



Ref. No. EMIL/GEOL/ 153 /2018-19

Dated—07.06.2018

To

The Director,  
Ministry of Environment, Forests & Climate Change  
3<sup>rd</sup> Floor, Vayu Wing, Indira Paryavaran Bhavan  
Jor Bagh Road, New Delhi - 110 003  
INDIA

Sub: Submission of half-yearly EC compliance status for the period October-2017 to March-2018 in respect of Kasia Iron & Dolomite Mines of Essel Mining & Industries Limited, Barbil

Ref: General condition no. xiii of Environment Clearance (EC) Vide letter No. J-11015/960/2007-IA.II (M) on 29.11.2010

Sir,

With reference of the above we are submitting herewith the half-yearly EC compliance status along with environmental monitoring report in respect of Kasia Iron & Dolomite Mines for the period of October-2017 to March-2018.

Thanking you,

Yours Faithfully,  
For ESSEL MINING & INDUSTRIES LTD.

Dr. Khageswar Mahanta  
Vice President

Encl: As above.

- Cc: 1. The Director(S) Govt. of India, (Ministry of Env. & Forests) Eastern Regional Office, A/3, Chandrasekharpur, Bhubaneswar-751023.  
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2. The Member Secretary, State Pollution Control Board, Paribesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012.  
e-mail: [membersecretary@ospcboard.org](mailto:membersecretary@ospcboard.org)
3. Sh R. C. Saxena ( Scientist 'D' & Incharge ), Central Pollution Control Board, Southern Conclave, Block 502, 5th & 6th Floors, 1582, Rajdanga Main Road, Kolkata - 700 107.  
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## HALF YEARLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE CONDITIONS

**01. Name of the Project:** Kasia Iron & Dolomite Mines of M/s. ESSEL MINING & INDUSTRIES LIMITED, Barbil, Keonjhar, Odisha.

**02. MoEF Clearance Letter No. & Date:** J-11015/960/2007-IA.II (M) on 29.11.2010.

**03. Period of Compliance Report:** From 01.10.2017 to 31.03.2018.

SL NO.	SPECIFIC CONDITION	COMPLIANCE
i	The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Orissa and effectively implement all the conditions stipulated therein.	Consent to establish for production of 7.5 MTPA has been obtained from the State Pollution Control Board, Odisha on 24.12.2010 vide letter no. 21999/IND-II-NOC-5188 and Consent to operate has also been obtained from the State Pollution Control Board, Orissa vide letter No. 2968/IND-I-CON-956 on 15.03.2018 for the period 2017-18 and 2018-19 valid up to 31.03.2019. The conditions stipulated therein are being complied with. However, the mining operation is suspended since November, 2012.
ii	The environmental clearance is subject to approval of the State Land use Department, Government of Orissa for diversion of agricultural land for non-agricultural use.	For diversion of agricultural land for non-agricultural use, necessary approval from the revenue dept. shall be obtained following the laid down procedure as and when required to do so.
iii	Environmental clearance is subject to grant of forestry clearance. Necessary forestry clearance under the Forest (Conservation) Act, 1980 for an area of 173.039ha forestland involved in the project shall be obtained before starting mining operation in that area. No mining shall be undertaken in the forest area without obtaining requisite prior forestry clearance.	The mine has obtained the stage-II Forest Clearance vides MoEF's letter F. No.8-95/1996-FC (pt) dated 18.11.2011 over an area of 173.039 ha of forest land included within the mining lease. The mining operation remained suspended on administrative ground during the period under review.
iv	Environmental clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004, as may be applicable to this project.	Our lease does not fall under any eco sensitive zone i.e. within 10 KM radius of the National Parks/Wildlife sanctuary. As such, the clause is not applicable to Kasia Iron & Dolomite Mines.

