ESSAR
STEEL

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Odisha, India
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U27100GJ1976PLC013787

Ref No. ESTIL/MIN/74/2019
Date : 28.09.2019

To

The Member Secretary
Expert Appraisal Committee (Non-coal mining)
Ministry of Environment, Forest & Climate Change
Vayu - 305, Indira Paryavaran Bhawan
Jorbagh Road, New Delhi - 110003

Sub : Ghoraburhani - Sagasahi Iron Ore with proposed production of 7.16 Million TPA of Iron ore (ROM) along with Crushing & Screening Plant and Beneficiation Plant with capacity of 6.7 Million TPA Capacity of M/s Essar Steel India Limited, in the mine lease area of 139.165 Ha located at village- Ghoraburhani, Sagasahi and Kalmang villages of Tahesil- Koira, District Sundargarh, Odisha (File No: J-11015/192/2016 IA-II(M); Proposal No : IA/OR/ MIN/56152/2016) - Reply for Additional details sought.

Ref: Letter from MoEF & CC vide F.NO J-11015/192/2016-IA-II(M) dated 26.08.2019

Dear Sir,

With reference to the above subject, we are herewith submitting the point wise ADS reply in compliance to the additional details sought by you on 26.08.2019 as ***Appendix I***

We request you to consider our proposal and take necessary steps towards grant of Environmental clearance for the project.

Thanking You.

Yours faithfully,
For Essar Steel India Limited

ESSAR STEEL INDIA LIMITED
AUTHORISED SIGNATORY

(Sabyasachi Mohanty)
Authorized Signatory

APPENDIX-I

i. **PP submitted that Rs.25 crores/- has been allotted for CER. PP needs to submit a year wise plans for CER amount for total of 5 years.**

Year wise breakup of the CER budget for a period of 5 years has been provided in **Annexure-1**. The Total cost works out to Rs. 2665 Lakhs of which Rs. 2500 Lakhs is CAPEX and Rs. 165 Lakhs is OPEX.

ii. **PP needs to submit quantitative plans for the CO2 reduction in transportation and excavation of the mineral.**

The various activities, measures proposed towards CO_2 Reduction and the quantification is given in **Annexure-2**. It is seen that overall 8066 T CO2/year of reduction will be obtained by the implementation of various measures as stated in the table.

iii. **PP requires to demonstrate through a conceptual plan for quantification of dust control as per NEERI report.**

For various mining and allied activities such as Drilling, Excavation, Transportation, Beneficiation plant, Crushing and Screening etc. the dust emission was quantified to provide the emission rate for PM10 and PM2.5 without control measures and with control measures. Various proposed mitigative methods along with its budget and representative photos are provided in **Annexure-3**.

iv. **PP needs to submit approved specific conservation plans for Schedule I species from concerned PCCF**

Site specific conservation plan for Schedule-I Species for Ghoraburhani-Sagasahi Iron ore Block of M/s. Essar Steel India Ltd. over an area of 139.165Ha in Koira Tehsil of Sundargarh district has been approved by the PCCF(WL) & Chief Wildlife Warden, Odisha vide letter No. 6757/1WL-FC-Mrl-SSP-196/2018 dated 13.08.2019 for a financial forecast of 1367.261 lakhs . Conservation plan for Schedule-I species has been made in the plan and its extract is given in **Annexure-4A** Copy of approval letter & approved conservation plan is given vide **Annexure-4B.**

v. PP requires to submit water budget for project including water harvesting, conservation and utilization within project and nearby villages.

Water budget including water harvesting, conservation & utilitsation with in the project and nearby villages is given in **Annexure – 5.**

vi. PP requires to submit the details of sources taken for emission factor analysis.

Fugitive emissions (PM10 & PM2.5) have been predicted by using standard equations given in "Indian Mine and Engineering Journal" and Compilation of Air Pollutant Emission Factors, EPA Publication No. AP-42 – Guidance on Emission factors on mining industry. The various emission sources and the emission factors are detailed below:

ACTIVITY	SOURCE TYPE	EQUATION
A. Drilling	Point	0.6kg/hole
B. Excavation of ore & Waste	Open pit	23.6 kg/hr particulate matter for every 1000 Tonnes per hour material handling
C. ROM Ore & Waste transportation	Line	0.2 kg/vehicle/km.
D. Beneficiation Plant	Area	
i) Unloading from hopper (EO)		(0.0018 *(S/5)*(U/5)) / ((M/2) ^{2}(Y/6))
ii) Movement on conveyor (EC)		(0.0018 *(S/5)*(U/5))/ (M/2)^2
iii) Screening & storage (EW)		0.05*(S/5)* (D/90)*(d/235)* (f/15)
E. Diesel Gen set	Point	CPCB approved diesel genset considering the suppliers specification.

vii. PP should submit the updated status of the court cases for consideration of the proposal.

There have been three numbers of cases pending against this project .Details of these cases are given below:

Case no with date of filing & Name of the Court / Tribunal	Description of the Appeal	Name of Applicant & Respondent	Present Status
O.A.No.-34/2018, dt 24.08.2018 at NGT– EZ Branch	The primary grievance expressed in the Original Application is that there was no proper Gram Sabha held nor any public hearing conducted as per procedure prescribed under the EIA Notification, 2006. The other grievance expressed is that although large areas of the forest land is involved in the project upon which the tribal community residing therein depend for their livelihood, the provisions of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 have not been complied with.	**Name of Petitioner :** Batu Munda, Gopal Naik, Kunu Behera and Others **Respondent :** • State of Orissa, represented through its Principal Secretary, Steel and Mines Department, Secretariat Building, Bhubaneswar,: • Union Of India, represented through its Secretary, Mines Department, Shastri Bhawan, New Delhi, • State Pollution Control Board, represented through its Member Secretary, Paribesha Bhawan, Bhubaneswar • Collector and District Magistrate,Sundargarh, /Addl. District Magistrate, Sundargarh, • Superintendent Of police, Rourkela, • Divisional Forest Officer, Bonai /Sub- Collector, Bonai,/ SDO, Bonai/ BDO, Koira / Inspector Incharge, Koira Police Station/ Sarpanch , Malda Panchayatr. • Essar Steel India limited	It has been disposed off by NGT – EZ Branch vide order dated. 21.01.2019 on the ground of pre-matured application and refereed to MOEF & CC, GOI**(Annexure-6A)**

W.P.(c) No.-9980/2017, dated 23.05.2017 at Odisha High Court	The petitioners have come before this Hon'ble Court in the form of PIL, by challenging the Public Hearing dated 19.05.2017, which is illegal and bad in the eye of law and also seeking a direction to the Opposite Party no 3 to conduct the public hearing by giving proper notice to the villagers of the affected villages of Ghodabudani, Sagasahi and Kalamang, in the presence of the Judicial Magistrate.	**Petitioner** : Rina rani Kumudial **Respondent** : • State Of Orissa represented through its Principal Secretary, Steel and Mines Department, Secretariat Building, Bhubaneswar • Union Of India, represented through its Secretary, Mines Department, Sastri Bhawan , New Delhi • State Pollution Control Board, represented through its Member Secretary, Paribesh Bhawan, Bhubaneswar • Collector and District Magistrate, Sundargarh / ADM, Sundargarh, • Sub-Collector, Bonai,/ SDO, Bonai • Inspector-in-charge, Koira Police Station • Essar Steel India Limited.	Vide Mentioned memeo dated 20th Aug'19 (**Refer to Annexure – 6 B**) the petitioner informed the court that the petitioner does not want to continue the case and hence case may be with drawan. . Further , the petitioner requested the court to hear the case on 26th Aug'19. But the case could not be heard due to boycott call given by High Court Bar Association (**Copy attached as Annexure-6C**) ,. **Copy of latest status attached as Annexure-6D**
W.P.(c) No.-9247/2018 Dated 25.05.2018 at Odisha High Court	The petitoners have filed this PIL seeking cancellation of Iron Ore mines persuant to invitation of bid for grant of mining lease for Iron Ore dated 23.12.2015 issued by the Government Of Odisha for Ghoraburhani - Sagasahi Iron Ore block.	**Petitioner :** Chitta Ranjan Sahu **Respondent :** • Department of Steel and Mines, Government Of Orissa, through Director of Mines, Bhubaneswar • State Of Orissa, through its Chief Secretary, Bhubaneswar • Union Of India, Through its Secretary, Ministry of Munes, Shastri Bhawan, New Delhi,	This case was listed for hearing on 26/08/2019 in Odisha High Court but could not be heard due to boycott call given by High Court Bar Association. However the main respondents namely the Government of Odisha, SBI Caps and others have already filed their counter affidavits defending the auction and issue of LOI to M/s Essar Steel India

		• SBI Capitals Market Limited.Through its managing Director, World Trade Tower, New Delhi, • Essar Steel India Limited, through IRP, Hazira, Surat, • Bhusan Steel Limited, through IRP M.G. Marg, New Delhi and • Bhusan Power and Steel Limited, through IRP, Nehru Palace , New Delhi..	Limited for allocation of Ghoraburhani- Sagasahi iron ore mine as a preferred bidder. **Copy of status attached Annexure-6 E.**

There are no adverse order or stay order from any courts for not considering EC to the project. Therefore. We humbly request you to consider our proposal to grant EC.

* * * * * * * *

Annexure-1

YEAR WISE PLANS FOR CER AMOUNT FOR 5 YEARS

A) BUDGETORY BREAKUP FOR CAPEX PROVISIONS

S. No.	Major activities	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total Amount
	Education						
1	Additional class rooms in Primary school	45	35	25	25	25	155
2	Additional class rooms in the middle school	25	20	20	20	20	105
3	Adopt one school in the core village to establish as a model school in the vicinity			108	50		158
4	Provision of Bench Desk for High School and Middle school for 15 schools	20	15	15	15	15	80
5	Service improvement & teaching learning materials in Anganwadi center			25	10	10	45
6	Boundary Wall for 02 High school, 06 Middle/Primary	55	45	35	35	35	205
7	Urinal in Primary/Middle/High School.(No -- 15)	5	5	5	5	5	25
8	Computer class as vocational course	16	16				32
9	Establishment of Library room in school	25	15	15	15	10	80
	Sub Total	**191**	**151**	**248**	**175**	**120**	**885**
	Health & Sanitation						
1	Support to improve the health services at Govt. CHC, Koira	65	38	-	-	-	103
2	Mobile Health Clinic van	45	-	-	-	-	45
3	Establishment of Medical center with basic facility	200	85	-	-	-	285
	Sub Total	**310**	**123**	**0**	**0**	**0**	**433**
	Infrastructure Development						
1	Hand pump new Unit	10	5	-	-	5	20
2	Additional new Deep bore Well	8	4	3	2	2	19
3	Drinking water through mini portable Overhead Tank	50	15	20	10		95
4	Additional New ponds & de-silting of old ponds	5	5	20	20	-	50
5	Community Centre		17	17	17	17	68
6	Construction and Reparing of PCC Village Roads	80	80	40	40	40	280
7	Village Street Lights	61	14	13	13		100
8	Repair and upkeep of main access road to the villages	50	25	15	10		100
	Sub Total	**264**	**165**	**128**	**112**	**64**	**732**
	Sustainable Livelihood through Skill Development Road						
1	Promotion of Income Generation Activities- Bee Keeping, Leafplate,	15	15	15	15	15	75

S. No.	Major activities	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total Amount
	Poultry, Dairy, Pickle, Taioring & embroidery, Mushroom Cultivation etc.						
2	ITI and Vocational Training to Youths for employbility	50	60	60	60	60	290
	Sub Total	**65**	**75**	**75**	**75**	**75**	**365**
	Special Program for sustainabe growth						
1	Setting up of Sports Nursery			50	25	10	**85**
	Sub Total	**0**	**0**	**50**	**25**	**10**	**85**
	Grand Total	**830**	**514**	**506**	**382**	**269**	**2500**

B) BUDGETORY BREAKUP FOR OPEX PROVISIONS

S. No.	Major activities	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total Amount
	Education						
1	Organization of School level competition (Quiz, Drawing, Slogan, etc on various issues) in school	2	2	2	1.5	1.25	8.75
2	Computer class as vocational course			1	1	1	3
3	Organization of sports in school on yearly basis along with a mega event at block level	1	1	1	1	1	5
	Sub Total	**3**	**3**	**4**	**3.5**	**3.25**	**17**
	Health & Sanitation						
1	Mobile Health Clinic van	6	10	10	10	10	46
2	Establishment of Medical center with basic facility			24	24	24	72
	Sub Total	**6**	**10**	**34**	**34**	**34**	**118**
	Infrastructure Development						
1	Hand pump repairing	2.5	2.5	1	1	1	8
	Sub Total	**2.5**	**2.5**	**1**	**1**	**1**	**8**
	Sustainable Livelihood through Skill Development						
1	ITI and Vocational Training to Youths for employbility			6	6	6	18
	Sub Total	**0**	**0**	**6**	**6**	**6**	**18**
	Special Program for sustainabe growth						
1	Village Development Committee formation and meetings on twice in a month in all villages for 500 meetings	0.5	0.5	0.5	0.5	0.5	3
2	Management of Sports Nursery			0.5	0.5	0.5	2
	Sub Total	**0.5**	**0.5**	**1.0**	**1.0**	**1.0**	4
	Grand Total	**12**	**16**	**46**	**46**	**45**	**165**

CONSOLIDATED YEARWISE BREAKUP FOR CER BUDGET

Item	1st Year	2nd Year	3rd Year	4th Year	5th Year	Total Amount
A) CAPEX						
Education	191.0	151.0	248.0	175.0	120.0	885.0
Health & Sanitation	310.0	123.0	0.0	0.0	0.0	433.0
Infrastruture Development	264.0	165.0	128.0	112.0	64.0	732.0
Sustainable Livelihood	65.0	75.0	75.0	75.0	75.0	365.0
Special Program	0.0	0.0	50.0	25.0	10.0	85.0
Sub total (1- 5 years)	**830.0**	**514.0**	**501.0**	**387.0**	**269.0**	**2500.0**
B) OPEX						
Education	3.0	3.0	4.0	3.5	3.3	16.8
Health & Sanitation	6.0	10.0	34.0	34.0	34.0	118.0
Infrastruture Development	2.5	2.5	1.0	1.0	1.0	8.0
Sustainable Livelihood	0.0	0.0	6.0	6.0	6.0	18.0
Special Program	0.5	0.5	1.0	1.0	1.0	4.0
Sub total (1- 5 years)	**12.0**	**16.0**	**46.0**	**45.5**	**45.3**	**164.8**
GRAND TOTAL (1- 5 years)	**842.0**	**530.0**	**547.0**	**432.5**	**314.3**	**2664.8**

ANNEXURE-2

Major activities causing Reduction of CO2 emission in Ghoraburhani - Sagasahi mine

<table>
<tr><th>S.No.</th><th>Activity leading to reduction in CO2 emission</th><th>Measures proposed for reduction in CO2 emission</th><th>Reduction in CO2 emission</th><th>Net Reduction in Co2 (T / year)</th></tr>
<tr><td>1.</td><td>Transportation of Beneficiated Ore
Use of slurry pipeline instead of truck for transportation of ore from Sagasahi mine to Dabuna beneficiation plant</td><td>20” pipeline installed over 28 km in place of heavy trucks for logistics outside Mining Lease area

Power requirement: 4 MW
Saving in fuel (non-use of trucks): 13025 KL/yr HSD</td><td>HSD savings = 6050 Kilo Ltrs /yr x 2.653* t CO2/KL= 16050 Tons /year.
(Less) Electricity consumption of 4 MW x 365 days/ year x 12 hrs / day = 17520 MWh/ year x 0.85 t CO2/MWh** = 14892 t CO2/year

Hence, Net reduction of CO2 emission = 1160 t CO2 / year

* Source: greencleanguide.com
** Source: CEA User Guide Ver13, 2018</td><td>1160</td></tr>
<tr><td>2.</td><td>Green Belt and Plantation
Plantation in and around Mining Lease area</td><td><table><tr><th>Area</th><th>Ha</th><th>Density</th></tr><tr><td>Backfilled & reclaimed area</td><td>86.727</td><td>1600</td></tr><tr><td>Dumps</td><td>6.203</td><td>1600</td></tr><tr><td>Infrastructure</td><td>2.430</td><td>1200</td></tr><tr><td>Tailing pond</td><td>4.923</td><td>1600</td></tr><tr><td>Beneficiation plant</td><td>12.85</td><td>1200</td></tr><tr><td>Other area</td><td>16.495</td><td>1600</td></tr><tr><td>Green belt over safety zone</td><td>6.755</td><td>1600</td></tr></table></td><td>With tree density as mentioned in 2nd column, the total planted tree will be 211,780 and with 90% survival rate about 190,000 tree is estimated to survive. (Now a young tree can absorb 13 lb (=5.85 kg) CO2 per year while a grown tree can absorb up to 48 lb (=21.6 kg) CO2 per year)*. Therefore the proposed plantation will be absorbing up to 4104 t CO2/year.

* Source: urbanforestrynetwork.com</td><td>4104.0</td></tr>
</table>

3.	**Power requirement** Use of Solar energy causing reduction in Electricity	For illumination : • at dump yard of OB and sub grade and ROM Ore • along haul road • around crushing unit • Ore / stock yard Total estimated Electric power requirement = 0.5 MW	Total estimated Electric power requirement = 0.5 MW = 0.5 x 10 hrs/ day x 330 days/ year = 1650 MWh /yr. Hence CO2 emission @ 0.82 t CO2/MWh* = 1353 t CO2 /yr. ** Source: CEA User Guide Ver13, 2018*	**1353.0**
4.	**Equipment Operation (Mobile Crushing & Screening Equipment)** Maximum utilization of Mobile Crushing & Screening Plant thro Electricity	80 % time (80 % of 20 hrs) the Crushing & Screening Plant to be operated through electricity. 80 % has been considered considering Power cut for 20 % during which it will be operated through Diesel	Total estimated electrical power requirement = 0.05MWx2x16hrx330days = 528 MWh/year. Hence Co2 emission @ 0.85 = 448.8 Tons/year By using Diesel operated Crushing & Screening Plant , total diesel consumption = 2x20ltr/hrx16hrx330 = 211200 Ltrs / year = 211.20 KL / year @ 2.653 t CO2/KL= 211.20 x2.653 = 560.31 Tons / year Hence, Reduction in Co2 emission = 560.31 – 448.8 = 111.51 (Say 111.5 t CO2 / Year)	**111.5**
5.	**Excavation & Transportation Equipment (Inside Lease)** Proper and preventive maintenance of HEMM machineries to obtain higher fuel efficiency and low emission	Total Diesel Cons : 9000 KL Approx. 5 % increase in efficiency. Net HSD saving ~= 450 KL/yr	Reduction in CO2 emission = 450 x 2.653 t CO2/KL = 1194 t CO2/yr	**1194**
	Use of Diesel additives in the Diesel operated Mobile Earth moving equipment like Excavators, Dumpers, Drill Machines etc	Reduction in specific diesel consumptions by 5 – 8 % Diesel Cons = 9000 KL / Year Savings in HSD = 450 KL / Year (@5 %)	Reduction in CO2 emission = 450 x 2.653 t CO2/KL = 1194 t CO2/yr	**1194**

6	**Dust Control** Automated water sprinkling system along haul road through nozzles	Reduction in use of diesel operated system / tankers ~ approx140 KL/yr. Power consumption by electrical m/c = 45 KWx6 hrx3x330 = 267 MWH/ year	Reduction in CO2 emission = 140 x 2.653 t CO2/KL = 371 t CO2/yr Co2 emission by Elect machinery = 267 x .85 = 227 t/ year Net Reduction in Co2 emission = 144 t / year	**144**
	TOTAL CO2 REDUCTION WITH CONTROL MEASURES ENVISAGED PER YEAR			**8066 t CO2/year**

Annexure-3

CONCEPTUAL PLAN FOR QUANTIFICATION OF DUST CONTROL AS PER NEERI REPORT

Preservation of environment in this mine strict enforcement of management schemes and regular air quality monitoring will be undertaken for taking corrective actions, as needed. By adopting the effective implementation of all the mitigative measures no adverse impact on Ambient Air quality due to dust emission is envisaged

For this project, the quantum of fugitive emissions (PM10 and PM2.5) from possible sources during the course of mining and ore processing, have been estimated and then its impact on air quality has been predicted using computer model ISCST3- AERMOD view Gaussian Plume Air Dispersion model (ver – 8.9.0). The modelling simulations were done for peak excavation capacity of 10.03 MTPA, separately for mining and allied activities within lease area and transportation outside lease area for a maximum 6 Million T per annum.

The details of dust generation due to various operations within the lease area and outside the lease area without adopting mitigative measures and with control measures are given below:

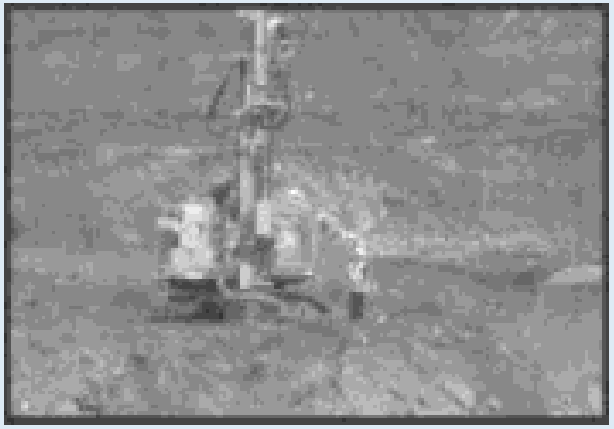
A. INSIDE THE LEASE AREA:

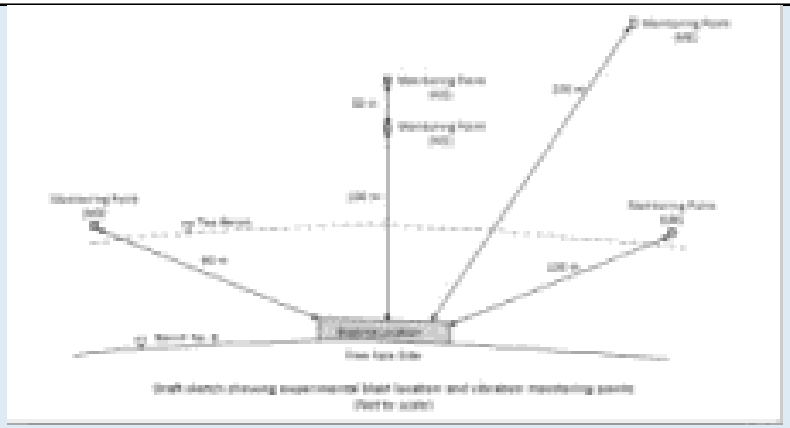
ACTIVITIES/POLLUTANTS	PM10 (g/sec)		PM 2.5 (g/sec)	
PARAMETERS	**WITHOUT Control**	**WITH Control**	**WITHOUT Control**	**WITH Control**
Drilling	0.41	0.08	0.19	0.04
Excavation	10.44	2.09	4.70	0.94
Transportation & Miscellaneous	2.33	0.47	1.05	0.21
Mineral processing	0.00	0.00	0.00	0.00
Additional Ore transportation from stack yard	3.33	0.83	1.50	0.38
Total	**16.51**	**3.47**	**7.44**	**1.57**

B. OUTSIDE THE LEASE AREA:

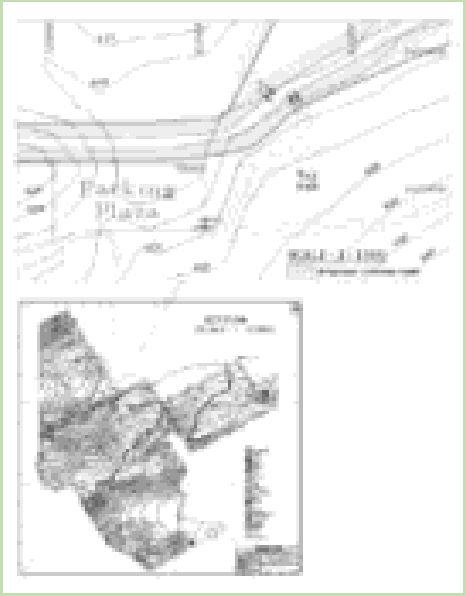
Route	PM10 (g/sec per km)		PM2.5 (g/sec per km)	
	WITHOUT Control	**WITH Control**	**WITHOUT Control**	**WITH Control**
In the road via NH	0.112	0.056	0.050	0.025
In the road towards Joribahal Chowk	0.167	0.083	0.075	0.037
Total	**0.279**	**0.139**	**0.125**	**0.062**

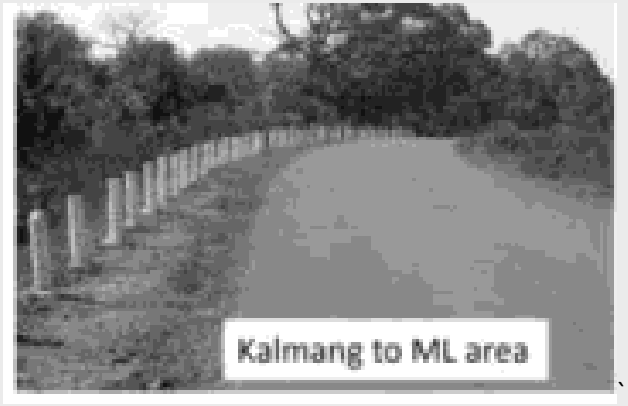
Activity wise details are as below :

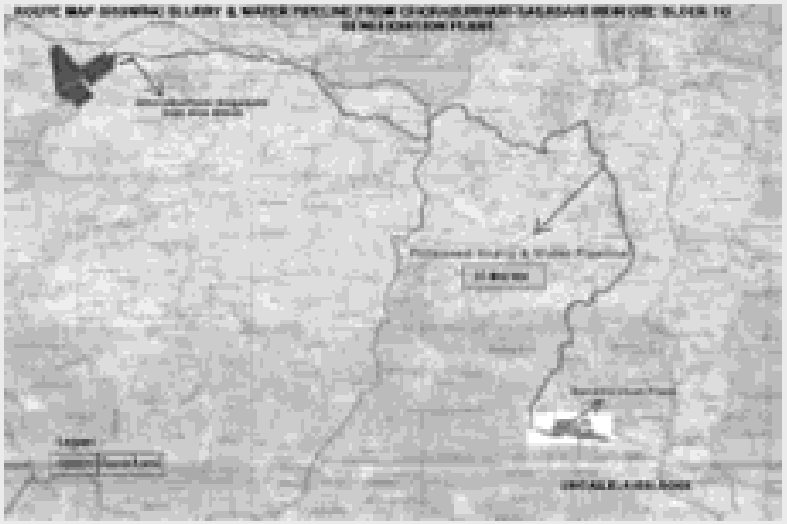
<table>
<tr><td colspan="3">1. Drilling</td></tr>
<tr><td colspan="3">Consequence: Dust emission
Number & Capacity of drill: 2 No. of DTH drills of 115mm/165 mm capacity.</td></tr>
<tr><td>PROPOSED MITIGATIVE MEASURES</td><td>REPRESENTATIVE PHOTO</td><td>COST(RS IN LAKHS)</td></tr>
<tr><td>• Using latest technology drilling machine inbuilt dust extraction system & water injecting system.</td><td rowspan="3"> 
DRILLING WITH DUST EXTRACTOR</td><td rowspan="3">• In built in the capital cost of the equipment.</td></tr>
<tr><td>• Use of sharp drills with wet drilling.</td></tr>
<tr><td>• Proper maintenance of drilling machines.</td></tr>
<tr><td colspan="3">2. BLASTING</td></tr>
<tr><td colspan="3">Consequence: Dust emission, Generation of fines.
Method: SME (Site Mixed Emulsion Explosives) along with conventional explosives such as PGC, Toe blast and ANFO. Both conventional as well as Nonel (non-electric initiation) blasting will be done.</td></tr>
<tr><td>PROPOSED MITIGATIVE MEASURES</td><td>REPRESENTATIVE PHOTO</td><td>COST(RS IN LAKHS)</td></tr>
<tr><td>• Well-designed blast by effective stemming and use of milli second delay detonators – Every blast shall be properly designed to see that the optimum breakage occurs.</td><td></td><td>Scientific study for fixing blasting parameters – Rs. 10 lakhs</td></tr>
</table>

• Avoiding blasting during high wind periods where the fine dust is carried away easily affecting the ambient air quality. • Use of delay detonators and controlled blasting techniques to keep the dust, noise as well as vibration level within the prescribed limits • Use of shock tube (nonelectric/Nonel) initiation system for in-hole as well as surface hole-to hole initiation for all the blasting operations for better and effective control on ground vibration, fly rock and air overpressure (noise).		
3. EXCAVATION, LOADING		
Consequence: Dust emission **Equipment:** Excavator of 5.7 m3 capacity(5Nos. + 1 Standby) and Loader of 9.0m^3 capacity(2+1)		
PROPOSED MITIGATIVE MEASURES	**REPRESENTATIVE PHOTO**	**COST(RS IN LAKHS)**
• Using sharp teeth for shovels and other excavation equipment and their periodical replacements. • Provision of dust filters / mask to workers working at highly dust prone and affected areas. • Imparting sufficient training to operators on safety and environmental parameters		Rs. 30 Lakhs per annum recurring cost for training and awareness programs.

4. HAULING, TRANSPORTATION WITHIN LEASE		
Consequence: Dust emission **Equipment:** 80 T Dumper		
PROPOSED MITIGATIVE MEASURES	**REPRESENTATIVE PHOTO**	**COST(RS IN LAKHS)**
• Avoiding overloading of dumpers. For preventing spillage, provision of overboard on chassis.		---
• Regular water sprinkling engaging pressurized water sprinkler on the feeder roads, haul roads, working face & areas prone to air pollution such as loading & unloading points for dust suppressions. Two (2) nos of 35 KL capacity pressurized water sprinkler will be deployed.		**Capital cost - Rs.55 Lakhs** **Recurring cost - Rs.115 Lakhs per annum.**
• It is proposed to install fixed water sprinkling arrangement system on the main haul road of about 1 Km.		**Capital cost - Rs. 20 Lakhs** **Recurring cost - Rs.15 Lakhs per annum**

• Vacuum cleaners will be deployed for cleaning of all mineral carrying roads inside ML area including road passing centrally through the Mining Lease and also for the proposed cement concrete road inside the lease area.		**Capital cost - Rs.135 Lakhs** **Recurring Cost : 15 Lakhs**
• A cement concrete road runs centrally through the Mining Lease which has divided Mining into Pit 1 and Pit 2. This road will be connected to both Pit 1 and Pit 2 through a 9 m wide and 300 m long cement concrete Road, which will serve as two way movement of vehicle. This will be constructed immediately (within 1 month) on execution of Mining Lease. • Construction & Maintenance of Parking Plaza		**<u>Cement Concrete Road</u> :** **Capital cost – Rs. 60 Lakhs Recurring cost - Rs.05 lakhs per annum.** **<u>Parking Plaza</u>** **Capital Cost : Rs.15 Lakh** **Recurring Cost : Rs.2 Lakhs per Annum**

5. TRANSPORTATION OUTSIDE THE LEASE		
Consequence: Dust emission **Equipment:** Trucks, 20T		
PROPOSED MITIGATIVE MEASURES	**REPRESENTATIVE PHOTO**	**COST(RS IN LAKHS)**
• Covering transport vehicles with tarpaulin during transportation to avoid spillage and generation of dust.		-
• Proper maintenance of mineral transport roads.		**Recurring cost - Rs. 25 Lakhs per annum.**

• **Transportation of Product through Pipeline in outside the lease area:** In compliance to CSIR–NEERI recommendation, on completion of pipeline by 4th year, slurry transportation system will be carried out.		**Capital cost - Rs 106.20 Cr.**
6. CRUSHING AND SCREENING PLANT		
Consequence: Dust emission **Equipment:** 1 stationary crushing and screening unit of 1350TPH capacity and 2 Mobile crushing and screening unit of 500TPH capacity		
PROPOSED MITIGATIVE MEASURES	**REPRESENTATIVE PHOTO**	**COST(RS IN LAKHS)**
• Installation of mist gun sprayer arrangement and dry fog system at screening & crushing unit as well as loading & unloading point for dust suppression.		**Installation of Dry fog systems** **Capital cost – 30 lakhs** **Recurring – Rs 60 lakhs per annum**
• The fixed crusher & screen will be in covered shed.		**Inbuilt in project cost**

• The products shall be discharged through chutes & bottom of chute will be maximum 3m from groundlevel.		**Inbuilt in project cost**
• Auto water sprinkling arrangements will be provided at all the discharge chutes to regulate fugitive dust.		**Inbuilt in project cost**
• Fixed auto sprinklers shall be provided in the stockyard of products.		**Capital cost - Rs. 20 Lakhs** **Recurring cost - Rs.15 Lakhs per annum**

In case of beneficiation plant, as the latest state of art wet process is proposed, no major impact on air quality will arise due to processing of ore. In this plant ore feed will be transported and fed to scrubber through hopper. Subsequently the material is passed through grinding mills, magnetic separators, Thickeners etc. In the scrubber itself water is mixed with ore and since then it will be a wet process. As such there will be **zero dust emission** in the process.

