

## ANNEXURE I

F. No. 8-78/1996-FC (pt.-I)  
Government of India  
Ministry of Environment, Forests and Climate Change  
(Forest Conservation Division)

Indira Paryavaran Bhawan  
Aliganj, Jorbagh Road  
New Delhi -110 003  
Dated: 3<sup>rd</sup> November, 2014

To,  
**The Principal Secretary (Forests),**  
Government of Odisha,  
Bhubaneswar.

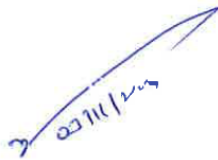
**Sub:** Diversion of 73.697 hectares of forest land in Sukinda Chromite Mines of M/s. TATA Steel Ltd. In Jajpur district during 3<sup>rd</sup> Renewal of mining lease (RML) period.

Sir,

I am directed to refer to the Government of Odisha's letter No 10F (Cons) 73/ 2014-8679/ F &E dated 9<sup>th</sup> May 2014 on the above mentioned subject, seeking prior approval of the Central Government under Section 2 of the Forest (Conservation) Act, 1980, and to say that the said proposal has been examined by the Forest Advisory Committee constituted by the Central Government under section-3 of the aforesaid Act.

2. After careful consideration of the proposal of the State Government of Odisha and on the basis of the recommendations of the Forest Advisory Committee, the Central Government hereby agrees to accord **stage-I approval** for the diversion of 73.697 hectares of forest land in Sukinda Chromite Mines of M/s. TATA Steel Ltd. In Jajpur district during 3<sup>rd</sup> Renewal of mining lease (RML) period, subject to the following conditions:

- (i) Legal status of the diverted forest land shall remain unchanged;
- (ii) Following activities shall be undertaken by the user agency at the project cost:
  - (a) A plan containing appropriate mitigative measures to minimize soil erosion and choking of streams shall be prepared and implemented;
  - (b) Planting of adequate drought hardy plant species and sowing of seeds in the appropriate area within the mining lease to arrest soil erosion;
  - (c) Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour;
  - (d) Stabilize the overburden dumps by appropriate grading/benching so as to ensure that that angles of repose at any given place is less than 28°; and
  - (e) Strict adherence to the prescribed top soil management.
- (iii) State Government shall charge the Net Present Value (NPV) of the forest area diverted under this proposal from the user agency as per the Orders of the Hon'ble



Supreme Court of India dated 28.03.2008, 24.04.2008 and 09.05.2008 in Writ Petition (Civil) No. 202/1995 and the guidelines issued by this Ministry vide its letter No. 5-3/2007-FC dated 05.02.2009 in this regard;

- (iv) At the time of payment of the Net Present Value (NPV) at the present rate, the user agency shall furnish an undertaking to pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;
- (v) All the funds received from the User Agency under the project shall be transferred to Ad-hoc CAMPA in the concerned Saving Bank Account in Corporation Bank, Lodhi Road, New Delhi-110003;
- (vi) User agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986;
- (vii) User agency shall maintain 7.50 meters wide strip all along the periphery of the mining lease as safety zone. No mining activity shall be undertaken in the safety zone;
- (viii) State Government shall ascertain the status, as on 25<sup>th</sup> October 1980, of the area located in the mining lease which has been treated as 'non-forest' as per the Hal (present) record of rights and intimate the same to the Ministry of Environment and Forests, Government of India within a period of one month from the date of grant of stage-I approval;
- (ix) User agency shall prepare a schedule of the surrender of the fully(biologically) reclaimed mined out forest land and submit the same to the Ministry of Environment and Forests before grant to stage-II approval under the FC Act;
- (x) The User Agency shall pay the proportionate cost of implementation of Regional Wildlife Management Plan at revised cost; and
- (xi) The user agency shall pay towards the cost of site specific conservation plan to be approved by the CWLW, Odisha for its implementation in leasehold as well as surrounding area.
- (xii) User agency in consultation with the State Forest Department shall create and maintain alternate habitat/ home for the avifauna, whose nesting trees are to be cleared in this project. Bird nests artificially made out of eco-friendly materials shall be used in the area, including forest area and human settlements, adjoining the forest area being diverted for the project;
- (xiii) User agency either himself or through the State Forest Department shall undertake fencing, protection and afforestation of the safety zone area (7.5 meter strip all along the outer boundary of the area identified to undertake mining), at the project cost;

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- (xiv) User agency either himself or through the State Forest Department shall undertake afforestation on degraded forest land, one and half time in extent to the area used for safety zone;
- (xv) Period of diversion of the said forest land under this approval shall be for a period co-terminus with the period of the mining lease proposed to be granted under the Mines and Minerals (Development and Regulation) Act, 1957, and the Rules framed there-under, subject to a maximum period of 20 years;
- (xvi) User agency either himself or through the State Forest Department shall undertake gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.4), if any, located in the area within 100 meters from outer perimeter of the mining lease;
- (xvii) User agency shall undertake de-silting of the village tanks and other water bodies located within five km from the mine lease boundary so as to mitigate the impact of siltation of such tanks/water bodies, whenever required;
- (xviii) User agency shall undertake mining in a phased manner and take due care for reclamation of the mined over area. The concurrent reclamation plan shall be executed by the User Agency as per the approved mining plan/scheme and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980, Government of Odisha and the Addl. Principal Chief Conservator of Forests (Central), Ministry of Environment & Forests, Regional Office (Eastern Zone), Bhubaneswar. If it is found from the annual report that the activities indicated in the concurrent reclamation plan are not being executed by the user agency, the Nodal Officer or the Addl. Principal Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities are satisfactorily executed;
- (xix) No labour camp shall be established on the forest land;
- (xx) User agency shall provide firewood preferably alternate fuel to the labourers and the staff working at the site so as to avoid any damage and pressure on the adjacent forest areas;
- (xxi) Boundary of the mining lease and safety zone shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, forward and back bearing and distance from pillar to pillar;
- (xxii) Forest land shall not be used for any purpose other than that specified in the proposal;
- (xxiii) State Government shall complete settlement of rights, in term of the Scheduled Tribes and Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, if

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any, on the forest land to be diverted and submit the documentary evidence as prescribed by this Ministry in its letter No. 11-9/1998-FC (pt.) dated 3<sup>rd</sup> August 2009, in support thereof;

- (xxiv) Any other condition that the Regional Office (Eastern Zone), Bhubaneswar of this Ministry, Bhubaneswar may stipulate, from time to time, in the interest of conservation, protection and development of forests & wildlife; and
- (xxv) User agency and the State Government shall ensure compliance to provisions of the all Acts, Rules, Regulations and Guidelines, for the time being in force, as applicable to the project.

