



Ref. No. EMIL/GEOL/ 382 /2017-18

Date—07.09.2017

To

The Member Secretary,
State Pollution Control Board, Odisha
Department of Forests & Environment,
Govt. of Odisha, Paribesh Bhawan,
A/118, Nilakantha Nagar, Unit-VIII
Bhubaneswar-751012

Sub: Submission of Environmental Statement in respect of Koira Iron Mines of Essel Mining & Industries Limited, Barbil for the year 2016-17.

Dear Sir,

Please find enclosed herewith the environmental statement report duly filled-in Form-V as prescribed under the Environment (Protection) Rules, 1986 & amendment thereof for the financial year 2016-17 in respect of Koira Iron Mines.

Thanking you,

Yours Faithfully,
For ESSEL MINING & INDUSTRIES LTD.

Dr. Khageswar Mahanta
Vice President

Cc: The Regional Officer, State Pollution Control Board, Sector-5, Rourkela
The Director, Govt. of India, Ministry of Env. & Forests, Eastern Regional Office, A/3,
Chandrasekharapur, Bhubaneswar-751023 (email-roez.bsr-mef@nic.in)

Encl: As above

Essel Mining & Industries Ltd.
P.O. Barbil, Dist. Keonjhar,
Odisha 758035, India

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CIN U51109WB1950PLC018728

Website www.adityabirla.com
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Regd. Office: Industry House, 18th Floor, 10 Camac Street, Kolkata - 700 017

OFFICIAL CORRESPONDENCE 2017-18 (SPCB 2017-18).Doc

FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March 2017

PART- A

- | | |
|--|--|
| <p>1. Name and address of the owner/ occupier of the industry, operation or process</p> <p>2. Industry category Primary- (STC Code) Secondary- (STC Code)</p> <p>3. Production capacity</p> <p>4. Year of establishment</p> <p>5. Date of the last environmental statement submitted</p> | <p style="text-align: right;">Koira Iron Mine
Essel Mining & Industries Limited
At/PO: Koira, Dist: Sundergarh
Odisha -770048</p> <p style="text-align: right;">: Open Cast Iron Ore Mines (Large Scale)</p> <p style="text-align: right;">: 4.0 Million Tonne Per Annum</p> <p style="text-align: right;">: 1971</p> <p style="text-align: right;">: 20.09.2016</p> |
|--|--|

PART- B

Water and Raw Material Consumption:

(i) Water consumption (m³/d)

- | | |
|-------------|-------|
| 1. Process | : 224 |
| 2. Cooling | : Nil |
| 3. Domestic | : 104 |

Name of the product(s)	Process water consumption per unit of products	
	During the previous financial year (2015-16)	During the current financial year (2016-17)
This is an open cast iron ore mines producing sized ore and fines. Water is required for dust suppression at C&S plant by the dry fog system & water sprinkling within the mines.		

(ii) Raw material consumption

Name of Raw Material	Name of Products	Consumption of raw material per unit of output	
		During the previous financial year (2015-16)	During the current financial year (2016-17)
This is an open cast iron ore mines. After blasting in the pits, RoM (Run off mine) is fed to Screening & Crushing unit to produce sized ore of 10-30 mm, 5-18 mm and -5 mm sized iron ores. Whatever material is fed for processing, same comes out as output of different size fractions. The total ROM production during this year is about 3995684 MT.			

* Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

PART-C
Pollution discharged to environment/unit of output
(Parameters as specified in the consent issued)