6. BENEFICIATION PLANT		
Consequence: Dust emission **Equipment:** Grinding mills, Spirals, Hydrocyclone, etc.for a throughput capacity of 6.7MTPA(1250TPH)		
PROPOSED MITIGATIVE MEASURES	**REPRESENTATIVE PHOTO**	**COST(RS IN LAKHS)**
• Enclosing the ore loading point with sheets to prevent dust propagation. • Providing inbuilt nozzles for spraying water in the form of mist (Dry fogging) for efficient dust suppression at feed – Hopper.		**Inbuilt in project cost**

• Transferring all material through closed conveyors.		**Inbuilt in project cost**
• All the transfer & junction points will be covered and adequate water sprinkling arrangement shall be provided.		
• Internal roads will be wetted by regular water sprinkling, if necessary.		
• Stacking of ore in proper location with proper stack geometry.		
• Thick plantation around the plant.		**Recurring cost - Rs 25 lakhs per annum**

* * * * * * * *

ANNEXURE-4A

PREPARATORY MEASURES TO BE TAKEN FOR CONSERVATION OF SCHEDULE-I FAUNA SPECIES FOUND IN THE STUDY AREA OF GHORABURHANI-SAGASAHI IRON ORE MINE (139.165 HA) IN BONAI FOREST DIVISION UNDER SUNDARGARH DISTRICT --- EXTRACT FROM APPROVED SITE SPECIFIC WILD LIFE MANAGEMENT PLAN

Ghoraburhani – Sgasahi Iron Ore Mine involves 139.165 Ha of total area out of which 126.401 Ha is forest area. Due to the proposed mining activities, the Wildlife present in the project area is likely to be threatened. Besides the Wildlife habitat will be reduced to the extent of forest area (126.401 Ha) involved. Therefore, the congregation of wild animals is likely to be increased within the surrounding Reserve Forest and proposed reserve forest areas. These animals will therefore be susceptible to greater threats. Therefore the management plan has been prepared to reduce such threats.

The major schedule-I animals found in study area are:-

1. Indian Elephant – Elephans maximus
2. Indian Peafowl (Mayur) – Pavo cristatus
3. Python (Ajagar) – Python molurus
4. Yellow Monitor Lizzard – Varanus flavescens
5. Wild Cat -- Fellsi Chaus affinis
6. Brahmani Kite – Hollistur Indussh

The Management strategy for the project around study area (10 Kms Buffer Zone) will therefore be as follows:-

1. Habitat Improvement
2. Reducing Man-animal conflict
3. Habitat / Forest protection
4. Reducing forest dependence
5. Others.

1. **Habitat Improvement**:-

It is proposed to improve the wildlife habitat in blank places and safety zone of the project area as well as in project impact area.The forests are gradually getting depleted and the cover for wildlife is getting reduced. It is necessary to improve the forest cover so as to provide proper habitat for the wild animals and also to produce adequate shelter and fodder.

Accordingly following measures have been proposed :

(i) It is proposed to plant of 14000 numbers of tall seedlings in blank areas in the project area to improve environment and provide shelter and food for small animals / Birds and Reptiles such as Jackal, monkeys, Peacock, common myna, Rat snake, cobra, Monitor Lizzard and python. The budgetary provision towards this activity has been kept as ***Rs. 71.442 Lacs***.

(II). Planting 10000 numbers of fruit bearing trees through VSS members of the surrounding villages of Mining areas to provide shelter and food for the small Animals, Birds (like Indian peaflowl etc) & Reptiles. The budgetary provision for this activity has been kept as ***Rs. 35.002 Lacs***.

(III). Silvicultural operation will be taken up along with sowing of fodder grasses with soil moisture conservation measures over an area of 400 Ha. it is also proposed to plant 1000 numbers of Ficus species in the blank species around the Mining areas. Besides, Construction of check dams, water bodies will be created in the study area to provide shelter, food and drinking water to the Animals / Birds / Reptiles and other faunas. The budgetary provision for this has been ear marked as ***Rs. 187.456 Lacs***.

2. **Reducing Man-animal conflict / Protection wildlife / Habitat**

Most important Man-Animal conflicts are **Man-Elephant and Man-Bear conflict**.

The following steps will be taken to reduce such conflict :

(I) Solar light to be provided to the villagers in the study area where Elephants are moving frequently. The budgetary provision is ***Rs. 60.00 Lacs***.

(II) Creation of awareness in the adjoining villages for conservation of forest & wildlife. The budgetary provision is ***Rs. 20.00 Lacs***.

(III) It is proposed to construct solar electric fencing around the Mine pit boundary to protect the animals from falling in Mine pits. The budgetary provision is ***Rs. 20.00 Lacs***.

(IV) It is proposed to engage 10 number of persons as protection squad – Cum – Anti depredation squad to protect the wildlife (I**ncludes Schedule – I species**) and check the movement of the big animals such as Elephant those who are moving towards habitation.

Two numbers of permanent protection camps will be constructed with all facilities for shelter of protection squad. The budgetary provision is **Rs. 239.036 Lacs**

(V) it is proposed to supply one Animal Rescue Van, which will be used for rescue of sick and wounded animals. It is also proposed to install Rescue center for Birds & Reptiles to act as observation and Treatment center before their release in the forest. It is also proposed to establish one Mobile Veterinary Unit with provision for on the spot treatment of Animals / Birds / Reptiles. The budgetary provision for this is **Rs. 120.00 Lacs**

(VI). It is proposed to purchase the equipment such as Drone Camera and Night Vision Camera etc to monitor the movement of Elephant because the main conflict as mentioned above, is Man-Elephant. The budgetary provision is **Rs. 30.00 Lacs**

(VII) It is proposed to provide training to the Forest Department Staff for conservation and protection of Wildlife as well as to Rescue the Man / Wildlife, if any faced and accident / conflict in and around the forest area. The budgetary provision is **Rs. 30.00 Lacs**

(VIII) It is proposed to give protection to Forest and Wildlife from fire, fire protection squad consists of 10 numbers will be deployed for 5 months / year with all equipments such as vehicle, water container, water pump and other fire fighting equipments and incentives to forest fringe villages to get active support from the villagers. The budgetary provision is **Rs. 89.45 Lacs**

(IX) It is proposed to provide 2 numbers of four wheel vehicle for monitoring and supervision of the protection and conservation activities of forest and wildlife. The budgetary provision is **Rs. 130.00 Lacs**.

3. **Reducing forest dependence**

(I) To reduce forest dependence it is proposed to supply alternate fuel to the local inhabitants for their day to day requirements. The budgetary provision is **Rs. 10.00 Lacs**.

(II) It is proposed to give training to VSS / SHGS for their alternate livelihood such as Apicultural, Poultry, Seri cultural etc. The budgetary provision is **Rs. 30.00 Lacs.**

4. **Others**

I. Incentives / Rewards: - It is necessary to collect regular information regarding Poachers, Smugglers and wild crime. The budgetary provision is **Rs. 20.00 Lacs**.

II. Cattle Immunization: - The Cattles of the villages are regularly entering the forest area for their food. The Village Cattles are used to face different type of bacterial and viral diseases so it is necessary to conduct regular camps for Cattle Immunization. The budgetary provision is **Rs. 10.00 Lacs.**

III. Monitoring and Evaluation:-The implementation of this plan will have to be monitored and evaluated during 4th & 8th year through independent agency. The budgetary provision towards this has been kept as **Rs. 5.00 Lacs**.

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ANNEXURE-4B

OFFICE OF THE PRINCIPAL CHIEF CONSERVATOR OF FORESTS (WILDLIFE) & CHIEF WILDLIFE WARDEN, ODISHA

Department of Forest and Environment, Government of Odisha

No. 6757 / 1WL-FC-Mri-SSP-196/2018
Dated, Bhubaneswar the 13 August, 2019

To

M/s Essar Steel India Limited,
At/PO – Dabuna, Via – Joda,
Dist. – Keonjhar, Odisha,
PIN – 758034

Sub: ***Approval of Site Specific Wildlife Conservation Plan for Ghoraburhani-Segasahi Iron Ore Block of M/s Essar Steel India Ltd. over an area of 139.165 ha in Koira Tahsil of Sundargarh district***

Sir,

It is to inform that you have to implement a Site Specific Wildlife Conservation Plan for Ghoraburhani-Segasahi Iron Ore Block in Koira Tahsil of Sundargarh district in compliance to the Standard ToR No.18 issued by MoEF&CC, Government of India in their letter No.J-11015/192/2016-IA.II(M) dt 16.01.2017 for preparation of EIA/EMP report.

2. The Site Specific Wildlife Conservation Plan in respect of the above project has been approved by the undersigned with financial forecast of **₹1367.261 lakh** (Rupees thirteen crore sixty-seven lakh twenty-six thousand one hundred) only for the following activities.

a.	For activities to be implemented by the user agency in project area	₹556.130 lakh
b.	For activities to be implemented in project impact area in Bonai Division	₹811.131 lakh
	Grand Total:	**₹1367.261 lakh**

3. Various activities in the forest area to be diverted will be executed by the Project proponent under the guidance of the concerned DFO. A sum of ₹811.131 lakh only may be transferred through online portal of CAMPA account of the State for the purpose for implementation of various activities within the project impact area by the Forest Department as envisaged in the plan.

4. You may please note the following conditions for future compliance.

- This Plan may be revisited after 5 years and the User Agency will give undertaking to contribute towards the revised cost of the conservation plan till the project period, if any.
- If there would be need for Site Specific Wildlife Conservation Plan after expiry of the present plan period, the user agency will have to submit another such plan at least one year before the expiry of the present Conservation Plan and deposit the outlay amount upon its approval. In case of delay, it will be dealt as per law for violations of Forest Conservation Act, 1980 and Environment (Protection) Act, 1986.
- The project proponent has to give an undertaking to bear the differential cost in case of enhancement of wage rate at the time of implementation of this plan.

Yours faithfully

Encl: 2 copies of approved site specific WL Conservation Plan

Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha

P.T.O.

PRAKRUTI BHAWAN, PLOT NO.1459, SAHEED NAGAR, BHUBANESWAR- 751007
Phone: 0674-2602250, Website: www.wildlife.odisha.gov.in, Email: odishawildlife@gmail.com

Memo No. 6759 /date 12/08/19

Copy forwarded for information and necessary action to –

1. Special Secretary to Govt. of Odisha, F&E Department, Bhubaneswar with reference to that Department memo No.17491/F&E dt 08.08.2018
2. Principal Chief Conservator of Forests, Odisha with reference to this office memo No.6131 dt 23.07.2019
3. Regional Chief Conservator of Forests, Rourkela Circle with reference to his memo No.1809 dt 28.07.2019
4. Divisional Forest Officer, Bonai Division alongwith copy of the approved site specific wildlife conservation plan with reference to this office memo No.6129 dt 23.07.2019

Principal Chief Conservator of Forests (WL)
& Chief Wildlife Warden, Odisha

B. FINANCIAL FORECAST

The cost estimate for different activities for the project area is given below:

Sl. No.	Particulars	Estimated cost (In lakhs)
1.	Plantation of 14000 indigenous tall seedlings in blanks areas @ 2800 plants per year in urban plantation mode to increase green cover in lease area. @5,10,300/- per 1000 plants	71.442
2.	Distribution of grafted fruit bearing seedlings in the adjacent villages through VSS @ 10000 nos. per year for 10 years @35/-/seedling.	35.00
3	Solar electric fencing along the mine pit boundary over 2.529 kms @ 5.93 lakh/km with Maintenance.	20.00
4	Creation of Awareness for conservation of forest and wildlife.	20.00
5	Promotion of Eco-Tourism activities for 10 years.	30.00
6	Supply of Rescue Van. Provision for Driver, Fuel and Maintenance for 10 years	25.00 40.00
7	Supply of 1 four wheel vehicle for use of RCCF, Rourkela for monitoring purpose. Provision for Fuel and Maintenance for 10 years.	25.00 40.00
8	Supply of 1 four wheel vehicle for use of PCCF, WL, Odisha for monitoring purpose. Provision for Fuel and Maintenance for 10 years	25.00 40.00
9	Rescue Centre for Snakes and other Reptiles.	15.00
10	Equipments to Monitor Elephant movement: It is proposed to deploy Drones fitted with night vision equipments to monitor the movement of elephants.	30.00
11	Mobile Veterinary Unit: one Mobile Veterinary unit for on the spot treatment of animals such as elephants etc. An amount of Rs.40.00 lakhs is proposed for the Vehicle and equipments.	40.00
12	Contingency	7.00
	Total :-	**463.442**
	20% escalation	92.688
	Total	**556.130**

Countersigned
Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

These activities will be taken up by the project proponent. The expenditure on other activities such as Dust control, Noise control, Water treatment, lighting, Waste Management, general watch and ward etc. have been provided either in the Mining Plan or in the Environmental Impact Assessment & Environmental Management Plan, hence those expenditures are not included in this estimate.

b) Locations (preferable with GPS coordinates) of the proposed interventions and maps overlaid in the proposed land use plan map

The location of proposed interventions particularly location of solar electric fencing has been indicated in the land use Map (Plate No -IV).

xii) **Undertaking:**

The project proponent undertakes to bear the cost of price escalation and/or differential wages in case of price rise or wage hike.

FINANCIAL FORECAST

Sl. No.	Particulars	Estimated cost (In lakhs)
	Habitat Improvement	
1.	Silvicultural operations will be taken up along with Sowing of fodder grasses along with other soil and moisture conservation measures over 400 ha of Forest area. @24984/- per Ha. with wage rate of Rs.286.30	99.94
2.	Planting of 1000 nos of tall seedlings of Ficus spp. along with provision of Iron Gabions	21.00
3.	SMC measures with top to bottom approach Staggered trench / LBCD / Percolation Pit over 135 ha. Staggered Trench @ Rs.53,076/- per ha. LBCD 3 Mt span @ Rs.16,744/- (30 nos.) Percolation Pit @ Rs.77/- per pit (1000 nos.)	21.716
4.	Creation of Eight Nos. of Water Body within the Treatment area @Rs.5.60 lakh	44.800
5.	Construction of two numbers of permanent protection camp with deep tube well / bore well, solar light system and digging of EPT (200 feet) around the protection camp along with fixing Iron Gate.	40.000
6.	Wildlife Protection Wages of Anti-depredation Squad, consisting of 10 members @14,11,200/- for 1 year and provision of hired vehicle and equipments, and other contingencies	199.036
7	Solar light to be provided in villages frequented by elephants.	60.000
8.	Prevention of Forest Fire Wages of Fire Protection Squad consisting of 10 members for 10 yrs, @8,589/- for 5 months/year (Rs.42.95lakh)	89.45

Sl. No.	Particulars	Estimated cost (In lakhs)
	Hiring of vehicle @36,000/- per month (Rs 18.00 lakh) Fire Fighting Equipments (Rs.8.5 lakh) Incentive to Forest Fringe Villages, 5 nos. (Rs.20.00 lakhs)	
9	Cattle Immunization	10.000
10	Reward/Incentive to informer (2Lakh X 10 years)	20.000
12	Supply of alternate fuel to the local inhabitants (1 lakh X 10 years)	10.000
13.	Training to VSS/SHG and Villagers for livelihood programme such as Apiculture, Poultry, Sericulture etc.	30.000
14	Training to Forest Department Staff regarding Forest/Wildlife Protection, and dealing with similar cases. An amount of Rs.25.00 lakhs is proposed for the purpose.	25.00
15	Monitoring & evaluation	5.00
	TOTAL :-	**675.942**
	20 % extra for escalation	135.189
	G. TOTAL :-	**811.131**

The total estimate of this plan is therefore (Rs.**556.130** lakhs + **811.131 lakhs**) = **Rs.1367.261 lakhs**. Out of this amount the project proponent will take up the activities for Rs.**556.130** lakhs and **811.131** lakhs will be deposited with the D.F.O/ Forest Department for taking up different activities within the Zone of Influence.

a) **Locations (preferable with GPS coordinates) and Maps** of areas of the proposed interventions. Such maps also show location of above man made infrastructures and the ameliorative measures such as under/over passes ramps etc.

The location of linear & man made infrastructure is indicated in plate no.

Countersigned
Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

Approved
Principal Chief Conservator of Forests
(Wildlife) & Chief Wildlife Warden
Odisha, Bhubaneswar

Countersigned
Divisional Forest Officer
& Wildlife Warden
BONAI DIVISION

Sarangi & Ray Eco Consultants
Plot No-2134, Baramunda
Bhubaneswar-751003

ESSAR STEEL INDIA LIMITED
AUTHORISED SIGNATORY

SITE SPECIFIC WILDLIFE CONSERVATION PLAN OF

GHORABURHANI- SAGASAHI IRON ORE BLOCK (139.165 Ha) IN SUNDERGARH DISTRICT OF ODISHA

OF

M/s. ESSAR STEEL INDIA LTD.

KOIRA, SUNDARGARH, ODISHA

Prepared By

P. K. Sarangi, Retd. IFS

Sangram Keshari Ray OFS(I)

SARANGI & RAY ECO CONSULTANTS

&

VISIONTECH CONSULTANCY SERVICES

CONTENTS

PREFACE

P. K. Sarangi, Retd. IFS

The Ghoraburhani-Sagasahi Iron Ore block of M/s Essar Steel India Ltd. located in the village (s) of Ghoraburhani, Sagasahi & Kalnang under Koira Tehesil of Sundargarh district, Odisha. The total leasehold area over 139.165 Ha comprises of 126.401 ha of Forest land & 12.764 ha of non-forest land. Application for diversion proposal of entire forest land included within the leasehold area for mining and ancillary purpose has already been submitted. Although the mining activities will be taken up in phased manner, the same will have some impact on the wildlife which necessarily requires the preparation of a comprehensive wildlife management plan to mitigate the adverse impact. Moreover it is left to the discretion of the DFO/ Forest Department to alter the proposal depending on the field demand and necessity.

This plan aims at minimizing the threats posed by mining activities during the plan period and to improve the Wildlife Habitat in the adjoining Forest area such as the Zone of Influence and beyond. Proper implementation of the Plan will definitely improve the Wildlife Habitat in the area and will reduce man-wild animal conflict.

I would like to thank Visiontech Consultancy Services for extending adequate help, in collection of data, information and preparation of this conservation plan.

I would also like to thank the Divisional Forest Officer, Bonai Forest Division Sri Sudhansu Sekhar Khora, IFS, and his staff for providing relevant information for preparation of the plan. I also extend my thanks to Range officer, Koira & Barbil range and their staff for providing relevant information for the plan.

My thanks are also due to the staff and officials of M/s Essar Steel India Ltd. for providing the required information and documents and extending necessary help at all stages for preparing this plan.

P.K.Sarangi

Sarangi & Ray Eco Consultants
Plot No-2134, Baramunda
Bhubaneswar

EXECUTIVE SUMMARY

.0.0 This Site Specific Wild Life Conservation Plan is prepared in compliance of condition No. 18 of the ToR issued by MoEF & CC, Govt. of India, as per the revised guide lines for preparing site specific Wild Life Conservation Plan prescribed by the Principal Chief Conservator of Forests (Wild Life), and Chief Wild Life Warden, Odisha.

.1.0 The Ghoraburhani-Sagasahi Iron Ore block of M/s Essar Steel India Ltd. is located in the village(s) of Ghoraburhani, Sagasahi & Kalmang under Koira Tehesil of Sundargarh district, Odisha. The total leasehold area is over 139.165 Ha. which includes 126.401 ha of Forest lands & 12.764 ha of non-forest land.

.2.0 Application for forest diversion proposal of entire forest land included within the leasehold area for the purpose of mining and ancillary activities have already been submitted.

.3.0 Based on the approved mining plan, the mineable and geological reserves in the blocks are estimated to be 78.24 Mill. Ton and 98.61 Mill. Tons respectively.

.4.0 The lease area of Ghoraburhani-Sagasahi Iron Ore block is located on the Topo Sheet No. F45N5(73 G/5) and bounded by

Latitude - 21° 56' 08.83896" - 21° 57' 09.61956"North

Longitude - 85° 17' 02.52096" - 85° 17' 48.99336" East

0.5.0 The motorable road passes through the lease area and connecting to the NH-215 before Koira at a distance of 1.9 Kms from the lease. The distance of the lease area is around 30 kms from Barbil and around 58 kms from Rourkela. The area is highly undulating and mountainous and the altitudes vary from 600 m to 745 meters above MSL.

0.5.1 The climate is tropical with a very hot summer and moderate to cool winter, the temperature rising up to 47°C. The area is characterized with well defined rainy season. The minimum temperature during winter goes to 4°C.

0.5.2 The existing Forest kissam land can be classified as PRF (Mendhamaruni), Village forest (VF) & Deemed forest (DLC).

0.5.3 The lease area does not form a part of any National Park or Wild life Sanctuary or Critical Wild Life habitat. No protected area is situated in the lease area or within the Zone of Influence.

0.5.4 The lease area is being surrounded by existing mines and no important wild animals are noticed in the area.

.5.0 There are total 85 nos. of rural villages and one urban area coming within the 10 Km. buffer area. The total population of these 85 rural villages and 1 urban area is 70835 in which the male population is 36320 (51.27 %) and the female population is 34515 (48.73%). This shows that the male and female population ratio is almost equal.

- Among the total population 67.51 % is Scheduled Tribes, 8.70 % is Scheduled Caste.
- Out of the total population, 45.3 % of the people are literate and 54.7 % of the people are illiterate.
- The non-workers constitute about 63.47 % (44981) and remaining part constitute the working population i.e. 36.53 % (25874).

0.6.0 The process of mining will be Opencast Fully Mechanized method with drilling and blasting.

0.7.0 The Mega wild animals like elephants have been found to be seen in Mendhamurhani PRF, Sidhanath RF, Karampada RF and Karo RF areas.

0.8.0 The households depending on agriculture for their livelihood are very few in numbers. Most of the household depends on mining for their livelihood and work as construction laborer & mining laborer.

Because of mining activities in and around the project area, dependence of the local population on NTFP collection is minimal. Around 20% population of the area, depend on NTFP collection. The major NTPF are Sal leaves, Sal seeds, Kendu leaves, Mahua flowers & seeds.

0.9.0 The threats perceived due to the project operation are

- Reduction of wildlife habitat
- Soil erosion
- Water pollution & water scarcity
- Dust hazards
- Noise disturbance

- Lighting problems
- Garbage problems
- Physical threats such as fall of animals in the pits, poaching etc.
- Forest fire

0.10.0 The present management plan is prepared to minimize the above threats.

A total of 131.812 ha of forest land will be utilized for mining and ancillaries activities. This area will be disturbed in its original shape and vegetation during the mining operation. The Safety zone along the Lease Boundary and Revenue Village Road will remain unchanged. The proposed Reclamation and Afforestation activities will be carried out in phase manner over 131.812 ha disturbed area as well as in the safety zone area along the mine boundary. It has been proposed to undertake gap plantation in the blank area from the starting year of the mine operation and reclamation and afforestation will be started from the 6th year of the mine operation in mine pit area. Out of 131.812 ha, 40.081 ha will be proposed to be back filled and then after afforestation will be carried out and 42.761 ha will be proposed for bench plantation. Further in the mined out area the surface layer will be covered with topsoil stored elsewhere and planting will be done with quality planting material (QPM).

The Interventions proposed to be taken up is as follows:

A. **Project Area:**

1. Water pollution will be checked by diverting the water to pass through garland drains and settling tanks and treating the water generated in the mine.
2. Dust hazards will be controlled by regular sprinkling of water on haul roads and the mine product at the time of loading and transportation. Dry fog system in the Crushing & screening unit will also be adopted to reduce spreading of dust.
3. Garbage will be disposed of through efficient garbage management methods.
4. Plantation in blanks and green belt will be done with 14000 seedlings at a cost of Rs.71.442 lakhs.
5. 10,000 Seedlings will be distributed annually, at cost of Rs.3.50 lakh per year. Total cost Rs.35.00 lakhs.
6. Solar Electric fencing will be done around the mine pit to prevent the animals from

falling in to the mine pit. Proposed expenditure Rs.20.00 lakhs.

7. Creation of Awareness in the villages around the mine area will be taken up at a cost of Rs.2.00 lakh annually and total cost Rs.20.00 lakhs.
8. Promotion of Eco-Tourism activities will be taken up in the Division and Rs. 30.00 lakhs is proposed for this.
9. One rescue van will be provide and the Cost of Rescue Van will be Rs.25.00 lakhs.
10. Wages of Driver and cost of Fuel for the rescue van will be Rs.4.00 lakhs annually and total cost Rs.40.00 lakhs.
11. One Four Wheeler Vehicle each for the RCCF Rourkela and PCCF (WL) Odisha will be provided @ Rs.25.00 lakhs each. Total Rs.50.00 lakhs provided for the purpose.
12. Wages of Driver, Fuel and maintenance etc. @ Rs.40.00 lakhs each to be provided. Total provision Rs.80.00 lakhs for the purpose.
13. One Rescue Centre for Snakes and other Reptiles will be established at a cost of Rs.15.00 lakhs.
14. Equipment like Drones with night vision facilities will be provided at a cost of Rs.30.00 lakhs.
15. One Mobile Veterinary Unit will be set up at a cost of Rs.40.00 lakhs.
16. Contingency – Rs 7.00 lakhs proposed for contingency expenses.

Total cost proposed for the project area is Rs.463.442 lakhs and cost of escalation @20% is Rs.92.688 lakhs. (Grand Total amount proposed = Rs.556.130 lakhs.)

B. Project Impact Area (Buffer Zone):

1. Silvicultural operation will be taken up over 400ha forest area at a cost of Rs.99.94 lakhs.
2. 1000 nos. of tall seedlings of Ficus spp. will be planted along with provision of Iron Gabion with total cost of Rs.21.00 lakhs.
3. Soil & Moisture conservation activities will be done over 30 ha with expenditure of Rs.21.716 lakhs.
4. 8 nos. of Water bodies will be created with expenditure of Rs.44.80 lakhs.
5. Two Permanent Protection Camps will be constructed at a cost of Rs.20.00 lakhs. each. Total cost Rs.40.00 lakhs.
6. Wages and other logistics such as hiring of vehicle, Medical expenses, Compassionate grants, Mobile recharging etc for the Anti-depredation Squad (with 10

nos) will be provided. Total cost will be Rs.199.036 lakhs.

7. Solar Lighting will be provided around the villages frequently invaded by elephants. Proposed expenditure Rs.60.00 lakhs.
8. Forest Fire will be prevented through deployment of Fire Watchers- 10 nos. with other logistics such as vehicle and equipments etc. Besides incentive is also proposed to be paid to the local VSS for pro-active support. An amount of Rs.89.45 lakhs is proposed to be spent.
9. of Fire watchers will be engaged for 5months/year to prevent forest fire. The wage component @8,400/- is Rs.42.00 lakhs
10. Hiring of Vehicles: Whenever required vehicles will be hired for fire fighting. Total expenditure proposed @36,000/- per month is Rs.18.00 lakhs.
11. Cattle Immunization will be done @1 lakh/year – total cost of Rs.10.00 lakhs.
12. Rewards to Informers: Informers will be rewarded for providing information regarding poachers and smugglers. Total amount proposed Rs.20.00 lakhs.
13. To reduce pressure on forest, alternate Fuel for Forest Fringe Villages will be supplied. Total cost proposed is Rs.10.00 lakhs.
14. Training will be imparted to SHGs/VSS members and villagers for skill development. Proposed expenditure is Rs.30.00 lakhs.
15. Training programmes for Forest Department staff in the field of Forest and Wildlife protection will be organized. Rs.25.00 lakhs is proposed for the activity
16. Monitoring & Evaluation will be taken up at regular intervals and the amount proposed is Rs.5.00 lakhs.

The cost of the proposed activities within the Impact area is Rs.675.942 lakhs and cost escalation @20% is Rs.135.189 lakhs. Hence the total amount proposed is **Rs.811.131** lakhs.

However, the Forest Department is free to utilize the entire amount or a part of it for other suitable areas depending on actual need.

C. **Total Cost:**

The total cost of this Plan is (Rs.556.130 lakhs + Rs.811.131 lakhs=) **Rs.1367.261** lakhs.

D. The activities proposed in this plan are expected to be undertaken within a period of 10 years with the presumption that, the desired result will be achieved within this

period. However, after completion of the plan period the objectives as well as the achievements will be reviewed and further steps as may be required will be taken.

CHAPTER- 1

DETAILS OF THE PROJECT AREA & IMPACT AREA

In pursuant to the Mines and Minerals (Development and Regulation) Amendment ACT, 2015 and The Mineral (Auction) Rules, 2015, Govt. of Odisha issued the notice inviting tender dated 23rd Dec 2015 for commencement of the auction process to grant the mining Lease under captive category in respect of Ghoraburhani - Sagasahi iron ore Block located in Koira Tahasil of Sundargarh district of Odisha. The e-auction process was conducted in accordance with the tender document and the mineral auction rule, 2015 for said mineral block and M/s Essar Steel India Limited was declared as the preferred Bidder under Rule 9(4) (b) (iii) of the Rules.

Ghoraburhani - Sagasahi Iron Ore Block over 139.165 ha of M/s Essar Steel India Ltd is in the villages of Ghoraburhani, Sagasahi and Kalmang, Koira Tahasil, district Sundargarh Odisha.

M/s Essar Steel India Ltd has already made a payment of Rs 9, 26,24,600.00 (Rupees Nine crore twenty-six lakhs twenty-four thousand six hundred only) through treasury challan on 17.03.2016 against the first installment being ten percent of the upfront money. Accordingly, the Government of Odisha has issued letter of Intent under Rule 10(2) of Mineral Auction Rules 2015 to M/s Essar Steel India Ltd for grant of Mining Lease for Ghoraburhani - Sagasahi Block for iron ore over an area of 139.165Ha (90.629Ha of Mineralized area and 48.536 ha for ancillary activities) in Ghoraburhani, Sagasahi and Kalmang village, Koira Tahasil of Sundargarh district of Odisha for a period of 50 years from the date of execution.

This letter of intent is valid subject to the provision of the Act and the Rules made there under and M/s Essar Steel India Limited shall be designated as the Successful Bidder and the subsequently granted the mining lease only upon satisfactory completion of all the requirements under the Act and Rules made there under.

Sundargarh District is very rich in Forest as well as wild life. This district is a part of Eastern Ghats and is a continuation of famous Saranda Forest containing diversified Flora & Fauna. Various Wild Life species including Elephants & sloth bears are present in this District.

The entire Sundergarh District is very rich in mineral deposits such as Iron Ore and Manganese Ore. Besides this District is also an Industrial Belt. A number of Industries have come up in the District. Presence of Wildlife along with Industries and Mining activities create a conflicting situation.

As per the exploration carried out by GSI, the geological and mineable reserves in the blocks are estimated to be respectively 98.61 Million Tons and 78.24 Million Tons respectively.

LOCATION OF THE PROJECT AND ITS IMPACT AREA:

Location of the project Area:

The lease area of Ghoraburhani-Sagasahi Iron ore Block is located on the Topo-sheet No. F45N5(73 G/5) and bounded by

Latitude - 21° 56' 08.83896" - 21° 57' 09.61956"North

Longitude - 85° 17' 02.52096" - 85° 17' 48.99336" East

The project area comes under Koira Beat of Koira Range of Bonai Forest Division.

A part of Mendhamaruni PRF is included within the project area.

Impact Area:

The project area is located at the border of Sundargarh and Keonjhar districts. Therefore the impact area extends over both the districts.

- Forest Blocks: Parts of the following forest blocks fall within the impact area of 10 km radius:
    1. Mendhamaruni RF,
    2. Baitarani RF,
    3. Sidhamath RF,
    4. Lakraghat RF,
    5. Karo RF,
    6. Toda RF,
    7. Ulliburu RF etc.
- Forest Beat: Koira , Malda, , Guali, uliburu, Dubuna, Kendudih
- Forest Range: Koira, Barbil
- Forest Division: Bonai & Keonjhar.

- **Land Schedule:**

Forest diversion proposal for entire forest land of 126.401 Ha. included within the leasehold area over 139.165 ha for the purpose of mining and ancillary activities has already been submitted.

Existing Land Use:

P R F	-	76.666 Ha
Revenue Forest	-	3.794 Ha.
D L C Forest	-	45.941 Ha
Total Forest Land	-	126.401 Ha
Private (Tenant) Land	-	3.257 Ha
Government Land	-	6.063 Ha
Gochar	-	3.444 Ha
Grand Total	-	139.165 Ha.

