

## HALF YEARLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE CONDITIONS

**01. Name of the Project:** Koira Iron Mine of M/S. Essel Mining & Industries Limited, Barbil, Keonjhar, Odisha

**02. MoEF Clearance No. & Date:** Environment Clearance (EC) No. J-11015/171/2011.IA-11 (M) on Date:07.05.2015

**03. Period of Compliance Report:** From 01.10.2015 to 31.03.2016.

<b>Sl. No.</b>	<b>Special Condition</b>	<b>Compliance Status</b>
<b>i</b>	The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Odisha and effectively implement all the conditions stipulated therein.	Consent to Establish and Consent to Operate has been obtained from the State Pollution Control Board for production capacity of 4.0 MTPA vide letter no.-10487/IND-II-NOC-5770 dated 27.06.2015 and letter no.-4083/IND-I-CON-1798 dated 03.03.2016 respectively and all the conditions are being complied.
<b>ii</b>	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	A site specific Wildlife conservation plan is approved by PCCF (Wildlife)-cum-Chief Wildlife Warden vide letter no. 8752/1WL(C) SSP-268/2011 on dtd. 30th Dec 2011.
<b>iii</b>	Traffic density on the route of mineral transportation shall be regularly monitored and report shall be submitted along with compliance report.	Traffic density on the route of mineral transportation is monitored regularly and record is maintained. The report for the period under review is annexed.
<b>iv</b>	As part of ambient air quality monitoring during operational phase of the project, the air samples shall also be analysed for their mineralogical composition and records maintained.	Mineralogical composition of the air samples is analyzed and the results is recorded. The record is being maintained.
<b>v</b>	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.	Mineral handling plant are provided with adequate number of high efficiency dust suppression system. Loading and unloading areas including all the transfer points are being addressed with the help of high efficiency mist gun sprayers installed around crushing & screening plant, loading & unloading point and transfer points. Upkeep and maintenance of such arrangement is being carried out regularly as per schedule.

<p><b>vi</b></p>	<p>Effective safeguard measures such as conditioning of ore with water, regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.</p>	<p>All the critical areas such as mineral stack yard, crushing &amp; screening plant area are provided with water sprinkling arrangement along with mist gun sprayer system particularly at material transfer points (hopper, chute etc.). All the transportation &amp; haulage roads are water sprinkled through mobile water tanker of capacity 12KL (1 nos.) &amp; 28KL (2 nos.). A grader is being deployed for proper maintenance of haulage road. The ambient air quality parameters conform to the norms prescribed by CPCB, New Delhi.</p>
<p><b>vii</b></p>	<p>The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.</p>	<p>A scheme on Rain Water Harvesting &amp; Artificial Ground Water Recharge has been prepared in consultation with Regional Director, CGWB, Bhubaneswar &amp; duly forwarded to CGWA, New Delhi and NOC for 500 KLD is accorded by CGWA and same being implemented religiously. We are undertaking periodically renovation &amp; desiltation of the village ponds, seasonal nallah at Balijodi, Koira, Kadodihi villages situated within 05 kms radius of the lease boundary as a measure to harvest the rain water and augment the ground water resources of the area. The storage-cum-percolation tanks are also constructed at suitable location for the purpose.</p>
<p><b>viii</b></p>	<p>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 installing new piezo meters during the mining operation. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.</p>	<p>Regular monitoring of ground water level and quality within the lease area is being carried out at the upstream, downstream four times in a year. 3 nos. of piezometers are already constructed for monitoring of ground water level and quality. It is observed that the groundwater table is not depleted. On the other hand it is maintained because of various recharge structures constructed in the lease area as well as in nearby villages.</p> <p>The monitoring report is being sent to MOEF &amp; its regional office, Central Ground Water Authority and Regional Director, Central Ground Water Board regularly in every quarter.</p>

