Half Yearly Progress Report for the period **October 2013 to March 2014** on compliance to the conditions stipulated in the Environmental Clearance letter no. J-11015/57/2010-IA.II (M) dated 22.05.2013 of MoEF, GOI in respect of Ghatkuri Iron Ore Mine of M/s Rungta Mines Limited located in West Singhbhum district of Jharkhand

A. **Specific Conditions**	**Compliance**
(i) No mining activities will be allowed in forest area for which the Forest Clearance is not available.	Total mine lease area is 138.848 ha. Mining activity is restricted to 31.319 ha broken up area for which stage-II forestry clearance has been accorded by MoEF, Govt. of India vide letter no. 8-63/99-FC dated 18.06.2001.
(ii) The project proponent will seek and obtain approval under the FC Act, 1980 for diversion of the entire forest land located within the mining lease within a period of two years from the two years from 01.02.2013 i.e. the date of issue of guidelines by FC vide there letter F. No. 11-362/ 2012- FC, failing which the mining lease area will be reduced to the non forest area plus the forest area for which the project proponent has been able to obtain the FC at the end of this time period. In the case of reduction in mine lease area, the project proponent will need to get a revised mining plan approved from the competent authority for reduced area and enter into a new mining lease as per reduced lease area. The EC will be construed to be available for the mining lease area as per the revised mining lease deed.	Total mine lease area is 138.848 ha. stage-II forestry clearance has been accorded by MoEF, Govt. of India vide letter no. 8-63/99-FC dated 18.06.2001 for 31.319 ha of forest land .Stage-I clearance has been obtained vide letter no 8-35/2013-FC , dt 17.06.2013 over 99.352 ha excluding (Safety Zone 0f 7.127 ha + 1.050 ha for gap plantation). Necessary compliance is under process for Stage-II Clearance.
(iii) Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	There is no National Park, Wild Life Sanctuary, or Biosphere Reserve within the core zone as well as buffer zone. However, the entire Singhbhum district has been declared as the habitat of elephant/elephant reserve. As per MoEF, GOI letter no. F.No-6-10/2011-WL dated 19.12.2012 there is no requirement of obtaining clearance from the National Wild Life Board for mining activities in this area.
(iv) Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation within one year.	There is no mine camp or colony in the mining lease area. No waste water is generated during the mining. We have called for proposals for installation of STP in the colony area.
(V) There shall be planning, developing and implementing facility of rain water harvesting measures on long term basis in consultation with Regional Director, Central Groundwater Board.	Rain water harvesting pits (3 nos.) having total capacity of 6324 m^3 have been constructed as per direction of Ground Water Board to augment ground water resources in the area
(vi) There shall be installation of conveyor belt system in future for transportation of ore from mine to Gua Railway siding.	This condition shall be complied.

(vii) All the conditions stipulated by the Jharkhand State Pollution Control Board in their NOC shall be effectively implemented.	Conditions stipulated by SPCB in their Consent to establish have been implemented. Consent to operate has been granted by the state pollution control Board.
(viii) The mining operations shall be restricted to above ground water table and it should not intersect ground water table. In case of working below ground water table, prior approval of the Ministry of Environment and Forests and Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	The mine is located on a hill top, The bottom RL of three working quarries are at 668 MRL, 698 MRL, & 737.5 MRL. The data for ground water table of the area is not available, however the ground water level in the area is found to be at 376 MRL which is far below the present working Depth. Further the ultimate pit depth will be at 590 m RL which is much above the water table will never intersect the water table.
(ix) The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations. The Betlata nallah shall be left undisturbed and protected.	The topography of the area is hilly at an elevation ranging from 413m to 804 m AMSL. The general ground level is at 413m AMSL There is no natural water course within the lease area.
(x) The top soil, if any, shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation.	Mining operation is confined in the broken up area only hence no top soil is found.
(xi) The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time there shall be two OB dumps at the end of the mine life in an area of 2.25 ha for dump D-1 and 3.92ha for dump D-3. The maximum height of the dumps shall not exceed 60m in five terraces for D1 dump and 48m in four terraces for D3 dump. The overall slope of the dumps shall be maintained to 280. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The entire excavated area shall be backfilled and afforested. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly bases.	Overburden/ waste material is being stacked at earmarked dump site D1, D3 covering an area of (6.2 ha.), Out of which 3.85 ha has been stabilised. & rehabilitated. The present Height of the dumps is 16 meters & 13 Meters respectively. The overall slope of the dump is being maintained 27 degree. OB dumps are being rehabilitated with suitable native species like Neem (*Azadirachta indica*), Chakunda (*Cassia siamea*), Karanja (*Pongamia pinnata*), Shishoo (*Dalbergia sissoo*) & Simaruba (*simarouba glance*) which will prevent erosion & surface run-off. Overburden dump slope over an area of 0.90 Hectares is covered under geo textile (Coir mat) for stabilisation of the dumps. Out of 95.5 ha to be reclaimed till the conceptual period, 1.03 ha. has already been reclaimed & the remaining 94.47 ha will be reclaimed & rehabilitated in phases after the excavated area is matured for reclamation. The compliance status is being sent to the Ministry on six monthly bases.
(xii) Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, mineral and	Catch drain & 2 nos of settling tanks of total capacity 8000 M^3 has been