3. After receipt of the report on compliance to the conditions stipulated in the paragraph-2 above, from the Government of Odisha, final/ stage-II approval for diversion of the said forest under Section-2 of the Forest (Conservation) Act, 1980 will be issued by this Ministry. Transfer of the said forest land to the user agency shall not be affected by the Government of Odisha till final/ stage-II approval for its diversion is issued by this Ministry.

4. However, pending receipt of report on compliance to the conditions stipulated in paragraph-2 above and grant of final/ stage-II approval under the Forest (Conservation) Act, 1980 for diversion of the said forest land, State Government may allow the user agency to undertake mining, as per the approved mining plan, in the already broken up forest land being diverted for mining purposes (as per the approved land use plan), for a period not exceeding one year from the date of issue of this letter.

5. Stage-I approval and Working Permission for mining over already broken up area is subject to in-principle decision of the authority in the State Government in terms of section 8(3) of the Mines and minerals (Development and Regulation) Act, 1957 that in the interest of mineral development it is necessary to renew the lease.

Yours faithfully,

SAL

(H. C. Chaudhary)  
Director

**Copy to:**

1. The Principal Chief Conservator of Forests, Government of Odisha, Bhubaneswar.
2. The Nodal Officer, the Forest (Conservation) Act, 1980, the Government of Odisha, Bhubaneswar.
3. The Addl. Principal Chief Conservator of Forests (Central), Regional Office (Eastern Zone), Bhubaneswar.
4. User Agency.
5. Monitoring Cell, FC Division, MoEF, New Delhi.
6. Guard File.

(H. C. Chaudhary)  
Director

## ANNEXURE II

Government of Odisha  
Forest & Environment Department

-0-

No.10F (Con) 73/2014 14957 / F&E, Dt. 17.07.17

From

Sri Debidutta Biswal, IFS  
Special Secretary to Government

To

**The Principal Chief Conservator of Forests, Odisha**

Sub: Diversion of balance 330.972 ha. of Sabik Kisam Forest land as on 25.10.1980 in addition to already diverted forest land of 73.697 ha for Chromite mining in their Sukinda Chromite mine in Jajpur District under Cuttack Forest Division by M/s TATA Steel Limited.

Sir,

I am directed to enclose herewith the Stage-I approval order of Government of India, MoEF &CC, vide letter F. No. 8-15/2016-FC dt.04.07.2017 for diversion of balance 330.972 ha. of Sabik Kisam Forest land as on 25.10.1980 in addition to already diverted forest land of 73.697 ha for Chromite mining in their Sukinda Chromite mine in Jajpur District under Cuttack Forest Division by M/s TATA Steel Limited. The Stage-I approval order referred to above indicates that Government of India, MoEF &CC, agrees for diversion of above extent of forest land subject to compliance of 25(Twenty-five) no. of conditions by the user agency so as to consider the case for Stage-II(Final) forests clearance.

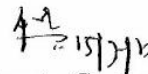
In addition to the conditions stipulated in the in-principle approval order, the user agency is also required to comply with the following additional conditions.

- User Agency has to execute Phased Reclamation Plan at their cost.
- The User Agency shall pay the differential cost towards proportionate cost of implementation of Regional Wildlife Management Plan at revised rate.
- The user agency shall undertake demarcation of the lease area on the ground posting four feet high cement concrete pillars embedded two feet inside the soil with serial number, forward and backward bearings, and distance from pillar to pillar. The user agency shall also submit the map of lease area showing different kinds of forest land using DGPS survey data and latitude and longitude of each pillar to the Divisional Forest Officer, Cuttack for his reference before commencement of work on final forest clearance.
- Lease profile shall be furnished by the lessee.
- The user agency shall provide the relevant safety zone map duly authenticated by competent Forest and Mining Officers concerned. Safety zone area shall therefore be assessed and demarcated on ground. User agency shall maintain safety zone and undertake afforestation activities over 1.5 times of the forest area in safety zone area in degraded forest land elsewhere.

It is requested to take necessary steps for compliance of the conditions imposed in the Stage-I approval order of MoEF &CC, as well as the additional conditions imposed by the State Government. Appropriate instruction in this context may be imparted to the Divisional Forest Officer of Cuttack Forest Division as well as to the user agency for compliance of the conditions. Detailed compliance of all the conditions imposed by MoEF &CC and State Government may be meticulously scrutinized by Addl. PCCF (Forest Diversion) & Nodal Officer, FC Act of your office and further necessary steps may also be taken by him expeditiously to furnish the detailed compliance in this respect to MoEF&CC on behalf of State Government as per authorization of State Government communicated in this regard vide letter No. 10195/F&E dt.16.5.2017 to you, for their consideration for according final forest clearance to this project. A copy of detailed compliance so sent to MoEF&CC may also be marked to State Forest Department unflinchingly for reference.

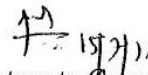
Violation of Forest Conservation Act, 1980, if any, may, however, be reported in detail expeditiously to the State Government as per para 1.9 of F.C. Act guidelines for bringing the same to the notice of Government of India, Ministry of Environment, Forests and Climate Change for further action at their end.

Yours faithfully

  
Special Secretary to Government

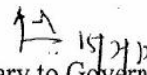
Memo No. 14958/F&E., Dated. 17-07-17

Copy with copy of enclosures forwarded to the PCCF(WL) & CWLW, Odisha for information & necessary action.

  
Special Secretary to Government

Memo No. 14959/F&E., Dated. 17-07-17

Copy with copy of enclosures forwarded to the Addl. Principal CCF(Forest Diversion) & Nodal Officer, FC Act, O/O PCCF, Odisha for information & necessary follow up action with reference to Government order communicated to PCCF, Odisha in the matter of processing compliance of conditions of Stage-I approval order/State Government vide F&E department letter No. 10195/F&E dt.16.5.2017.