<b>ix</b>	The project proponent shall regularly monitor the flow rate of the natural water streams Kurarhi Nadi and water stream flowing adjacent to the mine lease and maintain the records.	Monitoring of water quality at upstream and downstream of Karo nalla, Kurarhi nadi and Koira (Orahuri) nalla are being carried out on quarterly basis and record of monitoring data is being maintained and submitted to Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Kolkata zonal office of Central Pollution Control Board.
<b>x</b>	The reclaimed and rehabilitated area shall be afforested. Monitoring and management of rehabilitated areas shall 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 basis.	So far 0.57 ha. of waste dump area and 1.626 ha of quarry area have been reclaimed & rehabilitated by plantation programme. In the half yearly EC compliance report submitted to MoEF & its regional office, the updated status on reclamation & rehabilitation is submitted.
<b>xi</b>	Dimension of the retaining wall at the toe of temporary over burden dumps and OB benches within the mine to check run-off and siltation shall be based on the rain fall data.	The dimension of the retaining/toe wall constructed along the toe/perimeter of the OB dumps are maintained at 1.5 mtr height & 1.0 mtr width. Such structure proved to be adequate to withstand the hydrostatic pressure exerted due to rainfall over the dump area. The weep hole provision on the toe wall address the issue of hydrostatic pressure. Such arrangement have successfully checked the run-off as well as the siltation of low lying area.
<b>xii</b>	Plantation shall be raised in an specified area including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around the higher benches of excavated void to be converted in to water body, roads etc. by planting the native species in consultation with the local DFO/ Agriculture Department. The density of the trees should be around 2500 plants per Ha.	Plantation over the specified area including a 7.5m wide green belt in the safety zone around the mining lease area is completed by native species such as teak, karanj, sisoo, chakunda, neem, babul etc. Similarly reclaimed area, OB dumps and haul roads are covered with annual plantation programme in consultation with local forest department. Density of the plants is being maintained at 2500 plants per ha. So far 8.145 Ha area has been covered under plantation. During the year 2015-16, we have planted nearly 4305 saplings so far in the lease boundary safety zone and over waste dump. Similarly, about 8854 saplings were planted in ANR plantation programme in nearby degraded forests during this financial year.
<b>xiii</b>	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 RPM 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.	Water sprinkling is being carried out through mobile water tanker at loading & unloading points, at Screening & Crushing plants etc. Three nos. of mobile water tanker of capacity 28KL (2 nos.), 12 KL (1 nos.) are deployed for water sprinkling. Mist Gun spray arrangements have also been made at loading & unloading points, at Screening & Crushing plants. All the parameters of ambient air quality have been found to be well within the prescribed limits of Central Pollution Control Board.

<b>xiv</b>	Process water discharge and/or any waste water shall be properly treated to meet the prescribed standards before reuse/discharge. The runoff from temporary OB dumps and other surface run off shall be analyzed for iron and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.	Iron ore mining involves dry process, there is no generation of process water. Hence no discharge. However, the run off generated during monsoon is being channelized through a series of garland drains to the settling pits constructed at toe of the waste & OB dumps and other operational areas. The quality of the surface run-off accumulated in the settling pit and rain water harvesting pond is being monitored & the concentration is found to be well within the permissible limit.
<b>xv</b>	Regular monitoring of the flow rate of the springs and perennial nallahs shall be carried out and records maintained.	Regular monitoring of the water flow rate of the Karo nalla and Koira (Orahuri) nalla at upstream & downstream are being monitored and records maintained.
<b>xvi</b>	Regular monitoring of water quality, upstream and downstream of river shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	Regular monitoring of the water quality of the Karo nalla and Koira (Orahuri) nalla at upstream & downstream are being monitored and the results are submitted to Ministry of Environment and Forests, its Regional Office, Bhubaneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.
<b>xvii</b>	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	Site specific suitable rainwater harvesting measures on long term basis are already envisaged in the scheme which was prepared in consultation with RD, CGWB. One exhausted mine pit has been converted to rain water harvesting pond from which water is used for plantation, dust suppression as well as other industrial use.
<b>xviii</b>	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 from mine face to the beneficiation plant. The vehicles shall be covered with a tarpaulin and shall not be overloaded.	Vehicular emissions are being kept under control and all vehicles including contract vehicle/tippers carrying ore possess PUC from the authorized agents of OSPCB. Tarpaulin is being covered on the loaded trucks and the loading of ore is done as per Govt norms i.e., within the permissible limits.
<b>xix</b>	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.	One STP having capacity 10KLD is in operation at canteen as well as newly constructed office to treat the waste water generated from these two sources. Similarly, one STP having capacity 50 KLD is in use at colony which is situated away from the mine lease area. The treated water from the colony STP is used for gardening purpose & cleaning of pavement etc. A full-fledged workshop with ETP (capacity-2kl/hour) & oil-grease trap facility exist within the workshop premise for treatment of workshop effluent. The water is recycled & reused for vehicle washing purpose.