OB dumps to prevent run off of water and flow of sediments directly into the Betlata nallah and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. The drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dumps to prevent run off of water and flow of sediments directly into the Betlata nallah and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.	constructed at strategic location around dumps at the end of garland drain. Boulder check wall have been provided at regular interval in the garland drains to check the speed of runoff and also for de-siltation purpose. The overflow from the settling tanks and other run off from the mine through garland drains is collected in three nos of sedimentation ponds of dimension (75mx40mx 1.5m), (18mx18mx9m) & 40mx25mx 1.5m) . The collected water is being used for road sprinkling.
(xiii) Dimension of the retaining wall at the toe of over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain fall data.	Boulder retaining wall (1450m length) has been constructed (1.5m height x 1.5m width) around the dumps. Speed of torrential flow is being controlled by installing different size of boulder walls at different levels to finally merge in the garland drains as per direction of State Pollution Control Board.
(xiv) The green belt of 8.177 ha shall be maintained by planting the species in consultation with the local DFO /Agriculture Department. The native density of the trees should be around 2500 plants per ha.	No plantation has been done during October 2013- March 2014.
(xv) Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Four water tankers of capacity 8 KL are being used for sprinkling of water on haul road, transfer points. Dry fog system has been installed in mobile crushing & screening plants. Road grader & compactor are being used to maintain the road surface to control the fugitive dust. Ambient Air Quality parameters are within the CPCB norms.
(xvi) Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained.	This condition shall be complied.
(xvii) Regular monitoring of water quality upstream and downstream of Betlata nallah shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment and Forests, its Regional Office, Bhubneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	The Betalata Nalla is flowing at a distance of about 5.0 KM from the lease boundary which finally merge at farther downstream of the mine. The drainage of the mine is controlled by Karo River which flows at about 1.7 KM of the lease boundary. Regular monitoring of water quality of and Karo River & Betalata Nalla is carried out and report is enclosed as Annexure I. This is being submitted to the MoEF, CGWB & State Pollution Control Board.

(xviii) The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Rain water harvesting pits (3 nos.) having total capacity of 6324 m^3 have been constructed as per direction of Ground Water Board to augment ground water resources in the area
(xix) Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year - pre- monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to Ministry of Environment and Forests and its Regional Office, Bhubaneswar, Central Ground Water Authority and Regional Director, Central Ground Water Board.	Ground water level & Quality is being monitored in four seasons and the data is enclosed at **Annexure I**.
(xx) The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water for the project. Ground water shall not be used for the mining operations.	Water drawl permission from Karo River has been obtained from the competent authority. Ground water is not be used for the mining operations.
(xxi) Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	Rain water harvesting pits have been constructed as per the direction of Ground Water Board.
(xxii) Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded.	Vehicular emission is being regularly monitored. Transporting vehicles carrying minerals are regularly maintained. No overloading is allowed. Transporting vehicles carrying minerals outside mine are covered with tarpaulin.
(xxiii) Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Blasting operation is being carried out only during day time and during shift change. This is being followed as per DGMS norms. NONEL is being practiced to reduce dispersal of fly rocks to far off distance & also generation of noise & vibration to reduce impact to structure and also buildings. Rock breakers are extensively used to avoid blasting. Wetting of blasting area is also being carried out before blasting to reduce dust generation.
(xxiv) Drills shall either be operated with dust extractors or equipped with water injection system.	Wet drilling system is practiced in the mine
(xxv) Mineral handling plant shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Four water tankers of capacity 8 KL are being used for sprinkling of water on haul road, transfer points. Dry fog system has been installed in mobile crushing & screening plants. Road grader & compactor are being used to maintain the road surface to control the fugitive dust. Ambient Air Quality parameters are within the CPCB norms.