Pollutants	Quantity of pollution discharged (mass/day)	Concentrations of pollutants in discharges (mass/volume)	Percentage of variation from prescribed standards with reasons																																																																																																																																																																																																				
Water	<p>As the industry is being operated on dry process technology, no liquid effluent is generated from the screening & crushing process.</p> <p>Domestic waste water generated from residential colony is treated through Sewage Treatment Plant and the treated water is utilized for plantation & vehicle washing purpose. Water quality for the year 2016-17 is summarized below.</p> <p style="text-align: center;">WATER QUALITY</p> <table border="1"> <thead> <tr> <th rowspan="2">Parameters</th> <th colspan="2">Koira nala up-stream</th> <th colspan="2">Koira nala down stream</th> <th colspan="2">Karo nala up stream</th> <th colspan="2">Karo nala Down stream</th> <th colspan="2">Kurarhi nala Up stream</th> <th colspan="2">Kurarhi nala down stream</th> <th colspan="2">STP</th> <th colspan="2">ETP</th> <th rowspan="2">STANDARD (GSR422E)</th> </tr> <tr> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>pH</td> <td>6.11</td> <td>7.34</td> <td>6.01</td> <td>7.52</td> <td>6.36</td> <td>7.33</td> <td>6.05</td> <td>7.4</td> <td>6.36</td> <td>7.46</td> <td>6.28</td> <td>7.37</td> <td>6.32</td> <td>7.64</td> <td>6.18</td> <td>7.56</td> <td>5.5-9.0</td> </tr> <tr> <td>TSS, mg/l</td> <td>15</td> <td>82</td> <td>15</td> <td>46</td> <td>10</td> <td>39</td> <td>12</td> <td>74</td> <td><10</td> <td>116</td> <td><10</td> <td>24</td> <td>22</td> <td>58</td> <td>12</td> <td>76</td> <td>100</td> </tr> <tr> <td>TDS, mg/l</td> <td>55</td> <td>859</td> <td>55</td> <td>165</td> <td>33</td> <td>78</td> <td>34</td> <td>90</td> <td>21</td> <td>48</td> <td>25</td> <td>54</td> <td>182</td> <td>476</td> <td>41</td> <td>148</td> <td>2100</td> </tr> <tr> <td>Oil & grease, mg/l</td> <td><1</td> <td>5</td> <td><1</td> <td>3</td> <td><1</td> <td>3</td> <td><1</td> <td>2</td> <td><1</td> <td>1</td> <td><1</td> <td>1</td> <td>3</td> <td>7</td> <td><1</td> <td>1</td> <td>10</td> </tr> <tr> <td>Fluoride, mg/l</td> <td><0.1</td> <td>0.43</td> <td><0.1</td> <td>0.51</td> <td><0.1</td> <td>0.21</td> <td><0.1</td> <td>0.22</td> <td><0.1</td> <td>0.12</td> <td><0.1</td> <td>0.20</td> <td><0.1</td> <td>0.46</td> <td><0.1</td> <td>0.53</td> <td>2.0</td> </tr> <tr> <td>Chlorides, mg/l</td> <td>11</td> <td>37</td> <td>11</td> <td>45</td> <td><10</td> <td>20</td> <td><10</td> <td>22</td> <td><10</td> <td>14</td> <td><10</td> <td>15</td> <td>27</td> <td>97</td> <td><10</td> <td>36</td> <td>1000</td> </tr> <tr> <td>Iron, mg/l</td> <td>0.05</td> <td>1.65</td> <td>0.06</td> <td>1.1</td> <td>0.06</td> <td>1.1</td> <td>0.06</td> <td>0.90</td> <td>0.05</td> <td>1.16</td> <td><0.05</td> <td>0.29</td> <td>0.16</td> <td>2.50</td> <td>0.06</td> <td>0.52</td> <td>3</td> </tr> <tr> <td>BOD, mg/l</td> <td>2</td> <td>13</td> <td>2</td> <td>6</td> <td>2</td> <td>5</td> <td>2</td> <td>8</td> <td>2</td> <td>6</td> <td>2</td> <td>3</td> <td>7</td> <td>112</td> <td>3</td> <td>9</td> <td>30</td> </tr> <tr> <td>COD, mg/l</td> <td>7</td> <td>51</td> <td>9</td> <td>31</td> <td>10</td> <td>30</td> <td>8</td> <td>27</td> <td>8</td> <td>28</td> <td>8</td> <td>18</td> <td>34</td> <td>101</td> <td>15</td> <td>40</td> <td>250</td> </tr> </tbody> </table>			