The details of land use plan is as follows: -

Proposed Land Use plan of Project Area:

The present & Plan period land use pattern is given below:

Particulars	AREA IN HECTARE				
	At present	Additional area during plan period	Land use at the end of plan period	Additional area beyond plan period	Land use during conceptual period
Area under mining**	0.50	40.273	40.773	47.986	88.759
Storage of topsoil	0	0.320	0.32	0	0
Waste dump	0	4.967	4.967	1.036	6.003
Sub grade stack / Mineral storage	0	7.551	7.551	0	0
Infrastructure Facilities (Site services & utilities, admn. building , Conveyor belt, etc)	0	2.4303	2.4303		2.4303
Roads	0.598	2.2714	2.8694	0	0.950
Railway	0	0	0	0	0
Tailing Pond	0	4.923	4.923		4.923
Effluent treatment plant	0	0	0		0
Mineral separation plant (Crushing & screening unit, beneficiation plant)	0	15.6557	15.6557	0	12.85

Township area	0	0	0	0	0
Others (Retaining wall, Garland drain, check dams, settling tank, Sump, embankment etc magazine with safety zone)	0	6.4557	6.4557		6.4557
Sub Total	**1.098**	**84.8471**	**85.9451**	**49.022**	**122.371**
Safety zone (ML Boundary, road)	**6.755**		**6.755**		**6.755**
Untouched area	**131**		**46.464**		**10.03**
Grand total	**139.165**		**139.165**		**139.165**

*** Old quarries / excavations of very low and negligible depth.

Statutory Clearance

- **Status of Forest Clearance**

Stage-I clearance for diversion of forest land for mining purpose has been issued by Government of India, in their ministry of Environment, Forest & Climate Change Letter, F. No.8-55/2018-FC, dated 6th March, 2019.

- **Status of Environment Clearance:**

ToR for this project has been issued by MoEF&CC by their letter No. J-11015/192/2016.IA.II (M) dated 16th January 2017, for 7.16 MTPA ROM productions with 6.00 MTPA beneficiation plant. Draft EIA & EMP has been submitted to State Pollution Control Board, Bhubaneswar and Public hearing has been completed successfully on 19.05.2017.

The point No.16 of the Standard TOR prescribes " *A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.*"

The point No.18 of the Standard TOR prescribes "*A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET species duly authenticated, separately for core and buffer zones should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any schedule-I fauna found in the study area, the necessary plan along with budgetary*

provisions for the conservation should be prepared in consultation with State Forest and wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost."

Hence this plan is prepared in compliance to these conditions.

- **Status of Mining Plan:**

Mining plan for the block approved by Indian Bureau of Mines vide. letter no MP/FM/02-ORI/ BHU/2016 dated 11th July 2016.

b) **Village and Habitation:**

Project area:

The project area partially covers three villages such as (1) Kalmanga, (2)Ghorhaburhani and (3)Sagasahi.

Total no. of Households in these villages is 411, out of which 26 families are to be displaced. The project proponent has to take up the RR Scheme at a cost of Rs.354.05 lakhs.

- **Demography & Occupation:**

There are 86 villages located within the impact zone which are expected to be affected by various mining operations.

OPULATION DISTRIBUTION, LITERACY RATE, ETC IN STUDY AREA/ IMPACT ZONE:

The impact zone of the project area encompassing 12.70 km radial around the Project.

The study details based on 2011 census data are highlighted below:

- There are total 83 nos. of rural villages and one urban area coming within the 10 Km. buffer area. These villages spread over two districts as given below:

Name of District	Name of Tahsil	Number of Villages
Sundargarh	Koida	51
Keonjhar	Rugudi	16
	Joda	1
	Bolani	6
	Barsuban	10
	TOTAL	84
Jharkhand		2
GRAND TOTAL		86

The population pattern and other details as per 2011 Census are as follows:

Total No. of House Holds	16625

Sl. No.	Particulars	Population		
		Male	Female	Total
1	Total population	36320	34515	70835
2	Scheduled Caste	3109	3051	6160 (8.7%)
3	Scheduled Tribe	23810	24016	47826 (67.51%)
4	Literates	20555 (56.6%)	11571 (33.5%)	32126 (45.35%)
5	Main Workers	16101	3883	19984
6	Cultivators	621	175	796
7	Agricultural labourers	123	46	169
8	Marginal workers	3062	2829	5891
9	Non workers	17157	27804	44961

- Out of the total population of these 83 rural villages and 1 urban area is 70835 in which the male population is 36320 (51.27 %) and the female population is 34515 (48.73%). This shows that the male and female population ratio is almost equal.
- Among the total population 67.51 % is Scheduled Tribes, 8.70 % is Scheduled Caste and 23.79 % people belong to other castes mainly the Most Backward Communities and Backward Communities.
- Among the total population, 45.3 % of the people are literate and 54.7 % of the people are illiterate. This shows that nearly half of the population is illiterate.
- Among the literates 29 % are males and 16.3 % are females. This shows that the male literates are slightly more than the female literates and the illiterate constitute 22.3 % are male and the female 32.4 %.
- Among the total population non workers are about 63.47 % (44961) and remaining part constitute the working population i.e. 36.53 % (25874).
- Among the population, 28.21 % people are main workers (19984) and 8.32 % people are marginal workers (5890).

- **Cropping Pattern:**

The numbers of household in the village depending solely on agriculture for their livelihood are few in numbers and are categorized as construction worker and mining worker. Mining activities contributes maximum days to the workers than the daily construction wage salary job and private work. The cultivators mostly depend on manual methods and use the traditional plough and bullock for tiling their land and other related operations. The major types of crops are Khariff (Paddy, Maize & Ragi) & Rabi (Mung, Mustard, Black gram. Ground nut etc.). Some people also raise vegetables such as Beans, Cauliflower, Cabbage, Brinjal etc. on small scale. During Khariff season from July to October (July-October). Agricultural activities take place both in rain-fed areas and irrigated areas and during Rabi season vegetables crops are generally grown.

The Extent of Biotic Pressure on impact area with interference to forest growth.

The different biotic pressures are

i. Collection of firewood
ii. Cattle grazing
iii. Forest fire
iv. Collection of small timbers for use in household
v. Collection of NTPF

A large chunk of the rural population use firewood for their cooking. Besides almost all the population uses Timber for construction purpose. Demand of the increasing population results in depletion of forests. Families settled near the forest are directly depending on fuel requirement from forest.

- **Population Dependent upon NTFP collection and its impact on wildlife**

The dependence of the local population in and around the project area on NTFP collection is minimal. Roughly around 22% of household collect NTFP, such as Sal leaves, Sal seeds, Kendu leaves, Mahua flowers & seeds and Tamarind.

The anxiety of collecting more quantity of NTFP and fuel wood, prompt the individuals for early entry in to the forest area and results in confrontation with the wild animals.

Some times Mohua flower collection is done by cleaning the ground around the mohua trees by burning and the fire at times spreads to the nearby forest areas causing damage to various flora and fauna.

- **Cattle Population and its dependency on forest**

Total cattle population of 9 villages surrounding the project area is more than 1453 as per census data of 2003-04.The livestock populations include cows, buffaloes, goats and oxen in the impact Region. These cattle mostly depend on the forest area for grazing. Normally stall feeding is not practiced in this area. It was observed that the grazing of livestock was practiced as a group activity and all cows gather at a common place and then led to the nearby forest area for grazing. Entry of large number of cattle in to the forest damages the forest and also responsible for transmission of diseases to the wild. Cattle population of 09 villages of Sundergarh dist. is 1453 (2003-04 Census).

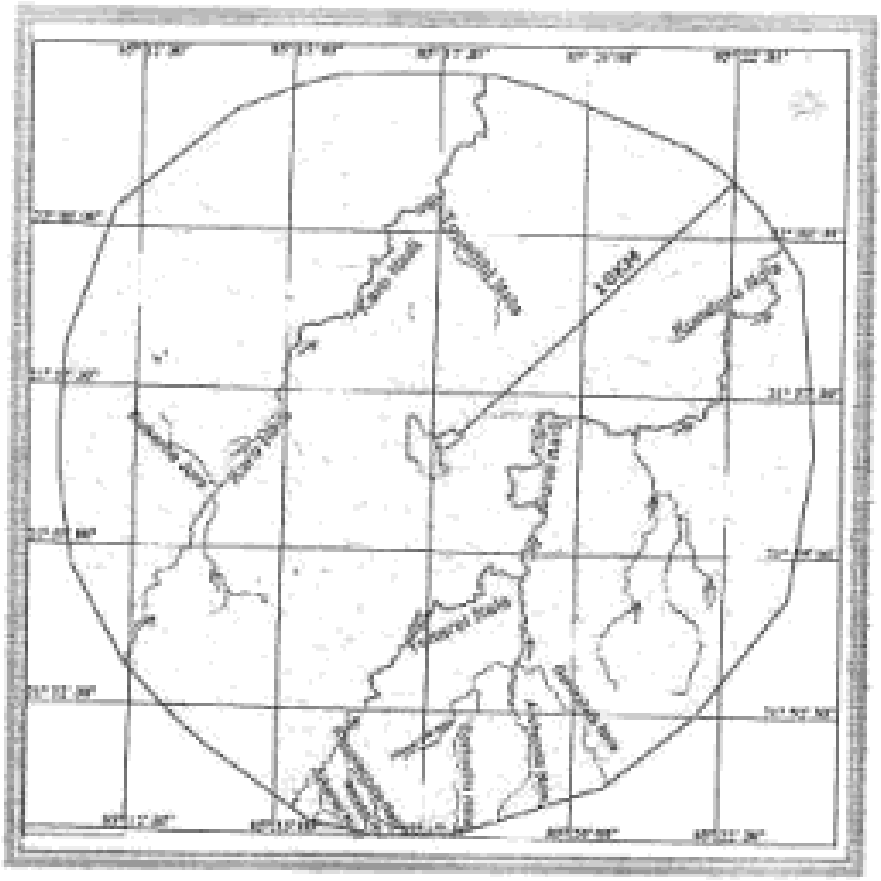
Sl. No.	Name of Village	Total Cattle	Total Buffalo	Total Goat	Total Sheep
Koida P.S. (Sundergarh)					
1	Sanindpur	247	0	205	23
2	Kalmanga	115	8	60	0
3	Maida	188	0	200	0
4	Patabeda	89	0	75	0
5	Ganua	495	127	400	75
6	Rusiberna	NA			
7	Mandajada	150	44	112	0
8	Dalita	90	0	65	0
9	Baserdh	79	0	54	0
	TOTAL	**1453**	**179**	**1171**	**98**

c) **Topography and natural drainage:**

The project area is with highly rugged terrain, and elongated hills trending ENE-WSW direction, low mounds and narrow valleys. The highest elevation of ridges in the area is 745m. The low lying valleys occur at an elevation of around 600m. Lateritic soil recorded in the ridges and valleys are mainly covered by alluvial soil.

The drainage of the project area takes place through Karo river in NW and Suna Nadi in SE, which flows in the western & eastern side of the lease area at a distance of 4.0 Km &

1.6 km respectively from the lease boundary. Few rain water drainage channels are passing through the lease area



d. Infrastructure Facilities and its impact:

Roads: The area can be approached from Barbil or Koira through NH-215. The National Highway No.215 connecting Panikoili on National Highway No.5 is located at a distance of 1.9 km. NW.

Railway Line/Siding: The nearest railway station head is Barbil which is located at a distance of 30 km from the lease area in NE direction. This Railway line has been in existence for quite some time and no new impact could be perceived for this.

Moreover, no new railway line is proposed to be laid in the area. However, expansion of single line in to double line of railway is under process.

Dam: There is no water reservoir within the impact area.

Water Way: The only major water way in this area are Karo river & Suna Nadi which are 4.0 Km & 1.6 km respectively from the lease boundary. As it is a natural perennial water source, it is beneficial for the wild animals.

Mine Pits: As there are number of mines in these areas, there are number of working & non-working pits. There is likelihood of the animals falling in to it. But the present user proposes to surround its own mine pit with Solar Electric fencing along chain mesh provision to prevent entry of all types of wild animals.

Unguarded dug Wells: There are no such un-guarded dug wells in the study area. So there is no chance of fall of animals inside the well.

Mining Projects: The other important mining centers in the vicinity are Kalta, Tensa, Barsuan in Koira circle and Joda circle in Keonjhar district.

e. Description of Flora & Fauna:

This is a new mine & yet to be executed. This area does not form a part of any wild life Sanctuary or National Park or critical Wildlife habitat. This area is also surrounded by various mines and mining activities.

The Forest around the lease & impact zone area are disturbed due to various Mining activities and presence of Wildlife is very sparse. As per the information collected the following flora & fauna are found in the core and Buffer area of the project.

No endemic species are found either in project area & in the ZOI area.

During the site inspection of the project area as well as the buffer (impact) area detailed study of Flora and fauna has been conducted.

The list of Flora and Fauna so prepared and authenticated by the forest officials is enclosed.

LIST OF PLANT RECORDED IN CORE ZONE

List of Flora & Fauna found in the Core Zone & Buffer Zone of Ghorabarhani-Sagasahi Iron ore Block (139.165 Ha) of M/s Essar Steel India Ltd. in the District of Sundargarh, Odisha.
Core Zone

[illegible]

FLORA (Core Zone)

Sl.No	Local Name/Common Name	Botanical Name	Family
Trees			
1	Khair	*Acacia catechu*	Mimosaceae
2	Kurum	*Adina cordifolia*	Rubiaceae
3	Bel	*Aegle marmelos*	Rutaceae
4	Mahala	*Ailanthus excelsa*	Simaroubaceae
5	Chhatian	*Alstonia scholaris*	Apocynaceae
6	Phasi	*Anogeissus acuminata*	Combretaceae
7	Dhaura	*Anogeissus latifolia*	Combretaceae
8	Kadamba	*Anthocephalus cadamba*	Rubiaceae
9	Neem	*Azadirachta indica*	Meliaceae
10	Simuli	*Bombax ceiba*	Bombacaceae
1	Char	*Buchanania lanzan*	Anacardiaceae
2	Palasa	*Butea monosperma*	Fabaceae
3	Kumbhi	*Careya arborea*	Myrtaceae
14	Kakada	*Casearia tomentosa*	Salicaceae
15	Sunari	*Cassia fistula*	Fabaceae
16	Bheru	*Chloroxylon swietenia*	Meliaceae
17	Karada	*Cleistanthus collinus*	Euphorbiaceae
18	Sisoo	*Dalbergia latifolia*	Fabaceae
19	Mankada kendu	*Diospyros embryopteris*	Ebenaceae
20	Kendu	*Diospyros melanoxylon*	Ebenaceae
21	Paldhua	*Erythrina indica*	Fabaceae
22	Bara	*Ficus benghalensis*	Moraceae
23	Dimiri	*Ficus hispida*	Moraceae
24	Aswastha	*Ficus religiosa*	Moraceae

Sl.No	Local Name/Common Name	Botanical Name	Family
25	Gambhari	*Gmelina arborea*	Verbenaceae
26	Dhaman	*Grewia tilifolia*	Tiliaceae
27	Sidha	*Lagerstroemia parviflora*	Lythraceae
28	Mai	*Lannea coromandelica*	Anacardiaceae
29	Kainth	*Limonia acidissima*	Rutaceae
30	Mahul	*Madhuca longifolia*	Sapotaceae
31	Aamba	*Mangifera indica*	Anacardiaceae
32	Champa	*Michelia champaca*	Magnoliaceae
33	Khirkoli	*Mimusops hexandra*	Sapotaceae
34	Anchhu	*Morinda tinctoria*	Rubiaceae
35	Bandhana	*Ougeinia oojeinensis*	Fabaceae
36	Piasala	*Pterocarpus marsupium*	Fabaceae
37	Kusum	*Schleichera oleosa*	Sapindaceae
38	Bhalia	*Semicarpus anacardium*	Anacardiaceae
39	Sal	*Shorea robusta*	Dipterocarpaceae
40	Ambada	*Spondias mangifera*	Anacardiaceae
41	Gurdhiri	*Sterculia urens*	Malvaceae
42	Patuli	*Stereospermum suaveolifolium*	Bignoniaceae
43	Jamun	*Syzygium cumini*	Myrtaceae
44	Tentuli	*Tamarindus indica*	Caesalpiniaceae
45	Teak	*Tectona grandis*	Verbenaceae
46	Arjun	*Terminalia arjuna*	Combretaceae
47	Bahada	*Terminalia belerica*	Combretaceae
48	Harida	*Terminalia chebula*	Combretaceae
49	Amla	*Terminalia tomentosa*	Combretaceae
50	Asana	*Tectona grandis*	Verbenaceae
51	Kangada	*Xylia xylocarpa*	Fabaceae
52	Barkoli	*Zizyphus mauritiana*	Rhamnaceae

Sl.No	Local Name/Common Name	Botanical Name	Family
Shrubs			
1	Arakha	*Calotropis procera*	Asclepidaceae
2	Aswagandha	*Withania somnifera*	Solanaceae
3	Basanga	*Adhatoda vasica*	Acanthaceae
4	Gila	*Caesalpinia decapetala*	Caesalpiniaceae
5	Girili	*Indigofera pulchella*	Fabaceae
6	Kantelkoli	*Ziziphus oenoplia*	Rhamnaceae
7	Ghuruda	*Gardenia gumifera*	Rubiaceae
8	Nagairi	*Lantana camara*	Verbenaceae
9	Ranidantakathi	*Flemingia chappar*	Fabaceae
10	Telkoraun	*Ixora parviflora*	Rubiceae
11	Kurei	*Holarrhena antidysenterea*	Apocynacele
Herbs			
1	Anantamula	Hemidesmus indicus	Asclepidaceae
2	Apamarunga	Achyranthes aspera	Amarantaceae
3	Boghanakhi	Martynia diandra	Pedaliaceae
4	Bhuinimba	Andrographis paniculata	Acanthaceae
5	Bhumgaraj	Wedelia calendulacea	Compositae
6	Chitaparu	Plumbago zeylanica	Plumbaginaceae
7	Dudura	Datura stramonium	Solanaceae
8	Haladi	Curcuma longa	Zingiberaceae
9	Patalagaruda	Rauwolfia serpentina	Apocynaceae
10	Paluo	Curcuma aromatica	Zingiberaceae
11	Salaparni	Desmodium gangeticum	Fabaceae
12	Nagapheni	Opuntia vulgaris	Cactaceae
Climbers			
1	Aisundi	Combretum decandrum	Combretaceae
2	Asadhua	Capparis zeylanica	Capparidaceae
3	Anantamuli	Hemidesmus indicus	Asclepiadaceae

Sl.No	Local Name/Common Name	Botanical Name	Family
4	Arsi / Gila	Entada scandens	Mimosaceae
5	Baidank	Mucuna pruriens	Fabaceae
6	Dantari	Acacia pennata	Mimosaceae
7	Desialu	Dioscorea alata	Dioscoreaceae
8	Gudmari	Gymnema sylvestre	Asclepiadaceae
9	Gulichi	Tinospora cordifolia	Menispermaceae
10	Kaincha	Abrus precatorius	Fabaceae
11	Karaba	Dioscorea pentaphylla	Dioscoreaceae
12	Lata palas	Butea superba	Papilionaceae
13	Mardalai	Milletia auriculata	Papilionaceae
14	Muturi	Smilax macrophylla	Liliaceae
15	Modanga	Loranthus longiflorus	Loranthaceae
16	Satabari	Asparagus racemosus	Liliaceae
17	Siali	Bauhinia vahlii	Caesalpiniaceae
Bamboos			
1	Baunsa (salia)	Dendrocalamus strictus	Gramineae
Grasses			
1	Broom	Thysalolaena maxima	-do-
2	Duba	Cynodon dactylon	-do-
3	Kasatandi	Saccharum spontaneum	-do-
4	Sabai	Pollinidium angustifolium	-do-
5	Sinkula	Hetropogun contortus	-do-

Range Officer,
Koira Range

Countersigned

Divisional Forest Officer
Bonai Division

Table No - 3.23

LIST OF PLANT RECORDED IN BUFFER ZONE

BUFFER ZONE

The common species of flora & fauna noticed in Buffer zone is furnished below separately;

FLORA (Buffer Zone)

Sl. No.	Local Name/Common Name	Botanical Name	Family
Trees			
1	Acacia	*Acacia auriculiformis*	Mimosaceae
2	Khair	*Acacia catechu*	Mimosaceae
3	Kurum	*Adina cordifolia*	Rubiaceae
4	Bel	*Aegle marmelos*	Rutaceae
5	Mahula	*Ailanthus excelsa*	Simaroubaceae
6	Chhatian	*Alstonia scholaris*	Apocynaceae
7	Phasi	*Anogeissus acuminata*	Combretaceae
8	Dhaura	*Anogeissus latifolia*	Combretaceae
9	Kadamba	*Anthocephalus cadamba*	Rubiaceae
10	Neem	*Azadirachta indica*	Meliaceae
11	Simalo	*Bombax ceiba*	Bombacoceae
12	Char	*Buchanania lanzan*	Anacardiaceae
13	Palas	*Butea monosperma*	Fabaceae
14	Haldiphasa	*Butea parviflora*	Fabaceae
15	Kumbhi	*Careya arborea*	Myrtaceae
16	Khukada	*Casearia tomentosa*	Salicaceae
17	Sunari	*Cassia fistula*	Fabaceae
18	Bhera	*Chloroxylon swietenia*	Meliaceae
19	Kurada	*Christanthus collinus*	Euphorbiaceae
20	Atundi	*Combretum decandrum*	Combretaceae
21	Sisha	*Dalbergia latifolia*	Fabaceae
22	Mankada kendu	*Diospyros embryopteris*	Ebenaceae
23	kendu	*Diospyros melanoxylon*	Ebenaceae

Sl. No.	Local Name/Common Name	Botanical Name	Family
24	Amla	*Phyllanthus emblica*	Phyllanthaceae
25	Paldhua	*Erythrina indica*	Fabaceae
26	Bara	*Ficus benghalensis*	Moraceae
27	Dimri	*Ficus hispida*	Moraceae
28	Aswastha	*Ficus religiosa*	Moraceae
29	Kataranga	*Gardenia latifolia*	Rubiaceae
30	Kekado	*Garuga pinnata*	Burseraceae
31	Gambhari	*Gmelina arboria*	Verbenaceae
32	Dhamn	*Grewia tilifolia*	Tiliaceae
33	Sidha	*Lagerstroemia parviflora*	Lythraceae
34	Moi	*Lannea coromandelica*	Anacardiaceae
35	Kaintha	*Lemonia acidissima*	Rutaceae
36	Mahul	*Madhuca longifolia*	Sapotaceae
37	Aamba	*Mangifera indica*	Anacardiaceae
38	Champa	*Michelia champaca*	Magnoliaceae
39	Khirkoli	*Monilkra hexandra*	Sapotaceae
40	Achhu	*Morinda tinctoria*	Rubiaceae
41	Phanphasta	*Oroxylon indicum*	Bignoniaceae
42	Barudhara	*Ougeinia oojeinensis*	Fabaceae
43	Pijuli	*Psidium guajava*	Myrtaceae
44	Piasala	*Pterocarpus marsupium*	Fabaceae
45	Ritha	*Sapindus emarginata*	Sapindaceae
46	Kusuma	*Schleichera oleosa*	Sapindaceae
48	Bhalia	*Semicarpus anacardium*	Anacardiaceae
49	Sal	*Shorea robusta*	Dipterocarpaceae
50	Ambada	*Spondias mangifera*	Anacardiaceae
51	Girdhini	*Sterculia urens*	Malvaceae
52	Patuli	*Stereospermum angustifolium*	Bignoniaceae

Sl. No.	Local Name/Common Name	Botanical Name	Family
53	Lodha	*Symplocos racemosa*	Styracaceae
54	Jamun	*Syzygium cumini*	Myrtaceae
55	Tentuli	*Tamarindus indica*	Caesalpiniaceae
56	Teak	*Tectona grandis*	Verbenaceae
57	Arjun	*Terminalia arjuna*	Combretaceae
58	Bahada	*Terminalia belerica*	Combretaceae
59	Harida	*Terminalia chebula*	Combretaceae
60	Asana	*Terminalia tomentosa*	Combretaceae
61	Kangada	*Xylia xylocarpa*	Fabaceae
62	Barkoli	*Ziziphus mauritiana*	Rhamnaceae
Shrubs			
1	Arakha	Calotropis procera	Asclepiadaceae
2	Amari	Ipomea fistulosa	Convolvulaceae
3	Aswagandha	Withania somnifera	Solanaceae
4	Baircha	Flacourtia ramontchi	Flacourtiaceae
5	Basanga	Adhatoda vasica	Acanthaceae
6	Gila	Caesalpinia decapetala	Caesalpiniaceae
7	Girili	Indigofera pulchella	Fabaceae
8	Karabir	Nerium indicum	Apocynaceae
9	Kantaikoli	Ziziphus oenoplia	Rhamnaceae
10	Gharudu	Gardenia gummifera	Rubiaceae
11	Mamuri	Antidesma diandrum	Euphorbiaceae
12	Nagairi	Lantana camara	Verbenaceae
13	Ranidantakathi	Flemingia chappar	Fabaceae
14	Siju	Euphorbia nivulia	Euphorbiaceae
15	Telkoruan	Ixora parviflora	Rubiaceae
16	Kurei	Holarrhena antidysenterica	Apocynaceae
17	Dhatki	Woodfordia fruticosa	Myrtaceae
Herbs			

Sl. No.	Local Name/Common Name	Botanical Name	Family
1	Ankaracti	Solanum xanthocarpum	Solanaceae
2	Anantamula	Hemidesmus indicus	Asclepidaceae
3	Apamaranga	Achyranthes aspera	Amarantaceae
4	Bagharakhi	Martynia diandra	Pedaliaceae
5	Bhuinimba	Andrographis paniculata	Acanthaceae
6	Bhumgaraj	Wedelia calendulacea	Compositae
7	Chitapara	Plumbago zeylanica	Plumbaginaceae
8	Dudura	Datura stramonium	Solanaceae
9	Haladi	Curcuma longa	Zingiberaceae
10	Patalagaruda	Rauwolfia serpentina	Apocynaceae
11	Palua	Curcuma aromatica	Zingiberaceae
12	Salaparni	Desmodium gangeticum	Fabaceae
13	Septapheni	Opuntia dillenii	Cactaceae
14	Tulasi (dhala)	Ocimum basilicum	Labiateae
15	Tulasi (kala)	Ocimum sanctum	-do-
16	Nagapheni	Opuntia vulgaris	Cactaceae
Climbers			
1	Alundi	Combretum decandrum	Combretaceae
2	Asadhua	Capparis zeylanica	Capparidaceae
3	Anantamuli	Hemidesmus indicus	Asclepiadaceae
4	Arsi / Gila	Entada scandens	Mimosaceae
5	Baidarik	Mucuna pruriens	Fabaceae
6	Dantari	Acacia pennata	Mimosaceae
7	Desialu	Dioscorea alata	Dioscoreaceae
8	Gudmari	Gymnema sylvestre	Asclepiadaceae
9	Gulichi	Tinospora cordifolia	Menispermaceae
10	Kainchа	Abrus precatorius	Fabaceae
11	Karaba	Dioscorea pentaphylla	Dioscoreaceae
12	Lata palas	Butea superba	Papilionaceae
13	Mandalai	Milletia auriculata	Papilionaceae
14	Muturi	Smilax macrophylla	Liliaceae
15	Modanga	Loranthus longiflorus	Loranthaceae

Sl. No.	Local Name/Common Name	Botanical Name	Family
16	Satabari	Asparagus racemosus	Liliaceae
17	Siali	Bauhinia vahlii	Caesalpiniaceae
Bamboos			
1	Bansa (salia)	Dendrocalamus strictus	Gramineae
2	-do- (daba)	Bambusa arundinacea	Gramineae
3	-do- (kanta)	Bambusa arundinacea	Gramineae
Grasses			
1	Bena	Vitiveria zizanoides	-do- Gramineae
2	Broom	Thysalolaena maxima	-do-
3	Duba	Cynodon dactylon	-do-
4	Kasatandi	Saccharum spontaneum	-do-
5	Sabai	Pollinidium angustifolium	-do-
6	Sirikula	Hetropogon contortus	-do-

Range Officer,
Kolta Range

RANGE OFFICER
KOLTA FOREST RANGE

Countersigned

Divisional Forest Officer
Bonai Division

The fauna noticed in the Buffer Zone are given in table below:

FAUNA (Buffer Zone)

Sl No	Oriya Name	English Name	Latin Name	Family	Schedule
1	Baduli	Bat	Rousettute schenaulti	Pteropodidae	V
2	Banabiradi	Wild cat	Felis chaus affinis	Felidae	I
3	Barah	Wild boar	Sus crefa cristatus	Suidae	III
4	Bihua	Jackal	Canis latranua	Canidae	V
5	Bhalu	Black bear	Selenarctos tibetana	Ursidae	II
6	Chital	Spotted deer	Axis axis	Cervidae	III
7	Chemara	House bat	Cynopterus sphinx	Pteropodidae	V
8	Gundichimusa	Squirrel	Funambulus penanti	Sciuridae	V
9	Hati	Elephant	Elephas maximus	Elephantidae	I
10	Jhinka	Porcupine	Hystrix leucura	Hystricidae	IV
11	Katasa	Big wild cat	Paradoxurus hermaphrodit	Felidae	II
12	Kokisiali	Fox	Vulpes bengalensis	Canidae	II
13	Kutura	Barking deer	Cervulus muntjac	Cervidae	III
14	Mankada (hanu)	Black-faced monkey	Semnopithecus entellus	Cercopithecidae	II
15	-do- (pati)	Red-faced monkey	Macaca mulatta	Cercopithecidae	II

16	Musa	Mouse	Rattus rattus	Muridae	V
17	Nuula	Mongoose	Herpestes bengalensis	Viverridae	IV
18	Odha	Otter	Lutra lutra	Mustelidae	III
19	Saliapatini	Civet	Viverricula indica	Viverridae	II
20	Thekua	Hare	Lepus nuficaudatus	Leporidae	III

B– BIRDS

List of birds

Sl. No.	Oriya Name	English Name	Latin Name	Family	Schedule
1	Bani	Common myna	Acridotheres tristis	Sturnidae	IV
2	Baya chadhei	Weaver bird	Ploceus phillipinus	Ploceidae	IV
3	Banekukuda	Jungle fowl	Gallus gallus	Phadianidae	IV
4	Bhrungaraj	Black bee	Dissemurus paradiseus	Dicruridae	IV
5	Gonduri	Bastard gull	Turnix buscitotor	Turnicidae	IV
6	Chatak	Swifty	Micropus affinis	Apodidae	IV
7	Chila	Kite	Mylvus migrans		IV
8	Gosalalia	Grey crane	Anastomus oscitens	Ciconiidae	IV
9	Gharchatia	Sparrow	Passer domesticus	Ploceidae	IV
10	Ghukalika	Raven myna	Acridotheres ginginianus	Sturnidae	IV
11	Haldibasant	Golden oriole	Oriolus xanthornus	Oriidae	IV
12	Koeli	Cuckoo	Cuculus canorus	Cuculidae	IV
13	Kajalapati	King crow	Dicrurus macrocercus	Dicruridae	IV
14	Kau	Crow	Corvus splendens	Corvidae	V
15	Kumbhatua	Red crow	Centropus sinensis	Cuculidae	IV
16	Mayura	Peacock	Pavo cristatus	Phadianidae	I
17	Macharanka	King-fisher	Caryle rudis	Alcedinidae	IV
18	Panikua	Little cormorant	Phalacrocorax nagar	Anatidae	IV
19	Pecha	Owl	Athena brama	Strigidae	IV
20	Para	Pigeon	Columba livia	Columbidae	IV
21	Sua	Parrot	Pistacula krameri	Sturnidae	IV
22	Sankachila	Brahmin kite	Haliastur Indus	Muscicapidae	I
23	Kapota	Dove	Streptopelichin opensis	Columbidae	IV
24	Baga (kanti)	Pond heron	Ardeola grayii	Ardeidae	IV

25	Bagya (rare)	Cattle egret	Bubulcus ibis	Ardeidae	IV
26	Kathahana	Ceylon hoopoe	Upupa ceylanensis	Upupidae	IV

C – SNAKES

List of snakes

Sl No	Oriya Name	English Name	Latin Name	Family	Schedule
1	Ajagarh	Indian python	Python molurus	Boidae	I
2	Chili	Painted krait	Bungarus caeruleus	Elapidae	IV
3	Dhamana	Rat snake	Ptyas mucosus	Colubridae	II
4	Boda	Russell's viper	Vipera russelli	Viperidae	II
5	Domundia	John's sandboda	Eryx conicus	Boidae	IV
6	Gokhar	Cobra	Naja naja	Elapidae	II
7	Laudankia	Arboreal adder	Dryophis nasutus	Elapidae	IV
8	Dhonda	Water snake	Natrix piscator	Colubridae	IV
9	Rana	Banded krait	Bungarus fasciatus	Elapidae	II
10	Tampa	Monocellate cobra	Naja naja kaouthia	-do-	II
11	Telia	Blind snake	Typhlops braminus	Typhlopidae	IV

D – LIZARDS

List of lizards

Sl. No.	Oriya Name	English Name	Latin Name	Family	Schedule
1	Balharupi	Indian chameleon	Chameleon zeylanicus	Chamaeleontidae	IV
2	Champeineeli	Mabuya	Mabuya bibro	Scincidae	IV
3	Endua	Garden lizard	Calotes versicolor	Agamidae	IV
4	Godha	Guana	Varanus monitor	Varanidae	I
5	Jhilipiti	Lizard	Hemidactylus flaviviridis	Gekkonidae	IV