(xxvi) Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	Periodical medical examination is carried out regularly by Utkal Polyclinic of Bhubaneswar with a team of doctors including Occupational Health Physician, Cardiologist, Radiologist, Ophthalmologist etc. A doctor and other para-medical staff have been appointed for regular check-up of workers. Health check up is done as per schedule. Records of findings are maintained properly.
(xxvii) The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely leopard, elephant etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. All the safeguard measures brought out in the Wildlife Conservation Pan so prepared specific to the project site shall be effectively implemented. A copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	Forest & Wildlife Department of State Government has given assignment to a Wildlife Expert Organization for preparation of Integrated Wildlife Mitigation Plan for this area which is under process. Mine Management will make proportionate contribution as per demand raised by Forest & Wildlife Department of State Govt.
(xxviii) Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	There is no mine camp or colony in the mining lease area. No waste water is generated during the mining. We have called for proposals for installation of STP in the colony area.
(xxix) The proponent shall complete all the tasks as per the action plan submitted with the budgetary provisions during the public hearing held on 23.11.2012.	This condition is being complied.
(xxx) A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	Final Mine Closure Plan along with corpus fund will be submitted to Ministry of Environment & Forests before 5 year of Mine Closure.
B. General conditions	
(i) No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Shovel dumper combination is being followed for mining operation. Mineral handling system such as crusher & screening is also being practiced to separate Iron ore of size less than 10 mm and 10 - 30 mm, 5-18 mm grade size. Consent to Operate for all this activities has been obtained. In case of change in scope of working is made in future, requisite permission shall be obtained accordingly.

<table>
<tr><td>(ii) No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.</td><td>The production of Iron ore including quantum solid waste generation has not been changed is as per the approved IBM/EC condition.<table><tr><td>Period</td><td>Production(MT)</td><td>OB(MT)</td></tr><tr><td>October 2013 to March 2014</td><td>14,95,225.420</td><td>2,15,168.200</td></tr></table></td></tr>
<tr><td>(iii) Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM, SPM, SO2 & Nox monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.</td><td>8 Monitoring stations have been established in the core as well as buffer zone on the basis of meteorological data in consultation with the State Pollution Control Board.</td></tr>
<tr><td>(iv) Data on ambient air quality (RSPM, SPM, SO_2 & NOx) should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board/ Central Pollution Control Board once in six months.</td><td>Data collected for the quarter ending December 2013 & March 2014 is annexed as Annexure III. This is being submitted to the MoEF & SPCB.</td></tr>
<tr><td>(v) Fugitive dust emissions from all the sources should be controlled regularly. Water spraying arrangement on haul roads, loading and unloading and at transfer points should be provided and properly maintained.</td><td>Four water tankers of capacity 8 KL capacity are being used for sprinkling of water on main haul road, transfer points etc. Crushing & Screening Plants have been provided with dry fogging system and it is operated during the working hour.</td></tr>
<tr><td>(vi) Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.</td><td>Monitoring of noise level is carried out at 10 locations& the monitoring data indicates that the L_{eq} levels are within 85 dB (A). The workers at crushers and screening plants have been provided with ear muffs. The noise level Report is annexed at Annexure-IV.</td></tr>
<tr><td>(vii) Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May, 1993 and 31st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.</td><td>There is no workshop or vehicle maintenance unit inside the mine.</td></tr>
<tr><td>(viii) Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.</td><td>Personal protective equipments i.e. ear plugs; nose masks are supplied to the employees exposed as per their working environment. Training programme is conducted regularly on safety & health.</td></tr>
</table>

(ix) Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Periodical medical examination is carried out regularly by Utkal Polyclinic of Bhubaneswar with a team of doctors including Occupational Health Physician, Cardiologist, Radiologist, Ophthalmologist etc. A doctor and other para-medical staff have been appointed for regular check-up of workers. Health check up is done as per schedule. Records of findings are maintained properly. The various parameters that are covered under IME and PME are blood test, sugar level test, urine test, blood pressure, chest x-ray, eye refraction test, audiometric test, chest measurement, height/weight measurement, night blindness/ color blindness test, nervous system test, abdomen test, loco motor system, hernia, hydrocele, ECG, lung function test etc. No serious case has been detected which can be related to occupational health problem.
(x) 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.	A separate Environment Management cell has already been constituted.
(xi) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	The expense incurred on this account is enclosed as Annexure V.
(xii) The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	All information will be submitted to Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project.
(xiii) The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Full cooperation will be provided to inspecting officers during monitoring of compliance conditions.
(xiv) The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board.	Six monthly reports are being submitted regularly to the concerned offices.
(xv) The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Pollution Control Board and State Pollution Control Board.	Six monthly reports are being submitted regularly to the concerned offices.