  
Special Secretary to Government

### ANNEXURE III

#### MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

#### MINERALOGICAL COMPOSITION REPORT FOR SEP-2017

1. Name of Industry : Sukinda Mines, (M/s TATA Steel Limited); Kalanranjiatta.
2. Sampling Location : St-1: Near Stack yard, St-2: At Lab Top, St-3: At Hospital top St-4: Near Mines Complex, St-5: Near COB Plant, St-6: Near Telingpond .
3. Monitoring Instruments : RDS(APM 460 BL)
4. Sample Collected by : VCSPL representative in presence of TATA representative.

| Parameters                     | Analysis Results |            |            |            |            |            |
|--------------------------------|------------------|------------|------------|------------|------------|------------|
|                                | St-1             | St-2       | St-3       | St-4       | St-5       | St-6       |
|                                | 16.09.2017       | 16.09.2017 | 15.09.2017 | 15.09.2017 | 15.09.2017 | 16.09.2017 |
| Cr <sub>2</sub> O <sub>3</sub> | 19.9             | 18.4       | 21.6       | 15.2       | 13.8       | 17.6       |
| Fe <sub>2</sub> O <sub>3</sub> | 7.6              | 6.9        | 8.6        | 6.4        | 5.1        | 6.2        |
| MnO <sub>2</sub>               | 2.1              | 1.8        | 2.4        | 1.2        | 0.8        | 1.6        |
| SiO <sub>2</sub>               | 25.2             | 24.6       | 26.2       | 22.8       | 30.6       | 26.8       |
| Al <sub>2</sub> O <sub>3</sub> | 10.6             | 9.8        | 11.6       | 9.8        | 5.8        | 8.6        |
| MgO                            | 11.4             | 10.8       | 12.4       | 10.2       | 8.2        | 9.8        |
| CaO                            | 2.6              | 2.1        | 2.8        | 1.8        | 1.6        | 1.9        |

For Visiointek Consultancy Services Pvt. Ltd.



**ANNEXURE IV**  
**COVERING OF LOADED TRUCK BY TARPAULIN**



COVERING OF TRUCK BY TARPAULIN



**ANNEXURE V**  
**DUST CONTROLLING MAJORS**



Concrete Path



Stationary Water Sprinkler



Dust Suppression System at Hopper



Water Sprinkling



Concentrate Stack Covered With Tarpaulin



COVERING OF TRUCK BY TARPAULIN

Truck Covered With Tarpaulin

**ANEXURE-VI**  
**AMBIENT AIR QUALITY**  
**CORE ZONE (April'17 to Sep'17)**

| <b>1. COB PLANT</b> |               |                |              |              |             |             |             |              |                  |                             |                  |                 |
|---------------------|---------------|----------------|--------------|--------------|-------------|-------------|-------------|--------------|------------------|-----------------------------|------------------|-----------------|
| Monthly Average     | PM10<br>µg/m3 | PM2.5<br>µg/m3 | SO2<br>µg/m3 | NOx<br>µg/m3 | CO<br>mg/m3 | O3<br>µg/m3 | Pb<br>µg/m3 | NH3<br>µg/m3 | Benzene<br>µg/m3 | Benzo(a)<br>Pyrene<br>ng/m3 | Arsenic<br>ng/m3 | Nickel<br>ng/m3 |
| Apr-17              | 59.00         | 32.18          | 4.88         | 11.8         | 0.21        | 6.45        | BDL         | BDL          | 0.78             | BDL                         | BDL              | BDL             |
| May-17              | 56.67         | 32.06          | 4.60         | 11.88        | 0.20        | 6.59        | BDL         | BDL          | 0.78             | BDL                         | BDL              | BDL             |
| Jun-17              | 47            | 27.48          | 4.22         | 11.12        | 0.16        | 5.57        | BDL         | BDL          | 0.67             | BDL                         | BDL              | BDL             |
| Jul-17              | 39.8          | 18.6           | <4.1         | <9.4         | 0.14        | <4.0        | <0.001      | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Aug-17              | 45.1          | 21.7           | <4.2         | <9.8         | 0.22        | <4.0        | <0.001      | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Sep-17              | 44.30         | 21.10          | <4.1         | <10          | 0.24        | <4.0        | <0.001      | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| <b>AVERAGE</b>      | <b>48.65</b>  | <b>25.52</b>   | <b>4.57</b>  | <b>11.60</b> | <b>0.20</b> | <b>6.20</b> | <b>BDL</b>  | <b>BDL</b>   | <b>0.74</b>      | <b>BDL</b>                  | <b>BDL</b>       | <b>BDL</b>      |

| <b>3. LABORATORY TOP</b> |               |                |              |              |             |             |             |              |                  |                             |                  |                 |
|--------------------------|---------------|----------------|--------------|--------------|-------------|-------------|-------------|--------------|------------------|-----------------------------|------------------|-----------------|
| Monthly Average          | PM10<br>µg/m3 | PM2.5<br>µg/m3 | SO2<br>µg/m3 | NOx<br>µg/m3 | CO<br>mg/m3 | O3<br>µg/m3 | Pb<br>µg/m3 | NH3<br>µg/m3 | Benzene<br>µg/m3 | Benzo(a)<br>Pyrene<br>ng/m3 | Arsenic<br>ng/m3 | Nickel<br>ng/m3 |
| Apr-17                   | 54.25         | 31.43          | 4.5          | 11.28        | 0.18        | 5.95        | BDL         | BDL          | 0.72             | BDL                         | BDL              | BDL             |
| May-17                   | 50.89         | 29.03          | 4.27         | 11.19        | 0.17        | 6.09        | BDL         | BDL          | 0.69             | BDL                         | BDL              | BDL             |
| Jun-17                   | 43.00         | 26.16          | 4.12         | 10.52        | 0.14        | 5.32        | BDL         | BDL          | 0.61             | BDL                         | BDL              | BDL             |
| Jul-17                   | 34.3          | 15.1           | <4.0         | <9.0         | <0.12       | <4.0        | <0.001      | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Aug-17                   | 36            | 16.6           | <4.0         | <9.1         | 0.14        | <4.0        | <0.001      | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Sep-17                   | 41.30         | 19.40          | <4.0         | <9.2         | 0.14        | <4.0        | <0.001      | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| <b>AVERAGE</b>           | <b>43.29</b>  | <b>22.95</b>   | <b>4.30</b>  | <b>11.00</b> | <b>0.15</b> | <b>5.79</b> | <b>BDL</b>  | <b>BDL</b>   | <b>0.67</b>      | <b>BDL</b>                  | <b>BDL</b>       | <b>BDL</b>      |