Range Officer
Kuica Range

Divisional Forest Officer
Bonai Division

FAUNA (Core Zone)

Sl. No.	Oriya Name	English Name	Latin Name	Family	Schedule
1	Badudi	Bat	Rousettus schenaulti	Pteropodidae	V
2	Baraha	Wild boar	Sus creta cristatus	Suidae	III
3	Bilua	Jackal	Canis latranus	Canidae	V
4	Bhalu	Black bear	Selenarctos tibetana	Ursidae	II
5	Chital	Spotted deer	Axis axis	Cervidae	III
6	Chemani	House bat	Cynopterus sphinx	Pteropodidae	V
7	Gundichimusa	Squirrel	Funambulus penanti	Sciuridae	V
8	Jhinka	Porcupine	Hystrix leucura	Hystricidae	IV
9	Katasa	Big wild cat	Paradoxurus hermaphrodit	Felidae	II
10	Kokisiali	Fox	Vulpes bengalensis	Canidae	II
11	Kutura	Barking deer	Cervulus muntjac	Cervidae	III
12	Mankada (bana)	Black-faced monkey	Semnopithecus entellus	Cercopithecidae	II
13	-do- (pati)	Red-faced monkey	Macaca mulatta	Cercopithecidae	II
14	Musa	Mouse	Rattus rattus	Muridae	V
15	Neula	Mongoose	Herpestes bengalensis	Viverridae	IV
16	Odha	Otter	Lutra lutra	Mustelidae	III
17	Thekua	Hare	Lepus ruficaudatus	Leporidae	III

B- BIRDS

List of birds

Sl. No.	Oriya Name	English Name	Latin Name	Family	Schedule
1	Bani	Common myna	Acridotheres tristis	Sturnidae	IV
2	Baya chadhei	Weaver bird	Ploceus phillipinus	Ploceidae	IV
3	Banakukuda	Jungle fowl	Gallus gallus	Phasianidae	IV
4	Bhrungaraj	Black bee	Dissemurus paradiseus	Dicruridae	IV

5	Gundturi	Bastard gull	Turnix tusciator	Turnicidae	IV
6	Chatak	Swifty	Micropus affinis	Apodidae	IV
7	Chila	Kite	Mylvus migrans		IV
8	Haldibasant	Golden oriole	Oriolus xanthornus	Oriolidae	IV
9	Koili	Cuckoo	Cuculus canorus	Cuculidae	IV
10	Kajalapati	King crow	Dicrurus macrocercus	Dicruridae	IV
11	Kau	Crow	Corvus splendens	Corvidae	V
12	Kumbhatua	Red crow	Centropus sinensis	Cuculidae	IV
13	Macharanka	King-fisher	Carylo rudis	Alcedinidae	IV
14	Pecha	Owl	Athena brama	Strigidae	IV
15	Sua	Parrot	Pistacula kramerii	Sturnidae	IV
16	Kapota	Dove	Strepropelichia chinensis	Columbidae	IV
17	Baga (kanti)	Pond heron	Ardeola grayii	Ardeidae	IV
18	Baga (rani)	Cattle egret	Bubulcus ibis coromandus	Ardeidae	IV
19	Kathahana	Ceylon hoopoe	Upupa ceylonensis	Upupidae	IV

C – SNAKES

List of snakes					
Sl.No.	Oriya Name	English Name	Latin Name	Family	Schedule
1	Chiti	Painted krait	Bungarus coeruleus	Elapidae	IV
2	Dhamana	Rat snake	Ptyas mucosus	Colubridae	II
3	Boda	Rusell's viper	Vipera russelli	Viperidae	II
4	Domundia	John's sandboda	Eryx conicus	Boidae	IV
5	Gokhar	Cobra	Naja naja	Elapidae	II
6	Laudankia	Arboreal adder	Dryophis nasutus	Elapidae	IV
7	Dhanda	Water snake	Natrix piscator	Colubridae	IV
8	Rana	Banded krait	Bungarus fasciatus	Elapidae	II
9	Tampa	Monocellate cobra	Naja naja kuothia	-do-	II
10	Telia	Blind snake	Typhlops braminus	Typhlopidae	IV

D – LIZARDS

List of lizards

Sl. No.	Oriya Name	English Name	Latin Name	Family	Schedule
1	Bhutapti	Indian chameleon	Chamaeleon zeylanicus	Chamaeleontidae	IV
2	Champeimoli	Mabuya	Mabuya bibroi	Scincidae	IV
3	Endua	Garden lizard	Calotes versicolor	Agamidae	IV
4	Jhitipiti	Lizard	Hemidactylus flaviviridis	Gekkonidae	IV

Range Officer
Koira Range

Divisional Forest Officer
Bonai Division

f. Description of the Forest and wildlife Scenario:

Forest and Forest types: -

As per the State of Forest Report published by F.S.I. the status of forest cover in the area under consideration are as follows:

(Area in Km²)

District	Geograp hical Area	Status of Forest				
		Very dense forest	Moderately dense forest	Open forest	Total	
As per Report of 2015						
Sundargarh	9712	1020	1826	1309	4155	128
Keonjhar	8303	290	1401	1517	3208	56
As per Report of 2017						
Sundargarh	9712	1019	1814	1431	4264	89
Keonjhar	8303	289	1404	1519	3212	55

Forest Type: Total forests of Bonai Forest Division is 1683.677 km² as per current Working Plan. Forests of the Division have been classified into following types and sub-types by Champion and Seth.

1. Sub group 3C – Northern Indian Tropical Moist Deciduous Forests.
   Type 3C / C2 Moist Peninsular Sal
   Sub-type 3C/C2e (i) Moist Peninsular High level Sal
   3C/C2e (ii) Moist Peninsular Low level Sal
   3C/C2e (iii) Moist Peninsular Valley Sal
2. Sub group 5B – Northern Tropical Dry Deciduous Forests.
   (i) Type 5B/C1 Dry Sal bearing forests
   Sub-type 5B/C1e - Dry Peninsular Sal Forests
   (ii) Type 5B/C2 – Northern Dry Mixed Deciduous Forests
   (iii) Type 5E/ 9 Dry Bamboo break
3. Sub group 2B – Northern Tropical semi Evergreen Forests and *Terminalia tomentosa* forests.

g. Movement of Mega wildlife:

Small groups of elephants are known to move between Karampada forests of Jharkhand State to Odisha via Kiriburu – Uliburu RF, Sidhamath RF and to Karo RF. This group alternates between Jharkhand-Odisha forests. The movement is not confined to forest areas alone. Stray movement occurs in villages causing house & crop damages of Paddy, Banana plants, Jackfruit, Mangoes. Human death also occurs due to accidental encounter. Malda, Deojhar, Alaghat, Sargigarh, Gonua on Bonai side and Khandabandha and Gurada villages on Kendujhar District are affected by crop depredation. Elephant movement occurs in Teherai and Kundra Nala nearby villages and other plain lands where paddy is adequately available.

Eelephant movement is also found occasionally in Mendhamaruni PRF.

h. **Man- animal conflict Data: (depicted on map and enclosed as Plate-c),**

(Details collected from DFO office Bonai, Range office Barbil & Champua)

Human – Elephant Conflict is on rise in the state and has become one of the major issues in the fight to save Asia's endangered elephants. It is one of main cause of elephant death. Due to loss and fragmentation of elephant habitat/forest, lack of fodder, water and shelter, the elephants are rather turning to crop raiding for sustenance. At times the human habitations are destroyed in the conflict, besides loss of human life.

The elephant population in the district of Sundargarh is rather fluctuating. Elephant movement takes place between Jharkhand and Odisha.

The data on Man-animal conflict is furnished in respect of Koira Range of Bonai Forest Division.

BONAI DIVISION

Elephant Census

Year	No. of elephant found
2010	45
2012	42
2015	65
2017	60

Human Death by Wild Animal

Year	Human Death	Animal causing human death
2015-16	Nil	-
2016-17	Nil	-
2017-18	One	Elephant
2018-19	One	Elephant

Human Injury by Wild Animal

Year	No of Human involved	Animal causing injury
2015-16	Nil	-
2016-17	Nil	-
2017-18	Nil	-
2018-19	Nil	-

House damage by Elephants

Year	No. of Houses damaged
2015-16	30
2016-17	12
2017-18	15
2018-19	6

Crop damage by Elephants

Year	Crop area damaged in Ac.	Compensation paid in Rs.
2015-16	3.04	30,400
2016-17	40.30	4,03,000
2017-18	5.44	54,400
2018-19	22.88	2,28,800

Cattle kill by Wild Animal

Year	Name of Human Kill	Date & place of occurrence	Location
2015-16	- NIL –		
2016-17	- NIL –		
2017-18	- NIL –		
2018-19	- NIL –		

Details of death of wild animals

Year	Date	Animal killed	Location	Cause of death
2015-16	-	Nil	-	-
2016-17	12.05.2016	Female Elephant-1	Teherai Khesra Forest, Tehrai Beat, 21°54'33.5"N & 85°17'0.7" E	Natural
2017-18	-	Nil	-	-
2018-19	11.10.2018	Wild Boar - 1	Podadihi Khajuridihi Beat	Poaching

i. Survey of Working Plan

The following Reserved Forests are located within the Impact area.

Sl. No.	Name of the Forest Block	Area in Ha.	Location with reference to the project area	Working Circle
1	Mendhamaruni PRF	I- 472.937 II- 340.875	Part within the project	RWC
2	Mendhamaruni RF	512.973	Adjacent SW	SWC–287.750ha RWC-225.187ha
3	Kathmal RF	101.174	4.0 km SW	SWC
4	Karo RF	1419.063	3.3 Km - NW	SWC
5	Bhabanipahar RF	370.295	6.3 km. SW	Prot.WC-209.109 RWC- 161.187

	Bhabanipahar PRF	1290.313	6.6 kmSW	RWC
6	Khajuridihi RF	2144.312	9.5 km. S	SWC
7	Sidhamath RF	5766.059	4.0 km NE	IWC-3046.9766 RWC-2719.0825
8	Baitarani RF	3517.677	5.0 km NE	RWC
9	Uliburu RF	980.205	5.5 km NW	IWC

The Working Plan prescriptions for different Working Circles as above are:

i. **Selection Working Circle**

Special provisions are:

1. Trees standing within 50 mts on either side of nala banks shall not be marked for felling.
2. Trees standing within 50 mts radius of key habitats of wild animals shall not be marked
3. Trees having nesting dens of arboreal animals and the hollow trees which are used as assylum by wild animals shall not be marked for felling.
4. Except dead and uprooted trees, no tree standing within 20 mts along road sides shall be marked for felling.
5. Except for dead & uprooted trees, no tree shall be marked for felling in eroded areas and steep slopes.
6. Fruit bearing species shall not be marked.
7. All climbers should be cut at the time of marking except for endangered species.

Subsidiary silvicultural operations

1. Cleaning and thinning operations to be carried out in the year following main felling.
2. All marked trees left out to be removed.
3. Trees damaged more than 1/3rd at the time of main felling to be cut back.
4. All other species under 60 c.m. g.b.h. interfering with the growth of established regeneration of principal & secondary species to be felled and removed.
5. All the defective and mal formed stems of secoedary species interfering with the growth of established regeneration of principal species are to be felled and removed.
6. Thinning is to be carried out in congested group of principal & secondary species under 60 c.m. g.b.h. as per prescribed formula.
7. No cleaning to be carried out in eroded atreas.
8. In the blanks, eroded patches and pockets having sparse or bushy type are to be taken up for enrichment planting.

ii. **Rehabilitation-cum-Plantation Working Circle**:

The major provisions are:

1. Cutting back of high stumps and climbers, singling out multiple coppice shoots, C-grade thinning in congested patches. Planting with two year old seedlings of bamboo along with fruit bearing and NTFP species.
2. In barren areas and blanks, planting of fast growing indigenous species such as Ailanthus, Siris, Karada, Sidha, Neem, Chakunda, Kusum, Sissoo etc. In the eroded patches species like Babul, Khair, Rohini, Sabai grass are to be planted. Planting of Jamu, Karanja, Arjun etc. to be taken up in low lying moist degraded patches.

3. Suitable Soil conservation measures such as gully plugging, cotour bunding etc. to be taken up on hill slopes.
4. In the areas having slope more than 15°, staggered contour trenches are to be dug along the contours. Aegave and Sabai grass may be planted in the intervening spaces of contour trenches.
5. In the areas having moderate to gentle slope of less than 15°, small contour bunds are to be erected along the contours. The bunds and intervening spaces are to be planted with suitable species.
6. The open blank patches are to be planted with fast growing species.
7. Areas infested with weeds are to be cleared through control burning and revegetated by planting.
8. In areas having dense bushy and scrubby types of growth, control burning, cleaning and prunning operations are to be carried out. Afterwards enrichment planting may be taken up.
9. Required administrative measures for dissuading shifting cultivation are to be taken up.
10. In areas planted previously, tending and thinning operations may be taken up along with enrichment plantation.
11. The biotic interference is to be minimized by effectively closing the forest to grazing, browsing, and illicit felling etc. through fencing measures such as vegetative fencing, trench fencing and stone wall fencing.

iii. **Wild life (Overlapping) Working Circle:**

All the Forest Blocks coming within impact area have been placed under Wild Life Overlapping Working Circle. The prescriptions of Wildlife (Overlapping) Working Circle are:-

1. **Habitat Improvement** :-

Habitat shall be developed with the cooperation of the local people using sound silvicultural technique. The aim should be to provide more food water shelter for the wildlife and reduce man animal conflict. It is therefore necessary to evaluate the concerned wildlife habitat in advance. Physical and biological parameters are to be considered while evaluating the habitat. The important physical parameters needing evaluation are, climate, topography, edaphic features, incidence of fire, spatio-temporal availability of water. 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. For the improvement and development of wildlife habitat, the following measures are to be taken.

A. **Improving availability of food**: Food is an essential prerequisite for any lving organism. The adequacy of food in wild life habitat depends upon the quality and quantity of food produced and the animal population living therein. Keeping in view this aspect of wild life management, restricted removal of trees is prescribed. Similarly, under various subsidiary silvicultural operations like opening of canopy, thinning of congested patches, improving the general availability of food shall always be taken into consideration. The fruit bearing trees have been prohibited from felling.under the respective Working Circle.

- Food availability in a habitat changes with the season. Herbivores depend on plant materials for their sustainance and are normally selective feedersas their food preferences are related to palatability. Herbivores prefer the leaves, barks, twigs, flowers, fruits and seed of species like *Mallotus philippinensis, Dendrocalamus strictus, Adina cordifolia, Albizzia lebbek, Aegle marmelos, Cassia fistula, Ficus bengalensis, Ougeinia ougenensis, Shorea robusta, Syzygium cumini, Terminalia alata, Terminalia belerica, Zizyphus mauritiana, Bombax ceiba* etc. These species are to be preserved and propagated.
- Deer, Monkey, Langur, Rats and Hare feed on wild fruits of plants like *Ficus spp. Terminalia belerica, Buchanania lanzan, Aegle marmelos, Syzygium cumini, Emblica officinalis, Zizyphus mauritiana, Diospyrus melanoxylon, Grewia hirsuta etc.* These animals help in dispersal of seeds.
- Among the plant materials, grasses constitute major portion of herbivores food. Grasses which are highly preferred and consumed by herbivores are: *Aronopus compresses, Eragrostis pilosa, Saccharum bengalensis* etc. The grasses are proposed to be raised in the wildlife concentrated areas to meet the food requirement of herbivores.
- The carnivores survive on the availability of prey animals.
- Wild elephants feed on barks and leaves of species like *Ficus bengalensis, Ficus religiosa, Mallotus philippinensis, Dendrocalamus strictus, Ougeinia ougenensis, Bombax ceiba, Kydia calycina* etc.

Bonai Forest Division does not have extensive grass lands. However scattered patches of grasses are available. The available grass species are not very nutritive and some of them are even unpalatable. For improving the food availability of herbivores, there is a great need of improving the existing food stock by raising suitable mix of the grass species of annual and perennial nature alongwith leguminous shrubs and trees.

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. The distribution of water holes in a habitat and their interspersion with the cover types determine the distribution of wild animals. Waterbodies themselves serve as habitat for several species of animals and birds.

Bonai Division has a number of perennial and seasonal streams. There is no dearth of water during rainy season and winter season. However scarcity is felt from January to June, when most of the nallas and streams dry up and water becomes a scarce commodity, particularly in the hilly and drier localities. For making the availability of water to wild fauna in all seasons possible, it is necessary to protect all existing water holes and to construct small check-dams on plateau and upper slopes of all important nalas. From better wildlife management point of view, it is necessary to have a water hole for every 15-20 sq. kms of forest area.

C. **Measures for Improving the cover**: Providing adequate cover to wild animals within their habitat 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 vantage point 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 of debries, no felling of trees within radius of 50 mts along

nalas, water holes, wallows, saltlicks and core habitat of wild animals etc. have also been prescribed for improving the cover for different wildlife species. Measure 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 and middle storey is to be developed and maintained.

D. **Measures for Improving Wilderness**:- The forest 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. Most of the forest ares of Bonai Forest Division have been subjected to severe biotic interference due to rising population pressure and prevailing poverty and there has been rapid shrinkage of wilderness. To maintain proper wilderness the following steps are to be taken up.

- The forest areas which are key habitats for wildlife need to be identified and delincated on a map and efforts are to be made to reduce the biotic interference to the minimum possible level.
- Most of the domestic cattle are left stray in forest areas for grazing purpose. This not only causes shrinkage of wilderness but also reduce food availability. It is high time that, the local inhabitants are persuaded to reduce their uneconomic cattle population and to adopt stall feeding.
- The ongoing reckless mining operations within interior forest areas are to be regulated in such such a manner so as to cause minimum damage and disturbance to wildlife.
- Proper measures are to be taken up for preventing illicit felling, poaching, encroachment, shifting cultivation, setting of fire etc.
- Mulching in the dry areas is to be carried out.

E. **Measures for Protection & Development of salt licks:** Herbivores need salt in addition to food. For this purpose the herbivores depend on naturally available salt licks. These natural salt licks are available on sides of natural nalas and foot hills. Sincere efforts are to be made to identify and protect the areas which are having high salt concentration and frequently visited by the herbivores.

2. **Silvicultural measures**

The wildlife management does not demand fundamental change in silvicultural operations. Some small modification in in the forest management can serve the cause of wildlife. The following measures are to be taken while carrying out silvicultural operations.

i. No felling of dead and green diseased trees to be done in the areas covering the key habitats of wildlife.
ii. No felling should be carried out in the areas having crown density of 0.4 and less.
iii. Hollow trees and the trees supporting nesting dens of wild animals and birds shall not be felled.
iv. A portion of the left over lops and tops and other debries after main felling are to be piled up so as to provide shelter to Civet Cat, Lepus, Porcupine and other small wild animals.
v. No marking and felling of trees is to be carried out within 50 mts radius around the key habitat of wild animals such as den, saltlick, wallows, water holes etc..
vi. No fruit bearing trees like harida, bahada, anla, zizyphus, kendu, mahul and ficus etc. should be felled.

vii. Emphasis to be given on improvement of flora composition and density.
viii. Planting of grasses and trees favourable to wildlife is to be taken up in blanks and in the patches sparsely vegetated.
ix. In the plantation areas creation of ground flora and middle storey should be encouraged.

3. **Legal and Administrative Measures:**
   - Effective implementation of Wildlife Protection Acts and Rules require adequate infrastructure, field staff and supporting funds. As far as Bonai Forest Division is concerned non of these is available.
   - Adequate number of anti-poaching gates operating round the clock are to be erected at the entrance and exit of each of the roads passing through forest areas rich in wildlife.
   - Watch towers need to be erected in the key habitats of wild animals.
   - Adequate exposure training to be provided to the staff on wildlife management.
   - Required number of posts of Forest Rangers, Foresters and Forest Guards to be deployed specially for wildlife protection and management are to be created.

4. **Scientific Study and Wildlife Census:**

   In order to have a scientific basis for wildlife management, the following steps may be taken:
   i. Regular and systematic training to be provided to the staff with rgard to data collection and analysis.
   ii. Comprehensive wildlife census to be carried out on regular basis.
   iii. Study involving wildlife pattern with respect to structure, composition and density of vegetation.
   iv. Study involving wildlife pattern with respect to physical parameters like rainfall, temperature, water and soil.
   v. Study on migration pattern and behavioural aspect of important wild animals.
   vi. Study on health status and wild animal diseases.
   vii. Study on socio-economic status of tribals living around forest areas and their dependence/biotic interference on forest.

5. **Integrated Development:**
   Due to sharp rise in human population and lack of adequate income generation avenues, the dependence of local inhabitants on forst is increasing over the years. Therefore intensive efforts are to be made to improve the Socio-economic status of the local inhabitants. It is suggested to develop Agriculture through appropriate imput support and take steps to develop small industries.

6. **Fire protection measures:**

   Forest fire is a regular feature in Bonai Forest Division. Most of the forest fires are intentional and man made. Due to such fire all the ground flora and most of the middle storey are destroyed. Small animals and reptiles are invariably killed and large animals are also trapped in the process.
   Necessary fire protection measures needs to be taken along with cleaning of firelines.

7. **Development of Tourism:**
   Turism will provide an opportunity to the people to interact with nature and wilderness and create awareness among the peple about importance of Forest and Wildlife.

8. **Measures to reduce Animal depredation:**

The maximum depredation is caused by elephants. Elephants do no stay in Bonai Forest Division permanently. They are migrating from Bamra and keonjhar Divisions and from Saranda Forests of Bihar. Their stay is temporary and seasonal. However the elephants are seen through out the year in few pockets of Toda RF, Silkuta RF, Balai RF and Lunga RF. The steps suggested to reduce animal depredation are:

i. Driving away the Wild elephants by beating of drums, shot-guns, crackers, fire, tear gas and trained elephants.
ii. Creation of elephant proof trenches adjoining the settlement areas.
iii. Creation of low cost corridor with water and food facility so as to confine the migration movement of elephants.
iv. Plantation af Bamboos and other palatable species in the forest areas frequented by elephants.
v. Immobilization and capture method in extreme cases.

j. Indicative Plan Showing the Location of Other Projects:

The surrounding mining leases are shown in table below

Sl. No	LEASE NAME WITH LESSEE	AREA (Ha.)
1	Ghoraburhani-Sagasahi iron ore block (ESIL)	139.165
2	Sagasahi iron mines (National Enterprices)	41.844
3	Kalmang mn. mines (Rungta Mines ltd.)	218.530
4	Malda mn. mines block-1 (TISCO)	681.564
5	Sanindpur iron & bx. mines (Rungta Sons)	147.100
6	Oraghat iron & mn. mines (SA Halim)	25.847
7	Oraghat iron ore mines (Rungta Sons)	82.966
8	Sanindpur iron & mn. (National Enterprises)	70.917
9	Malda mn. mines block-2 (TISCO)	37.405
10	Patabeda iron ore mines (MGM Minerals)	28.397
11	Patabeda iron ore mines (MG Mohanty)	14.000
12	Patabeda iron-mn. mines (MG Mohanty)	19.425
13	Gonua iron & manganese mines (P K Alhuwalia)	86.886
14	Ganua iron & mn. mine (KC Pradhan)	12.560
15	Ganua iron & mn mines (Zenith Mining)	129.179
16	Ganua iron & mn mines (KJS Alhuwallia)	23.166
17	Ganua iron & mn. mines (P. Mohanty)	13.796
18	Malda mn. mines block-5 (TISCO)	55.220
19	Ganua iron_mn mines (MG Mohanty)	83.151
20	Dalita iron & mn. mines(BC Dogra)	22.165
21	Dubuna iron & mn. mines (Neelanchal Ispat Nigam Limited)	868.816
22	Patamunda mn. mine (Orissa Manganese & Mineral)	807.306
23	Malda mn. mines block-3 (TISCO)	46.137
24	Sanpatholi mn. mines (Orissa Manganese & Mineral)	23.290

25	Patamunda mn. mine (Sun Alloys & Minerals ltd.)	81.197
26	Tehari-Sonua iron mn. mines (Tarani Minerals)	29.076
27	Bhanjapali, Koira & Teherai manganese mines (RS Sindhu)	65.710
28	Bhanja kusum mn. mines (Orissa Manganese & Mineral)	8.498
29	Teherai iron-mn. mines (BICO)	116.572
30	Kanther-Koira iron-mn. mines (BS Mishra)	13.270
31	Kanther Koida mn. mines (Rungta Mines ltd.)	73.633
32	KJST iron-mn-bux (S.N.Mohanty)	333.063
33	Tentulidihi mn. mines (Orissa Manganese & Mineral)	35.610
34	Bhanjapalii iron mines (JN Patnaik)	18.000
35	Toda iron ore mines (SAIL)	3.340
35	Bhanjapali iron ore mines (OMC Ltd.)	141.235
36	Koida iron mines (ESSEL)	90.143
37	Nuagaon iron & mn. mines (SD Sharma)	12.922
38	Orahuri mn. mines (Orissa Manganese & Mineral)	51.476
39	Nuagaon mn. mines (Tarani Minerals)	7.850
40	Narayanaposi iron-mn. mines (AMTC)	349.254
41	Kasira iron ore mines (OMC Ltd.)	418.335
42	Nadidihi iron & mn. mines (Feegrade)	121.405
43	Nadidihi iron-mn. mines (BICO)	73.855
44	Nuagaon iron & mn. mines (S.N.Mohanty)	29.297
45	Bandhal mn. mines (Kanakdhara)	28.021
46	Kamando mn. mines (UC Mishra)	60.700
47	Kusumdihi-Kamanda mn.&bx (Rungta Sons)	43.067
48	Kusumdihi mn. mines (Orissa Manganese & Mineral)	31.549
49	Kusumdihi mn. & bx. mines (BICO)	52.176
50	Kusumdihi mn. mines (Kavita Agarwal)	47.486
51	Barsuan-Kalta iron ore mines (SAIL)	2486.382
52	TISCO-Khandbandh iron mine	978.000
53	R P Sao, Chormalda mn mine	141.122
54	Rungta_Katasahi_mn_mine	196.860
55	SN Paul Katasai mn mine	9.700
56	KJS Alluwalia, Nuagaon iron	767.284
57	R.P. Sao & Sons, Guali iron mines	365.026
58	KJS Alluwalia Panduliposi-Kendudihi iron & mn	40.470
59	KC Pradhan-Paradeipur iron mine	12.600
60	OMC_Parlipada mn	104.860
61	TISCO Tiring pahar mn mines	169.000
62	Shri Metaliks Ltd. Khandband iron mine	35.774
63	R B Das Kundrupani iron & mn	10.255
64	OMC_Tiringpahar iron & mn	79.300

65	OMC_Khandband iron ore mine	366.311
66	Rungta, Siljoda mn mine	715.369
67	Serajudin_Gurada mn mine	40.064
68	S N Dasmohapatra Katasahi mn mine	36.474
69	omdc_bhadrasahi iron & mn	998.700
70	FACOR Katashi block-a manganese mine	8.936
71	FACOR Katasahi block-b manganese mine	4.560
	TOTAL	**13582.640**

The total area comprising the buffer zone of 10 sq. KM is coming to 37121.00 Ha. Out of that, the area coming within the lease hold area of the adjacent mining leases falling inside the10 Km radius is 13582.640 Ha. Hence the area within the 10 Km buffer zone was proportionately increased by extending the radius of 10 Km to 12.70 Km to compensate the equal amount of the area. The locations of these mines have been indicated in plate-b.

k Experts Engaged for the study:

The study was taken up by Shri P.K.Sarangi IFS (Retd.) and Shri Sangram Keshari Ray along with the staff of Visiontek Consultancy Service4s and the staff of Essar Steel India Ltd.

Sampling Techniques

Vegetation study:

Lease area:

A large chunk of the lease area has been broken up. Detail study was conducted in four patches where the original vegetation is available. Sample plots of 100mx100m was laid and the list of flora available in the area was recorded.

Impact area:

Since impact zone extends over some RF it was felt prudent to take up the study in the Reserve Forest area. The nearest Reserve Forest being Mendhamaruni RF was taken for the study. The methodology adopted for the study was as follows:

Vegetation Analysis

1. A base line of 500mts was selected in E-W direction.
2. Transacts line of 500mts each perpendicular distance to the baseline at 100mts interval was marked, starting at 50mts from the initial point. Total transacts were therefore 5.
3. Sample plots of size 30mx30m (15mts on either side of the transact) were laid on these transact lines at 100mts interval, starting the sample plot at 50mts from the base line. Hence the total numbers of sample plots were 25.
4. The list of the tree species was prepared. Specimens of unidentified plants were preserved for identification.

5. Further sample plots of 5mx5m was laid at the center of each sample plot and in this secondary sample plot the list of herbs and shrubs were prepared.

6. Tertiary sample plots of size 1mx1m was laid within the secondary sample plot to list out the grasses and ground cover.

Study of Fauna

This plan is prepared for conservation and management of wildlife depending on site specific problems. It is therefore necessary to know the wildlife species present within the lease area as well as the impact area so as to design an appropriate plan.

Methodology:

Direct sighting of wild animals is a rare chance. The study had to rely on indirect evidences, and information collected from the surrounding areas from various stake holders such as available records (wildlife offence cases, animal depredation etc.), discussion with mine workers, and Forest Department staff and with the villagers within the impact zone yielded the desired result. Besides at the time of study of flora, where ever animal signs & Tracks were noticed the same were taken in to consideration. The wildlife habitat has also been studied and analyzed for possible presence of the animals.

Animal signs were also observed and recorded at the time of vegetation study.

The information was collected to deduce the presence of important wild animal species present in the area, particularly the scheduled animals in the category of Mammals, Birds, Herpatofauna and Insects and thereafter the final list has been prepared.

The mammals in the project study area has listed along with the frequency of occurrence for sighting, calls, scats/ fecal matter, track marks or other indirect signs along the transects as well as quadrant.

CHAPTER – 2

PERCEIVED IMPACT

2.a Impact of Project:

The mining process adopted in the said mines is open cast fully mechanized mining method with deployment of mechanized shovel and high capacity dumpers of matching size. Drilling and blasting activities as per the requirement will also be taken up by deployment of proper machineries. Excavation of Ore & Waste will be done using combination of shovel dumper system and the Ore will be mechanically crushed to the desired size. During the initial period, the transportation of ore will be through the road using high capacity trucks to the destination/ Railway siding. However, at the latter stage the Iron ore fines will be transported through the slurry pipeline and the CLO will continue to be transported through the road to the railway siding.

General Impact on Environment

Impact on Soil: - The mining activity will involve removal of all the forest cover, top Soil due to digging of large pits. Major part of the forest land will come under the mining pit setting aside the safety zone. The topographical features of the lease area put it in high soil erosion prone area. Therefore large scale soil erosion is bound to take place which may cause formation of Gullies and Ravines leading to further destruction of adjoining forest as well as wildlife habitat. The running of heavy machinery will lead to soil compaction which will have tilling effect on the normal morphology and the micro flora & fauna residing within sub soil. Denudation of soil & its green cover will also reduce the biotic material from the soil making it difficult for the green cover to come up again in the area. More over the area being bereft of its natural green cover, there is possible chances of being infested with weeds and if no weeds come up exposure of bare earth to sun would definitely reduce the moisture regime of the top soil & immediate sub soil.

Impact on Vegetation: - Due to mining activity over the lease area, the biotic pressure which was exerted over the Forest area now being leased-out, will be shifted to the surrounding areas. Collection of fuel wood, small timber and other NTFP by the local people will also be shifted to the surrounding area which will create additional pressure on the surrounding Forest area. Grazing pressure of the local Cattle will also be shifted to these Forest. Therefore the wildlife habitat in these Forest areas is likely to be disturbed.

With the de-forestation there is every likely hood of increased incidents of man animal conflict. This would be due to marginalization of access to basic life supporting resources like forest, drinking & breeding grounds.

Impact on water regime: - Large quantities of water produced in the process of mining which are highly polluted will be released in to the natural drainage system, thereby contaminating natural water sources. The slurry generated in the mining process will also be pumped out in to the natural drainage system making the natural water source unfit for consumption by animals as well as human beings. Besides large amount of Garbage will be generated in the mining area and will contaminate the water. The contaminated water will create health problems within the Zone of Influence as well as beyond. As the entire water requirement for mines would be from bore holes, this would adversely affect the ground water table which would not only affect the quality & health of forest but also would minimize the potable drinking water to the population.

Impact on Air: - The mining process, Ore Crushing & Screening, transportation, and plying of large number of heavy vehicles may spread large quantities of dust in the surrounding area. There will be heavy air pollution in and around the lease area creating various problems for the animals and the fringe village dwellers living around the mines area.

2.b Quantum of Pollutants and Its Effects:

2.b.1 Quantum of Pollutants

Air Pollution:

The Impact on Ambient air quality will be estimated by using the Air Dispersion Model for prediction of Ground level concentration from mining activities and crusher area are computed by using Industrial source complex sort term model version 3 (ISCST3) as prescribed by MoEF & OSPCB for area source and point source respectively at the time of EIA/EMP preparation.

