-11-49/2021 (FC) dt. 22.10.2021 of Govt. MoEF & CC.
(iv) File No. 8-22/2018 (FC) dt. 12.10.2021 of Govt. MoEF & CC
(v) Memo No. 19991 F&E dt. 16.11.2021 of Govt. of Odisha Forest, Environment & CC.
(vi) Memo No. 19686 dt. 18.11.2021 of Conservator of Forests (Nodal) O/o the PCCF & HoFF, Odisha.

Sir,

With reference to the letter cited above on the captioned subject, it is to inform you that the Site Specific Wildlife Conservation Plan of the above project has been approved by the Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Odisha with financial forecast of Rs.3,75,92,88 Lakh (Rupees Five Crore Seventy-Six Lakh Ninety-Two Thousand Eight Hundred Eighty only) for the following activities. The same has been communicated in your vide Letter No. 8425/PCCF(WL)-FD & WL-19/2020 Dt. 16.10.20, which may be treated as

a) For activities to be implemented in Project area by the User Agency	Rs.181.0218 Lakh
b) Training activities to be implemented in project impact area by DFO, Cuttack Division	Rs.95.5070 Lakh
Grand Total	Rs.375.9288 Lakh

Previously, you had deposited Rs.88,00,000.00 (Rupees Ninety eight lakh only) towards Site Specific Wildlife Conservation Plan vide D.D. No. 495472 dt. 26.02.2019. Besides, the Govt. of India, MoEF & CC has allowed an adhoc Rs.1,35,42,923.00 (Rupees one crore forty-five lakh forty-two thousand nine hundred forty-three only) the same deposit towards Regional Wildlife Management Plan vide letter under reference (iv). As per the guidelines of MoEF & CC, Govt. of India, under intimation to the user agency to deposit the compensatory levies in full as estimated for implementation of Wildlife management Plan.

P.T.O

1. Cost of [illegible] SSWLCP – Rs 2,36,33,880.00
2. Prev[illegible] d. [illegible] – Rs 98,00,000.00
3. [illegible] – Rs 1,15,42,942.00

Amount to be deposited for – Rs 3,23,09,938.00 (Rs 5,76,52,880.00 – Rs 98,00,000.00 – Rs 1,15,42,942.00) (rupees three crore twenty-three lakh nine thousand nine hundred thirty eight)

Hence you are requested to deposit an amount of Rs 3,23,09,938.00 (rupees three crore twenty-three lakh nine thousand nine hundred thirty eight) only in AG or CAMPA account through e-payment mode only and submit the original document as against the deposit to this office at your earliest.

Further it is required to submit the Undertaking against Item No. 3 of the Letter No. 8426/FCA-ED & WL-1/2020-20, 16.10.2020 of the PCCF (WL) & CWLW, Odisha, Bhubaneswar for further follow up action.

Yours faithfully,

Divisional Forest Officer
Cuttack Forest Division

Copy submitted for kind information to

1. The Principal Chief Conservator of Forests (Wildlife) & Chief Wildlife Warden, Odisha, Bhubaneswar.
2. The Regional Chief Conservator of Forests, Angul Circle, Angul.

APPENDIX - D

SOKUMAR

AGENCY COPY

यूनियन बैंक Union Bank

NEFT / RTGS CHALLAN for CAMPA Funds

Date : 16-12-2021

Agency Name.	ODISHA MINING CORPORATION LTD
Application No.	5584710701
MoEF/SC File No.	8-22/2016-FC
Location.	ORRISA
Address.	OMC HouseKhordha
Amount(in Rs)	33309936/-

Amount in Words. Three Crore Thirty-Three Lakh Nine Thousand Nine Hundred and Thirty-Eight(Rupees Only

NEFT/RTGS to be made as per following details;

Beneficiary Name:	ORRISA CAMPA
IFSC Code:	UBIN0903710
Pay in Account No.	150825084710701 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

NEFT / RTGS CHALLAN for CAMPA Funds

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- 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 .

UTR
UBIN72153136793

As Provided by F & E Sector

Dy. General Manager (