<b>xx</b>	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	Digital processing of the lease area based on high resolution satellite imagery was carried out during preparation of EIA EMP report. As advised the monitoring data of land use pattern using remote sensing technique shall be undertaken once in three years and will be submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar.
<b>xxi</b>	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.	Pre-placement medical examination (IME) and Periodical Medical Examination (PME) of employees (departmental & contractual) are conducted as per prescribed norms of Mines Rule, 1955. The initial and periodical examination includes blood hematology, blood pressure, detailed cardiovascular assessment, neurological examination, pulmonary test, audiometry etc. All chest radiographs are being classified for detection of pneumoconiosis and documentation made in accordance with ILO classifications & correspondingly action plan drawn out.
<b>xxii</b>	The project proponent shall undertake all the commitments made during the public hearing and effectively address the concerns raised by the locals in the public hearing as well as during consideration of the project, while implementing the project.	The project proponent is implementing the commitments made during the public hearing in a phased manner in respect of employment, education & health facility, drinking water supply etc.
<b>xxiii</b>	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna 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.	We have installed the solar fence all along the lease boundary for protection of the wild animals. A site specific Wildlife conservation plan for protection of fauna found in the study area is being approved by PCCF (Wildlife)-cum-Chief Wildlife Warden vide letter no. 8752/1WL(C) SSP-268/2011 on dtd. 30th Dec 2011. In the conservation plan it is projected to spend about Rs. 180.00 lakhs. An amount of Rs. 120.00 lakhs has been deposited with State Forest Department towards the buffer zone activity. And an amount of 60.00 lakhs is to be spent within the leasehold area in consultation with local forest department. The copy of the Wild Life Conservation Plan depicting various action plans already submitted to Regional Office.
<b>xxiv</b>	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.	A Final Mine Closure Plan along with details of Corpus Fund will be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval as advised.

Sl. No.	General Condition	Compliance Status		
i	No change in Iron Ore Processing and scope of working should be made without prior approval of the Ministry of Environment & Forests.	No change in mining technology and scope of working has been made. The mine is operated with mechanized means using various equipment & machineries like drills, dozer, dumper, excavators, loaders, crushing & screening plants etc.		
ii	No change in the calendar plan including Processing/Beneficiation of mineral iron ore and waste should be made.	The approved annual production capacity of the mines is 4.0 MTPA and the production is limited within the approved quantity. The excavation details for the year 2015-16 is given below.		
		<b>Category</b>	<b>Excavation (proposed)</b>	<b>Achieved</b>
		ROM in Metric Ton	4000000	2959272
		Waste in CUM	352384	13331.9
iii	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM 10 ) and 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. The data so recorded 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.	Ambient air quality covering 6 locations in core zone & 4 locations in buffer zone is being monitored. The location of the AAQ-monitoring stations and frequency etc. done in consultation with Regional office of SPCB, Rourkela.  During the period under review it is observed that PM10 concentration is in the range of 30-83 µg/m <sup>3</sup> and PM2.5 concentrations is 13-46 µg/m <sup>3</sup> which is well within the limits of the National Ambient Air Quality Standard (NAAQS). Similarly, the maximum concentration of Sulphur Dioxide (SO <sub>2</sub> ), Nitrous Oxide (NO <sub>x</sub> ) and Carbon Monoxide (CO) are well within the limits of NAAQS. The details of Ambient Air Quality are annexed. The data thus recorded are 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		
iv	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 I muffs.	In order to control the noise levels shock absorbent linings are provided in vibrating parts, the machineries & equipments are properly maintained & up kept. Controlled blasting techniques using delay detonators are adopted to mitigate noise & vibration problem. Rock breakers are being used to avoid secondary blasting. Personal Protective Equipments like ear plugs/muffs are provided to workers engaged in operations of HEMMs etc.		
v	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with	Noise masks are provided to the personnel working in the dusty areas. Requisite trainings is also imparted to the workers/employees at the		

