

HALF YEARLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE CONDITIONS

01. Name of the Project: Enhancement of Production of Iron Ore from 0.06 million TPA to 1.5 million TPA of M/s. ESSEL MINING & INDUSTRIES LIMITED, at KOIRA IRON MINE, Sundargarh District of Odisha State.

02. MoEF Clearance No. & Date: Environment Clearance (EC) No. J-11015/599/2007-IA.II (M) on 24.09.2008.

03. Period of Compliance Report: From 01.10.2013 to 31.03.2014.

Sl. No.	Special Condition	Compliance Status
i	The project proponent shall obtain Consent to Establish from the State Pollution Control Board, Orissa and effectively implement all the conditions stipulated therein.	Consent to Establish has been obtained from the State Pollution Control Board for production capacity of 1.5 MTPA vide letter no.-9171/IND-II-NOC-4251 dated 16.04.08 and all the conditions are being implemented.
ii	Environmental clearance is subject to grant of forestry clearance. Necessary forestry clearance under the Forest (Conservation) Act, 1980 for an area of 59.458ha forestland involved in the project shall be obtained before starting mining operation in that area. No mining will be undertaken in the forest area without obtaining requisite prior forestry clearance.	Stage-II Forest Clearance has been obtained from MoEF on 29 th August 2013 vide letter no:- 8-102 / 2010-FC. under F.C. Act, 1980 over an area of 59.458ha forestland involved in the project.
iii	The mining operations shall be restricted to above ground water table and it should not intersect groundwater 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.	At present the mining operations is restricted above 553 m RL. The ultimate pit bottom defined so far will be restricted to 500 m RL. The recent hydro-geological study reveals the ground water table at 480 m RL within lease area. Thus there is no intersection of ground water table by mining activity so far. Necessary permission will be obtained from CGWA and MoEF in case of working below the Ground water table.
iv	The project proponent shall ensure that no natural watercourse and/or water resources are obstructed due to any mining operations.	No river / nala is passing through the ML area and Mining activities will be confined within the ML area. So natural watercourse and/or water resources are not obstructed due to mining activities.

v	<p>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.</p>	<p>Since mining operation is being carried out at present within broken-up area, there is no generation of top soil. However, in future while working in virgin area if top soil will be encountered, it will be stacked separately and used for greenbelt development, reclamation and rehabilitation of mined out area.</p>
vi	<p>The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and should not be kept active for long period of time. No new external OB dumps shall be created and the temporary dumps shall be re-handled. Backfilling shall start from the 4th year onwards and there shall be two external OB dumps at the end of the mine life in an area of 6.372ha. Proper terracing of OB dumps should be carried out so that the overall slope of dumps shall not exceed 28°. 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 dumps. Out of the total excavated area of 61.149ha, an area of 54.169 ha 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 basis.</p>	<p>In course of mining operation the generated overburden are being stacked in earmarked area in a retreating method. Retaining walls have been made at the toe of the dumps. Dumps are being suitably terraced. The accumulated water in the garland drains is being passed through settling tanks/sedimentation ponds, which are constructed depending upon the contours to allow the silt to settle before final discharge. Geo-textiles are used in the terraces of OB dump for stabilization. Plantation is being done on the dump terraces/slope for dump stabilization with native species.</p>