v	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the competent authority, as may be applicable to this project.	<p>The area does not fall within National Parks, Sanctuaries, Biosphere Reserves, Wildlife corridors, Tiger/Elephant reserves nor do the same exist within 10 km of the mining lease area. Therefore, clearance under the Wildlife (Protection) Act, 1972 is not applicable in case of Kasia Iron &amp; Dolomite Mines. However, a site specific wild life conservation plan has been prepared and approval is obtained vide Memo. No. 4053/1WL(C) SSP-166/2011 dated 13.06.2011 from PCCF (Wild life) cum Chief wild life warden, Odisha.</p> <p>A copy of approved wildlife conservation plan has already been submitted to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar vide our office letter no.840 dated 04.12.2012.</p>
vi	The mining operations shall be restricted to above ground water table and it should not intersect the groundwater table. In case of working below the ground water table, prior approval of the Ministry of Environment and Forests and the Central Ground Water Authority shall be obtained, for which a detailed hydro-geological study shall be carried out.	Mining operation is suspended since November, 2012. So no change in the pit dimensions. However, the present depth of mining operations is at 455m RL and the level of ground water table is at 432m RL in lease area. Thus there is no intersection of ground water table by mining activity. Necessary approval will be obtained from CGWA and MoEF in case of working below the Ground water table and accordingly a detailed hydro-geological study shall be carried out for obtaining the approval.
vii	The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any mining operations. Adequate measures shall be taken for conservation and protection of the seasonal nallah passing through the mine lease and also the first order and the second order streams, if any emanating/passing through the mine lease area during the course of mining operation.	No natural watercourse is emanating/passing through the lease hold area. As such the question of obstruction of natural water course & water resources due to any mining operation does not arise.
viii	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.	At present mining operation suspended. However, in future after resumption of mining operation, 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 etc.

ix	<p>The over burden generated during the mining operation shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time and its phase-wise stabilization shall be carried out. Backfilling shall commence from the year 2020-2021 onwards. Proper terracing of the OB dumps shall be carried out so that the overall slope of the dumps shall be maintained to 27°. The over burden dump shall 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. Out of the total excavated area of 101.888ha, an area of 57.705ha shall be backfilled and reclaimed by plantation. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment &amp; Forests and its Regional Office located at Bhubaneswar on six monthly basis.</p>	<p>OB is dumped as per approved mining plan and within the earmarked area. Inactive portions of the OB dump are gradually stabilized and rehabilitated by plantation. The slope of the dump is terraced and the overall slope angle is maintained less than 28 degree. As regards the reclamation of excavated land, this will be done as per progressive mine closure plan and shall be achieved at the end of mine life following the final closure plan. Inactive dumps have been stabilized /rehabilitated through afforestation programme. The rehabilitated dumps are being monitored for five years to ensure self-sustenance of the vegetation.</p> <p>Compliance status is being submitted regularly to the Ministry of Environment &amp; Forest and its regional office located at Bhubaneswar once in every six months.</p>
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x	<p>Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, OB and mineral dump(s) to prevent run off of water and flow of sediments directly into the agricultural fields, the seasonal nallah, the Karo River 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 the monsoon and maintained properly.</p> <p>Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the mine pit and OB and mineral dump(s) to prevent run off of water and flow of sediments directly into the agricultural fields, the seasonal nallah, the Karo River 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.</p>	<p>Till now catch drains of 2450 running meter &amp; siltation ponds are constructed around the OB and mineral dumps to prevent run off of water and flow of sediments directly into the agricultural fields, the seasonal nallah, the Karo River and other water bodies. The water so collected is utilized for watering the mine area, roads, green belt development etc. The drains are regularly desilted particularly before &amp; after the monsoon and maintained properly.</p> <p>The overall slope angles of OB dumps are maintained within the natural angle of repose of the waste. The retaining wall and garland drain with sedimentation pit are constructed at appropriate location along the periphery of the waste dump. Their dimensions are matching the requirements to prevent run off of water and flow of sediments to nearby water bodies.</p> <p>However, no work related to OB dump management is carried out due to temporary discontinuance of mining operation during this period under review.</p>
xi	<p>Dimension of the retaining wall at the toe of the over burden dumps and the OB benches within the mine to check run-off and siltation shall be based on the rain fall data.</p>	<p>Retaining wall (1.5m height &amp; 1.0 m width) has been constructed at the toe of the OB dumps to check run-off and siltation of low lying lands.</p>
xii	<p>The void left unfilled in an area of 44.183 ha shall be converted into water body. The higher benches of excavated void/mining pit shall be terraced and plantation done to stabilize the slopes. The slope of higher benches shall be made gentler for easy accessibility by local people to use the water body. Peripheral fencing shall be carried out along the excavated area.</p>	<p>Following the conceptual mining plan 44.183 ha worked out pit area shall be converted into water reservoir for pisciculture at the end of life of the mine, when the measures like terracing and plantation along the slopes shall be done to stabilize the higher benches of the excavated voids. The slope shall also be made gentler and the area shall be subjected to peripheral fencing.</p>
xiii	<p>The water recovery and spill way system shall be so designed that the natural water resources are not affected and that no spill water goes into the nearby Karo River and other</p>	<p>When Beneficiation plant &amp; tailing pond will be operational necessary arrangement will be made based on the design proposed in detailed project report with respect to Beneficiation plant &amp; tailing pond to ensure</p>