(xvi) A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	Clearance letter has already been displayed in concerned Panchayat.
(xvii) State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.	It had been displayed by the State Pollution Control Board
(xviii) The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubaneswar.	The EC was advertised in town news paper.

Annexure - I

Piezometric Data

Ground water Level measured using Piezometer

(MRL of the Bore well: 413 m)

Month	Piezometric head from the ground level (in meter)
December 2013	4.964
January 2014	4.995
February 2014	5.863
March 2014	4.469

Analysis Report of well water

Well Water near Nuyia Basti

Sl. No.	Location/Parameter	October - December 2013	January - March 2014
1	Colour (in Hazen unit)	<1.0	<1.0
2	Odour	Unobjectionable	Unobjectionable
3	Turbidity (NTU)	0.8	0.9
4	Taste	Agreeable	Agreeable
5	pH	7.3	6.5
6	Temperature in ^{0}C	24.0	22.0
7	Pesticides in mg/l	Nil	Absent
8	Total Hardness (as $CaCo_3$) mg/l	250.0	220.0
9	Iron (as Fe) in mg/l	0.60	0.80
10	Chloride (as Cl) in mg/l	90.0	28.0
11	Residual Free Chlorine in mg/l	<0.10	<0.10
12	Total dissolved Solids in mg/l	380	430.0
13	Calcium (as Ca) in mg/l	72.4	780
14	Magnesium (as Mg) in mg/l	17.01	3.50
15	Copper (as Cu) in mg/l	<0.02	<0.02
16	Manganese (as Mn) in mg/l	<0.02	<0.02
17	Sulphate (ca SO_4) in mg/l	11.0	7.2
18	Nitrate (ca NO_3) in mg/l	1.8	1.3
19	Phenolic Compounds (C6H5OH) in mg/l	<0.001	<0.001
20	Mercury (as Hg) in mg/l	<0.001	<0001
21	Zinc (as Zn) in mg/l	<0.02	<0.02
22	Cadmium (as Cd) in mg/l	<0.001	<0.001
23	Slenium (as Se) mg/l	-	-
24	Arsenic (as As) in mg/l	<0.005	<0.005
25	Cynide (as CN) in mg/l	N.T	N.T.
26	Chromium (as Cr^{+6}) in mg/l	<0.02	<0.02
27	Mineral Oil in mg/l	<0.01	<0.01
28	Alkanity in mg/l	222.0	132.0
29	Fluoride (as F) in mg/l	0.8	0.9
30	Coliform (MPN/100ml)	Nil	Nil

Annexure II

Surface Water Quality Report

Location: - Karo River

Sl. No.	Parameters	UP Stream	Down stream	UP Stream	Down stream
		October – December 2013		January - March 2014	
1	Colour in hazen unit	<1.0	<1.0	<1.0	<1.0
2	Total Suspended Solids mg/l	48.0	58.0	42.0	46.0
3	Dissolved Solids mg/l	70.0	70.0	60.0	75.0
4	Dissolved Oxygen mg/l	6.4	6.6	5.6	5.6
5	pH value	7.1	7.0	6.0	6.0
6	Temperature in ^0C	24.0	24.0	22.0	22.0
8	Total Residual Chlorine mg/l	<0.10	<0.10	<0.10	<0.10
9	COD mg/l	16	18	27.1	28.5
10	Arsenic (as As) mg/l	<0.005	<0.005	<0.005	<0.005
11	Mercury (as Hg) mg/l	<0.001	<0.001	<0.001	<0.001
12	Lead (as Pb) mg/l	<0.01	<0.01	<0.01	<0.01
13	Cadmium (as Cd) mg/l	<0.001	<0.001	<0.001	<0.001
14	Hex. Chromium (as Cr^{+6}) mg/l	<0.02	<0.02	<0.02	<0.02
15	BOD mg/l	1.0	1.0	1.0	1.0
16	Copper (as Cu) mg/l	<0.02	<0.02	<0.02	<0.02
17	Zinc (as Zn) mg/l	<0.02	<0.02	<0.02	<0.02
18	Selenium (as Se) mg/l	-	-	-	-
19	Nickel (as Ni) mg/l	<0.05	<0.05	<0.05	<0.05
20	Iron (as Fe) mg/l	0.40	0.4	0.9	0.9
21	Cyanide (as CN) mg/l	NT	NT	N.T.	N.T.
22	Chlorides (as Cl) mg/l	12.0	16.0	17.0	21.0
23	Fluoride (as F) mg/l	1.0	1.20	0.6	0.4
24	Dissolved Phosphate (as P) mg/l	0.60	1.0	0.6	0.7
25	Sulphate (as SO_4) mg/l	3.4	3.8	5.24	4.55
27	Pesticides	Absent	Absent	Absent	Absent
28	Phenolic Compounds (as C_6H_5OH) mg/l	<0.001	<0.001	<0.001	<0.001
29	Total nitrate (as NO_3)	1.4	1.8	0.9	0.9
30	Manganese (as Mn.) mg/l	<0.02	<0.02	<0.02	<0.02