The predicted incremental PM10 concentration value is 7.0 micro.gm/ CUM core zone and 1.0- 7.0 micro.gm/CUM in buffer zone. It reveals the values of AAQ in the zone of Impact are within the norms. The Data is enclosed as **(Annexure-8)**.

Water Pollution:

The adverse impact on nearby water body due to mining is envisaged because of contamination silt carry-over along with run-off water. However, the same will be control within the SPCB prescribed norms by taking the suitable control measures like; de-silting checks/check weirs, settling pits and gully plugs besides well managing the mine waste dumps with adequate sloping followed by application of coir-geo textiles, plantation, mixed grass application, toe wall etc.

Besides the above, the Oil & Grease and silt carry-over is envisaged with the work-shop service centre water. However, the same will be well separated, collected, stored and disposed properly to the authorized re-processers. The treated water will be utilized for adjacent plantation purpose as it is very negligible in quantity.

Sewage generation due to domestic / site-specific Camps is envisaged, it will result in carryover of organic pollutants. However, the same will brought within the norms by treating at Sewage treatment plants / Soak pits.

Other waste:

The wastes like Used Oil, e-waste, Used batteries and Oil contaminated wastes generation are envisaged; provisions will be to put in place for their collection, storage and disposal to authorized reprocesses. There by pollution caused will nullify.

Noise and Vibration:

The generation of Noise will be envisaged due to operation of plant and machinery. It is limited to the work zone only and will be monitored and maintained within the norms prescribed by DGMS (less than 85 leq dB(A). Ground Vibration due to Blasting is envisaged. However, the same will be well within the norms prescribed by DGMS(less than 5 mm/sec) by controlled blasting utilizing the nonel technology.

2. b.2 Effect of Pollutants

Impact on Soil: - The mining activity will involve removal of all the forest cover, top Soil and digging of large pits. Major part of the forest land will come under the mining pit setting aside the safety zone. The Topographical features of the lease area puts it in high erosion prone area. Therefore large scale soil erosion is bound to take place which may cause formation of Gullies and Ravines leading to further destruction of adjoining Forest as well as wildlife habitat. The possibility of land slide also cannot be ruled out.

Loss of Moisture:- Due to mining activity there will be large scale evaporation from the exposed soil and moisture retention capacity of the soil along the periphery of the mine pits will reduce. The sub-soil water will also be reduced which may lead to destruction of some more vegetation due to desiccation. The process of dewatering and releasing huge quantities of water in to the natural drainage system may reduce the Sub-soil water. Besides the ground water recharge in the area will reduce resulting in water scarcity.

Water accumulation: - Digging of large pits may accumulate huge quantities of water which will lure the Wild animals and ultimately may trap them in the pits which will be fatal for them.

Impact on Vegetation: - Due to mining activity over the lease area, the biotic pressure which was exerted over the Forest area now being leased out & will be shifted to the surrounding areas. Collection of fuel wood, small timber and other NTFP by the local people will also be shifted to the surrounding area which will create additional pressure on the surrounding Forest area. Grazing pressure of the local Cattle will also be shifted to these Forests. Therefore the wildlife habitat in these Forest areas is likely to be disturbed.

Impact on water regime: - Large quantities of water produced in the process of mining which are highly polluted will be released in to the natural drainage system, thereby contaminating natural water sources. The slurry generated in the mining process will also be pumped out in to the natural drainage system making the natural water source unfit for consumption by animals as well as human beings. Besides large amount of Garbage will be generated in the mining area and will contaminate the water. The contaminated water will create health problems within the Zone of Influence as well as beyond.

Impact on Air: - The mining process, Beneficiation, Ore Crushing & Screening, transportation, and plying of large number of heavy vehicles will spread large quantities of dust in the surrounding area. There will be heavy air pollution in and around the lease area creating various problems for the wild animals.

Accumulation of Garbage: Due to various activities in the mining process, movement of large number of work force and vehicles within the mining area, a large quantity of garbage will be generated within the mining area.

The Garbage includes Solid Wastes such as over burden, Mine Waste, Sub-grade Ore. Besides some amount of Bio degradable waste and Hazardous waste such as used oil, used batteries, oily sludge, filter materials containing oil are likely to be generated within the lease area.

These dangerous materials will create various health problems for both human population as well as animal population including wild animals.

2.c Degradation Anticipated:

Due to diversion of forest area to the extent of 126.401 ha, the biotic pressure which will be exerted on this area further divert to the impact zone causing degradation of the forest cover within the impact zone. Decrease in wildlife habitat to the extent is anticipated.

Since this new mining lease area is surrounded by working mines, the wildlife habitat of the area has already been disturbed and that it can be presumed that, the wild animals of the area have migrated to the nearby forest areas which are not disturbed by mining. Though elephants have been seen occasionally visiting existing forest areas in and around the mine area.

Generation of substantial quantity of dust may create unhealthy condition for animals. This being equally applicable for the human beings the same has been taken care in the Environment Management Plan.

Removal of top soil and digging of large pits may lead to large scale Soil erosion.

Change of land use pattern within the mining area may permanently make the area unsuitable for animal habitat unless properly reclaimed.

2.d Nature of Threats to Flora & Fauna:

Fall of animals in the Mine Pits

The mine pits are dug with very steep slopes with 10 metres bench height with vertical slope (the overall slope being 45^0). Usually no physical barrier is provided around the mine pits. Any accidental fall of the animals in those pits may be fatal for the animals.

Poaching

The poachers may also drive the animals and lead them in to the mine pits using the same as animal trap.

Destruction of wildlife habitat

Due to mining activity over the lease area, the biotic pressure which will exerted over the Forest area, be shifted to the surrounding areas. The collection of fuel wood, small timber and other NTFP by the local people will shift to the surrounding area and further create additional pressure on the surrounding Forest area. Grazing pressure of the local

Cattle will also be shifted to these Forests. Therefore the wildlife habitat in these Forest areas is likely to be disturbed.

Distraction of the normal migratory path of elephants & other mega fauna of the area

As a result of the bright light & the noise generated within the mine area, this will possibly impede the normal perambulation of the animals along their traditional routes which will likely to increase the human animal contact, there by posing the threats to either parties.

2.e Transportation and Its Impact:

It has been proposed that, the following machineries will be deployed for the mining operation.

Unit operation	Name	Numbers
Drilling	DTH	2
Excavation & loading	Excavator	5+1
	Loader	2+1
Transporting	Dumper	12+2
Leveling & road making	Dozer	2
Mineral processing	Crushing and screening unit (Stationary)	1
	Crushing and screening unit (mobile)	2
Motor Grader		01
Water Tanker		04
Light vehicle		04
Explosive Van		01
Ambulance		01
D.G.Set		01
Rock Breaker	SPN220B	01
Bus	Tata LP709	01

- Movement of large number of vehicles at night with their lights on in and around the lease area will disturb the Wild animals.
- Vehicles/rails may hit the nocturnal animals
- Noise/Sound created by the vehicles & rail engine will create stress amongst the wild fauna.

2.f Pollution and Its Impact

Noise Pollution: Disturb the environment of animals and create stress amongst the wild fauna.

Water pollution: Besides disturbing the aquatic ecosystem, pollution will make the water unfit for animal consumption leading to various health problems.

Air Pollution: Air pollution may take place due to decrease in Oxygen content in the air and increase of poisonous gases like; Carbon monoxide & PM generation due to the movement of large number of vehicles and operation of heavy machineries. Deposition of dust on the leaves will decrease the efficiency of photosynthesis. Deposit of large quantity of dust on the leaves will make the fodder unfit for consumption and lead to scarcity of food.

Under ground Pollution: There may be some underground pollution due seepage of oil and emulsion released from the machineries.

2g) Study Techniques

The study techniques adopted for collection of data/information has been described in the foregoing chapter.

CHAPTER – 3

OBJECTIVES OF MANAGEMENT & STRATEGIES

a) **Objectives of Management:**

Basing on the information collected as per the foregoing chapters, the Management objectives can be described as:

Conservation of Wild Life habitat

The forest area of 126.401 ha will not be available for general purpose such as collection of fuel, small timber and other NTFP items by the local population. This area will also not be available for use by the wild animals. The objective therefore is to provide minimum possible cover and protection for the small animals which are available within the project area and to create conditions for absorbing the additional biotic pressure that may accrue on the surrounding forest areas.

Soil & Moisture Conservation

1. The mining activity will involve removal of all the forest cover, top soil and digging of large pits. Major part of the forest land will come under the mining pit setting aside the safety zone. Due to digging of large pits a lot of soil erosion including formation of gullies is bound to take place which is required to be treated properly.
2. Similarly due to mining activity there will be large scale evaporation from the exposed soil and moisture retention capacity of the soil along the periphery of the mine pits will reduce. The sub-soil water will also be reduced which may lead desiccation condition and destruction of some more vegetation.
3. Repeated forest fire has created refractory condition of the soil in almost all the forests irrespective of the impact zone. Water retention capacity as well as permeability of the soil will be reduced. The management objective will therefore emphasise taking of steps for improvement of soil conditions.

Control of Water pollution

The water accumulated within the mining area is likely to be muddy due to presence of large amount of dust and broken up soil and coal powder. It is also likely to be contaminated due to excessive plying and cleaning of heavy vehicles and machineries. At the time of rainy season run off water to be extracted from the mine and released to the

natural drainage system. This water if contaminated or polluted will also pollute the natural water source. Hence mitigation measures need to be taken in this respect.

Control of Air Pollution & Dust hazards

The mining process includes Blasting, Drilling, movement of heavy vehicles and machineries etc. These activities will produce large amount of dust and coal powder. Such dust mixed with coal powder will cause air pollution. This will create respiratory problems in wild animals. Large amount of dust will also settle on the grasses and other fodder plants making these plants/grasses unpalatable. Specified measures needs to be taken to minimize this hazard

Control of Noise pollution

The Environmental Management Plan sets out that, there will be no impact of Noise produced in the Mining process. The Noise Levels are proposed to be kept within permissible limits. However operation of heavy machinery and Blasting in the mining area will produce large amount of sound which may cause disturbance to wild animals. So necessary mitigate measures will be taken to control it.

Waste Management

Due to various activities in the mining & beneficiation process, movement of large number of work force and vehicles within the mining area, a large quantity of garbage will be generated within the mining area. The Garbage includes Solid Wastes such as over burden, mine waste, sub-grade ore. Besides some amount of Bio degradable waste and Hazardous waste such as used oil, used batteries, oily sludge, filter materials containing oil are likely to be generated within the project area.

These dangerous materials will create pollution leading to various health problems for wild animals. So, proper handling & Management is required to avoid such contamination/pollution.

Preventive steps for the animals not to fall in the Mine Pits

The mine pits are dug with very steep slopes. It is necessary to take preventive steps so that, the wild animals/ domestic animals do not fall in the mine pits.

Man animal conflict

Due to reduction of habitat, additional biotic interference will be exerted in the Impact Zone which will create disturbance. There will also be shortage of food. The animals are therefore likely to invade cultivated lands and human habitation which will result in man-animal conflict and revengeful attitude of the people. Steps need to be taken to reduce

man animal conflict and ameliorate the revengeful attitude.

b) Strategies to mitigate and minimize adverse impacts:

The strategies for preparation of Wildlife Conservation Plan will therefore be as follows:

1. Project area: - The project area will normally not be a suitable habitat for large and medium animals. However, some small animals and birds will still continue to stay within the area. Besides steps are to be taken for protection of straying animals.
2. Impact Zone: - Within the Impact zone safe habitat needs to taken for all the available animals which are either existing within the Impact Zone or migrating from the project area. Therefore, habitat development, protection and reduction of man-animal conflict will be given due importance.

The strategies to be adopted for mitigation & minimizing the adverse impact of mining & other allied activities have been discussed in chapter – 4 & 5

CHAPTER –4

PROPOSED MANAGEMENT STRATEGIES WITHIN PROJECT SITE

(To be implemented by the project proponent)

Due operation of various mining activities the Wildlife present within the lease area will be threatened. Besides the Wildlife habitat is reduced to the extent of forest area (126.401 ha) involved. The Wildlife Management Plan therefore aims at providing safe passage to the existing wild animals in the lease area to the nearby forest areas. In spite of the project activities some small animals will continue to live in the project area. Certain measures are therefore required to be under taken within the mining area.

The Environmental Management Plan prescribes certain control measures for conservation of Flora & Fauna. These are:

- Enhancement of Forest area due to biological reclamation, arboriculture/afforestation, green belt / avenue plantation.
- Water body created in the mine pits.
- Zero discharge or release of treated water.
- Afforestation within the project area.

This aspect is kept in view while preparing the current Wildlife Management Plan.

a) Interventions to be implemented by the project authorities inside the project area with suitable justifications

Basing on the perceived threats to wildlife as per the foregoing chapter, the Management Plan is prepared to address almost all such threats. The mining area as well as the Impact Zone will be treated for habitat improvement so that, more fodder and water will be available for the wild animals.

Safe passage to Existing Wildlife

It is very important to save the existing wild animals available within the lease area and to divert them to safer locations. It can be possible to achieve such objective by commencing the mining activities from locations situated away from the Forest areas and allowing these animals to shift to the adjoining forest areas. There are several Reserved Forests within the Zone of Influence. Hence the Wild animals present within the Lease area will find their way to nearby Forest areas.

Restoration of habitat:

Total 131.812 ha of land for mining and ancillaries activities will be disturbed. The

original shape and vegetation during the mining operation from the allotted mining lease area will be changed. However the Safety zone along the Lease Boundary and existing roads outside the project area will remain unchanged. The proposed Reclamation and Afforestation will be carried out in phased manner over 131.812 ha disturbed area. Besides the gap plantation program will be carried out in the safety zone area along the mine boundary and village road over 6.755 ha of forest and non-forest land. It has been proposed to take up gap plantation in the safety zone area from the starting year of the mine operation and reclamation and afforestation will be start from the 6th year of the mine operation in mine pit area. Out of 131.812 ha, 40.081 ha will be proposed to be back filled and then after afforestation will be carried out and 42.761 ha will be proposed to be bench plantation using surface layer of benches top cover of benches by 6" top soil. Further in the mined out area the surface layer will be covered with topsoil stored elsewhere and planting will be done with care to achieve good percentage of survival. In order to rehabilitate the area to appropriate wildlife habitat, gradual development of the area is necessary, so that, after the mine closure the area can be developed in to a good wildlife habitat.

In order to rehabilitate the area to appropriate wildlife habitat, gradual development of the area is necessary, so that, after the mine closure the area can be developed in to a good wildlife habitat.

Soil and water conservation

As the mining activities involve digging of large pits, there will be substantial loss of moisture. There will also be large scale soil erosion due to mining activity. Most of the area will be covered for mining activity and mining pit will be dug excluding the safety Zone. It is not practicable to take up any Soil and Water conservation activity within the mining area. However in the safety zone the rain water will be diverted in easy gradient channels to the settling tanks to cause minimum soil erosion. This provision has been made in the Mining Plan as well as Environment Management Plan. Hence no separate provision is being made for this. The OB dumps where soil erosion rate is anticipated to be very high will be stabilised by planting of trees and grass. Such provision is being made in the Mining Plan; hence no separate provision is made in this plan.

There is a provision of Plantation of 14000 indigenous tall seedlings in blanks areas @ 2800 plants per year in urban plantation mode to increase green cover in lease area. The estimated

cost is Rs 71.442 Lakhs.

Apart from the above there will be distribution of seedlings to adjacent villagers / VSS to increase green cover @ 10000 nos. per year for 10 years. **The budget provision is Rs 35.00 lakhs** @Rs.35.00 per 18 month old seedlings.

Control of Dust

Spreading of huge amounts of dust causes air pollution which affects more to the human beings and the workers engaged in the mining activity, besides creating problems for the wild animals. Therefore, dust control is a major activity in the mining process. Dust generation cannot be completely eliminated, but attempt is to be made to reduce the quantum of dust in the mining process. The steps proposed for control of dust are:

- All the drills will be provided with well-designed dust extraction/suppression system and wet drilling practice is to be adopted.
- Blasting operation will be designed to produce minimum dust.
- Use of optimum amount of explosive so as to produce minimum dust.
- Use of sprinklers and dust suppression units at the time of loading, transportation and handling of ore and over burden.
- Regular maintenance of HEMMs and other equipments.
- Green belt to be provided around the quarry, workshop complex, residential colony and avenue plantation to be taken up along the haul roads and other roads apart from the safety zone.

Dust control measures have been proposed as compliance to Environmental Impact Assessment and therefore special provision is not being made for this.

Control of water pollution

Water pollution is the most important factor in mining process. Huge quantities of water will be generated every day along with slurry which is to be removed from the mining pits. In addition large quantities of contaminated water due to cleaning of vehicles and machineries, dumping of Garbage etc. will also be generated.

The water pollution will be controlled by treatment of water before releasing the same in to the natural drainage system. The discharged water will be collected in sump pits and channelled to sedimentation pond and effluent treatment plant. Treated water will be used for dust suppression on haul roads, washing of dumpers and dozers etc. The following steps are taken to control water pollution:

- Waste water generated in the work-shop and vehicle servicing/machinery servicing units will be channelled through oil & grease tap and settling tanks.
- Provision of septic tanks, soak pits and Sewage Treatment plant installed for domestic effluents.
- Mine discharge water will be treated and re-used.
- Garland drains will be provided around OB dumps and the water channelled through settling tanks.
- Regular monitoring will be done and corrective steps shall be taken when required.

Oil and Grease recovered manually will be stored in drums and auctioned. Surface runoff will be channelled through sedimentation ponds to settle the suspended materials. The treated water will be diverted to the natural drainage system.

All these measures have been proposed in the Environment Management Plan and therefore special provision is not made for this.

Noise control

The following measures will be taken to keep the noise at the minimum possible level:

- Proper designing of plant & machinery by providing in-built mechanisms like silencers, mufflers and enclosures for noise generating parts and shock absorbing pads at the foundation of vibrating equipment.
- Silencers provided where necessary.
- Routine maintenance of equipment,
- Enclosures for crusher house, etc.
- Rational deployment of noise generating plant and machinery.
- Greenbelts are created around the quarry, infrastructure sites, service building area and avenue plantation along the haul roads to absorb Noise.
- HEMMs are installed/ kept with sound proof cabins.
- Provision of isolation for vibrating equipments (both fixed and mobile).
- Blasting is restricted to a particular time during the day (preferably shift change time) so as to cause minimum panic to wild animals. Night blasting will be avoided.
- Regular monitoring of noise levels at various points.

Lighting

The core area of the mining activity will be sufficiently illuminated. Such illumination detracts the animals from the core mining area, which would otherwise be dangerous to their lives.

The use of vehicular headlights which disturb the animals is restricted and only dippers are allowed within the mining area.

These activities have been included in the mining process and hence no special funds are required.

Over burden Management

The top soil and other mine waste constitute the overburden. These materials will stored separately for back filling of mine pits as per mine closure plan. The OB dumps will surrounded by retaining walls followed by Garland drains. Washing away of the top soil will controlled by providing retaining wall around the dump and adopting dump stabilisation methods. The back filled area will be technically and biologically reclaimed. The steps taken in this regard are as follows:

- Overburden will be dumped at designated location.
- Loose soil and Overburden will be promptly lifted to the designated location.
- Proper Terracing will be done keeping in view the angle of Repose.
- Dump stabilisation will be done by planting of grasses and other suitable species.
- The dumps will be surrounded by retaining walls to control washing away of soil.
- Garland drains will be provided around the retaining walls leading to settling tanks, to settle the washed away soil/silt etc.
- Check dams to be provided along the natural drainage system to control soil erosion.
- The size of the garland drains will be 1m wide and 0.5m deep. The water percolated through the wastes will be drained to the garland drains and then to settling tanks

Physiographic change of Habitat (Land Management)

Some physiographic change is bound to take place after the closure of mine. The available top soil and overburden will not be sufficient to fill up the mine pits. In order to address this problem, a systematic procedure will be adopted at the time of back filling.

- Refilling with the available OB should be done in a sequential manner. Only after one pit is refilled completely, refilling of the next pit will be taken up. Partial refilling is to be

avoided.

- One of the exhausted pits will be used as storage area for tailings from beneficiation plant.
- Some of the mine pits will have to be left as such which can serve the purpose of water body. In such cases the gradient of the pit wall will be kept at 15° slope or 1:6. This will help the animals to use the water body. One passage of gentle slope will be done in each water body for easy movement of wild animals. Besides, the water body will be used for development of aquatic fauna.

Garbage Management

Since Garbage not only creates problems for the wild life but it also creates problems for mining activity. Particularly non-degradable materials like polythene bags etc. pose a lot of problem for the machineries as well as Wild animals. Hence proper garbage management is also an important activity in mining process. Some of the steps to be taken within the mining area have been indicated under water pollution.

The additional steps which are to be taken for Garbage management are as follows.

(a) Entry of non-degradable materials which are likely to produce garbage such as polythene bags, aluminium foils, tin foils etc. are restricted in to the Mining area.

(b) Un-avoidable generation of hazardous materials such as used oils, parts of machineries and equipments are promptly collected and kept at secluded places for disposal.

The oily sludge generated will be stored or transported in leak proof containers. The area over which oil/grease is handled will be kept effectively impervious. Any wash off from the oil/grease handling area or workshop will be drained through impervious drains, collected in specially constructed pit and treated appropriately before releasing it to the natural drains.

(c) The non-degradable materials if any are sent for recycling.

(d) The Garbage generated in the Mining area are regularly collected and segregated in-to Bio-degradable and non-degradable materials.

(e) The Bio-degradable substances are put in the Compost pits for conversion in-to manure. The Manure obtained from these pits will be utilised for plantation purpose.

Garbage management is an important activity as per provisions of Environmental Management Plan. Hence no separate provision is made for this.

Management Plan. Hence no separate provision is made for this.

Fall of animals in the mining pits.

In order to prevent accidental fall of animals in the mine pits the following steps shall be taken.

(a) The Executives and the Supervising staff will be educated and motivated to collect information regarding presence of wild animals in the mining area. In case any such animal is noticed it will be driven away to the nearest forest.

(b) There will be large scale activities within the mining area and it will be sufficiently illuminated with bright light so that the wild animals will avoid the area.

(c) In-spite of the precautions taken, in case of accidental fall of any wild animal in the mining pit, the workers will be educated to rescue the animal immediately and further inform the local Forest authorities for their advice

(d) Solar electric fencing along the mine pit boundary over 2.529 kms @ 5.93 lakh/km with maintenance. Estimated cost is around 15.0 Lakhs and an amount of Rs.5.00lakhs is provided for maintenance. **Total cost Rs.20.00 lakhs.**

Creation of Awareness

The user agency will create awareness in the villages around the mining area. The following activities will be undertaken.

- Distribution of Leaflets.
- Organization of Padayatra.
- Essay, Debate & Drawing competition in Schools & Colleges.
- Street plays/Dance Drama.
- Hoardings will be fixed at prominent place with illustration of this precautionary measures.

The user agency will incur expenditure of aprox. **Rs.20.00 lakhs (Rs.2.0 lakh annually)** for the purpose during the life of the mine.

Promotion of Eco-Development Activities for 10 years

It is proposed to take up eco-development activities in the area to increase Eco-Tourism. There is a provision of **Rs 30.00 lakhs** towards such activities for 10 years.

Rescue Van

There is a provision towards supply of Rescue van having cost **Rs 25.00** Lakhs & Provision for Driver, Fuel and Maintenance for 10 years @4.00 lakhs/year is **Rs.40.00** Lakhs.

Vehicle for RCCF, Rourkela

For the monitoring purpose one four wheel vehile will be provided to RCCF, Rourkela having estimated **cost of Rs 25.00 lakhs**. There is a provision of **Rs 40.00 Lakhs** towards fuel & maintenance for 10 Years

Vehicle for PCCF, Wildlife

For the monitoring purpose one four wheel vehile will be provided to RCCF, Rourkela having estimated **cost of Rs 25.00 lakhs**. There is a provision of **Rs 40.00 Lakhs** towards fuel & maintenance for 10 Years

Rescue Centre for Snakes and other Reptiles:

It is proposed to establish one rescue centre for Snakes and other Reptiles. The proposed cost is Rs.15.00 lakhs.

Equipments to Monitor Elephant movement:

It is proposed to deploy Drones fitted with night vision equipments to monitor the movement of elephants. An amount of **Rs.30.00 lakhs** is proposed for the purpose.

Mobile Veterinary Unit:

It is proposed to establish one Mobile Veterinary unit for on the spot treatment of animals such as elephants etc. An amount of Rs.40.00 lakhs is proposed for the Vehicle and equipments.

Contingency

This fund is for any emergency like situation. It is proposed to keep a provision of **Rs.7.00** lakh for the purpose.

Total Financial provision for the project proponent for the period of 10 years is indicated below.

B. FINANCIAL FORECAST

The cost estimate for different activities for the project area is given below:

Sl. No.	Particulars	Estimated cost (In lakhs)
1.	Plantation of 14000 indigenous tall seedlings in blanks areas @ 2800 plants per year in urban plantation mode to increase green cover in lease area. @5,10,300/- per 1000 plants.	71.442
2.	Distribution of grafted fruit bearing seedlings in the adjacent villages through VSS @ 10000 nos. per year for 10 years @35/-/seedling.	35.00
3	Solar electric fencing along the mine pit boundary over 2.529 kms @ 5.93 lakh/km with Maintenance.	20.00
4	Creation of Awareness for conservation of forest and wildlife.	20.00
5	Promotion of Eco-Tourism activities for 10 years.	30.00
6	Supply of Rescue Van. Provision for Driver, Fuel and Maintenance for 10 years.	25.00 40.00
7	Supply of 1 four wheel vehicle for use of RCCF, Rourkela for monitoring purpose. Provision for Fuel and Maintenance for 10 years.	25.00 40.00
8	Supply of 1 four wheel vehicle for use of PCCF, WL, Odisha for monitoring purpose. Provision for Fuel and Maintenance for 10 years	25.00 40.00
9	Rescue Centre for Snakes and other Reptiles.	15.00
10	Equipments to Monitor Elephant movement: It is proposed to deploy Drones fitted with night vision equipments to monitor the movement of elephants.	30.00
11	Mobile Veterinary Unit: one Mobile Veterinary unit for on the spot treatment of animals such as elephants etc. An amount of Rs.40.00 lakhs is proposed for the Vehicle and equipments.	40.00
12	Contingency	7.00
	Total :-	**463.442**
	20% escalation	92.688
	Total	**556.130**

Countersigned

Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

These activities will be taken up by the project proponent. The expenditure on other activities such as Dust control, Noise control, Water treatment, lighting, Waste Management, general watch and ward etc. have been provided either in the Mining Plan or in the Environmental Impact Assessment & Environmental Management Plan, hence those expenditures are not included in this estimate.

b) Locations (preferable with GPS coordinates) of the proposed interventions and maps overlaid in the proposed land use plan map

The location of proposed interventions particularly location of solar electric fencing has been indicated in the land use Map (Plate No -IV).

GHORABURHANI- SAGASAHI IRON ORE BLOCK OF
M/s. ESSAR STEEL INDIA LTD

Sarangi & Ray Eco Consultants
Plot No-2134, Baramunda
Bhubaneswar-751003

ESSAR STEEL INDIA LIMITED
AUTHORISED SIGNATORY

Countersigned

Divisional Forest Officer
& Wildlife Warden
BONAI DIVISION

e) Relevant provision of environment management plan for the project and the interventions overlapping in nature are to be specified.

The interventions undertaken as per the environment management plan have been described as above. The relevant provisions are indicated below.

1. Soil & water conservation (described in Chp. no - 4 of the Environment Management Plan)
2. Control of dust (described in Chp. no - 4 of the Environment Management Plan)
3. Control of water pollution (described in Chp. no - 4 of the Environment Management Plan)
4. Noise control (described in Chp. no - 4 of the Environment Management Plan)
5. Overburden management (described in Chp. no - 4 of the Environment Management Plan)
6. Garbage Management (described in Chp. no - 4 of the Environment Management Plan)

d) Proposed Plan period

This plan is proposed for a period of 10 years. However if necessary, interim revision of this plan can be taken up depending on the actual requirement. The proposed mitigation measures are therefore:

CHAPTER – 5

PROPOSED MANAGEMENT STRATEGIES WITHIN THE PROJECT IMPACT ZONE

The project area involves diversion of 126.401 ha forest area for mining and ancillary's purpose. The project impact could extend to the areas lying beyond the other mining areas. Therefore, the congregation of wild animals is likely to increase within the surrounding Reserve Forest areas. These animals will therefore be susceptible to greater threats. The Management Plan therefore aims at reducing such threats.

Although the impact zone is normally considered as the area situated within 10.00 km radius, due to presence of other mines along this project area the Impact Zone may be slightly more than the standard Impact Zone.

The management strategy for the impact zone will therefore be as follows.

- Habitat Improvement.
- Reducing man-animal conflict.
- Habitat/Forest protection.
- Reducing Forest dependence.
- Others.

Interventions to be adopted by the Divisional Forest Officer in the project impact area (buffer zone of about 12.70 KM or beyond around the project boundary). This will include the habitat improvements measures to reduce/ameliorate the human animal interface conflict & the measures to facilitate the movement of mega fauna across the manmade linear infrastructures causing hindrance in their movement

The project area adjoins 71 no's of working & none working mines and there for the impact area has been estimated to be with radius of 12.70 Km & accordingly this plan has been prepared.

I)Habitat Improvement

It is proposed to improve the wild life habitat within the Impact Zone with the following activities.

(a) Improvement of Forest area: - The Forests are gradually getting depleted and the cover for Wildlife is getting reduced. It is necessary that, the Forest cover is improved so as to provide proper habitat for the wild animals and also to produce adequate fodder.

Selection of site for such habitat improvement is very important. It is proposed to develop

the habitat over 400 ha. area by taking up cultural operations in RF / PRF of Koira range.

The Working Plan prescriptions for Improvement Working Circle is:

As the crop is immature and in pole stage, it is recommended that giving adequate protection against illicit removal, fire and grazing would help it to establish in to good mature stock in future. Therefore, only basic minimum inputs and tending operations are required without any commercial activity. No felling of trees of any species shall be carried out. The following interventions are proposed:

(i) Silvicultural operations will be taken up along with tending operation and planting/Sowing of fodder grasses along with other soil and moisture conservation measures over 400 ha of Forest area. The expenditure will be Rs.99.94 lakhs @24984/- per Ha.

(ii) Planting of tall seedlings of Ficus spp.: It is proposed to plant 1000 nos. of tall seedlings of Ficus species along the Nala banks and peripheries of the RF to provide fodder and shelter for the animals.

The cost for this will be: 1st year @300/- = Rs. 3,00,000/-
2nd year maintenance @200/- = Rs.2,00,000/-
Cost of Iron Gabion @1600/- = Rs.16,00,000/-
Total Rs.21.00 lakhs.

(iii) Soil & Moisture Conservation: SMC measures with top to bottom approach with Staggered trench / LBCD / Percolation Pit over 30 ha. is around **Rs.21.716** Lakhs.

(iv) Creation of Water bodies:- In order to contain the wild animals in a safe habitat, it is proposed to make provision for availability of water during summer season. It is proposed to create Eight numbers of water bodies at strategic locations @5.60lakh each. Total cost of **Rs.44.80** lakhs. Size 60m x 40m x 3 m. Coordinate of the proposed water bodies are 21° 58' 44.099"N - 85° 20' 00.96"E and 21° 55' 44.852"N - 85° 17' 07.169"E.

ii) **Wildlife Protection**:

(a) **Permanent Protection Camp**:

Construction of two numbers of permanent protection camp with deep tube well / bore well, solar light system and digging of EPT (200 feet) around the protection camp along with fixing Iron Gate. Budget towards this facility is Rs.20.00 Lakhs per camp. Total provision is **Rs.40.00** lakhs.

every year for a period of 10 years. The lessee proposes to bear the cost of 10 (ten) nos. of fire watchers for the adjoining forest areas during the summer months every year during the proposed period. The total cost on this account will be (10 x 8,589/- x 5mt x 10=) **Rs.42.95** lakhs.

- **Hiring of vehicle:**

A vehicle needs to be hired during the summer season to be deployed in fire fighting activities. The proposed expenditure is @36000/- per month and the total cost is **Rs. 18.00** lakhs.

- **Fire fighting Equipments:**

These Fire watchers will also be equipped with certain tools to attend to emergencies. The user agency therefore proposes to contribute **Rs.8.500** lakh for such fire fighting equipment.

- **Provision of incentive to Forest fringe villages.**

In some cases the protection of forest by the VSS in the area is very encouraging. The VSS/ Villagers will be encouraged to prevent Forest Fire through Incentive System. Awareness will be created among the forest fringe villages to prevent forest fire. The village which can successfully prevent forest fire in the specified patch of the forest near their village will be rewarded with incentive. The user agency proposes to bear the cost of incentive for 10 villages within the Impact Zone and the amount will be deposited with the D.F.O./Forest Department as the case may be. The cost will therefore be **Rs. 20.00 lakhs** @ Rs 20000/- per village/per year.