| <b>2. STACK YARD</b> |               |                |              |              |             |             |            |              |                  |                             |                  |                 |
|----------------------|---------------|----------------|--------------|--------------|-------------|-------------|------------|--------------|------------------|-----------------------------|------------------|-----------------|
| Monthly Average      | PM10<br>µg/m3 | PM2.5<br>µg/m3 | SO2<br>µg/m3 | NOx<br>µg/m3 | CO<br>mg/m3 | O3<br>µg/m3 | Pb µg/m3   | NH3<br>µg/m3 | Benzene<br>µg/m3 | Benzo(a)<br>Pyrene<br>ng/m3 | Arsenic<br>ng/m3 | Nickel<br>ng/m3 |
| Apr-17               | 63.25         | 34.9           | 5.33         | 12.35        | 0.23        | 7.03        | BDL        | BDL          | 0.85             | BDL                         | BDL              | BDL             |
| May-17               | 61.11         | 34.30          | 4.93         | 12.43        | 0.23        | 7.04        | BDL        | BDL          | 0.84             | BDL                         | BDL              | BDL             |
| Jun-17               | 53.33         | 30.80          | 4.47         | 11.63        | 0.18        | 5.97        | BDL        | BDL          | 0.75             | BDL                         | BDL              | BDL             |
| Jul-17               | 43.40         | 20.30          | 4.50         | 10.90        | 0.21        | <4.0        | <0.001     | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Aug-17               | 51.60         | 24.40          | 4.60         | 11.40        | 0.28        | <4.0        | <0.001     | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Sep-17               | 56.70         | 28.10          | <4.4         | 11.70        | 0.30        | <4.6        | <0.001     | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| <b>AVERAGE</b>       | <b>54.90</b>  | <b>28.80</b>   | <b>4.77</b>  | <b>11.74</b> | <b>0.24</b> | <b>6.68</b> | <b>BDL</b> | <b>BDL</b>   | <b>0.81</b>      | <b>BDL</b>                  | <b>BDL</b>       | <b>BDL</b>      |

| <b>4. HOSPITAL TOP</b> |               |                |              |              |             |             |            |              |                  |                             |                  |                 |
|------------------------|---------------|----------------|--------------|--------------|-------------|-------------|------------|--------------|------------------|-----------------------------|------------------|-----------------|
| Monthly Average        | PM10<br>µg/m3 | PM2.5<br>µg/m3 | SO2<br>µg/m3 | NOx<br>µg/m3 | CO<br>mg/m3 | O3<br>µg/m3 | Pb µg/m3   | NH3<br>µg/m3 | Benzene<br>µg/m3 | Benzo(a)<br>Pyrene<br>ng/m3 | Arsenic<br>ng/m3 | Nickel<br>ng/m3 |
| Apr-17                 | 46.00         | 26.63          | 4.00         | 10.35        | 0.14        | 5.3         | BDL        | BDL          | 0.61             | BDL                         | BDL              | BDL             |
| May-17                 | 40.56         | 23.80          | BDL          | 10.10        | 0.13        | 5.23        | BDL        | BDL          | 0.57             | BDL                         | BDL              | BDL             |
| Jun-17                 | 34.67         | 20.33          | BDL          | 9.63         | 0.11        | 5.09        | BDL        | BDL          | 0.49             | BDL                         | BDL              | BDL             |
| Jul-17                 | 32.9          | 14.6           | <4.0         | <9.0         | <0.11       | <4.0        | <0.001     | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Aug-17                 | 33.2          | 15.3           | <4.0         | <9.0         | 0.12        | <4.0        | <0.001     | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Sep-17                 | 37.60         | 17.60          | <4.0         | <9.0         | <0.11       | <4.0        | <0.001     | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| <b>AVERAGE</b>         | <b>37.49</b>  | <b>19.71</b>   | <b>4.00</b>  | <b>10.03</b> | <b>0.13</b> | <b>5.21</b> | <b>BDL</b> | <b>BDL</b>   | <b>0.56</b>      | <b>BDL</b>                  | <b>BDL</b>       | <b>BDL</b>      |

| Mining Complex  |               |                |              |              |             |             |             |              |                  |                             |                  |                 |
|-----------------|---------------|----------------|--------------|--------------|-------------|-------------|-------------|--------------|------------------|-----------------------------|------------------|-----------------|
| Monthly Average | PM10<br>µg/m3 | PM2.5<br>µg/m3 | SO2<br>µg/m3 | NOx<br>µg/m3 | CO<br>mg/m3 | O3<br>µg/m3 | Pb<br>µg/m3 | NH3<br>µg/m3 | Benzene<br>µg/m3 | Benzo(a)<br>Pyrene<br>ng/m3 | Arsenic<br>ng/m3 | Nickel<br>ng/m3 |
| Apr-17          | 50.25         | 28.73          | 4.3          | 10.83        | 0.16        | 5.5         | BDL         | BDL          | 0.65             | BDL                         | BDL              | BDL             |
| May-17          | 45.44         | 26.79          | 4.04         | 10.56        | 0.15        | 5.69        | BDL         | BDL          | 0.63             | BDL                         | BDL              | BDL             |
| Jun-17          | 39.00         | 22.50          | 4.03         | 10.10        | 0.12        | 5.16        | BDL         | BDL          | 0.55             | BDL                         | BDL              | BDL             |
| Jul-17          | 41.3          | 19.1           | <4.4         | 10.3         | 0.19        | <4.0        | <0.001      | <20          | <0.001           | <0.002                      | <0.001           | <0.01           |
| Aug-17          | 49.9          | 23.9           | <4.4         | <10.6        | 0.26        | <4.0        | <0.001      | <20          | <0.001           | <0.002                      | <0.001           | <0.01           |
| Sep-17          | 49.30         | 24.40          | <4.2         | 10.60        | 0.26        | <4.0        | <0.001      | <20          | <0.001           | <0.002                      | <0.001           | <0.01           |
| <b>AVERAGE</b>  | <b>45.87</b>  | <b>24.24</b>   | <b>4.12</b>  | <b>10.48</b> | <b>0.19</b> | <b>5.45</b> | <b>BDL</b>  | <b>BDL</b>   | <b>0.61</b>      | <b>BDL</b>                  | <b>BDL</b>       | <b>BDL</b>      |