	water bodies.	that water resources are not affected and no spill water goes into the nearby Karo River and other water bodies .
xiv	The project proponent shall carry out conditioning of the ore with water to mitigate fugitive dust emission, without affecting flow of ore in the ore processing and handling areas.	High pressurized dry fog system installed at every transfer points of screening & crushing unit for conditioning of the ore with water and all conveyor belts are covered with GI sheet to mitigate fugitive dust emission. The flow of the ore in the ore processing and handling areas are not affected on such conditioning of the ore. However, during the appraisal period (October, 2017 to March, 2018) mining operation is suspended temporarily.
xv	The effluent from the ore beneficiation plant shall be treated to conform to the prescribed standards and the tailings slurry shall be transported through a closed pipeline to the tailing dam.	The Beneficiation Plant is yet to be commissioned. On commissioning of the plant the stipulation to conform the prescribed standards of effluent shall be maintained and the tailing slurry shall be transported through a closed pipe line to the tailing dam as advised.
xvi	The project proponent shall take necessary safeguard measures to ensure that there is no leaching from the tailing pond.	The stipulation shall be implemented after commissioning of the Beneficiation plant.
xvii	The decanted water from the tailing ponds shall be re-circulated and there should be zero discharge from the tailing ponds. Acid mine water, if any, shall be neutralized and reused within the plant.	The stipulation shall be implemented after commissioning of the Beneficiation plant.
xviii	Plantation shall be raised in an area of 140.003 ha including a 7.5m wide green belt in the safety zone around the mining lease by planting the native species around reclaimed area, OB dumps, mine benches, around water body, around beneficiation plant and tailing ponds, along the roads etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per hectare. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	As envisaged the plantation shall be raised over an area of 140.003 ha including a 7.5m wide green belt in safety zone around the mining area, reclaimed area, OB dumps, mine benches, around water body, beneficiation plant, tailing pond & along the roads etc. shall be completed at the end of life of mine. As of now we have completed plantation within safety zone area of 7.5 m along the ML boundary by native species. The density of the trees kept at 2500 plants per hectare. No plantation is carried out during this period under review since mining operation is suspended temporarily on administrative ground.

xix	Effective safeguard measures such as 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. 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.	During the appraisal period (Oct, 2017 to March, 2018) mining operation including crushing & screening is suspended temporarily.
xx	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.	A scheme on Rain Water Harvesting & Artificial Ground Water Recharge has been prepared in consultation with Regional Director, CGWB, Bhubaneswar & duly approved by CGWA, New Delhi and same is under the process of implementation now. To add more, we have already carried out an Integrated Watershed Development Programme in & around Kasia Mines under CSR scheme in consultation with RWSS, Govt. of Odisha & District Administration, Keonjhar. The same will be implemented to augment the water resources of the area once the mining operation resumes over the area.
xxi	Regular monitoring of ground water level and quality shall be carried out in and around the project area (mine lease, beneficiation plant and tailing ponds) by establishing a network of existing wells and installing new piezometers during the 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.	Regular monitoring of ground water level and quality is being carried out in and around the lease hold area.  Three numbers of piezometers are already established in core and buffer zone. We are also monitoring the depth of water available in the dug well located outside the lease hold area in buffer zone. The report is sent to MOEF & its Regional Office, Bhubaneswar, Central Ground Water Authority and Regional Director Central Ground Water Board regularly. The ground water level and quality monitoring results are enclosed as Annexure-A.  As observed from the monitoring data there is no sign of depletion of ground water table due to mining activity.