vii	<p>Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil, mineral and OB dumps to prevent run off of water and flow of sediments directly into the Karo Nallah and other water bodies. The water so collected shall be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted, particularly after monsoon, and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mine pit, topsoil dump and over burden dumps to prevent run off of water and flow of sediments directly into the Karo Nallah and other water bodies and sump capacity shall 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 shall 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.</p>	<p>Existing catch drain and garland drain are being extended to cover the entire dumps. Size, gradient and length of the drains are being maintained to take care of the peak flow.</p> <p>Siltation ponds are constructed depending upon the contours to allow the silt to settle before final discharge. So far garland drains of 1905 mtr length have been constructed covering all the waste dumps at different locations.</p> <p>Siltation ponds and drains are being cleaned periodically to help providing adequate retention period thereby avoiding flow of sediments to any water body adjoining the mines.</p>
viii	<p>Dimension of the retaining wall at the toe of OB dumps and over burden benches within the mine to check run-off and siltation shall be based on the rain fall data.</p>	<p>Approximately 967 mtr. of retaining wall (both RCC & boulder wall) are made at the toe of OB dumps and over burden benches. Three numbers of siltation ponds are being maintained within the lease area. This has helped in checking the runoff & siltation.</p>
ix	<p>Plantation shall be raised in an area of 75.12ha including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, over burden dumps, quarry benches, 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.</p>	<p>Plantation over safety zone area is completed by native species such as teak, karanj, sisoo, chakunda, neem, babul etc. Similarly reclaimed area, OB dumps and along the roads are covered with in 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.</p>
x	<p>Regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RSPM such as around crushing and screening plant, loading and unloading point and transfer points. Extensive water sprinkling shall be carried out on haul roads. 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>Water sprinkling is being carried out through mobile water tanker at loading & unloading points, at Screening & Crushing plants are being carried out. Four nos. of mobile water tanker of capacity 28KL, 12 KL & 8 KL are deployed for water sprinkling. All the parameters of ambient air quality have been found to be within the prescribed limits of Central Pollution Control Board.</p>

xi	Regular monitoring of the flow rate of the springs and perennial nallahs in and around the mine shall be carried out and records maintained.	Regular monitoring of the flow rate of Karo nalla & Koira nalla are being carried out and records are being maintained. It is evidenced from the monitored data the water flow varies from 853 m ³ /hr (Oct-13) to 424.8 m ³ /hr(Jan-14) at Koira nala downstream and 1897.2 m ³ /hr (Oct-13) to 255.6 m ³ /hr(March-14) at Koira nala upstream point. Similarly it varies from 921.6 m ³ /hr (Jan-14) to 435.6 m ³ /hr(Mar-14) at Karo nala upstream and 1422 m ³ /hr (Jan-14) to 871.2 m ³ /hr(March-14) at Karo nala downstream point.
xii	Regular monitoring of water quality upstream and downstream of Karo nallah and another perennial nallah shall be carried out and record of monitored data should be maintained and submitted to 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.	Monitoring of water quality at upstream and downstream of Karo nalla and Koira 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.
xiii	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.	A scheme on Rain Water Harvesting & Artificial Ground Water Recharge has been prepared in consultation with Regional Director, CGWB, Bhubaneswar & duly forwarded to CGWA, New Delhi and same is under the process for implementation. Further we have undertaken renovation & 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 augment the ground water resources of the area.
xiv	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 should 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 shall 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.	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. The ground water level is recorded at 5.23 m from the surface in the well near mines office during January, 2014. The monitoring report is being sent to MOEF, Central Ground Water Authority and Regional Director, Central Ground Water Board regularly.
xv	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. The same is under implementation.
xvi	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	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

	mineral. The mineral transportation shall be carried out through covered trucks only and the vehicles carrying the mineral shall not be overloaded.	loaded trucks and the loading of ore is done as per Govt norms i.e., within the permissible limits.
xvii	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.	Controlled blasting is being practiced in our mines. Blasting is being carried out during day time only. All blasting is controlled with shock tube delay systems thereby mitigating the ground vibration & fly rock problems.
xviii	Drills shall either be operated with dust extractors or equipped with water injection system.	The drills used in mines are equipped with DCT system i.e., there is provision of dust extraction as well as dust suppression system with injection of water. To make it further effective, mock gels are also used in the fractured strata as & when required.
xix	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 provided with dust suppression arrangement by water sprinkling. Upkeep and maintenance of such arrangement is being carried out regularly as per schedule.
xx	Consent to operate shall be obtained from the State Pollution Control Board prior to start of enhanced production from the mine.	Consent to Operate has been obtained from the State Pollution Control Board for production capacity of 1.5 MTPA vide letter no.- 7598/IND-I-CON-1798 dated 04.05.11 which is valid up to 31 st March, 2016.
xxi	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and wastewater generated during mining operation.	STP is already in operation at Mines colony which is situated away from the Mine lease area. Presently no work shop effluent is generated from the mine site as contract vendors are engaged for transportation and there is no waste water generation during mining operation. However, we proposed to establish a full-fledged workshop with ETP and oil & grease trap facility for washing & maintenance of the vehicles.