Total cost of Fire Protection is **Rs.89.45 lakhs.**

v) **Cattle Immunization:**

Cattles in village area used to face different type of Bacterial & viral disease throughout the year. The user agency has proposed **Rs. 10.00** Lakhs towards cattle immunization with provision of feeding to staff.

vi) **Incentive/Rewards to informer**

It is necessary to collect regular information regarding the poachers, smugglers

and wildlife crime. The informers will be rewarded for their participation. It is proposed to keep a budget provision of **Rs. 20.00** Lakhs for the purpose.

vii) **Supply of alternate fuel**

There is a provision of supply of alternate fuel like LPG gas, Gobar gas to local inhabitants. The budget provision is **Rs 10.00** Lakhs @1.0 Lakh per year.

viii) **Training to VSS/SHG and Villagers for Livelihood activities**: Some of the families/local youths/SHGs will be supported to adopt alternate livelihood activities, such as Apiculture, Poultry, Sericulture etc. Necessary training, Technical and Logistic support will be extended to them. The budget provision is **Rs 30.0** lakhs.

ix) **Training to Forest Department Staff:**

It is proposed to impart appropriate training regarding Forest/Wildlife Protection, and dealing with similar cases. An amount of **Rs.25.00** lakhs is proposed for the purpose

x) **Monitoring and Evaluation**

The implementation of this plan will have to be closely monitored and evaluated during 4^{th} year and 8^{th} year through independent person/agency. An amount of Rs.5.00 lakh is provided for the purpose.

xi) **Discretion of Forest Department**

Although the above proposals are submitted for the mitigation of various threats to Wildlife and its habitat, the Forest Department is free to make alteration of the proposal or to divert the proposed activities to any other suitable locations.

xii) **Undertaking:**

The project proponent undertakes to bear the cost of price escalation and/or differential wages in case of price rise or wage hike.

xii) Undertaking:

The project proponent undertakes to bear the cost of price escalation and/or differential wages in case of price rise or wage hike.

FINANCIAL FORECAST

Sl. No.	Particulars	Estimated cost (In lakhs)
	Habitat Improvement	
1.	Silvicultural operations will be taken up along with Sowing of fodder grasses along with other soil and moisture conservation measures over 400 ha of Forest area. @24984/- per Ha. with wage rate of Rs.286.30	99.94
2.	Planting of 1000 nos of tall seedlings of Ficus spp. along with provision of Iron Gabions	21.00
3.	SMC measures with top to bottom approach: Staggered trench / LBCD / Percolation Pit over 135 ha. Staggered Trench @ Rs.53,076/- per ha. LBCD 3 Mt span @ Rs.16,744/- (30 nos.) Percolation Pit @ Rs.77/- per pit (1000 nos.)	21.716
4.	Creation of Eight Nos. of Water Body within the Treatment area @Rs.5.60 lakh	44.800
5.	Construction of two numbers of permanent protection camp with deep tube well / bore well, solar light system and digging of EPT (200 feet) around the protection camp along with fixing Iron Gate.	40.000
6.	Wildlife Protection Wages of Anti-depredation Squad, consisting of 10 members @14,11,200/- for 1 year and provision of hired vehicle and equipments, and other contingencies	199.036
7	Solar light to be provided in villages frequented by elephants.	60.000
8.	Prevention of Forest Fire Wages of Fire Protection Squad consisting of 10 members for 10 yrs, @8,589/- for 5 months/year (Rs.42.95lakh)	89.45

Sl. No.	Particulars	Estimated cost (In lakhs)
	Hiring of vehicle @36,000/- per month (Rs.18.00 lakh) Fire Fighting Equipments (Rs.8.5 lakh) Incentive to Forest Fringe Villages, 5 nos. (Rs.20.00 lakhs)	
9	Cattle Immunization	10.000
10.	Reward/Incentive to informer (2Lakh X 10 years)	20.000
12.	Supply of alternate fuel to the local inhabitants (1 lakh X 10 years)	10.000
13.	Training to VSS/SHG and Villagers for livelihood programme such as Apiculture, Poultry, Sericulture etc.	30.000
14.	Training to Forest Department Staff regarding Forest/Wildlife Protection, and dealing with similar cases. An amount of Rs.25.00 lakhs is proposed for the purpose.	25.00
15	Monitoring & evaluation	5.00
	TOTAL :-	**675.942**
	20 % extra for escalation	135.189
	G. TOTAL :-	**811.131**

The total estimate of this plan is therefore (**Rs.556.130** lakhs + **811.131** lakhs) = **Rs.1367.261 lakhs**. Out of this amount the project proponent will take up the activities for Rs.**556.130** lakhs and **811.131** lakhs will be deposited with the D.F.O/ Forest Department for taking up different activities within the Zone of Influence.

a) **Locations (preferable with GPS coordinates) and Maps** of areas of the proposed interventions. Such maps also show location of above man made infrastructures and the ameliorative measures such as under/over passes ramps etc.

The location of linear & man made infrastructure is indicated in plate no.

Countersigned
Regional Chief Conservator of Forests
Rourkela Circle, Rourkela

Approved
Principal Chief Conservator of Forests
(Wildlife) & Chief Wildlife Warden
Odisha, Bhubaneswar

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Countersigned
Divisional Forest Officer
& Wildlife Warden
BONAI DIVISION

The total estimate of this plan is therefore (Rs.400.130 lakhs + Rs.963.992 lakhs) = **Rs.1364.122 lakhs**. Out of this amount the project proponent will take up the activities for Rs.400.130 lakhs and Rs.963.992 lakhs will be deposited with the D.F.O/ Forest Department for taking up different activities within the Zone of Influence.

a) **Locations (preferable with GPS coordinates) and Maps** of areas of the proposed interventions. Such maps also show location of above man made infrastructures and the ameliorative measures such as under/over passes ramps etc.

The location of linear & man made infrastructure is indicated in plate no.

b) **Monitoring & evaluation arrangement for the activities under taken**

Provision has been kept in this plan for taking of monitoring & evaluation activities in the fourth year & eighth year during the plan period.

c) **Plan Period:**

This plan is proposed for a period of 10 years. However, if necessary, interim revision of this plan can be taken up depending on the actual requirement. The proposed mitigation measures are therefore:

CHAPTER –6

The Ten year cost schedules for project proponent & forest department is given below.

Year	Amount required in lakhs	
	Project proponent	DFO/Forest Department
1	197.604	217.8910
2	24.780	111.2156
3	50.040	75.9426
4	42.506	51.3326
5	29.856	46.9876
6	33.856	51.8626
7	21.200	29.4626
8	21.200	29.4626
9	21.200	29.4626
10	21.200	31.9626
Total	**463.442**	**675.942**
20%Escalation	**92.688**	**135.189**
Grand Total	**556.130**	**811.131**
COST OF THE PLAN	1367.26 Rs.1366.260 lakhs	

Maps/appendices/plan

01	Location Map on Topo-sheet with Linear Infrastructures	Plate No. I
02	Location Map Showing Other Projects within the project impact Area	Plate No. II
03	Existing Land use plan of the project	Plate No. III
04	Proposed land use Plan	Plate No IV
05	Topo Map showing Man-Animal Conflict and Mega wild life Movement areas	Plate No V
06	Location Map showing the distance of the Project Area from National parks, Sanctuaries and elephant/ Tiger reserve	Plate No VI
07	Post Mining land use Plan	Plate No VII

YEARWISE FUNDS REQUIREMENT FOR ACTIVITIES WITHIN THE PROJECT AREA

Sl. No.	Particulars	Year wise requirement of funds in Rs. lakhs										
		1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr	9th yr	10th yr	Total
1	Plantation in blanks 14000 seedlings	1.404	3.580	28.840	21.306	8.656	7.656	0	0	0	0	71.442
2	Seedling distribution	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	35.00
3	Solar Electric fencing	15.00	0	0	0	0	5.00	0	0	0	0	20.00
4	Creation of Awareness	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	20.00
5	Promotion of Eco-Development Activities	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	30.00
6	Cost of Rescue Van	25.00	0	0	0	0	0	0	0	0	0	25.00
7	Wages of Driver and cost of Fuel	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	40.00
8	One Four Wheeler Vehicle for the RCCF	25.00	0	0	0	0	0	0	0	0	0	25.00
9	Wages of Driver, Fuel and maintenance	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	40.00
10	One Four Wheeler Vehicle for PCCF(WL)	25.00	0	0	0	0	0	0	0	0	0	25.00
11	Wages of Driver, Fuel and maintenance	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	40.00
12	Rescue Centre for snakes	15.00	0	0	0	0	0	0	0	0	0	15.00

13	Provision of Equipments such as Drones fitted with night vision equipments	30.00	0	0	0	0	0	0	0	0	0	30.00
14	Formation of Mobile Veterinary Unit	40.00	0	0	0	0	0	0	0	0	0	40.00
15	Contingency	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	7.00
	TOTAL	**197.604**	**24.78**	**50.04**	**42.506**	**29.856**	**33.856**	**21.200**	**21.200**	**21.200**	**21.200**	**463.442**
	Cost escalation 20%	39.521	4.956	10.008	8.501	5.971	6.771	4.240	4.240	4.240	4.240	92.688
	GRAND TOTAL	**237.125**	**29.736**	**60.048**	**51.007**	**35.827**	**40.627**	**25.440**	**25.440**	**25.440**	**25.440**	**556.130**

YEARWISE FUNDS REQUIREMENT FOR ACTIVITIES BEYOND THE PROJECT AREA (IMPACT AREA)

Sl. No.	Particulars	Year wise requirement of funds in Rs. lakhs										
		1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr	9th yr	10th yr	Total
1	Silvicultural operation over 400ha @ 24984/ha	10.812	53.753	20.480	10.870	4.025	0	0	0	0	0	99.94
2	Planting of 1000 nos of Ficus tall seedlings	3.00	2.00	0	0	0	0	0	0	0	0	5.00
	Iron tree guard	16.00	0	0	0	0	0	0	0	0	0	16.00
3	Soil & Moisture conservation	21.716	0	0	0	0	0	0	0	0	0	21.716
4	Creation of Water bodies - 8 nos.	22.40	0	0	0	0	22.40	0	0	0	0	44.80
5	Construction of Two numbers of Permanent Protection Camp	40.00	0	0	0	0	0	0	0	0	0	40.00
6	Wages of Anti-depredation Squad 10nos @14,11,200/- per yr. Hire charges of Vehicle, POL, Equipments, Medical claim, uniforms and other contingencies	19.9036	19.9036	19.9036	19.9036	19.9036	19.9036	19.9036	19.9036	19.9036	19.9036	199.036
7	Solar Electric Fencing	30.00	15.00	15.00	0	0	0	0	0	0	0	60.00
8	Wages of Fire Watchers- 10 nos, 5months/year @8400/-	4.259	4.259	4.259	4.259	4.259	4.259	4.259	4.259	4.259	4.259	42.590
9	Hiring of Vehicles @33,000/- /per month	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	1.80	18.000
10	Fire Fighting Equipments	8.500	0	0	0	0	0	0	0	0	0	8.86
11	Incentive to Forest Fringe Villages	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	20.000
12	Cattle Immunization	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	10.000
13	Rewards to Informers	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	2.000	20.000

Sl. No.	Particulars	Year wise requirement of funds in Rs. lakhs										
		1st yr	2nd yr	3rd yr	4th yr	5th yr	6th yr	7th yr	8th yr	9th yr	10th yr	Total
14	Supply of alternate Fuel for Forest Fringe Villages	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	10.000
15	Training of VSS/SHG and Villagers for livelihood programme.	6.000	6.000	6.000	6.000	6.000	0	0	0	0	0	30.000
16	Training of forest Department Staff	5.00	5.00	5.00	5.00	5.00	0	0	0	0	0	25.00
17	Monitoring & Evaluation	0	0	0	0	2.500	0	0	0	0	2.500	5.000
	TOTAL	**217.8910**	**111.2156**	**75.9426**	**51.3326**	**46.9876**	**51.8626**	**29.4626**	**29.4626**	**29.4626**	**31.9626**	**675.942**
	Cost Escalation 20%	43.5781	22.2431	15.1885	10.2665	9.3975	10.3725	5.8925	5.8529	5.8529	6.3925	135.189
	GRAND TOTAL	**261.4687**	133.4587	91.1311	61.5991	56.3851	62.2351	35.3551	35.1175	35.1175	38.3551	811.131

ANNEXURE - 1

भारत सरकार
खान मंत्रालय
भारतीय खान ब्यूरो
क्षेत्रीय खान नियंत्रक का कार्यालय

REGD PARCEL
ro.bhubaneswar@ibm.gov.in

No. MP-TM/02-ORI/BHU/2016-17 / ...

Plot No. 149, Pokharipur
Bhubaneswar – 751 020
Date: 11.07.2016

To

M/s Essar Steel India Ltd Ore Club,
Near Bank of India ATM,
Bhadrasahi Chowk,
Joda –Barbil High way,
Barbil, Keonjhar- 758035

Sub: Approval of Mining Plan of Ghoraburhani-Sagasahi Iron Ore Mine along with Progressive Mine Closure Plan (PMCP), over an area of 139.165 Ha. in Sundargarh district of Odisha State, submitted by M/s Essar Steel India Ltd under Rule 13 of MCR, 2016..

Ref: - i) Your letter No. Nil dated 29.04.2016 received on 12.05.2016.
ii) This office letter of even no. dated 16.05.2016.
iii) This office letter of even no. dated 30.05.2016.
iv) Your Qualified Person letter No. Nil dated 13.06.2016.
v) This office letter of even no dated 21.06.2016.
vi) Your letter No. Nil dated 04.07.2016.

Sir,

In exercise of the power delegated to me under Rule 13 (1)(a) of Mineral Concession Rules, 2016 vide Gazette Notification No. S.O. 1857(E) dated 18.05.2016, I hereby **Approve** the Mining Plan of Ghoraburhani-Sagasahi Iron Ore Mine along with Progressive Mine Closure Plan (PMCP), over an area of 139.165 Ha. in Sundargarh district of Odisha State, submitted by M/s Essar Steel India Ltd under Rule 13 of MCR, 2016. This approval is subject to the following conditions:

I. The Mining Plan is approved without prejudice to any other law applicable to the mine area from time to time whether made by the Central Government, State Government or any other authority and without prejudice to any order or direction from any court of competent jurisdiction.
II. The proposals shown on the plates and/or given in the document is based on the lease map /sketch submitted by the applicant/ lessee and is applicable from the date of approval.
III. It is clarified that the approval of aforesaid Mining Plan does not in any way imply the approval of the Government in terms of any other provision of Mines & Minerals (Development & Regulation) Act, 1957, or the Mineral Concession Rules, 2016 and any other laws including Forest (Conservation) Act, 1980, Environment

(Protection) Act, 1986 or the rules made there under, Mines Act, 1952 and Rule & Regulations made there under.

IV. Indian Bureau of Mines has not undertaken verification of the mining lease boundary on the ground and does not undertake any responsibility regarding correctness of the boundaries of the leasehold shown on the ground with reference to lease map & other plans furnished by the applicant / lessee.

V. Mineral Block map duly authenticated by ORSAC is considered for this approval as per Director of Mines, Government of Odisha letter No . MXIII-(b)-60/2015 – 5227/DM dated 04.06.2016.

VI. At any stage, if it is observed that the information furnished, data incorporated in the document are incorrect or misrepresent facts, the approval of the document shall be revoked with immediate effect.

VII. If this approval conflicts with any other law or court order/ Direction under any statute, it shall be revoked immediately.

VIII. Next Financial Assurance shall be due for submission on or before 31.03.2021.

Further, the Ghoraburhani Sagasahi iron ore block has been allotted to M/s Essar Steel India Ltd through competitive bidding by auction for captive use in their Integrated Steel Plant. Iron ore occurring in this area is mostly of high grade, e.g., average grade of iron ore as 55% Fe cut off is above 60%. This material constitutes about 80% of the ROM. Average grade of iron ore deposit in the area at 45% Fe threshold value is estimated at 62.25%.

The preferred bidder, as a captive user, has a steel plant at Hazira, Gujrat claimed to be an integrated steel plant. On verification of the document, it is observed that the preferred bidder's steel plant is reported to be integrated mostly through DRI route. This DRI plant reported to have been commissioned sometime in the 1990. As per the technical report of the DRI plant the acceptable feed grade to the plant is reported to be 64% Fe; in contrast to the acceptable feed grade to blast furnace of about 62% Fe, or even below it.

In view of above, the lessee has submitted mining plan with excavation proposal spreading into two different ore zones for mining high grade iron ore of 64% Fe content. This aspect of consuming only high grade ore has been looked into from the angle of conservation of mineral and therefore scrutiny comment was issued to modify the mining proposal. However, the applicant did not modify the proposal arguing that their plant needs iron ore of 64% Fe.

In view of above, it is established that:

a. The average grade of the deposit and that of the ROM would be 62.25% Fe.

b. Applicant plans to use only +64% Fe content iron ore.

Hence, in the interest of mineral conservation & environment friendly mining; as well as in the interest of maximising mineral revenue, this approval is further subject to the following special conditions:

i. The total ROM including mineral reject as indicated in Page 37 shall be taken out from the lease for dispatch and consumption.

ii. The royalty and other taxes would be as per Rule 39(7) of Mineral Concession Rules, 2016 and other rules made under the MMDR ACT'2015 and calculated on the basis of sale price published by IBM.

iii. In the interest of scientific mining, complete deposit shall be explored under UNFC-G-I and the ore body details shall be delineated in complete with its grade, boundary, incidence of different grades of ore in lateral and vertical direction etc. and the mining plan shall be modified accordingly.

भवदीय / yours faithfully,

Encl: - One copy of approved
Mining Plan

(M BISWAS)
क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

Copy for kind information to:-

1. Shri Pradeept Mohapatra and shri Sabyasachi Mohanty, Post Box No. 1, P.o- Joda, At – Unchabali, Barnehari, Dist – Keonjhar, Odisha – 758034.
2. The Director of Mines, Directorate of Mines, Government of Odisha, Heads of the Department Building, New Capital, Bhubaneswar- 751001, Odisha along with one copy of Mining Plan by **REGISTERED PARCEL**.

(M BISWAS)
क्षेत्रीय खान नियंत्रक / Regional Controller of Mines

By Speed Post

No. J-11015/192/2016-IA.II (M)
Government of India
Ministry of Environment, Forest and Climate Change
Impact Assessment Division
***

Indira Paryavaran Bhavan,
Vayu Wing, 3rd Floor, Aliganj,
Jor Bagh Road,
New Delhi-110 003

Dated: 16th January, 2017

To,

M/s Essar Steel India Ltd.
Ore Club, Bhadrasahi Chowk,
Near Bank of India ATM, Barbil,
District - Keonjhar,
Odisha - 758 035

Email pdmining@essar.com

Sub.:- **Ghoraburhani - Sagasahi Iron Ore with proposed production of 7.16 Million TPA of Iron ore (ROM) along with Crushing & Screening Plant and Beneficiation Plant with capacity of 6.7 Million TPA Capacity by M/s Essar Steel India Limited, located at village- Ghoraburhani, Sagasahi and Kaimang, Tehsil Koira, District Sundargarh, Odisha (MLA 139.165ha)- prescribing TOR regarding.**

Ref.:- Online proposal no. IA/OR/MIN/56152/2016

Sir,

This has reference to above mentioned online proposal for determining the Terms of Reference (TOR) for undertaking detailed EIA study for the purpose of obtaining Environmental Clearance in accordance with the provisions of the EIA Notification, 2006. For this purpose, the Proponent had submitted information in the prescribed format (Form-1) along with a Pre-feasibility Report.

2. The proposal is for Ghorabhurani – Sagasahi Iron ore block with proposed production of 7.16 Million TPA of Iron ore (ROM) along with Crushing & Screening Plant and Beneficiation Plant with capacity of 6.7 Million TPA Capacity in mine lease area of 139.165ha. The mine lease area is located at Ghorabhurani, Sagasahi and Kaimang villages, Koira tehsil of Sundargarh district of Odisha. The lease area is bounded by Latitude 21°56'08.83996" - 21°57'09.61656" North and Longitude 85°17'02.52096"- 85°17'48.99336" East and falls in Survey in India Topo Sheet No. 73 G/1 & 73 G/5. The allotted block is a highly rugged terrain, with elongated hills trending ENE-WSW direction, low mounds and narrow valleys. The highest elevation of ridges in the area is 745m. The low lying valleys occur at an elevation of around 600m.

3. The proposal of TOR was earlier considered in the EAC meeting held during September 19-20, 2016 wherein the Committee noted that there are discrepancies in

the online Form I and hard copy submitted in the Ministry. It was also observed by the Committee that 0.50 ha lease area had already been mined out as per land use pattern mentioned in the PFR and the Committee is of the view State Govt. of Mines and Geology may be requested to ascertain whether mining activities were carried out or not to check the violation, if any as per the provisions of E (P) Act, 1986 and F(C) Act.

4. The Project Proponent, vide letter dated 21.11.2016, has submitted the revised Form-I and PFR. The Directorate of Mines, Government of Odisha, vide letter dated 21.11.2016, *inter-alia*, mentioned that there are few old quarries/excavations of very low and negligible depth have been observed in the area of 0.5ha under question are very old and the depth of excavation therein is negligible. The excavations are presently covered with bushy outgrowth and vegetation. Therefore, it may not be proper to attribute the excavations over the said 0.5ha area to any type of mining operation in violation of the E(P) Act, 1986 and FC Act, 1980. Further, the area over 139.165ha in Goraburhani-Sagasai was not held under any mining lease earlier and therefore, no mining operation has been allowed by the State Government over the area as on date.

5. Govt. of Odisha has issued letter of Intent under Rule 10(2) of Mineral Auction Rules 2015 to M/s Essar Steel India Ltd. on 28th March'2016 for grant of Mining Lease for Ghoraburhani - Sagasahi Block. Project Proponent reported that Iron ore produced from this proposed ML area will be fully utilized in the Integrated Steel Plant of M/s Essar Steel India located at Hazira, Gujarat. The total mine lease area is 139.165ha. Out of which 126.401 ha is forest land and rest 12.764 ha non-forest land (private tenant land @ 3.257 ha; Government land @ 6.063 ha; and Gochar land @ 3.444 ha). Application for diversion of forest land for mining purpose is already made and under consideration with the State Government. Mining will be carried out by mechanized opencast method by removal of topsoil, drilling and blasting of ore zone, excavation, loading and haulage of run of mine ore. The total water requirement will be $3230m^3$ /day out of which $430m^3$/day is needed for mining, domestic & allied activities and $2800m^3$/day is needed as make up water for Beneficiation plant.The total resource of +45%Fe is estimated to be 98.61 Million tones and the mineable reserve is estimated to be 78.24 million tones. Considering this, the life of the mine is expected to be about 12 years.

6. The Project Proponent reported that there is no National Park, Wildlife Sanctuary, defense installation or sensitive area located within 10 km radius of the proposed mine. Project Proponent reported that in the 10km buffer zone, TopadihiNala - 3.1 km – N, KunduruNala-6.5 km – NE, SunaNadi–1.6 km – E, KalmangNala – 0.9 km – E. KakarpaniNala - 5.1 km – E, GenirajalaNala - 6.2 km - SE, TehereiNala - 2.9 km - SE, KhajurdihiNala - 6.3 km - S, KhuntachiraNala - 8.4 km - S, LekerapaniNala – 2.2 km – SW, ArchendaNala – 7.0 km – S, KaroNadi - 4.0 km – W are found. Few rain water drainage channels are passing through the lease area. Reserve forests like Lakrhaghat R.F – 4.8 – N, Siddhamath R.F - 4.0 km – NE, Baitarani R.F – 5.0 km – NE, Mendhamaruni R.F – adjacent to lease boundary – SW, Kathamala R. F - 4.0 km – SW, BhabaniPaharh R.F - 6.3 km - SW, Karo R. F - 3.3 km – NW, Ulihuru R.F - 5.5 km – NW are located within 10 Km radius. Orissa-Jharkand Inter State Boundary is located at about 7.5 km NW from the lease boundary.Total project cost is Rs. 998.72 Crores. Project Proponent reported that they had started collection of baseline data during October-December 2016 and requested to use the baseline data. The Committee agreed the same.

7. The proposal of Terms of Reference (TOR) was considered before the Expert Appraisal Committee (Non Coal Mining Sector) in its meeting held during **December 15-16, 2016** wherein the Committee prescribed the TOR for undertaking detailed EIA study. **This Standard TOR shall be subject to carrying capacity being conducted by NEERI.**

8. It is mentioned that the Chief Secretary, Government of Odisha vide letter dated 16.07.2016 has requested to considered the TOR proposal of M/s ESSAR Steel India Limited as the LOI has been given through competitive bidding. In this context, the Ministry has considered the request of Chief Secretary, Government of Odisha to consider the TOR subject to outcome of carrying capacity study.

9. The matter was examined in the Ministry and the undersigned is directed to say that the Ministry of Environment, Forest and Climate Change after accepting the recommendations of the EAC, hereby decided to accord the Terms of Reference for the above mentioned project. **This Standard TOR shall be subject to carrying capacity being conducted by NEERI.** Accordingly, the Project Proponent is requested to prepare and submit the EIA/EMP report based on the TOR prescribed which are as under:-

A. <u>Standard TOR</u>

1) Year-wise production details since 1994 should be given, clearly stating the highest production achieved in any one year prior to 1994. It may also be categorically informed whether there had been any increase in production after the EIA Notification 1994 came into force, w.r.t. the highest production achieved prior to 1994.

2) A copy of the document in support of the fact that the Proponent is the rightful lessee of the mine should be given.

3) All documents including approved mine plan, EIA and Public Hearing should be compatible with one another in terms of the mine lease area, production levels, waste generation and its management, mining technology etc. and should be in the name of the lessee.

4) All corner coordinates of the mine lease area, superimposed on a High Resolution Imagery/toposheet, topographic sheet, geomorphology and geology of the area should be provided. Such an Imagery of the proposed area should clearly show the land use and other ecological features of the study area (core and buffer zone).

5) Information should be provided in Survey of India Toposheet in 1:50,000 scale indicating geological map of the area, geomorphology of land forms of the area, existing minerals and mining history of the area, important water bodies, streams and rivers and soil characteristics.

6) Details about the land proposed for mining activities should be given with information as to whether mining conforms to the land use policy of the State; land diversion for mining should have approval from State land use board or the concerned authority.

7) It should be clearly stated whether the proponent Company has a well laid down Environment Policy approved by its Board of Directors? If so, it may be spelt out in the EIA Report with description of the prescribed operating process/procedures to bring into focus any infringement/deviation/violation of the environmental or forest norms/ conditions? The hierarchical system or administrative order of the Company to deal with the environmental issues and for ensuring compliance with the EC conditions may also be given. The system of reporting of non-compliances / violations of environmental norms to the Board of Directors of the Company and/or shareholders or stakeholders at large, may also be detailed in the EIA Report.

8) Issues relating to Mine Safety, including subsidence study in case of underground mining and slope study in case of open cast mining, blasting study etc. should be detailed. The proposed safeguard measures in each case should also be provided.

9) The study area will comprise of 10 km zone around the mine lease from lease periphery and the data contained in the EIA such as waste generation etc. should be for the life of the mine / lease period.

10) Land use of the study area delineating forest area, agricultural land, grazing land, wildlife sanctuary, national park, migratory routes of fauna, water bodies, human settlements and other ecological features should be indicated. Land use plan of the mine lease area should be prepared to encompass preoperational, operational and post operational phases and submitted. Impact, if any, of change of land use should be given.

11) Details of the land for any Over Burden Dumps outside the mine lease, such as extent of land area, distance from mine lease, its land use, R&R issues, if any, should be given.

12) A Certificate from the Competent Authority in the State Forest Department should be provided, confirming the involvement of forest land, if any, in the project area. In the event of any contrary claim by the Project Proponent regarding the status of forests, the site may be inspected by the State Forest Department along with the Regional Office of the Ministry to ascertain the status of forests, based on which, the Certificate in this regard as mentioned above be issued. In all such cases, it would be desirable for representative of the State Forest Department to assist the Expert Appraisal Committees.

13) Status of forestry clearance for the broken up area and virgin forestland involved in the Project including deposition of net present value (NPV) and compensatory afforestation (CA) should be indicated. A copy of the forestry clearance should also be furnished.

14) Implementation status of recognition of forest rights under the Scheduled Tribes and other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 should be indicated.

15) The vegetation in the RF / PF areas in the study area, with necessary details, should be given.

16) A study shall be got done to ascertain the impact of the Mining Project on wildlife of the study area and details furnished. Impact of the project on the wildlife in the surrounding and any other protected area and accordingly, detailed mitigative measures required, should be worked out with cost implications and submitted.

17) Location of National Parks, Sanctuaries, Biosphere Reserves, Wildlife Corridors, Ramsar site Tiger/Elephant Reserves/(existing as well as proposed), if any, within 10 km of the mine lease should be clearly indicated, supported by a location map duly authenticated by Chief Wildlife Warden. Necessary clearance, as may be applicable to such projects due to proximity of the ecologically sensitive areas as mentioned above, should be obtained from the Standing Committee of National Board of Wildlife and copy furnished.

18) A detailed biological study of the study area [core zone and buffer zone (10 km radius of the periphery of the mine lease)] shall be carried out. Details of flora and fauna, endangered, endemic and RET Species duly authenticated, separately for core and buffer zone should be furnished based on such primary field survey, clearly indicating the Schedule of the fauna present. In case of any scheduled-I fauna found in the study area, the necessary plan alongwith budgetary provisions for their conservation should be prepared in consultation with State Forest and Wildlife Department and details furnished. Necessary allocation of funds for implementing the same should be made as part of the project cost

19) Proximity to Areas ceclared as 'Critically Polluted' or the Project areas likely to come under the 'Aravali Range', (attracting court restrictions for mining operations), should also be indicated and where so required, clearance certifications from the prescribed Authorities, such as the SPCB or State Mining Dept. Should be secured and furnished to the effect that the proposed mining activities could be considered.

20) Similarly, for coastal Projects, A CRZ map duly authenticated by one of the authorized agencies demarcating LTL, HTL, CRZ area, location of the mine lease w.r.t CRZ, coastal features such as mangroves, if any, should be furnished. (Note: The Mining Projects falling under CRZ would also need to obtain approval of the concerned Coastal Zone Management Authority).

21) R&R Plan/compensation details for the Project Affected People (PAP) should be furnished. While preparing the R&R Plan, the relevant State/National Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs /STs and other weaker sections of the society in the study area, a need based sample survey, family-wise, should be undertaken to assess their requirements, and action programmes prepared and submitted accordingly, integrating the sectoral programmes of line departments of the State Government. It may be clearly brought out whether the village(s) located in the mine lease area will be shifted or not. The issues relating to shifting of village(s) including their R&R and socio-economic aspects should be discussed in the Report.

22) One season (non-monsoon) [i.e. March - May (Summer Season); October - December (post monsoon season) ; December - February (winter season)] primary baseline data on ambient air quality as per CPCB Notification of 2009, water quality, noise level, soil and flora and fauna shall be collected and the AAQ and other data so compiled presented date-wise in the EIA and EMP Report. Site-specific meteorological data should also be collected. The location of the monitoring stations should be such as to represent whole of the study area and justified keeping in view the pre-dominant downwind direction and location of sensitive receptors. There should be at least one monitoring station within 500 m of the mine lease in the pre-dominant downwind direction. The mineralogical composition of PM_{10}, particularly for free silica, should be given.

23) Air quality modeling should be carried out for prediction of impact of the project on the air quality of the area. It should also take into account the impact of movement of vehicles for transportation of mineral. The details of the model used and input parameters used for modelling should be provided. The air quality contours may be shown on a location map clearly indicating the location of the site, location of sensitive receptors, if any, and the habitation. The wind roses showing pre-dominant wind direction may also be indicated on the map.

24) The water requirement for the Project, its availability and source should be furnished. A detailed water balance should also be provided. Fresh water requirement for the Project should be indicated.

25) Necessary clearance from the Competent Authority for drawl of requisite quantity of water for the Project should be provided.

26) Description of water conservation measures proposed to be adopted in the Project should be given. Details of rainwater harvesting proposed in the Project, if any, should be provided.

27) Impact of the Project on the water quality, both surface and groundwater, should be assessed and necessary safeguard measures, if any required, should be provided.

28) Based on actual monitored data, it may clearly be shown whether working will intersect groundwater. Necessary data and documentation in this regard may be provided. In case the working will intersect groundwater table, a detailed Hydro Geological Study should be undertaken and Report furnished. The Report inter-alia, shall include details of the aquifers present and impact of mining activities on these aquifers. Necessary permission from Central Ground Water Authority for working below ground water and for pumping of ground water should also be obtained and copy furnished.

29) Details of any stream, seasonal or otherwise passing through the lease area and modification / diversion proposed, if any, and the impact of the same on the hydrology should be brought out.

30) Information on site elevation, working depth, ground water table etc. Should be provided both in AMSL and bgl. A schematic diagram may also be provided for the same.