xxii	Appropriate mitigative measures should be taken to prevent pollution of the Karo River in consultation with the State Pollution Control Board.	Karo river is situated at a distance of 06 kilometers from the Mine lease area with intervening forest patch in between. Further, we have undertaken protective measures such as check dam, garland drain, settling pits, toe walls etc to avoid any pollution of Karo river. We have also undertaken renovation & desiltation of the village ponds, seasonal nallah etc situated within 05 Kms radius of the lease boundary as a supplementary mitigative measures.
xxiii	The project proponent shall obtain necessary prior permission/NOC of the competent authorities for drawl of requisite quantity of water required for the project.	Ground water abstraction is carried out only after obtaining NOC from CGWA. NOC for ground water drawal for 2000 KLD is obtained vide letter No.21-4(18)/SER/CGWA/2007-1218 dated 06.08.2014. Application has been filed for renewal of NOC. An agreement has been signed with the Executive Engineer, DoWR, Govt. of Odisha for drawl of ground water for domestic use.
xxiv	The groundwater and surface water in and around the mine including tailing ponds shall be regularly monitored at strategic locations for heavy metals. The monitoring stations shall be established in consultation with the Regional Director, Central Ground Water Board and the State Pollution Control Board.	<p>The monitoring stations for ground water and surface water in and around the mines have been established in consultation with Regional office of State Pollution control Board. Metals such as Fe, Cr+6, Cu, Se, As, Cd, Hg, Pb, Zn and Mn at specific locations for both surface water (downstream &amp; upstream) and ground water is being periodically monitored by referring to the standards as per BIS: 10500. The analysis results are well within the permissible standards while other parameters are below detection level.</p> <p>The ground water level and quality monitoring results are annexed.</p>
xxv	The project proponent shall practice suitable rainwater harvesting measures on long term basis and work out a detailed scheme for rainwater harvesting in consultation with the Central Groundwater Authority and submit a copy of the same to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	<p>A scheme on Rain Water Harvesting &amp; Artificial Ground Water Recharge has been prepared in consultation with Regional Director, CGWB, Bhubaneswar &amp; duly approved by CGWA, New Delhi and same is under the process of implementation now. To add more, we have already carried out an Integrated Watershed Development Programme in &amp; around Kasia Mines under CSR scheme in consultation with RWSS, Govt. of Odisha &amp; District Administration, Keonjhar. The same will be implemented to augment the water resources of the area.</p> <p>The copy of such report has been forwarded to MOEF and its Regional office, Bhubaneswar.</p>



xxvi	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 the covered trucks only and the vehicles carrying the mineral shall not be overloaded. No transportation of ore outside the mine lease area shall be carried out after the sunset.	Since the mining operation remained suspended on administrative ground, no transportation of minerals is carried out during this period under review
xxvii	No blasting shall be carried out after the sunset. 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.	No blasting is carried out during this period under review since mining operation is suspended temporarily on administrative ground.
xxviii	Drills shall either be operated with the dust extractors or equipped with water injection system.	No drilling is carried out during this period under review since mining operation is suspended temporarily on administrative ground.
xxix	Mineral handling area 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.	No crushing & screening activities is undertaken during this period under review since mining operation is suspended temporarily on administrative ground.
xxx	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and wastewater generated during the mining operation.	<p>The Sewage treatment plant is working within colony. As regards ETP there is hardly any waste water generation in the workshop since only minor repair &amp; maintenance is being done at the workshop. Further, there is no waste water generation during the mining operation since mine is operated in dry process.</p> <p>No maintenance work or mining operation during this period under review since mining operation is suspended temporarily on administrative ground.</p>
xxxii	Effective safeguard measures should be taken to control fugitive emissions so as to ensure that RSPM (PM10) levels are within prescribed limits.	Water sprinkling along road is carried out to ensure that RSPM (PM10) levels are maintained within prescribed limits.
xxxiii	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	Pre-placement medical examination (IME) and periodical medical examination (PME) of the workers engaged in the mines is being carried out regularly and records are also maintained.