Parameters	Koira nala up-stream		Koira nala down stream		Karo nala up stream		Karo nala Down stream		Kurarhi nala Up stream		Kurarhi nala down stream		STP		ETP		STANDARD (GSR422E)	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	Min	Max	pH	6.11	7.34	6.01	7.52	6.36	7.33	6.05	7.4	6.36	7.46	6.28	7.37	6.32	7.64	6.18	7.56	5.5-9.0	TSS, mg/l	15	82	15	46	10	39	12	74	<10	116	<10	24	22	58	12	76	100	TDS, mg/l	55	859	55	165	33	78	34	90	21	48	25	54	182	476	41	148	2100	Oil & grease, mg/l	<1	5	<1	3	<1	3	<1	2	<1	1	<1	1	3	7	<1	1	10	Fluoride, mg/l	<0.1	0.43	<0.1	0.51	<0.1	0.21	<0.1	0.22	<0.1	0.12	<0.1	0.20	<0.1	0.46	<0.1	0.53	2.0	Chlorides, mg/l	11	37	11	45	<10	20	<10	22	<10	14	<10	15	27	97	<10	36	1000	Iron, mg/l	0.05	1.65	0.06	1.1	0.06	1.1	0.06	0.90	0.05	1.16	<0.05	0.29	0.16	2.50	0.06	0.52	3	BOD, mg/l	2	13	2	6	2	5	2	8	2	6	2	3	7	112	3	9	30	COD, mg/l	7	51	9	31	10	30	8	27	8	28	8	18	34	101	15	40	250
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Air	<p>Concentration of ambient air quality parameters both in core & buffer zone varies in the following ranges throughout the year conforming the NAAQ standards. The monitoring results obtained from these locations are submitted half yearly to the OSPCB, CPCB, MoEF, IBM.</p> <p>The ambient air quality in & around the lease hold area during the year 2016-17 is within the permissible limit of NAAQ standards.</p> <table border="1"> <thead> <tr> <th rowspan="2">Parameters</th> <th colspan="2">Core Zone</th> <th colspan="2">Buffer Zone</th> <th rowspan="2">Standards</th> <th rowspan="2">Variation</th> </tr> <tr> <th>Min</th> <th>Max</th> <th>Min</th> <th>Max</th> </tr> </thead> <tbody> <tr> <td>PM₁₀</td> <td>46</td> <td>86</td> <td>45</td> <td>92</td> <td>100 µg/m³ (24 Hrly)</td> <td rowspan="6">No deviation. All the values remain within the permissible limit.</td> </tr> <tr> <td>PM_{2.5}</td> <td>15</td> <td>54</td> <td>12</td> <td>38</td> <td>60 µg/m³ (24 Hrly)</td> </tr> <tr> <td>SO₂</td> <td>6.6</td> <td>16.3</td> <td>6.5</td> <td>17.1</td> <td>80 µg/m³ (24 Hrly)</td> </tr> <tr> <td>NO_x</td> <td>7.3</td> <td>17.2</td> <td>7.8</td> <td>18.2</td> <td>80 µg/m³ (24 Hrly)</td> </tr> <tr> <td>CO</td> <td>0.07</td> <td>0.95</td> <td>0.01</td> <td>0.97</td> <td>02 mg/m³ (8 Hrly)</td> </tr> </tbody> </table>			Parameters	Core Zone		Buffer Zone		Standards	Variation	Min	Max	Min	Max	PM ₁₀	46	86	45	92	100 µg/m ³ (24 Hrly)	No deviation. All the values remain within the permissible limit.	PM _{2.5}	15	54	12	38	60 µg/m ³ (24 Hrly)	SO ₂	6.6	16.3	6.5	17.1	80 µg/m ³ (24 Hrly)	NO _x	7.3	17.2	7.8	18.2	80 µg/m ³ (24 Hrly)	CO	0.07	0.95	0.01	0.97	02 mg/m ³ (8 Hrly)																																																																																																																																																										
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PART-D
(Hazardous Wastes)