| Near Tailing Pond |               |                |                |              |             |             |            |              |                  |                             |                  |                 |
|-------------------|---------------|----------------|----------------|--------------|-------------|-------------|------------|--------------|------------------|-----------------------------|------------------|-----------------|
| Monthly Average   | PM10<br>µg/m3 | PM2.5<br>µg/m3 | SO2<br>µg/m3   | NOx<br>µg/m3 | CO<br>mg/m3 | O3<br>µg/m3 | Pb µg/m3   | NH3<br>µg/m3 | Benzene<br>µg/m3 | Benzo(a)<br>Pyrene<br>ng/m3 | Arsenic<br>ng/m3 | Nickel<br>ng/m3 |
| Apr-17            | 41.75         | 24.5           | BDL            | 9.88         | 0.11        | 5.08        | BDL        | BDL          | 0.55             | BDL                         | BDL              | BDL             |
| May-17            | 36.78         | 21.58          | BDL            | 9.67         | 0.11        | 5.08        | BDL        | BDL          | 0.52             | BDL                         | BDL              | BDL             |
| Jun-17            | 30.44         | 18.41          | BDL            | 9.37         | 0.11        | 5.03        | BDL        | BDL          | 0.44             | BDL                         | BDL              | BDL             |
| Jul-17            | 36.7          | 16             | <4.0           | <9.0         | 0.13        | <4.0        | <0.001     | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Aug-17            | 42.9          | 20.2           | <4.2           | 9.5          | 0.18        | <4.0        | <0.001     | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| Sep-17            | 45.60         | 23.30          | <4.1           | <9.7         | 0.22        | <4.0        | <0.001     | <20.0        | <0.001           | <0.002                      | <0.001           | <0.01           |
| <b>AVERAGE</b>    | <b>39.03</b>  | <b>20.67</b>   | <b>#DIV/0!</b> | <b>9.61</b>  | <b>0.14</b> | <b>5.06</b> | <b>BDL</b> | <b>BDL</b>   | <b>0.50</b>      | <b>BDL</b>                  | <b>BDL</b>       | <b>BDL</b>      |

### BUFFER ZONE Ambient Air Quality

| Sl.No | Location      | Month of Monitoring | PM10 µg/m3 | PM2.5 µg/m3 | SO2 µg/m3 | NOx µg/m3 | CO mg/m3 | O3 µg/m3 | Pb µg/m3 | NH3 µg/m3 | Benzene µg/m3 | Benzo(a) Pyrene ng/m3 | Arsenic ng/m3 | Nickel ng/m3 |     |
|-------|---------------|---------------------|------------|-------------|-----------|-----------|----------|----------|----------|-----------|---------------|-----------------------|---------------|--------------|-----|
| 1     | Birasal       | June'17             | 42         | 24.9        | BDL       | 10.6      | 0.13     | BDL      | BDL      | BDL       | 0.64          | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 25.8       | 11.6        | <4.0      | <9.0      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
| 2     | Kanehipal     | June'17             | 38         | 21.2        | BDL       | 10.2      | 0.11     | BDL      | BDL      | BDL       | 0.59          | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 24.4       | 10.8        | <4.0      | <0.9      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
| 3     | Kalarangiatta | June'17             | 51         | 29.6        | BDL       | 11.3      | 0.15     | 5.7      | BDL      | BDL       | 0.73          | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 27.2       | 12.8        | <4.0      | <0.9      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
| 4     | Kaliapani     | June'17             | 34         | 19.4        | BDL       | 9.8       | 0.11     | BDL      | BDL      | BDL       | 0.56          | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 26.3       | 12.2        | <4.0      | <0.9      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
| 5     | Kakudia       | June'17             | 28         | 16.8        | BDL       | BDL       | BDL      | BDL      | BDL      | BDL       | 0.5           | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 28.4       | 13.2        | <4.0      | <0.9      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
| 6     | Sendashara    | June'17             | 23         | 14.2        | BDL       | BDL       | BDL      | BDL      | BDL      | BDL       | 0.46          | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 24.6       | 11.8        | <4.0      | <0.9      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
| 7     | Laxmidharpur  | June'17             | 37         | 21.9        | BDL       | 10.3      | 0.11     | BDL      | BDL      | BDL       | 0.59          | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 29.8       | 13.6        | <4.0      | <0.9      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
| 8     | Sukarangi     | June'17             | 45         | 27.4        | BDL       | 10.9      | 0.14     | BDL      | BDL      | BDL       | 0.68          | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 31.4       | 14.4        | <4.0      | <0.9      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
| 9     | Muruabil      | June'17             | 24         | 13.7        | BDL       | BDL       | BDL      | BDL      | BDL      | BDL       | 0.46          | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 33.4       | 15.2        | <4.0      | <0.9      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
| 10    | Kharkhari     | June'17             | 33         | 18.5        | BDL       | 9.7       | 0.12     | BDL      | BDL      | BDL       | 0.55          | BDL                   | BDL           | BDL          |     |
|       |               | Sep'17              | 30.7       | 14.1        | <4.0      | <0.9      | <0.10    | <4.0     | <0.001   | <20.0     | <0.001        | <0.002                | <0.001        | <0.01        |     |
|       |               | Dec'17              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |
|       |               | Mar'18              |            |             |           |           |          |          |          |           |               |                       | BDL           | BDL          | BDL |