xxii	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely Asiatic elephant, tiger, python, Indian wolf 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 Plan 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.	A site specific Wildlife conservation plan for protection of endangered 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 implementation of regional wildlife management plan. 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 submitted to Regional Office.
xxiii	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.	Necessary basic amenities such as temporary sheds, canteen, toilets, safe drinking water and electricity etc have been provided to the construction labourers.
xxiv	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 mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	The mine is fully mechanized and operated with drilling, blasting with dozer, dumper combination and has excavators, loaders, mobile crushing & screening plants with necessary pollution control measures.		
ii	No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.	The approved annual production capacity of the mines is 1.5 MTPA and the production is limited within the approved quantity. The excavation details for the year 2013-14 is given below.		
		Category	Excavation (proposed)	Achieved
		ROM	2501936	600258
		Waste	0	11030
iii	Atleast four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM, SPM, SO ₂ & NO _x 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.	<p>Ambient air quality covering 4 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.</p> <p>It is observed that the Maximum concentration of Respirable Particulate Matter (PM₁₀) is in the range of 44 µg/m³ - 79 µg/m³ and Fine particulate Matter (PM_{2.5}) is in the range of 17 µg/m³ - 38 µg/m³. The PM₁₀ and PM_{2.5} concentrations were found to be well within the limits of the National Ambient Air Quality Standard (NAAQS). The Maximum concentration of Sulphur Dioxide (SO₂), Nitrous Oxide (NO_x) and Carbon Monoxide (CO) are well within the limits of NAAQS. The details of Ambient Air Quality are enclosed as Annexure-1.</p>		

iv	Data on ambient air quality (RSPM, SPM, SO ₂ & NO _x) 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 [(RSPM (Particulate matter with size less than 2.5 & 10 micron i.e., PM _{2.5} & PM ₁₀), SO _x and NO _x) is being regularly monitored and 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
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.	Fugitive dust has been controlled by sprinkling water on haul roads & loading/unloading point etc and the sprinkling arrangements are being maintained properly.
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.	In order to control the noise levels shock absorbent linings are provided in vibrating parts, the machineries & equipments are properly maintained & upkept. Controlled blasting techniques using delay detonators are adopted to mitigate noise & vibration. Personal Protective Equipments are being provided to workers.
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.	Presently no work shop effluent is generated from the mine site as contract vendors are engaged for transportation and there is no waste water generation during mining operation. However, we proposed to establish a full-fledged workshop with ETP and oil & grease trap facility for washing & maintenance of the vehicles.
viii	<p>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.</p> <p>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.</p>	<p>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. All the personnel are trained on safety in work place and continuous awareness programmes are being conducted for all employees.</p> <p>Periodical Medical Examination of employees (departmental & contractual) are conducted as per prescribed norms of Mines Rule, 1955. The initial and periodical examination includes blood haematology, blood pressure, detailed cardiovascular assessment, neurological examination etc. All chest radiographs are being classified for detection of pneumoconiosis, diagnosis and documentation made in accordance to ILO classifications.</p>

ix	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 under operation consisting Sr. GM(Planning, Quality & Environment), Sr. GM(CSR & Admin & Security) and Chief Medical Officer who reports directly to Sr. Vice President(Operation), Head of the Cell.
x	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. Year wise expenditure is being submitted to MoEF's Regional Office located at Bhubaneswar. During the year 2013-14 an amount Rs. 125 lakhs was spent towards environmental protection measures at Koira Iron Mine.
xi	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 1971. Accordingly the clause is not applicable to us.
xii	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.
xiii	The project proponent shall submit six monthly report 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.	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. We have also uploaded the status of compliance of the environmental clearance conditions, including results of monitored data on our company's website.
xiv	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.	Copy of environment clearance letter has been submitted to the Koira Gram Panchayat for information.

<p>xv</p>	<p>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.</p>	<p>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.</p>
<p>xvi</p>	<p>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.</p>	<p>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 The Samaj and Sambad on dated 01.10.2008. The copy of publication have since been forwarded to the Regional Office MoEF, Bhubaneswar.</p>