	workers should be drawn and followed accordingly.	
xxxiii	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna namely elephant, Indian wolf, leopard, pangolin, python etc. in the study area fauna found in the study area. Action plan for conservation of flora and fauna prepared shall be implemented in consultation with the State Forest and Wildlife Department. All the safeguard measures brought out in the Wildlife Conservation Plan prepared specific to this project site shall be effectively implemented. 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. A copy of action plan shall be submitted to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar.	A site specific wild life conservation plan has been prepared for the conservation of flora and fauna in consultation with the State Forest and Wildlife Department. Approval of Site Specific Wild Life Conservation plan is obtained vide Memo. No. 4053/1WL(C) SSP-166/2011 dated 13.06.2011. A sum of rupees Rs. 136.00 lakhs has been deposited with the state forest dept towards the above for implementation within the buffer zone and Rs. 89.00 lakhs will be spend in core zone of the project. The copy of the Wild life Conservation plan duly approved by PCCF (WL) is sent to the Regional Office of MoEF, Bhubaneswar.
xxxiv	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.	Housing for the construction labor within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, STP, safe drinking water, medical health care etc. has been provided.

xxxv	<p>The critical parameters such as RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NOX in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically . Further, quality of discharged water shall also be monitored [(TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA.II(M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry <a href="http://www.envfor.nic.in">www.envfor.nic.in</a> shall also be referred in this regard for its compliance.</p>	<p>Ambient air quality monitoring covering PM10, PM2.5, SO<sub>2</sub>, NO<sub>x</sub>, CO is being carried out in core &amp; buffer zone in 6 locations. The report is being submitted to the Ministry's Regional Office at Bhubaneswar and to the State Pollution Control Board/Central Pollution Control Board half yearly. As per the DGMS guidelines peak particle velocity during blasting is also carried out. However, no blasting is carried out during this period under review since mining operation is suspended temporarily.</p> <p>The monitored data is being uploaded in the company website (<a href="http://www.esselmining.com">www.esselmining.com</a>) as well as being displayed electronically on the main gate of the company in public domain. The environmental monitoring report during this compliance period is annexed.</p>
xxxvi	<p>A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment &amp; Forests 5 years in advance of final mine closure for approval.</p>	<p>A progressive mine closure plan approved by IBM is in place.</p> <p>The final mine closure plan along with details of Corpus fund will be submitted to the Ministry of Environment &amp; Forests 5 years in advance of final mine closure as advised. However, as per IBM manual, FMCP has been submitted on 30.03.2018 i.e. 2 years prior to the validity of mining lease ending 31.03.2020 for approval.</p>

SL NO.	GENERAL CONDITION	COMPLIANCE									
i	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	Necessary permission will be taken from MoEF if any changes to be made in mining technology or scope of working.									
ii	No change in the calendar plan including excavation, quantum of mineral iron ore and waste should be made.	Presently, the mining operation is suspended due to administrative ground. However, on resumption of mining operation the calendar plan shall be strictly adhered to. The excavation details achieved for the year FY 2017-18 are given in the following table.									
		<table border="1"> <thead> <tr> <th>Category</th> <th>Excavation Plan (2017-18)</th> <th>Achieved</th> </tr> </thead> <tbody> <tr> <td>ROM in Metric Ton</td> <td>2514000</td> <td>Nil</td> </tr> <tr> <td>Overburden in Cum</td> <td>104000</td> <td>Nil</td> </tr> </tbody> </table>	Category	Excavation Plan (2017-18)	Achieved	ROM in Metric Ton	2514000	Nil	Overburden in Cum	104000	Nil
		Category	Excavation Plan (2017-18)	Achieved							
		ROM in Metric Ton	2514000	Nil							
Overburden in Cum	104000	Nil									
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 10micron i.e., PM10) 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.	For the monitoring of Ambient air quality 2 stations in the core zone and 4 stations in the buffer zone has been installed based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with SPCB, Odisha. To this effect all the monitoring stations are duly authenticated in consultation with Regional Officer, OSPCB, Keonjhar.									
iv	Data on ambient air quality [(RSPM(Particulate matter with size less than 10micron i.e., PM10) and 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.	Ambient air quality [(RSPM(Particulate matter with size less than 10 micron i.e., PM <sub>10</sub> ) and NO <sub>x</sub> ] 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. The PM <sub>10</sub> and PM <sub>2.5</sub> concentrations were found to be well within the limits of the National Ambient Air Quality Standard (NAAQS). The 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.									
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. Dry fog system with high jet water sprinkler is installed at all transfer point, loading/unloading points to control fugitive dust emission. Such installations are also regularly maintained. However, during the appraisal period (Oct, 2017 to Mar, 2018) mining operation is suspended temporarily.									