31) A time bound Progressive Greenbelt Development Plan shall be prepared in a tabular form (indicating the linear and quantitative coverage, plant species and time frame) and submitted, keeping in mind, the same will have to be executed up front on commencement of the Project. Phase-wise plan of plantation and compensatory afforestation should be charted clearly indicating the area to be covered under plantation and the species to be planted. The details of plantation already done should be given. The plant species selected for green belt should have greater ecological value and should be of good utility value to the local population with emphasis on local and native species and the species which are tolerent to pollution.

32) Impact on local transport infrastructure due to the Project should be indicated. Projected increase in truck traffic as a result of the Project in the present road network (including those outside the Project area) should be worked out, indicating whether it is capable of handling the incremental load. Arrangement for improving the infrastructure, if contemplated (including action to be taken by other agencies such as State Government) should be covered. Project Proponent shall conduct Impact of Transportation study as per Indian Road Congress Guidelines.

33) Details of the onsite shelter and facilities to be provided to the mine workers should be included in the EIA Report.

34) Conceptual post mining land use and Reclamation and Restoration of mined out areas (with plans and with adequate number of sections) should be given in the EIA report.

35) Occupational Health impacts of the Project should be anticipated and the proposed preventive measures spelt out in detail. Details of pre-placement medical examination and periodical medical examination schedules should be incorporated in the EMP. The project specific occupational health mitigation measures with required facilities proposed in the mining area may be detailed.

36) Public health implications of the Project and related activities for the population in the impact zone should be systematically evaluated and the proposed remedial measures should be detailed along with budgetary allocations.

37) Measures of socio economic significance and influence to the local community proposed to be provided by the Project Proponent should be indicated. As far as possible, quantitative dimensions may be given with time frames for implementation.

38) Detailed environmental management plan (EMP) to mitigate the environmental impacts which, should inter-alia include the impacts of change of land use, loss of agricultural and grazing land, if any, occupational health impacts besides other impacts specific to the proposed Project.

39) Public Hearing points raised and commitment of the Project Proponent on the same along with time bound Action Plan with budgetary provisions to implement the same should be provided and also incorporated in the final EIA/EMP Report of the Project.

40) Details of litigation pending against the project, if any, with direction /order passed by any Court of Law against the Project should be given.

41) The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.

42) A Disaster management Plan shall be prepared and included in the EIA/EMP Report.

43) Benefits of the Project if the Project is implemented should be spelt out. The benefits of the Project shall clearly indicate environmental, social, economic, employment potential, etc.

B. ADDITIONAL TOR

44) Impact of mining activity on adjacent land with particular reference to run off, soil erosion and loss of top soil due to change in topography;

45) Details of Transportation of mined out materials as per the Indian Road Congress for both the ways (loaded as well as unloaded trucks) load and its impact on Environment;

46) Impact of all existing mining on the present land use in the study area;

47) Updated status of Stage I FC clearance.

48) Details of action plan with financial and physical breakup (2.5% of the total cost of the project) to be earmarked towards the Enterprise Social Commitment (ESC) based on local needs.

49) Details of outcome of the Hon'ble Supreme Court Order in WP (c) No. 114 of 2014 (Common Cause Vs. UoI and Ors).

10. Besides the above, the below mentioned general points are also to be followed:-

a) Executive Summary of the EIA/EMP Report.
b) All documents to be properly referenced with index and continuous page numbering.
c) Where data are presented in the Report especially in Tables, the period in which the data were collected and the sources should be indicated.
d) Project Proponent shall enclose all the analysis/testing reports of water, air, soil, noise etc. using the MoEF&CC/NABL accredited laboratories. All the original analysis/testing reports should be available during appraisal of the Project.
e) Where the documents provided are in a language other than English, an English translation should be provided.
f) The Questionnaire for environmental appraisal of mining projects as devised earlier by the Ministry shall also be filled and submitted.
g) While preparing the EIA report, the instructions for the Proponents and instructions for the Consultants issued by MoEF vide O.M No.)-

11013/41/2006-IA.II(I) dated 4th August, 2009, which are available on the website of this Ministry, should be followed.

h) Changes, if any made in the basic scope and project parameters (as submitted in Form-I and the PFR for securing the TOR) should be brought to the attention of MoEF&CC with reasons for such changes and permission should be sought, as the TOR may also have to be altered. Post Public Hearing changes in structure and content of the draft EIA/EMP (other than modifications arising out of the P.H. process) will entail conducting the PH again with the revised documentation.

i) As per the circular no. J-11011/618/2010-IA.II(I) dated 30.5.2012, certified report of the status of compliance of the conditions stipulated in the environment clearance for the existing operations of the project, should be obtained from the Regional Office of Ministry of Environment, Forest and Climate Change, as may be applicable.

j) The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

11. The EIA report should also include (i) surface plan of the area indicating contours of main topographic features, drainage and mining area, (ii) geological maps and sections and (iii) sections of the mine pit and external dumps, if any, clearly showing the land features of the adjoining area.

12. The prescribed TOR would be valid for a period of three years for submission of the EIA/EMP report, as per the O.M. No. J-11013/41/2006-IA.II(I) dated 22.3.2010, 22.08.2014, 08.10.2014 and 07.11.2014. The instant TOR is valid upto **15.01.2020**.

13. After preparing the draft EIA (as per the generic structure prescribed in Appendix- III of the EIA Notification, 2006) covering the above mentioned issues, the proponent will get the public hearing conducted and take further necessary action for obtaining environmental clearance in accordance with the procedure prescribed under the EIA Notification, 2006.

Yours faithfully,

(Surendra Kumar)
Director
Tele-fax: 24695304

Copy to:

1). **The Secretary**, Ministry of Mines, Government of India, Shastri Bhawan, New Delhi
2). **The Secretary**, Department of Environment, Government of Odisha, Secretariat, Bhubaneswar.
3). **The Secretary**, Department of Mines and Geology, Government of Odisha, Secretariat, Bhubaneswar.
4). **The Secretary**, Department of Forests, Government of Odisha, Secretariat, Bhubaneswar.
5). **The Chairman**, Central Pollution Control Board, Parivesh Bhawan, CBD-cum-Office Complex, East Arjun Nagar, Delhi-110032.

F. No. 8-55/2018-FC
Government of India
Ministry of Environment, Forest and Climate Change
(FC Division)
***

Indira Paryavaran Bhawan,
Jor bagh Aliganj Road,
New Delhi – 110003.

Dated: January, 2019.

To,

The Principal Secretary (Forests),
Government of Odisha,
Bhubaneswar.

Subject :Proposal for diversion of 120.838 ha of forest land for iron ore mining under Section 2 (ii) and for according permission under Section 2 (iii) of the Forest (Conservation) Act, 1980 for entire forest land 126.401 ha including safety zone area of 5.563 ha in favour of M/s Essar Steel India Ltd within their allotted Ghoraburhani-Sagasahi Iron Ore Block of 139.165 ha located in village Sagasahi, Kalmang, Ghoraburhani and Mendhamaruni PRF-I in Koira Tehsil and Koira Range under Bonai Forest Division of Sundargarh District, Odisha.

Sir,

I am directed to refer to the State Government's letter No. 10F(Cons)-26/2018-17489/F&E dated 08.08.2018 on above mentioned subject seeking prior approval of the Central Government under Section-2 of the Forest (Conservation) Act, 1980 and to say that the proposal has been examined by the Forest Advisory Committee constituted by the Central Government under Section-3 of the said Act.

After careful examination of the proposal of the State Government and on the basis of the recommendations of the Forest Advisory Committee, the Central Government hereby conveys its *'in-principle'* approval for diversion of 120.838 ha of forest land for iron ore mining under Section 2 (ii) and for according permission under Section 2 (iii) of the Forest (Conservation) Act, 1980 for entire forest land 126.401 ha including safety zone area of 5.563 ha in favour of M/s Essar Steel India Ltd within their allotted Ghoraburhani-Sagasahi Iron Ore Block of 139.165 ha located in village Sagasahi, Kalmang, Ghoraburhani and Mendhamaruni PRF-I in Koira Tehsil and Koira Range under Bonai Forest Division of Sundargarh District, Odisha subject to fulfilment of the following conditions: -

(i) Legal status of the diverted forest land shall remain unchanged;

(ii) Compensatory afforestation shall be raised over the non-forest land equal in extent to the forest land being diverted within three years of Stage –II Clearance and maintained thereafter by the State Forest Department at the cost of the User Agency and at least 1000 plants per hectare (120.838 ha x 1000 = 120838 plants) shall be planted over identified non- forest land. If it is not possible to plant so many saplings in the area identified for CA, the balance saplings will be planted in any other forests as per prescriptions of approved working plan with provision for ten years on subsequent maintenance;

(iii) 25% of CA cost will be deposited extra by the user agency for soil and moisture conservation (SMC) activities on the CA land;

(iv) The 5.563 ha of proposed safety zone shall be maintained as tree cover and should be enriched with indigenous species.

(v) The admissible identified non-forest land for raising compensatory afforestation shall be transferred and mutated in favour of the State Forest Department before issue of the Stage-II clearance and the same shall be notified by the State Government as RF under Section-4 or PF under Section-20 of the Indian Forest Act. 1927 or under the relevant Section(s) of the local Forest Act, as the case may be, within a period of six months. The Nodal Officer (Forest Conservation) shall report compliance in this regard;

(vi) Following activities shall be undertaken by the user agency at the project cost:

a) Mitigative measures to minimize soil erosion and choking of stream shall be implemented within a period of three years with effect from the issue of Stage-II clearance in accordance with the approved Plan in consultation with the State Forest Department.

b) Planting of adequate drought hardy plant species and sowing of seeds, in the appropriate area within the mining lease to arrest soil erosion in accordance with the approved scheme;

c) Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour in accordance with the approved scheme;

d) Stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place is less than 28^0 and

e) No damage shall be caused to the top-soil and the user agency will follow the top soil management plan.

(vii) The land identified for the purpose of CA shall be clearly depicted on a Survey of India topo sheets of 1:50,000 scale;

(viii) The User Agency shall transfer the cost of raising and maintaining the compensatory afforestation at the current wage rate in consultation with State Forest Department in the account of CAMPA of the concerned State through online portal. The scheme may include appropriate provision for anticipated cost increase for works scheduled for subsequent years;

(ix) The User Agency shall transfer the funds for the Net Present Value (NPV) of the forest land being diverted under this proposal from the User Agency as per the orders of the Hon'ble Supreme Court of India dated 28.03.2008, 24.04.2008 and 09.05.2008 in Writ Petition (Civil) No. 202/1995 and the guidelines issued by this Ministry vide its letter No. 5-3/2007-FC dated 05.02.2009 through online portal of CAMPA account of the State Concerned;

(x) At the time of payment of the Net Present Value (NPV) at the present rate, the user agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;

(xi) Fencing, protection and regeneration of the safety zone area [7.5 meters' strip shall be kept within the mining lease boundary and area of the safety zone shall be part of the total area of mining lease as per the Ministry's guidelines dated 27.05.2015] shall be done within three year at the project cost from the issue of Stage-II Clearance. Besides this afforestation on degraded forest land to be selected elsewhere measuring one & a half times the area under safety zone shall also be done at the project cost; The degraded forest land (DFL) so selected will be informed to the MoEF & CC with shape files and afforestation will be done within three years from the date of Stage-II clearance and maintained thereafter in accordance with the approved Plan in consultation with the State Forest Department;

6-3-19

(xii) User Agency should ensure that the Compensatory levies (CA cost, NPV, etc.) are deposited through challan generated online on web portal and deposited in appropriate bank online only. Amount deposited through other mode will not be accepted as compliance of the Stage-I clearance;

(xiii) State Government shall complete settlement of rights, in term of the Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, if any, on the forest land to be diverted and submit the documentary evidence as prescribed by this Ministry's letter No. 11-9/1998-FC (Pt.) dated 03.08.2009 read with 05.07.2013, in support thereof;

(xiv) Period of diversion of the said forest land under this approval shall be for a period co-terminus with the period of the mining lease proposed to be granted under the Mines and Minerals (Development and Regulation) Act, 1957, as amended and the Rules framed there-under;

(xv) The User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required;

(xvi) No labour camp shall be established on the forest land and the User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas;

(xvii) The boundary of the diverted forest land, mining lease and safety zone, as applicable, shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS co-ordinates;

(xviii) The layout plan of the mining plan/ proposal shall not be changed without the prior approval of the Central Government and the forest land shall not be used for any purpose other than that specified in the proposal;

(xix) The forest land proposed to be divested shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government;

(xx) No damage to the flora and fauna of the adjoining area shall be caused;

(xxi) The user agency shall explore the possibility of translocation of maximum number of trees identified to be felled and shall ensure that any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department.

(xxii) User agency either himself or through the State Forest Department shall undertake gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.40), if any, located in the area within 100 m. from outer perimeter of the mining lease. The plan for plantation and SMC activities will be prepared and submitted to MoEF &CC before Stage-II Clearance;

(xxiii) The User Agency shall undertake mining in a phased manner after taking due care for reclamation of the mined over area. The concurrent reclamation plan as per the approved mining plan shall be executed by the User Agency from the very first year, and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980, in the concerned State Government and the concerned Regional Office of the Ministry. If it is found from the annual report that the activities indicated in the concurrent reclamation plan are not being executed by the User Agency, the Nodal Officer or the concern Addl. Principle Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities area satisfactorily executed.

6.3.15

(xxiv) The User Agency shall prepare a list of existing village tanks and other water bodies with GPS co-ordinates located within five km. from the mine lease boundary. This list is to be duly verified by the concerned Divisional Forest Officer. The User Agency shall regularly undertake desilting of these village tanks and other water bodies so as to mitigate the impact of siltation of such tanks/water bodies. A detailed approved plan for desilting of identified ponds and water bodies to be prepared in consultation with forest department and shall be submitted to MoEF & CC before Stage-II approval;

(xxv) The User Agency shall submit the annual self -compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year regularly;

(xxvi) Any other condition that the concerned Regional Office of this Ministry may stipulate with the approval of competent authority in the interest of conservation, protection and development of forests & wildlife; and

(xxvii) The user agency shall comply all the provisions of the all Acts, Rules, Regulations, Guidelines, Hon'ble Court Order (s) and NGT Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.

After receipt of the compliance report on fulfilment of the above conditions from the State Government, formal approval will be considered under Section-2 of the Forest (Conservation) Act, 1980. The transfer of forest land to the User Agency shall not be affected by the State Government till formal orders approving the diversion of forest land are issued by the Central Government.

Yours faithfully,

(Sandeep Sharma)
Asstt.Inspector General of Forests

Copy to:

1. The Principal Chief Conservator of Forests, Government of Odisha, Bhubaneshwar.
2. The Nodal Officer, O/o the PCCF, Government of Odisha, Bhubaneshwar.
3. The Addl. PCCF (Central), Regional Office, Bhubaneshwar
4. Monitoring Cell, FC Divisions, MoEF&CC
5. Guard File

(Sandeep Sharma)
Asstt. Inspector General of Forests (FC)

ANNEXURE - 4

c/c

FAX : 2562822/2560955
Tel : 2564033/2563924
EPABX : 2561909/2562847
E-mail: paribesh1@ospcboard.org
Web site : www.ospcboard.org

BY REGD POST

ODISHA

OFFICE OF THE
STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST & ENVIRONMENT, GOVERNMENT OF ODISHA]
Paribesh Bhawan, A/118, Nilakantha Nagar, Unit – VIII
Bhubaneswar – 751 012, INDIA

No. 459 / IND-II-NOC-6124 Date 11-01-2018

OFFICE MEMORANDUM

In consideration of the online application no. 1615707 for obtaining Consent to Establish for **Ghorabhurani-Sagasahi Iron Ore Mine Of M/s Essar Steel India Ltd.,** the State Pollution Control Board is pleased to convey its Consent to Establish under section 25 of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 for **production of Iron Ore (RoM) of Capacity 7.16 MTPA along with Crushing and Screening Plant (Stationary) – 1 x 1350 TPH, Crushing and Screening Plant (Mobile) – 2 x 500 TPH and Iron Ore Beneficiation Plant of capacity 6.7 MTPA over an area of 139.165 ha., At – Village Ghoraburhani, Sagasahi and Kalamanga, Tahasil – Koira** in the district of **Sundargarh**, Odisha with the following conditions.

GENERAL CONDITIONS:

1. **This Consent to establish is valid for the product, method of mining and capacity mentioned in the application form. This order is valid for five years. The proponent shall commence mining activities for the proposal within a period of five years from the date of issue of this consent to establish order. If the proponent fails to commence mining activities for the proposal within five years then a renewal of this consent to establish shall be sought by the proponent.**
2. The mine shall apply for grant of Consent to operate under section 25/26 of Water(Prevention & Control of Pollution)Act, 1974 & Air (Prevention & Control of Pollution)Act, 1981 at least 3 (three) months before the commencement of production and obtain Consent to Operate from this Board.
3. No change in mining technology and scope of working shall be made without prior approval of the Board.
4. **This consent to establish is subject to statutory and other clearances from Govt. of Odisha and/or Govt. of India, as and when applicable.**

SPECIAL CONDITIONS:

General:

1. The proponent shall obtain environmental clearance as per EIA notification, 2006 and amendment thereafter before commencement of mining activity.

2. The proponent shall obtain forest clearance for the forest land involved in the lease area

3. The proponent shall obtain requisite permission from the Water Resources Department, Govt. of Odisha for drawal of water.

4. A green belt of adequate width and density preferably with local species along the periphery of the mine, inactive dumps, backfilled area, vacant area, colony and any other vacant area shall be raised so as to provide protection against particulates and noise to ameliorate the environment. A detailed plantation programme in this regard shall be prepared and submitted at the time of making application for consent to operate for assessment.

5. A separate environmental management cell with suitable qualified personnel should be set up under the control of a Senior Executive, who will report directly to the Head of the organization.

6. The Board may impose further conditions or modify the conditions stipulated in this order during installation and/or at the time of obtaining consent to operate and may revoke this clearance in case the stipulated conditions are not implemented.

7. The above conditions will be enforced, inter-allia, under the provisions of the water (Prevention & Control of pollution) Act, 1974 and Air (Prevention & Control of Prevention) Act, 1981 and Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and Rule.

Water Pollution:

8. Effluent standard for iron ore mining and ore processing as notified by the MoEF&CC, Govt. of India vide G.S.R 809 (E) dated 04.10.2010 shall be followed.

9. Domestic effluent shall be discharged to soak pit via septic tank constructed as per BIS specification.

10. At the wet beneficiation plant, process waste water shall be recycled from thickener overflow to the maximum possible extent in order to reduce surface water pollution due to less discharge to the surrounding environment and less process water requirement.

11. Provision of suitable designed tailings dam with reclamation of clarified water and control of seepage water shall be provided by constructing seepage water collection ditch at the downstream side alongwith the recirculation facilities. Desilting of tailings shall be carried out periodically before onset of monsoon.

12. Maximum recovery of iron ore fines/micro fines need to be encouraged by adoption of hydro-cyclones, slow speed classifiers in the wet beneficiation circuit in order to increase the life of tailing dam.

13. Garland drains along with settling pit shall be provided around the iron ore fines stock yard to control washout of fines from the stockyard along with surface runoff.

14. Surface run-off from OB dump area, mineral stock yard, top soil storage area and rain water to be pumped from quarry shall be routed through adequate settling pond (designed maximum hourly rain fall basis) to meet prescribed effluent standard as notified by the MoEF&CC, Govt. of India vide G.S.R 809 (E) dated 04.10.2010, before discharge into natural stream/water courses.

15. Oil and grease trap should be installed before discharge of effluent from workshop. Wastewater from the mine pit, check dams or any other discharge, leaving lease boundary of the mine should be properly collected, treated so as to conform the standard as notified by the MoEF&CC, Govt. of India vide G.S.R 809 (E) dated 04.10.2010.

16. Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells. The monitoring should be done four times a year in pre-monsoon (April/May), Monsoon (August), Post-monsoon (November) and winter (January) seasons. Data thus collected should be submitted to the Board quarterly.

17. The effluents due to washing of HEMM (Heavy Earth Moving Machines) and vehicles on the ramps will be treated in ETP and the treated water will be collected in the treated water storage tank and reused for washing.

18. The proponent shall provide one rain water harvesting pond with adequate size for collection of rainwater and water from the pond shall be utilized for the mining activity.

19. The proponent shall maintain zero discharge of effluent from the tailing pond.

Air Pollution:

20. The emission standard for stack for De-dusting unit and Fugitive emission standard for iron ore mining and ore processing as notified by the MoEF&CC, Govt. of India vide G.S.R 809 (E) dated 04.10.2010 shall be followed.

21. Drill should be wet operated or with dust extractors and controlled blasting should be practices. Pre-wetting of blasting site shall be practiced.

22. Both dust suppression (dry fog) and extraction (bag filter) system shall be provided at all dust generating source such as crushing, screening, material transfer points etc. to control fugitive emission.

23. The primary crusher, screen and secondary crusher and the conveyor shall be placed under cover.

24. All the product conveyor of the crushers shall discharge the product into a hopper and chute arrangement fitted with dust extraction and bag filter system. Chute shall be maximum 3 meter height from the ground level. Fixed auto sprinklers shall be provided in the stock yard of product.

25. The mine shall make provision to collect the fine products in hopper instead of heaping by free falling to avoid the dust nuisance. The ore fines shall be stacked properly and systematically with retaining wall at the toe to avoid washings during rain. Ore fine transportation shall be done in covered truck.

26. Dust suppression on mine haul roads, active OB dumps and mine working benches shall be done by spraying water through water sprinklers along with chemical binders/wetting agents at frequent interval in order to reduce water consumption and to improve retention and re-absorption capacity of water. Water sprinklers of fixed type shall also be provided at the mine HEMM maintenance shop, other service centers and approach roads from mines to raw material handling & product handling area to prevent the generation of dust to be air borne.

27. Two ambient air quality monitoring stations for 24 hours operation should be established in the core zone as well as in the buffer zone for PM_{10}, $PM_{2.5}$, SPM, SO_2, NOx and CO monitoring. Location of the stations should be decided in consultation with the State

Pollution Control Board. Data on ambient air quality (PM_{10}, $PM_{2.5}$, SPM, SO_2, NOx and CO) should be submitted to the State Pollution Control Board once in six months.

28. Adequate measures shall be taken for control of noise levels in the work environment of mine area so that noise levels at the boundary line of mining lease area shall not exceed 75 dB (A) during day time (06:00 AM to 10.00 PM) and 70 dB(A) during night time (10:00 PM to 06:00 AM)

Solid and Hazardous Waste:

29. The tailing pond shall be covered through vegetation once the life of pond is over.
30. The unit shall make effort to use the tailings generated from wet beneficiation plant as raw materials for value added products like ceramic floor tiles, wall tiles and bricks.
31. Top soil should be stacked separately with proper slope at earmarked site (s) with adequate measures and shall be used for reclamation and rehabilitation of mined out areas.
32. At stockpile and loading plant area, a network of drains shall be constructed at a depth of 1.5 meter below the lowest level on the sites parallel to the stockpile area with interconnected box culverts. The sloping of surface shall be given inward to the stockpiles so that surface water will only infiltrate in to the drain.
33. The OB/waste dumps shall be properly dressed, benched, stopped at low angle (30°) with terracing and bamboo barricades in the slopes making retaining walls stone barriers at the toe of the dumps gully plugging etc. to prevent the solid erosion during monsoon, besides establishing vegetation on dump top as well as its slope surface. In difficult cases, hydro-seedling technique or use of geo-tiles mat embedded with seeds shall be adopted.
34. The proponent shall comply to the provisions of Hazardous and Other Wastes (Management and Trans boundary Movement) Rules, 2016 and amended thereafter.

MEMBER SECRETARY

To,

The General Manager,
Ghorabhurani-Sagasahi Iron Ore Mine of
M/s Essar Steel India Ltd.,
Ore Club, Bhadrasahi Chowk, Near Bank of India (ATM)
NH-215, Barbil, Keonjhar, Odisha-758035.

Memo No. 460 **/Dt.** 11-01-2018

Copy forwarded to:

1. The Secretary Steels & Mines, Govt. of Odisha, Bhubaneswar
2. The Director, Directorate of Mines, Govt. of Odisha, Bhubaneswar
3. The District Magistrate & Collector, Sundargarh.
4. The Deputy Director of Mines, Sundargarh.
5. The DFO, Sundargarh.
6. The Regional Officer, SPC Board, Sundargarh.
7. Consent to Operate Section, SPC Board, BBSR
8. Hazardous Waste Management Cell, SPC Board, BBSR
9. Copy to Guard file

SR.ENV. SCIENTIST, L-I (N)

GOVERNMENT OF ODISHA
DEPARTMENT OF STEEL AND MINES
*****

No-1775 /SM. Bhubaneswar,Dtd. 8-3-2019
IV(B)SM-20/2016

From

Sri B.N. Acharya,
Additional Secretary to Government.

To

The Director of Mines,
Odisha,Bhubaneswar.

Sub: Letter of intent with reference to e-auction dated 02.03.2016 for grant of a mining lease for Ghoraburahani-Sagasahi Block for Iron ore in Ghoraburahani, Sagasahi & Kalamang village, Koira Tahasil, Sundaragarh District on 139.165 hects area (90.629 hect. Area of mineralised area and 48.536 hects area of non-mineralised area) of Topo Sheet No.73G/5 in favour of M/s Essar Steel India Ltd.

Ref: Your letter No-629 DM dated 22.01.2019 and Letter No-3114 DM dated 28.03.2016.

Sir,

In inviting a reference to your letters and subject cited above, I am directed to intimate you that the State Government have been pleased to allow extension of the validity of Letter of Intent dated 28.03.2016 issued in favour of M/s Essar Steel India Ltd for grant of a mining lease for Ghoraburahani-Sagasahi Block for Iron ore in Ghoraburahani, Sagasahi & Kalamang village, Koira Tahasil, Sundaragarh District over 139.165 hects area up to 27.03.2021.

Yours faithfully
8.3.19
Additional Secretary to Government

Regd Post with A.D
Memo No. 1776 /SM, Dated: 8-3-2019

Copy forwarded to the M/s Essar Steel India Ltd,Essar House,27th KM Surat Hazira,Surat-394270,Gujrat,India for information and necessary action.

8.3.19
Additional Secretary to Government

ANNEXURE – 5B

By e-mail

DIRECTORATE OF MINES: ODISHA
BHUBANESWAR

No.MXIII(b)-60/15- 2584 DM., Dt. 19.3.19

From

Deepak Mohanty, I.F.S. (Retd.),
O.S.D-cum-Special Secretary to Govt.,
Steel & Mines Department &
Director of Mines, Odisha, Bhubaneswar.

To

M/s Essar Steel India Ltd.,
Essar House, 27th KM Surat Hazira,
Surat-394270. Gujrat.

Sub: - Letter of Intent with reference to e-auction dtd.2.3.2016 for grant of a mining lease for Ghoraburahani Sagasahi Block for Iron Ore in Ghoraburahani, Sagasahi & Kalamong village-Koira Tahasil, Sundargarh district over an area of 139.165 hects. (90.629 Acs.) in favour of India Ltd.

Sir,

In inviting a reference to your letter dt.26.12.2018 on the subject mentioned above, this is to intimate you that Government has been pleased to allow extension of the validity of the letter of intent (LoI) dt.28.3.2016 issued in favour of M/s Essar Steel India Ltd. for grant of aforesaid mining lease up to 27.3.2021.The copy of the same has already been forwarded to your vide Government in Steel & Mines Department Memo No.1776/SM., dt.8.3.2019. Hence, you are, hereby requested to take further course of action and extend the validity of your BG submitted as Bid Security for this mineral blocks, as per the terms of the letter of intent.

Yours faithfully,

DIRECTOR OF MINES, ODISHA

Memo No._____/DM., Dt.

Copy forwarded to the Special Secretary to Government of Odisha, Department of Steel & Mines, Bhubaneswar for kind information.

DIRECTOR OF MINES, ODISHA

Memo No._____/DM., Dt.

Copy to the General Manager, Essar Steel India Ltd., 3-A, Fortune Tower, Chandrasekharpur, Bhubaneswar for information & necessary action.

DIRECTOR OF MINES, ODISHA

K/1

Annexure – 5

WATER BUDGET INCLUDING WATER HARVESTING, CONSERVATION & UTILITSATION

I) Water Requirement and source

Water will be required for sprinkling on haul road to suppress dust, servicing of earth moving and other equipment, machinery & plant, drinking & other domestic use, sanitation, plantation, beneficiation plant for grinding and beneficiation and for slurry pumping through pipeline.

The total water requirement for this project works out to **3230 m3/day.**

S. No.	Purpose	Quantity m3/day	Annual Quantity @ 330 days/year – in Lakh m3/year
1.	Mining (Greenbelt, dust suppression etc.	430	1.419
2.	Beneficiation Plant (make up water only)	2800	9.240
	Total	**3230**	**10.659**

Entire water will be sourced from the bore wells. **The area falls in the "SAFE" category as per norms laid down by Central Ground Water Authority** and brought out in the Hydrological study Report submitted along with EIA/EMP report.

The mine working will start from hill top having 720 m elevation. The bottom most elevation of working bench of mine will be 540m AMSL in Pit -1 and at 520 m AMSL in Pit - 2. The water table is encountered at 503 m AMSL and as such there will not be any intersection of ground water table due to mining. Necessary clearance for drawl of ground water has been obtained from Central Ground Water Authority vide their letter no.21-4/1373/OR/MIN/2017 dated 0t.02.2018

Appropriate rainwater harvesting measures inside the lease area and in nearby villages along with conservation & utilization measures are devised and their details are given below:

2.0 Rain water Harvesting:

Project envisages to adopt measures towards Rain Water harvesting for supplementing recharge of bore wells which will be helpful in meeting water demand locally. These measures have been devised inside lease area as well as outside it.

2.1 Inside the lease area:

Within the lease area, water recharge during raining will be caused due to natural infiltration based on the run off co efficient in the entire lease area of 139.165 Ha & due to water harvesting through the proposed harvesting structures.

Peak runoff rate has seen assessed to design recharge structures utilizing the formula:-

Peak Runoff rate=Catchment area X Runoff coefficient X Rainfall intensity
Runoff coefficients have been taken based on accepted norms for rooftop, paved area, bare ground water body, green area etc.

Based on above, Runoff volumes are calculated to design storage tanks, recharge structures, filter beds etc. Two layer rapid sand gravel filters have been designed with combined filter media thickness of 100 cm. Size of storage tanks, dimensions of recharge wells are determined on the basis of utilizable runoff and optimum area considerations.

2.1.1 Water Harvesting Potential

The rainwater harvesting potential due to natural infiltration during the rainy days within the entire lease area of 139. 165 Ha has been calculated to be **1,48,977.89** m^3 per annum, considering an average annual rainfall of 1322.85 mm within a time span of 120 days of monsoon. The details are given below:

Component wise Rain water harvesting Potential

Sl No	Type of Catchment	Actual Area	Effective Area	Run-Off Coefficient	Run-Off Potential
		(m^2)			(m^3 / Year)
1	Roof Top	1,000	950	0.85	1,068.20
2	Road / Paved Area	35,036	31,532	0.50	20,856.32
3	Green Belt	68,552	54,842	0.05	3,627.36
4	Barren Land	12,40,742	6,20,371	0.10	82,065.78
5	Water Body	46,320	34,740	0.90	41,360.23
	TOTAL	**13,91,650**	**7,42,435**		**1,48,977.89**

In this project it has been proposed to utilize two methods of Rain water harvesting :-

- From rooftops of building and super structures.
- Storm water/Runoff harvesting from storage and artificial recharge of ground water.