## ANNEXURE VII: Roof Top Rain water Harvesting



**ANEXURE-VIII**  
**Ground Water Quality in Villages (October'16 & March'17)**

| Sl. No | Parameter                              | unit   | Apr'17      | May'17    | June'17   | July'17   | Aug'17    | Sep'17    |
|--------|--|--------|-------------|-----------|-----------|-----------|-----------|-----------|
|        |  |        | KARADAGADIA | KALIAPANI | KAKUDIA   | KALIAPANI | KALIAPANI | KALIAPANI |
|        | Ground water level                     | meters | 14.8        | 8.9       | 10.9      | 16.2      | 12.4      | 2.9       |
| 1      | Colour                                 | Hazen  | CL          | CL        | CL        | CL        | CL        | CL        |
| 2      | Odour                                  | --     | U/O         | U/O       | U/O       | U/O       | U/O       | U/O       |
| 3      | Taste                                  | --     | Agreeable   | Agreeable | Agreeable | Agreeable | Agreeable | Agreeable |
| 4      | Turbidity                              | NTU    | 0.61        | 0.49      | 0.58      | 1.4       | 1.6       | 2.1       |
| 5      | pH Value                               | --     | 7.3         | 7.2       | 7.3       | 7.28      | 7.32      | 7.28      |
| 6      | Dissolved Oxygen                       | mg/l   | 6.2         | 5.7       | 6.4       | 6.2       | 6.3       | 5.9       |
| 7      | Total Hardness (as CaCO <sub>3</sub> ) | mg/l   | 49.1        | 46.2      | 48.1      | 58        | 56        | 65        |
| 8      | Iron (as Fe)                           | mg/l   | 0.12        | 0.15      | 0.18      | 0.16      | 0.17      | 0.19      |
| 9      | Chloride (as Cl )                      | mg/l   | 10.9        | 11.8      | 12.2      | 16        | 17        | 22        |
| 10     | Residual, free Chlorine                | mg/l   | ND          | ND        | ND        | ND        | ND        | ND        |
| 11     | Fluoride (as F)                        | mg/l   | 0.04        | 0.04      | 0.04      | 0.32      | 0.026     | 0.024     |
| 12     | Dissolved Solids                       | mg/l   | 126         | 119       | 127       | 114       | 109       | 126       |
| 13     | Calcium (as Ca )                       | mg/l   | 9.4         | 9.8       | 10.2      | 12.8      | 13.6      | 16.4      |
| 14     | Magnesium (as Mg)                      | mg/l   | 7.1         | 7.5       | 7.7       | 6.3       | 5.3       | 5.8       |
| 15     | Copper (as Cu)                         | mg/l   | BDL         | BDL       | BDL       | <0.05     | <0.05     | <0.05     |
| 16     | Manganese (as Mn)                      | mg/l   | BDL         | BDL       | BDL       | <0.005    | <0.005    | <0.005    |
| 17     | Sulphate (as SO <sub>4</sub> )         | mg/l   | 21.7        | 20.5      | 21.1      | 16.4      | 15.8      | 13.6      |
| 18     | Nitrate (as NO <sub>3</sub> )          | mg/l   | 0.18        | 0.19      | 0.25      | 2.5       | 2.4       | 2.2       |
| 19     | Mercury (as Hg)                        | mg/l   | BDL         | BDL       | BDL       | 0.001     | 0.001     | <0.001    |
| 20     | Cadmium (as Cd)                        | mg/l   | BDL         | BDL       | BDL       | 0.001     | 0.001     | <0.001    |
| 21     | Selenium (as Se)                       | mg/l   | BDL         | BDL       | BDL       | 0.001     | 0.001     | <0.001    |
| 22     | Arsenic (as As)                        | mg/l   | BDL         | BDL       | BDL       | 0.001     | 0.001     | <0.001    |
| 23     | Cyanide (as CN)                        | mg/l   | BDL         | BDL       | BDL       | ND        | ND        | ND        |
| 24     | Lead (as Pb)                           | mg/l   | BDL         | BDL       | BDL       | <0.01     | <0.01     | <0.01     |
| 25     | Zinc (as Zn)                           | mg/l   | 0.26        | 0.21      | 0.27      | 0.14      | 0.11      | 0.13      |
| 26     | Chromium (as Cr <sup>+6</sup> )        | mg/l   | BDL         | BDL       | BDL       | <0.05     | <0.05     | <0.05     |
| 27     | Mineral Oil                            | mg/l   | NIL         | NIL       | NIL       | NIL       | NIL       | ND        |
| 28     | Alkalinity                             | mg/l   | 31          | 24        | 29        | 40        | 36        | 50        |
| 29     | Boron (as B)                           | mg/l   | BDL         | BDL       | BDL       | <0.01     | <0.01     | <0.01     |



**ANNEXURE - IX**  
**Photographs of Backfilling (In Progress)**



**ANEXURE-X**  
**Toe wall, Garland Drain and Surface Runoff Channel**



**Toe Wall**



**Toe Wall & garland drain**



**Surface runoff channel**

**ANNEXURE: XI**  
**Vetiver Plantation and Dump Plantation**



## Vetiver Plantation and Coir Matting



**ANNEXURE XII**  
**Plantation Targets as per Approved Mining Plan**

| Year         | Plan (Within ML) |              | Actual (within ML) |              | Plan (Outside ML)                |              | Actual (Outside ML) |              |
|--------------|------------------|--------------|--------------------|--------------|----------------------------------|--------------|---------------------|--------------|
|              | Nos. of Sapling  | Area in Ha   | Nos. of Sapling    | Area in Ha   | Nos. of Sapling                  | Area in Ha   | Nos. of Sapling     | Area in Ha   |
| 1998-99      | 4000             | 1.62         | 4000               | 1.7          |                                  |              |                     |              |
| 1999-00      | 4000             | 1.62         | 18000              | 4            |                                  |              |                     |              |
| 2000-01      | 5000             | 2.02         | 28342              | 2            |                                  |              |                     |              |
| 2001-02      | 5000             | 2.02         | 15000              | 0.5          |                                  |              |                     |              |
| 2002-03      | 5000             | 2.02         | 22000              | 1.5          |                                  |              |                     |              |
| 2003-04      | 10000            | 4            | 45500              | 1.5          |                                  |              |                     |              |
| 2004-05      | 2500             | 1            | 48000              | 1            |                                  |              |                     |              |
| 2005-06      | 6250             | 2.5          | 75000              | 2.5          |                                  |              |                     |              |
| 2006-07      | 14375            | 5.75         | 129500             | 5.75         |                                  |              |                     |              |
| 2007-08      | 13550            | 5.42         | 94000              | 4.42         | Additional Area (100ha) obtained |              |                     |              |
| 2008-09      | 3000             | 1.2          | 85250              | 2.94         | 8750                             | 3.5          | 36750               | 1.76         |
| 2009-10      | 4000             | 1.6          | 28000              | 3.9          | 17750                            | 7.1          | 56000               | 5.6          |
| 2010-11      | 0                | 0            | 25000              | 2            | 20000                            | 8            | 60000               | 6.5          |
| 2011-12      | 11250            | 4.5          | 45000              | 4.5          | 8750                             | 3.5          | 35000               | 3.5          |
| 2012-13      | 4625             | 1.9          | 5700               | 1.83         | 21375                            | 8.55         | 40000               | 6.5          |
| 2013-14      | 6250             | 2.5          | 3700               | 1.32         | 20000                            | 8            | 54326               | 5.6          |
| 2014-15      | 4000             | 1.6          | 4050               | 1.2          | 19875                            | 7.95         | 50100               | 5.1          |
| 2015-16      | 7500             | 3            | 6000               | 1            | 19625                            | 7.85         | 61473               | 8            |
| 2016-17      | 17000            | 6.8          | 7000               | 2.8          | 6250                             | 2.5          | 26000               | 6.7          |
| 2017-18      | 24750            | 9.9          | 15000              | 5            | 6250                             | 2.5          | 44000               | 6            |
| <b>TOTAL</b> | <b>152050</b>    | <b>60.97</b> | <b>704042</b>      | <b>51.36</b> | <b>148625</b>                    | <b>59.45</b> | <b>463649</b>       | <b>55.26</b> |