	Water quality of Betalata Nalla	Jan- March 2014
Sl. No.	Parameters	
1	Colour in hazen unit	<5
2	Odour	Odourless
3	Total Suspended Solids in mg/l	7.4
4	pH value	7.50
5	Temperature ^{0}C	21.0
11	BOD (3 days at 27^o C) mg/l	01
12	COD mg/l	4.2
13	Lead (as Pb) mg/l	<0.01
14	Cadmium (as Cd) mg/l	<0.01
16	Total Chromium (as Cr) mg/l	<0.01
17	Copper (as Cu) mg/l	0.0320
18	Zinc (as Zn) mg/l	<0.01
19	Nickel (as Ni) mg/l	<0.01
20	Cyanide (as CN) mg/l	<0.002
21	Fluoride (as F) mg/l	0.30
22	Dissolved Phosphate (as P) mg/l	0.0716
24	Phenolic Compounds (C_6H_5OH) mg/l	ND
25	Manganese (as Mn) mg/l	0.22
26	Iron (as Fe) mg/l	0.27
27	Arsenic (as As) mg/l	<0.001
28	Mercury (as Hg) mg/l	<0.001
29	Selenium (as Se) mg/l	<0.01
30	Nitrate Nitrogen (as NO_3-N) mg/l	<0.20

Monitoring of Air Quality for quarter ending December 2013
(8 hourly monitoring data)
All parameters are expressed in μ gm/m^3

Core Zone

Station Name	PM_{10}	$PM_{2.5}$	SO_2	NO_2	CO	Mn
Mine office	43.69	31.58	7.53	11.93	BDL	BDL

Buffer Zone

Station Name	PM_{10}	$PM_{2.5}$	SO_2	NO_2	CO	Mn
Nuia Village	58.87	28.82	9.58	15.24	BDL	BDL
Gua Village	28.51	22.62	7.37	11.01	BDL	BDL
Ghatkuri village	29.58	25.14	6.50	9.94	BDL	BDL

Fugitive Emission Monitoring (At a distance of 25 m from the source)

Station Name	Particulate matter
Waste Dump	122.15
Screening Unit	229.87

Monitoring of Air Quality for quarter ending March 2014

(8 hourly monitoring data)
Core Zone

Station Name	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	Mn
Mine office	42.93	31.28	7.61	10.82	BDL	BDL

Buffer Zone

Station Name	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO	Mn
Nuia Village	26.74	16.05	6.49	10.10	BDL	BDL
Gua Village	30.66	21.52	657	1023	BDL	BDL
Ghatkuri village	31.06	20.47	6.33	10.29	BDL	BDL

Fugitive Emission monitoring (25 m distance from the source)

Station Name	Particulate matter
Waste Dump	115.26
Screening Unit	121.62

Annexure-IV

Noise level Report

Period	Location	dB (A)
December 2013	Quarry	61.1
	Crushing Plant	63.0
	Haul Road	54.7
	Office camp	52.3
March 2014	Quarry	63.8
	Crushing Plant	66.7
	Haul Road	65.5
	Mines camp	53.1

Annexure - V

Expenditure incurred on Environmental Protection during October 2013 to March 2014

Sl. No.	Head of Expenditure	In ₹
1	Plantation & post plantation care	5,78,600.00
2	Water Sprinkling through Dry fog	2,36,086.00
3	Water Sprinkling through tankers	63,77,162.00
4	Environment monitoring (air, water, noise)	33,820.00
	Total	72,25,068.00