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 & equipment are properly maintained & up kept. Controlled blasting techniques using delay detonators are adopted to mitigate noise & vibration. Personal Protective Equipments are provided to workers engaged in operations of HEMMs etc. However, during the appraisal period (Oct, 2017 to Mar, 2018) mining operation is suspended temporarily.
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.	There is no workshop within the mine premise nor there waste-water generation from mines due to mining activities at Kasia Mines since it is operated in dry process. We have the programme to construct a workshop within the mines when we will construct the oil & grease traps before discharge of workshop effluents as advised. However, during the appraisal period (Oct, 2017 to Mar, 2018) mining operation is suspended temporarily.
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. 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. 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) is 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 & corrective measures taken accordingly.
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 in place consisting of geologists, environmentalists, chemists, horticulturist, medical officers etc. who reports directly to Joint President (Operations), Head of the Cell. The cell is responsible for effective implementation of environment protection measures and to monitor the routine environmental performance within the core & buffer zone of the lease area.

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 is spent only for environment related purposes. Year wise expenditure is being submitted to MoEF's Regional Office, Bhubaneswar. During the year 2017-18 an amount Rs.14,16,228/- was spent towards environmental protection measures in respect of Kasia Iron & Dolomite Mines. Year wise expenditure for the year 2017-18 is submitted to MoEF's Regional Office on 07.06.2018 located at Bhubaneswar vide our letter no. EMIL/GEOL/146/2018-19.
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 1955. Accordingly the clause is not applicable to us.
xii	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.	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) are being sent to the Ministry of Environment and Forests, its Regional Office at Bhubaneswar, the respective Zonal Office of Central Pollution Control Board at Kolkata and the State Pollution Control Board, Bhubaneswar.  The status of compliance of the environmental clearance conditions, including results of monitored data are being uploaded in our company's website ( <a href="http://esselmining.com/sustainability/environmental_reports.html">http://esselmining.com/sustainability/environmental_reports.html</a> ) and are updated the same periodically.  Simultaneously the above data are being sent to the Regional Office of the MoEF & CC Bhubaneswar, the Zonal Officer of Central Pollution Control Board, Kolkata and the State Pollution Control Board.
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.	We are extending full co-operation during inspection by MoEF officers of Regional Office, Bhubaneswar by furnishing the requisite data/ information/ monitoring reports etc.

Xiv	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 Sarpanch, Bhadrasahi Gram panchayat for information. The Clearance letter has also been put on the website of the company.
Xv	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 has been displayed by State Pollution Control Board for 30 days at the Regional Office, District Industry Centre and Collector's Office/ Tehsildar's Office.
xvi	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-mail.	The environmental statement for financial year ending 31st March, 2017 in Form-V has been submitted on dtd. 07.09.2017 to the State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently. It is being uploaded in the company's website along with the status of compliance of environmental clearance conditions. The same is also submitted to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.
xvii	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 <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 EC along with the availability of clearance order under with SPCB and MOEF website have been duly published in two widely circulated Oriya daily The Samaj and Sambad on dated 04.12.2010. The copy of the same is also forwarded to the Regional Office of the MoEF, Bhubaneswar.



**Khageswar Mahanta**  
Vice President (Geology)