**ANNEXURE XIII**  
**ETP at Sukinda Chromite Mine**



**ANNEXURE-XIV**  
**Herbal Treatment Plant**



**ANNEXURE-XV**  
**Recycling of Water At COB Plant**



**Thickener**



**Pantoon carrying Water recirculation system**

**Thickener and Water Recirculation Arrangement**



**Tailings Dewatering Plant - Filter Press**



**Pumping system to recirculate storm water during rain**

**Tailing Dewatering Plant and Water Recirculation Arrangement**



**ANEXURE-XVI**  
**Water Quality Report at Upstream and Downstream of Damsala Nallah**

| <b>Location</b>          | Apr'17                 | May'17                 | June'17                | July'17                | Aug'17                 | Sep'17                 |
|--------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
|                          | <b>pH</b>              | <b>pH</b>              | <b>pH</b>              | <b>pH</b>              | <b>pH</b>              | <b>pH</b>              |
| DAMSALA RIVER UPSTREAM   | 7.2                    | 7.3                    | 7.3                    | 7.24                   | 7.22                   | 7.1                    |
| DAMSALA RIVER DOWNSTREAM | 7.2                    | 7.2                    | 7.3                    | 7.28                   | 7.34                   | 7.2                    |
|                          |                        |                        |                        |                        |                        |                        |
| <b>Location</b>          | Apr'17                 | May'17                 | June'17                | July'17                | Aug'17                 | Sep'17                 |
|                          | <b>Cr+6 mg/l</b>       | <b>Cr+6 mg/l</b>       | <b>Cr+6 mg/l</b>       | <b>Cr+6 mg/l</b>       | <b>Cr+6 mg/l</b>       | <b>Cr+6 mg/l</b>       |
| DAMSALA RIVER UPSTREAM   | 0.048                  | 0.036                  | 0.054                  | <0.05                  | <0.05                  | <0.05                  |
| DAMSALA RIVER DOWNSTREAM | 0.041                  | 0.27                   | 0.047                  | <0.05                  | <0.05                  | <0.05                  |
|                          |                        |                        |                        |                        |                        |                        |
| <b>Location</b>          | Apr'17                 | May'17                 | June'17                | July'17                | Aug'17                 | Sep'17                 |
|                          | <b>Iron as Fe mg/l</b> | <b>Iron as Fe mg/l</b> | <b>Iron as Fe mg/l</b> | <b>Iron as Fe mg/l</b> | <b>Iron as Fe mg/l</b> | <b>Iron as Fe mg/l</b> |
| DAMSALA RIVER UPSTREAM   | 0.39                   | 0.34                   | 0.46                   | 0.38                   | 0.4                    | 0.36                   |
| DAMSALA RIVER DOWNSTREAM | 0.34                   | 0.31                   | 0.39                   | 0.36                   | 0.39                   | 0.32                   |

**ANNEXURE XVII : Oil Separation Pit**



# Sewage Treatment Plant



**ANNEXURE-XVIII**  
**Water Quality Report**  
**ETP Inlet**

| Sl. No | Parameter  | Unit      | Standards (In land Surface water)                    | Apr'17   | May'17   | June'17  | July'17  | Aug'17   | Sep'17   |
|--------|--|-----------|--|----------|----------|----------|----------|----------|----------|
|        |  |           |  | Inlet    | Inlet    | Inlet    | Inlet    | Inlet    | Inlet    |
| 1      | Colour & Odour   | Hazan/-   | 5.0 / U/O  | CL & U/O | CL & U/O | CL & U/O | CL & U/O | CL & U/O | CL & U/O |
| 2      | Suspended Solids                                       | mg/ltr    | 100  | 49       | 44       | 69       | 46       | 44       | 49       |
| 3      | Particular Size of Suspended Solids                    | μ(micron) | <850   | <850     | <850     | <850     | <850     | <850     | <850     |
| 4      | PH   | --        | 5.5-9.0  | 6.9      | 6.8      | 7.2      | 7.2      | 7.4      | 6.7      |
| 5      | Temperature  | °c.       | Shall not exceed 5°C above the receiving water       | 25       | 25       | 25       | 25       | 25       | 25       |
| 6      | Oil & Grease   | mg/ltr    | 10   | 0.76     | 0.8      | 0.08     | 0.09     | 1.1      | 0.86     |
| 7      | Total Residual Chlorine                                | mg/ltr    | 1  | ND       | ND       | ND       | ND       | ND       | ND       |
| 8      | Amm. Nitrogen as N                                     | mg/ltr    | 50   | 0.52     | 0.36     | 0.48     | 0.58     | 0.44     | 0.39     |
| 9      | Total Kjeldal Nitrogen as NH <sub>3</sub>              | mg/ltr    | 100  | 1.74     | 1.24     | 1.36     | 1.49     | 1.31     | 1.48     |
| 10     | Free Ammonia as NH <sub>3</sub>                        | mg/ltr    | 5  | 0.005    | 0.002    | 0.004    | 0.005    | 0.003    | 0.004    |
| 11     | BOD (3) days at 27°C.                                  | mg/ltr    | 30   | 2.14     | 2.62     | 2.78     | 2.86     | 2.86     | 1.88     |
| 12     | COD  | mg/ltr    | 250  | 6.38     | 6.6      | 7.4      | 7.8      | 7.41     | 5.78     |
| 13     | Arsenic as As  | mg/ltr    | 0.2  | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 14     | Mercury as Hg  | mg/ltr    | 0.01   | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 15     | Lead as Pb   | mg/ltr    | 0.1  | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 16     | Cadmium as Cd  | mg/ltr    | 2  | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 17     | Hexa Chromium as Cr <sup>+6</sup>                      | mg/ltr    | 0.1  | 0.2      | 0.22     | 0.14     | 0.075    | 0.07     | 0.24     |
| 18     | Total Chromium as Cr                                   | mg/ltr    | 2  | 0.36     | 0.26     | 0.17     | 0.16     | 0.34     | 0.36     |
| 19     | Copper as Cu   | mg/ltr    | 3  | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 20     | Zinc as Zn   | mg/ltr    | 5  | 0.38     | 0.32     | 0.44     | 0.37     | 0.41     | 0.38     |
| 21     | Selenium as Se   | mg/ltr    | 0.05   | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 22     | Nickel as Ni   | mg/ltr    | 3  | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 23     | Cyanide as CN  | mg/ltr    | 0.2  | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 24     | Fluoride as F  | mg/ltr    | 2  | 0.08     | 0.05     | 0.07     | 0.098    | 0.08     | 0.07     |
| 25     | Diss. Phosphate as P                                   | mg/ltr    | 5  | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 26     | Sulphide as S  | mg/ltr    | 2  | ND       | ND       | ND       | ND       | ND       | ND       |
| 27     | Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH | mg/ltr    | 1  | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 28     | Bio-assay Test   | --        | 90% survival of fish after 96 hours in 100% effluent | 97%      | 97%      | 97%      | 97%      | 97%      | 97%      |
| 29     | Manganese as Mn  | mg/ltr    | 2  | 0.033    | 0.027    | 0.036    | 0.025    | 0.033    | 0.023    |
| 30     | Iron as Fe   | mg/ltr    | 3  | 0.69     | 0.36     | 1.13     | 0.65     | 0.68     | 0.38     |
| 31     | Vanadium as V  | mg/ltr    | 0.2  | BDL      | BDL      | BDL      | BDL      | BDL      | BDL      |
| 32     | Nitrate Nitrogen                                       | mg/ltr    | 10   | 0.28     | 0.24     | 0.3      | 0.24     | 0.31     | 0.31     |
| 33     | Pesticides (as Benzene hexa chloride), μg/l Max.       | μg/l Max  | 10   | Absent   | Absent   | Absent   | Absent   | Absent   | Absent   |