2.1.2 Rain water harvesting structures

Following site specific RWH structures are planned and its potential is described below:

- Rain water harvesting pond (phreatic Aquifer – 1 No.)
- Contour trenches (Phreatic Aquifer- 14 Nos.)
- Cablon structures (Phreatic Aquifer- 20 Nos.)
- Recharge Bore well (Deep Aquifer- 2 Nos)

By adopting aforementioned Rain Water Harvesting Measures, the project would be recharging 1,01,579.30 m3 / annum of rain water and its details are given below:

S.No.	Aquifer	Structure	Expected Quantum of Annual Recharge (m3)
1.	Phreatic	Rain Water Harvesting pond	475.00
2	"	Counter Trenches	2658.42
3.	"	Gabions	3728.96
4.	"	Pit trenches	1404.93
5.	Deep	Recharge bore well	93312.00
		Total	**1,01,579.30**

The details of the proposed Gabion structures & proposed contour trenches are given in **Table 1 & 2.**

The location of proposed RWH structures are shown in rain water harvesting layout plan given as **Figure No. 1.**

Table No – 1

Details of Proposed Gabion Structures

Gabion Details	Span (m)	Breadth (m)	Height (m)	Storage Volume (m^3)	Expected Annual Recharge (m^3)
G - 1	15.0	2.0	2.5	70.65	254.34
G - 2	10.0	1.6	2.0	30.14	108.52
G - 3	10.0	1.6	2.0	30.14	108.52
G - 4	14.0	2.0	2.5	65.94	237.38
G - 5	10.0	1.6	2.0	30.14	108.52
G - 6	10.0	1.6	2.0	30.14	108.52
G - 7	10.0	1.6	2.0	30.14	108.52
G - 8	12.0	2.0	2.5	56.52	203.47
G - 9	12.0	2.0	2.5	56.52	203.47
G - 10	10.0	1.6	2.0	30.14	108.52
G - 11	12.0	1.6	2.0	36.17	130.22
G - 12	15.0	2.0	2.5	70.65	254.34
G - 13	12.0	1.6	2.0	36.17	130.22
G - 14	12.0	1.6	2.0	36.17	130.22
G - 15	15.0	2.0	2.5	70.65	254.34
G - 16	12.0	1.6	2.0	36.17	130.22
G - 17	15.0	2.0	2.5	70.65	254.34
G - 18	12.0	1.6	2.0	36.17	130.22
G - 19	10.0	2.4	3.0	67.82	244.17
G - 20	12.0	3.2	4.0	144.69	520.89
TOTAL				**1,035.82**	**3,728.96**

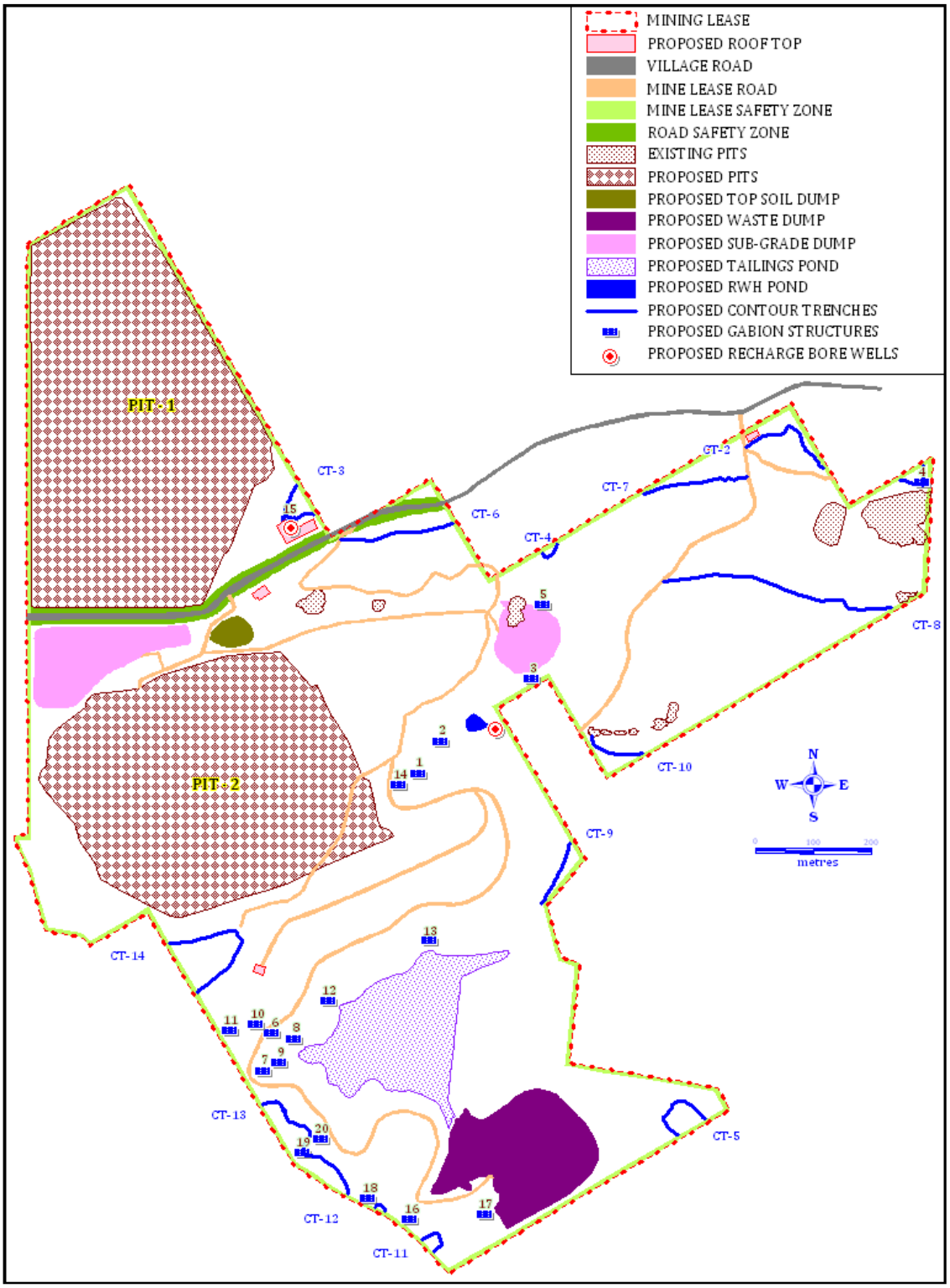
Table No – 2

Details of Proposed Contour Trenches

Trench	Contour (amsl)	Length (m)	Width (m)	Height (m)	Storage Volume (m^3)	Expected Annual Recharge (m^3)
CT-1	600	78	0.5	0.5	17.55	94.77
CT-2	605	186	0.5	0.5	41.85	225.99
CT-3	605	115	0.5	0.5	25.88	139.73
CT-4	610	41	0.5	0.5	9.23	49.82
CT-5	610	139	0.5	0.5	31.28	168.89
CT-6	610	196	0.5	0.5	44.10	238.14
CT-7	610	185	0.5	0.5	41.63	224.78
CT-8	640	406	0.5	0.5	91.35	493.29
CT-9	650	117	0.5	0.5	26.33	142.16
CT-10	660	104	0.5	0.5	23.40	126.36
CT-11	670	68	0.5	0.5	15.30	82.62
CT-12	675	27	0.5	0.5	6.08	32.81
CT-13	680	268	0.5	0.5	60.30	325.62
CT-14	735	258	0.5	0.5	58.05	313.47
Pit Trenches : Pit 1		4295.25	0.2	0.2	154.63	835.00
Pit Trenches : Pit 2		2931.75	0.2	0.2	105.54	569.93
TOTAL					**752.47**	**4,063.35**

Figure No – 1

Rain Water Harvesting Layout Plan



In addition, for surface runoff management, proposal of garland drain of 7700m has been made around dump, around quarry, and tailings pond & Six settling ponds / sumps are proposed to be constructed. Water in the rainy season shall be drained to the garland drain and connected to six settling ponds /sumps proposed at strategic points. These sump will be utilized for storing water and which parallaly can act as rain water harvesting pits. Besides, check dams / weirs will also be constructed across the garland drains at vulnerable places. A map showing the details of surface run off management structures inside the lease area are given **in Figure No. 2.**

Settling pond

The location and dimension of settling pond and sumps will be as follows:

Location	Code	**Length(m)**	**Width(m)**	**Depth(m)**	**Capacity in M3**
East of pit -1	SP–1	20	10	3	600
East of pit -1 Near crushing unit	SP-2	40	20	3	2400
North of Sub grade stack 1	SP-3	20	10	3	600
Eastern part UPL-2	SP-4	20	10	3	600
North east of Tailing pond	SP-5	40	20	3	2400
South east of Tailing pond	SP-6	40	20	3	2400
Total					9000

The water balance diagram is shown in **Figure No 3**.

Figure No 2

SURFACE RUNOFF MANAGEMENT STRUCTURES INSIDE THE LEASE AREA

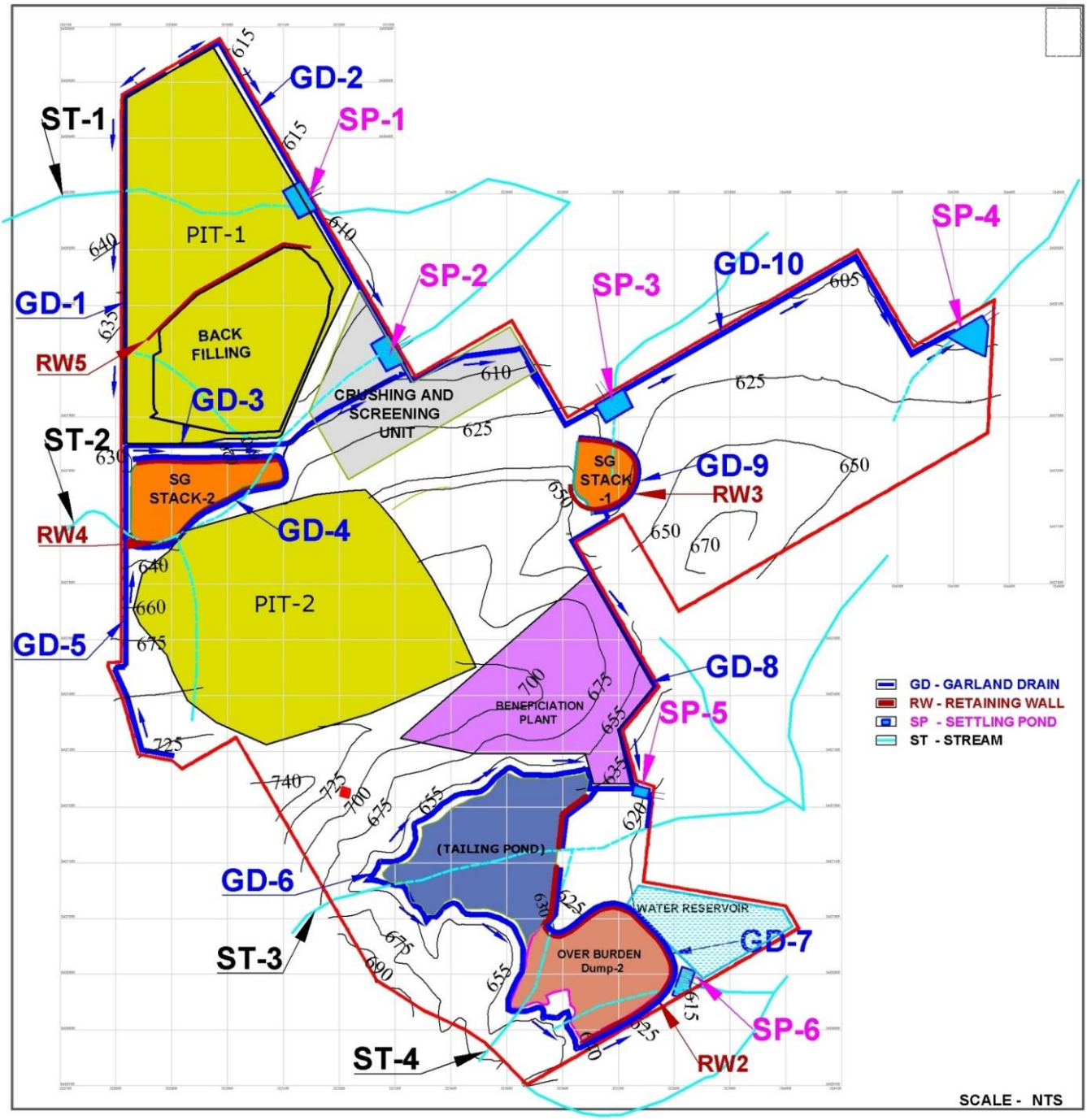
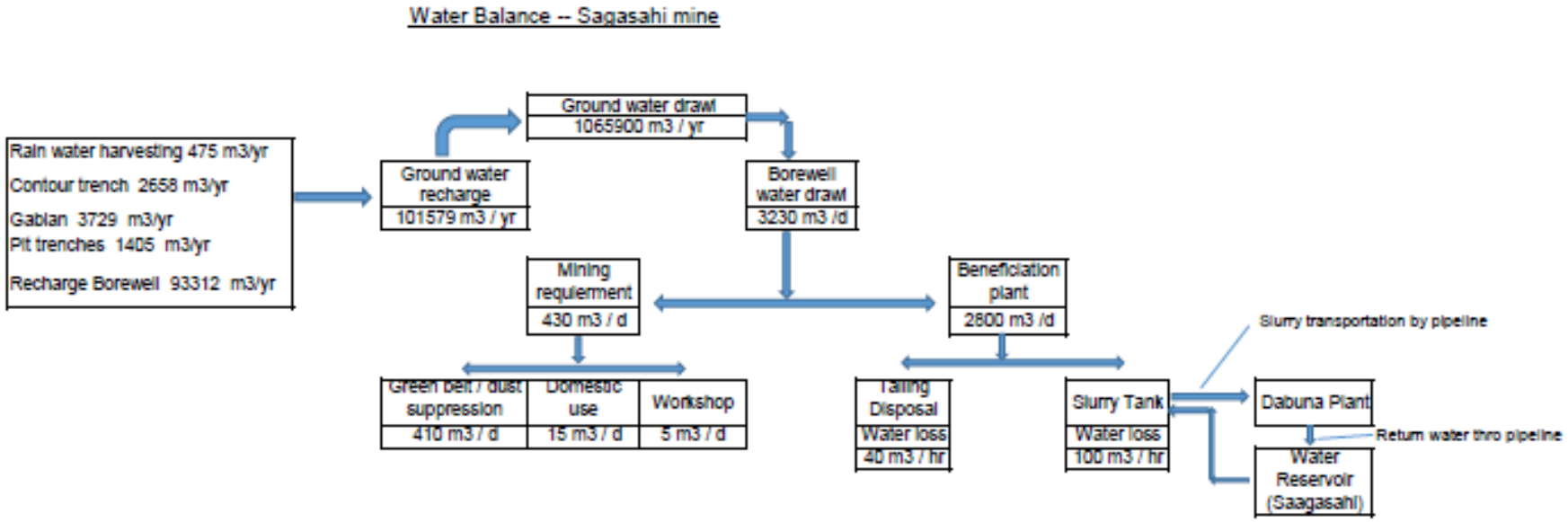


Figure No 3


Water Balance -- Sagasahi mine
Rain water harvesting 475 m3/yr
Contour trench 2658 m3/yr
Gabian 3729 m3/yr
Pit trenches 1405 m3/yr
Recharge Borewell 93312 m3/yr
Ground water recharge
101579 m3 / yr
Ground water draw
1065900 m3 / yr
Borewell water draw
3230 m3 /d
Mining requierment
430 m3 / d
Beneficiation plant
2800 m3 /d
Green belt / dust suppression
410 m3 / d
Domestic use
15 m3 / d
Workshop
5 m3 / d
Tailing Disposal
Water loss
40 m3 / hr
Slurry Tank
Water loss
100 m3 / hr
Slurry transportation by pipeline
Dabuna Plant
Return water thro pipeline
Water Reservoir (Saagasahi)

2.2 Outside Lease area

In addition to the above, the following measures are proposed in the buffer zone:

- Installation of rainwater harvesting structures on the roof of Schools, Government buildings and other suitable measures with recharge pit in consultation with respective authorities.
- Desilting of nearby village ponds & its maintenance.
- Construction of check dams in the streams in and around the area.

The various measures proposed to be adopted for conservation of water in the project area and surrounding Villages are given below :

2.2.1 **Creating additional water Ponds and de-silting of new ponds** :

As per the need survey done total nos of 17 ponds are available in the 13 villages (3 nos of core village & 10 nos of villages in Buffer zone). There are additional requirement of two numbers of ponds (one each in core and buffer zone) .

Details of result of the need survey is mentioned as below :

Village	Zone	Existing	Functional	Non-Functional	Additional new requirement
Kalmanga	Core	2	0	2	0
Ghorabudani	Core	0	0	0	1
Segasahi	Core	1	0	1	0
Sanaindipur	Buffer	2	2	0	0
Kashira	Buffer	1	1	0	0
Bhanjapali	Buffer	0	0	0	0
Malda	Buffer	1	1	0	0
Barpada	Peripheral	3	2	1	0
Gandhalpada	Peripheral	1	1	0	0
Rengalaberha	Peripheral	2	2	0	0
Teherei	Peripheral	0	0	0	1
Oraghat	Peripheral	1	1	0	0
Katesahi	Peripheral	3	1	2	0
Sub Total		**17**	**11**	**6**	**2**

Accordingly, for the purpose of conservation and restoration of water bodies it is proposed to create 02 nos of additional ponds (One each in core & nearby villages).

Apart from the above, periodical de-silting & clearing of the existing pond will be carried out from time to time as per the requirement . The above activities will be done in coordination with the villagers, local administration bodies.

An amount of Rs 50 Lakhs has been kept for additional new ponds and de-silting of existing ponds which will be spent over a period of 5 years in the core and surrounding villages.

Activity	Rs in lakhs					
	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Total
Additional New Pond & De-silting of Ponds	5	5	20	20	--	50

2.2.2 Roof top Rain water Harvesting System

In addition to the above, it is proposed to install rainwater harvesting structures in the roof of Government Schools, Public Health Centre and other Government buildings with recharge pit in consultation with respective Government department .

An amount of Rs 10 Lakhs has been kept in the budget- for this purpose in Environmental control measures for a period of first four years.

3.0 WATER CONSERVATION & UTILISATION:

In the project planning stage itself various water conservation measures are planned towards conservation of water for effective re utilization of water. Its details are as follows:

- About 15 m3/day of treated water confirming limits will be re used in the workshop.
- Out of 200 m3/ hr water being pumped inside tailing pond, 160 m3 of water will be skimmed and pumped from tailing pond,into the process tank of beneficiation plant for recycling and reuse.
- The mobile water sprinklers will be fitted with high pressure nozzles which reduces conservation of water.
- Installation of dry fogging system for crusher & screen plants.

By effective implementation of various above said water harvesting, conservation & utilization measures and since the project is located in hydrologically " Safe" category area no adverse impact on Ground water regime is envisaged.

* * * * * * * *

Item No. 03

BEFORE THE NATIONAL GREEN TRIBUNAL
PRINCIPAL BENCH, NEW DELHI
(Through Video Conferencing)

Original Application No. 34/2018 (EZ)

Batu Munda & Ors. Applicant(s)

Versus

State of Odisha & Ors. Respondent(s)

Date of hearing: 21.01.2019

CORAM : HON'BLE MR. JUSTICE S.P. WANGDI, JUDICIAL MEMBER
HON'BLE MR. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER
HON'BLE DR. NAGIN NANDA, EXPERT MEMBER

For Applicant(s): Ms. Paushali Banerjee, Advocate
For Respondent (s): Mr. T.K. Praharaj, ASC for Respondent No. 1
Ms. Papiya Banerjee Bihani, Advocate for Respondent No. 3
Mr. Dibya Jyoti Sahoo, Advocate for Respondent No. 12.
Mr. Bibhu Prasad Tripathy, Advocate for Respondent No. 13.
Mr. Gora Chand Roy Choudhury, Advocate for Respondent No. 14.

ORDER

1. This Original Application has been filed seeking for a direction upon State Pollution Control Board for holding a fresh public hearing for grant of Environmental Clearance to M/s. Essar Steel India Limited in accordance with procedure laid down under the Ministry of Environment, Forest and Climate Change Notification, 2006 for Ghodabudani – Sagasahi Iron Ore Block.

2. The primary grievance expressed in the Original Application is that there was no proper Gram Sabha held nor any public hearing conducted as per procedure prescribed under the EIA Notification, 2006. The other grievance expressed is that although large areas of the forest land is involved in the project upon which the tribal

community residing therein depend for their livelihood, the provisions of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006 have not been complied with.

3. Although we have reservation as to the necessity of holding a Gram Sabha for the purpose of the EIA Notification, 2006, an elaborate procedure otherwise has been prescribed for holding public hearing. We are not expressing any opinion on the merits of this question as this is not the stage when it can be considered. The question is also not a substantial question of environment contemplated under Section 14 of the NGT Act, 2010.

4. It is conceded by all sides that the MoEF & CC is yet to take a decision on the EIA Report submitted in respect of the project and also that the objections raised by the applicants have been forwarded to the Ministry for its consideration.

5. In the facts and circumstances stated briefly, we are of the view that the application is quite pre-mature as the questions raised therein are matters to be taken into consideration by the MoEF & CC before the Environmental Clearance is granted. It is against the Environmental Clearance, if later granted, that the applicants would be entitled to file an Appeal in terms of Section 5A of the Environment (Protection) Act, 1986.

6. We may also record the statement of Mr. Gora Chand Roy Choudhury, learned Counsel for the MoEF & CC, that the Environmental Clearance is yet to be issued and the objections raised against the public hearing and the non-compliance of the Forest (Conservation) Act, 1980 are under its consideration by the Ministry.

7. For all these reasons, we dispose of this O.A. with the direction that the MoEF&CC shall consider all the issues raised in the present

application while examining the EIA Report in the process of grant of the Environmental Clearance.

S.P. Wangdi, JM

K. Ramakrishnan, JM

Dr. Nagin Nanda, EM

January 21, 2019
Original Application No. 34/2018 (EZ)
AVT & HB

FOR WITHDRAWAL OF THE CASE
CS's Court

ANNEXURE-6B

IN THE HIGH COURT OF ORISSA : CUTTACK

MENTION MEMO

1. NUMBER OF THE CASE WP(C) 9980/2017
2. NAME OF THE PARTIES

Rasmarani Kumari & ors PETITIONER/APPELLANT

- VRS. -

State OPP. PARTY/RESPONDENT

3. PARTY SEEKING POSITION : PETITIONER/OPP.PARTY/ RESPONDENT INTERVENOR/APPELLANT
4. NAME OF THE ADVOCATE OF THE PARTY SEEKING POSITION: R.K. Mahanta
5. NAME OF THE ADVOCATES APPEARING FOR THE OPP. PARTIES. : STATE
6. MENTION FOR : ADMISSION, ORDER STAY HEARING
7. REASON FOR THE MENTION : The petitioner does not want to proceed further, hence may be withdrawn
8. DATE ON WHICH POSTING IS SOUGHT : 26/8/19
9. WHETHERANYCAVEAT HAS BEEN FILED OR NOT.
10. INDICATE WHETHER THE MATTER IS IN THE LIST BEFORE ANYOTHER BENCH No

LIST IT ON
26 AUG 2019
D.R. (Judicial)

CUTTACK,

DATED 20/ 8 /2019

SIGNATURE OF ADVOCATE

ANNEXURE-6C

THE HIGH COURT BAR ASSOCIATION

ORISSA HIGH COURT, CUTTACK - 753 002

Regd. No. - 401/48 of 1961-62

Tel. / Fax : 0671-2507810, 2508810, Web. : www.highcourtbar.org / Email : info@highcourtbar.org

Date :

RESOLUTION OF THE EXTRAORDINARY EMERGENT GENERAL BODY MEETING OF HIGH COURT BAR ASSOCIATION: ORISSA : CUTTACK, HELD ON 22.08.2019 (Thursday) at 1.15 P.M.

In pursuance to the requisition dated 21.09.2019, received from various members of the High Court Bar Association to call for a General Body meeting on **22.08.2019(Thursday)**, a General Body meeting was convened today i.e. on **22nd day of August, 2019(Thursday) at 1.15 P.M.** in the High Court Bar Association Hall presided over by **Shri Gopal Krushna Mohanty,** the President of the High Court Bar Association on chair. After a long deliberation by the learned members of the High Court Bar Association the following resolution has been unanimously passed :-

(i) All the members/Lawyers of the High Court Bar Association will abstain from the Court of the Hon'ble Chief Justice from ***2.00P.M. (after lunch) on 22.08.2019 (Thursday) till 29.08.2019 (Thursday).***

(ii) It is further resolved to constitute a Sub-Committee consisting of 7(Seven) members comprising Three former leaders of the Bar Association and Four senior Advocates and the

 ANNEXURE-6D

Orissa High Court

Back

Orissa High Court
Case Details

Case Type	: WP(C)	
Filing Number	: 9980/2017	Filing Date: 23-05-2017
Registration Number	: 9980/2017	Registration Date: 23-05-2017
CNR Number	**: ODHC01-043983-2017**	

Case Status

First Hearing Date	**: 01st June 2017**
Next Hearing Date	**: 09th January 2018**
Stage of Case	**: FOR ORDERS**
Coram	**: 1941MR. JUSTICE VINEET SARAN (CJ) , DR. JUSTICE B.R.SARANGI**
Bench	**: Division Bench**
Judicial	**: Civil Section**

Petitioner and Advocate

1) REENARANI KUMUDIAL

Advocate- M/S.RAJIV KU.MAHANTA,D.J.SAHOO,A.P.BOSE D.J.SAHOO,A.P.BOSE

Respondent and Advocate

1) STATE OF ORISSA

Advocate - M/S.RAMDAS ACHARYA,, T.BARIK, S.HIDYATULLAH, M/S.BIBHU PR.DAS, A.PATI, S.N.DAS, N.BARIK

IA Details

IA Number	Party	Date of Filing	Next Date	IA Status
IA/9087/2017 (9087/2017)	REENARANI KUMUDIAL STATE OF ORISSA	23-05-2017	--	Pending
IA/17322/2017 (17322/2017)	REENARANI KUMUDIAL STATE OF ORISSA	15-09-2017	--	Pending

History of Case Hearing

Cause List Type	Judge	Business On Date	Hearing Date	Purpose of hearing
	DR. JUSTICE B.R.SARANGI , MR. JUSTICE K.R.MOHAPATRA		01-06-2017	FRESH ADMISSION
	DR. JUSTICE B.R.SARANGI , MR. JUSTICE K.R.MOHAPATRA	01-06-2017	16-11-2017	FOR ORDERS
	MR. JUSTICE VINEET SARAN (CJ) , DR. JUSTICE B.R.SARANGI	16-11-2017	23-11-2017	FOR ORDERS
	MR. JUSTICE VINEET SARAN (CJ) , DR. JUSTICE B.R.SARANGI	23-11-2017	09-01-2018	FOR ORDERS
	MR. JUSTICE VINEET SARAN (CJ) , DR. JUSTICE B.R.SARANGI	23-11-2017	09-01-2018	FOR ORDERS
	MR. JUSTICE VINEET SARAN (CJ) , DR. JUSTICE B.R.SARANGI	23-11-2017	09-01-2018	FOR ORDERS

Orders

Order Number	Judge	Order Date	Order Details
1	DR. JUSTICE B.R.SARANGI,MR. JUSTICE K.R.MOHAPATRA	01-06-2017	View

Category Details

Category	LETTER PETITION & PIL MATTER (21)
Sub Category	(99)

Document Details

Sr. No.	Document No.	Date of Receiving	Filed by	Name of Advocate	Document Filed
1	38736	13-04-2018	M/S.RAJIV KU.MAHANTA		
2	19845	13-04-2018	M/S.RAJIV KU.MAHANTA		
3	19844	13-04-2018	M/S.RAJIV KU.MAHANTA		

Back

ANNEXURE-6E

Orissa High Court

Back

Orissa High Court
Case Details

Case Type	: WP(C)	
Filing Number	: 9247/2018	Filing Date: 25-05-2018
Registration Number	: 9247/2018	Registration Date: 25-05-2018
CNR Number	**: ODHC01-028590-2018**	

Case Status

First Hearing Date	:
Next Hearing Date	**: 14th October 2019**
Stage of Case	**: FOR ADMISSION - TENDER**
Coram	**: 2902MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA**
State	**: ORISSA**
District	**: Jagatsinghapur ***
Judicial	**: Civil Section**
Causelist Name	**: Weekly Daily**
Short Order	**: ADJOURNED**

Petitioner and Advocate

1) CHITTA RANJAN SAHU

Advocate- MR. YOSABANTA DAS, M/S.ASHOK KUMAR DAS,

Respondent and Advocate

1) DEPT OF STEEL AND MINES,GOVT OF ODISHA

Advocate - M/S.BIMBADHAR DASH,M/S.L.SAMANTARAY,AGA,, M/S.SATYAJIT MOHANTY, D.P.SAHU, S.DAS, M/S.SARADA PRASAD SARANGI, D.K.DAS, P.K.DASH, V.MAHAPATRA, T.PATNAIK, S.SAHU, S.MOHANTY, M/S.PRATAP CH. MOHAPATRA, S.CH.SAMANTARAY, S.KAR, B.D.SAHOO, M/S.BIBHU PRASAD TRIPATHY,A,R.ACHARY,T.BARIK,A.PATI,N.BARIK,D.S.NANDA,S.R.OJHA,S.HIDAYUTULLAH, M/S.SREEJIT MOHANTY, S.K.MISHRA, H.H.PANIGRAHI, A.MITTAL, U.C.MITTAL, A.GUPTA

2) UNION OF INDIA

3) SBI CAPITAL MARKETS LTD

4) ESSAR STEEL INDIA LTD

5) BHUSHAN STEEL LTD

Acts

Under Act(s)	Under Section(s)
CONSTITUTION OF INDIA, 1950	226

IA Details

IA Number	Party	Date of Filing	Next Date	IA Status
IA/7834/2018	CHITTA RANJAN SAHU DEPT OF STEEL AND MINES,GOVT OF ODISHA	25-05-2018	--	Pending
IA/9496/2018	CHITTA RANJAN SAHU DEPT OF STEEL AND MINES,GOVT OF ODISHA	05-07-2018	--	Pending
IA/14432/2018	CHITTA RANJAN SAHU DEPT OF STEEL AND MINES,GOVT OF ODISHA	12-09-2018	--	Pending

History of Case Hearing

Cause List Type	Judge	Business On Date	Hearing Date	Purpose of hearing

Supplementary(Daily)	DR. JUSTICE B.R.SARANGI , MR. JUSTICE K.R.MOHAPATRA		30-05-2018	FRESH ADMISSION
Supplementary(Daily)	DR. JUSTICE B.R.SARANGI , MR. JUSTICE K.R.MOHAPATRA	30-05-2018(R)	03-07-2018	FRESH ADMISSION
Supplementary(Daily)	DR. JUSTICE B.R.SARANGI , MR. JUSTICE K.R.MOHAPATRA	30-05-2018	03-07-2018	FRESH ADMISSION
Supplementary(Daily)	MR. JUSTICE VINEET SARAN (CJ) , DR. JUSTICE B.R.SARANGI	03-07-2018	18-07-2018	FRESH ADMISSION
Supplementary(Daily)	MR. JUSTICE VINEET SARAN (CJ) , DR. JUSTICE B.R.SARANGI	18-07-2018	27-08-2018	FRESH ADMISSION
Supplementary(Daily)	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	27-08-2018		FRESH ADMISSION
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	03-09-2018	25-09-2018	FOR ADMISSION
Supplementary(Daily)	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	03-10-2018	20-11-2018	FOR ADMISSION
Supplementary(Daily)	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	20-11-2018	11-12-2018	FOR ADMISSION
Supplementary(Daily)	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	11-12-2018	15-01-2019	FOR ADMISSION
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	15-01-2019	05-02-2019	FOR ADMISSION
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	05-02-2019	18-02-2019	FOR ADMISSION
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	18-02-2019	25-03-2019	FOR ADMISSION
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	25-03-2019	29-04-2019	FOR ADMISSION - TENDER
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	29-04-2019	17-06-2019	FOR ADMISSION - TENDER
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	17-06-2019	08-07-2019	FOR ADMISSION - TENDER
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE S.K.SAHOO	08-07-2019	29-07-2019	FOR ADMISSION - TENDER
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	29-07-2019	26-08-2019	FOR ADMISSION - TENDER
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	26-08-2019	16-09-2019	FOR ADMISSION - TENDER
Weekly Daily	MR. JUSTICE K. S. JHAVERI (CJ) , MR. JUSTICE K.R.MOHAPATRA	16-09-2019	14-10-2019	FOR ADMISSION - TENDER

Orders

Order Number	Judge	Order Date	Order Details
1	DR. JUSTICE B.R.SARANGI,MR. JUSTICE K.R.MOHAPATRA	30-05-2018	View
2	MR. JUSTICE VINEET SARAN (CJ),DR. JUSTICE B.R.SARANGI	18-07-2018	View
3	MR. JUSTICE K. S. JHAVERI (CJ),MR. JUSTICE K.R.MOHAPATRA	20-11-2018	View
4	MR. JUSTICE K. S. JHAVERI (CJ),MR. JUSTICE K.R.MOHAPATRA	11-12-2018	View
5	MR. JUSTICE K. S. JHAVERI (CJ),MR. JUSTICE K.R.MOHAPATRA	27-08-2018	View
6	MR. JUSTICE K. S. JHAVERI (CJ),MR. JUSTICE K.R.MOHAPATRA	15-01-2019	View
7	MR. JUSTICE K. S. JHAVERI (CJ),MR. JUSTICE K.R.MOHAPATRA	18-02-2019	View
8	MR. JUSTICE K. S. JHAVERI (CJ),MR. JUSTICE	25-03-2019	View

	K.R.MOHAPATRA		
9	MR. JUSTICE K. S. JHAVERI (CJ),MR. JUSTICE K.R.MOHAPATRA	17-06-2019	View
10	MR. JUSTICE K. S. JHAVERI (CJ),MR. JUSTICE K.R.MOHAPATRA	29-07-2019	View

Category Details

Category	LETTER PETITION & PIL MATTER (21)

OBJECTION

Sr.No.	Scrutiny Date	OBJECTION	Compliance Date	Receipt Date
1	25-05-2018	**All Objections are Complied**	25-05-2018	--

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