	adequate training and information on safety and health aspects.	entry level as well as periodically at our vocational training centre.
<b>vi</b>	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.	Dust masks are provided to employees (departmental & contractual) engaged in dusty operations. It is also ensured that they use the same. Employees are undergoing Periodical Medical Examination which is inclusive of lungs function test and audiometry etc. All the personnel are trained on safety in work place and continuous awareness programmes are being conducted for all employees. Periodical Medical Examination of employees (departmental & contractual) are conducted as per prescribed norms of Mines Rule, 1955. The initial and periodical examination includes blood hematology, blood pressure, detailed cardiovascular assessment, neurological examination etc. All chest radiographs are being classified for detection of pneumoconiosis, and documentation made in accordance to ILO classifications.
<b>vii</b>	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 Environmental Management cell is in place consisting of geologists, environmentalists, chemists, horticulturist, medical officers etc headed by a Senior Executive (Head of the Department) who reports directly to the Head of the Organization.
<b>viii</b>	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.	Account of expenditure for Environmental protection is maintained separately and are spent only for environment related purposes. During the year 2015-16 an amount of Rs. 18023639.58 was spent towards environmental protection measures. Year wise expenditure for the year 2015-16 is submitted to MoEF's Regional Office on 23.04.2016 located at Bhubaneswar.
<b>ix</b>	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.	This is an ongoing mining project & is operational since 1975. Accordingly the clause is not applicable to us.
<b>x</b>	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.	We are extending full co-operation during inspection by MoEF officers of Regional Office, Bhubaneswar by furnishing the requisite data/ information/ monitoring reports etc.

<b>xi</b>	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.	Both in hard copies and by e-mail, half yearly environmental compliance status report including environmental monitoring report is being submitted to the Ministry of Environment and Forests, its Regional Office, Bhubaneswar, the Zonal Office of Central Pollution Control Board, Kolkata and the State Pollution Control Board, Bhubaneswar. We have also uploaded the status of compliance of the environmental clearance conditions, including results of monitored data on our company's website i.e., <a href="http://www.esselmining.com">www.esselmining.com</a> .
<b>xii</b>	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	Copy of environment clearance letter has been submitted to the Koira Gram Panchayat, Zila Parisad for information. The environment clearance letter also put on the website of the Company.
<b>xiii</b>	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	Environment clearance letter displayed by State Pollution Control Board for 30 days at the Regional Office, District Industry Centre and Collector's Office/ Tehsildar's Office.
<b>xiv</b>	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-	We have submitted the Environmental statement in Form-V for the FY 2014-15 to the Member Secretary & Regional Officer, SPCB, Odisha on dated 30.08.2015. The same is also submitted to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail and also displayed on the website of the company along with the status of compliance of environmental clearance conditions. The submission of environmental statement for financial year ending 31st March, 2016 is due on September, 2016.



	mail.	
<b>xv</b>	The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and 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 <a href="http://envfor.nic.in">http://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Information regarding obtaining the EC along with the availability of clearance letter with SPCB and MoEF website have been duly published in two widely circulated Oriya daily " <b>The Samaya</b> " and " <b>The Statesman</b> " on dated 08.05.2015. The copy of publication have also been forwarded to the Regional Office MoEF, Bhubaneswar.

**Dr. Khageswar Mahanta**  
**Assistant Vice President**

**Month Wise statement showing the Traffic density per hour on the route of mineral transportation from the Koirra Iron Mine lease area of Essel Mining & Industries Limited during the month from October, 2015 to March 2016**

Month	No. of Trips/Hour							
	Barbil Route		Tensa Route		Kalta Route		Total	
	In	Out	In	Out	In	Out	In	Out
<b>October, 2015</b>	1	1	1	9	6	4	<b>8</b>	<b>14</b>
<b>November, 2015</b>	0	2	1	2	3	2	<b>4</b>	<b>6</b>
<b>December, 2015</b>	0	3	14	4	7	3	<b>21</b>	<b>10</b>
<b>January, 2016</b>	0	1	24	6	6	3	<b>30</b>	<b>11</b>
<b>February, 2016</b>	0	3	19	8	6	3	<b>25</b>	<b>13</b>
<b>March, 2016</b>	0	1	20	7	4	4	<b>24</b>	<b>12</b>