[As specified under Hazardous Wastes (Management and Handling) rules, 1989]

Hazardous waste	Total Quantity	
	During the previous financial year (2015-16)	During the current financial year (2016-17)
(a) From process - Used Oil	6.72 KL	3.69 KL
- Waste Containing Oil	0.525 MT	0.953 MT
(b) From pollution control facilities	Nil	Nil

PART-E

Solid Wastes

Sources	Total Quantity	
	During the previous financial year (2015-16)	During the current financial year (2016-17)
(a) From process (Overburden)	272663.87 MT	239277 MT
(b) From pollution control facility	Nil	
(c) Quantity recycled or Re- utilized	Nil	

PART-F

Please specify the characteristics (in terms of composition of quantum) of Hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Hazardous Waste: (Used Oil & Waste Containing Oil)

Iron ore screening & crushing is based on “Dry Process”. No Hazardous waste is generated from the process except used oil which is drained from Machineries / Equipments. It is used for lubrication. Burnt oil are stored in barrel and kept over an impervious floor under shed in a demarcated area till its disposal to authorized recycler.

Wastes containing oil or cotton waste are being disposed to an earmarked impervious pit.

Solid Waste:

The overburden mostly lateritic in nature are removed from the pit and dumped systematically and scientifically in the earmarked area (geologically barren area). The same waste dump is rehabilitated by plantation on maturity. The overburden generated from the process is utilized for back filling of a portion of the exhausted pit (Quarry no.06).

PART-G

Impact of pollution abatement measures taken on conservation of natural resources and on the cost of production.

Significant resource conservation measures undertaken as follows.

1. ETP is operational for the treatment workshop effluents. Similarly STP installed within the colony is being used for treatment of domestic sewage. Thus the treated water is used for gardening & floor washing.
2. Plantation over the waste dumps is undertaken to stabilize it.
3. During this period, more than Rs. 11.50 lakhs was spent towards nursery development & afforestation activities within the lease area. Similarly more than Rs. 125 lakhs incurred for environmental pollution monitoring and control measures as per the SPCB/CPCB/MoEF&CC guidelines.
4. Systematic & Scientific Mining Operations and use of HEMMs.
5. Extensive & Intensive Exploration Programme are conducted
6. Controlled blasting techniques
7. Use of Jaw/Cone Crusher & Screening Plant for processing of ore.
8. Proportionate Blending of different grades of ore for Meeting Various Buyers' requirement
9. Stacking of sub-grade & its future utilization
10. During the year 2016-17 an amount of Rs. 18023639.58 was spent towards environmental management plan.
11. 8603 and 460 nos. of saplings were planted within & outside the mining lease respectively during the year 2016-17.

PART-H

Additional measures/investment proposal for environmental protection including abatement of pollution, prevention of pollution.

1. The Mine management celebrates and participates in Mine Environment & Mineral Conservation Week, Mines Safety Week & World Environment Day every year.
2. Installation of water flow meters at various water drawal points helps us on economical use of water.
3. Implementation of Rain Water Harvesting Structures & Artificial Recharge Structures in and around of lease hold area for conservation & improvement of ground water potentiality.
4. Greenery development at vacant land, Govt. waste land etc.
5. Waste dumps are stabilized through plantation.
6. Development of green belts around operational areas and nearby villages.
7. The Mine has been awarded with 5 Star Rating by the Ministry of Mines, Govt. of India for the year 2015-16 and this has been conferred in the February, 2017. This is the highest rating in its category.
8. The mine has already been certified to ISO-14001 (Environment Management System), ISO-9001 (Quality Management System), OHSAS-18001 (Occupational Health and Safety Assessment Series), and maintaining the systems satisfactorily.
9. Top priority for WCM (World Class Manufacturing) activities for improvement in Safety, Environment, production, quality and sustainable development.

PART-I

Any other particulars for improving the quality of the environment

1. We have full-fledged Environment Department for monitoring, maintenance of pollution control equipment and for green belt development.
2. Monitoring of ambient air quality, noise, soil, DG stack emission and water quality is being done regularly.
3. Maintenance department is doing regular checking and scheduled maintenance of all the pollution control devices and equipments & HEMMs.
4. Administration dept is taking care of Housekeeping and Civil department is taking care of operation of STP under the guidance of Geology department.
5. Geology & Horticulture Department is taking care of tree plantation and green belt development.
6. Fruits bearing saplings are distributed free of cost to the nearby villagers.
7. UBE (Unit Business Excellence) is used as a tool for better housekeeping, good maintenance practice and assist in control of pollution.
8. Organize various awareness programmes in the nearby villages.



Dr. Khageswar Mahanta
Vice President