**NB :** C.L. Colourless, O.L – Odourless, ND- Not Detectable.

## Water Quality Report ETP Outlet

| Sl. No | Parameter  | Unit            | Standards (In land Surface water)                    | Apr'17   | May'17   | June'17  | July'17  | Aug'17   | Sep'17   |
|--------|--|-----------------|--|----------|----------|----------|----------|--|--|
|        |  |                 |  | Outlet   | Outlet   | Outlet   | Outlet   | Outlet   | Outlet   |
| 2      | Colour & Odour   | Hazan/-         | 5.0 / U/O  | CL & U/O | CL & U/O | CL & U/O | CL & U/O | CL & U/O   | CL & U/O   |
| 3      | Suspended Solids                                       | mg/ltr          | 100  | 26       | 21       | 31       | 24       | 28   | 34   |
| 4      | Particular Size of Suspended Solids                    | μ(micron)       | <850   | <850     | <850     | <850     | <850     | <850   | <850   |
| 5      | PH   | --              | 5.5-9.0  | 7.1      | 7.2      | 7.2      | 7.2      | 7.24   | 7.18   |
| 6      | Temperature  | <sup>0</sup> c. | Shall not exceed 5°C above the receiving water       | 25       | 25       | 25       | 25       | 25   | 24   |
| 7      | Oil & Grease   | mg/ltr          | 10   | ND       | ND       | ND       | ND       | ND   | ND   |
| 8      | Total Residual Chlorine                                | mg/ltr          | 1.0  | ND       | ND       | ND       | ND       | ND   | ND   |
| 9      | Amm. Nitrogen as N                                     | mg/ltr          | 50   | 0.44     | 0.41     | 0.51     | 0.52     | 0.64   | 0.6  |
| 10     | Total Kjeldal Nitrogen as NH <sub>3</sub>              | mg/ltr          | 100  | 1.6      | 1.53     | 1.69     | 1.2      | 1.4  | 1.2  |
| 11     | Free Ammonia as NH <sub>3</sub>                        | mg/ltr          | 5.0  | 0.004    | 0.003    | 0.005    | ND       | ND   | ND   |
| 12     | BOD (3) days at 27 <sup>0</sup> c.                     | mg/ltr          | 30   | 1.79     | 1.66     | 1.88     | <1.8     | <1.8   | <1.8   |
| 13     | COD  | mg/ltr          | 250  | 4.46     | 4.33     | 4.63     | 4.6      | 4.8  | 4.6  |
| 14     | Arsenic as As  | mg/ltr          | 0.2  | BDL      | BDL      | BDL      | <0.001   | <0.001   | <0.001   |
| 15     | Mercury as Hg  | mg/ltr          | 0.01   | BDL      | BDL      | BDL      | <0.001   | <0.001   | <0.001   |
| 16     | Lead as Pb   | mg/ltr          | 0.1  | BDL      | BDL      | BDL      | <0.01    | <0.01  | <0.01  |
| 17     | Cadmium as Cd  | mg/ltr          | 2.0  | BDL      | BDL      | BDL      | <0.001   | <0.001   | <0.001   |
| 18     | Hexa Chromium as Cr <sup>+6</sup>                      | mg/ltr          | 0.1  | BDL      | BDL      | BDL      | <0.05    | <0.05  | <0.05  |
| 19     | Total Chromium as Cr                                   | mg/ltr          | 2.0  | 0.28     | 0.22     | 0.38     | <0.05    | <0.05  | <0.05  |
| 20     | Copper as Cu   | mg/ltr          | 3.0  | BDL      | BDL      | BDL      | <0.05    | <0.05  | <0.05  |
| 21     | Zinc as Zn   | mg/ltr          | 5.0  | 0.3      | 0.23     | 0.41     | <0.05    | <0.05  | <0.05  |
| 22     | Selenium as Se   | mg/ltr          | 0.05   | BDL      | BDL      | BDL      | <0.001   | <0.001   | <0.001   |
| 23     | Nickel as Ni   | mg/ltr          | 3.0  | BDL      | BDL      | BDL      | <0.001   | <0.001   | <0.001   |
| 24     | Cyanide as CN  | mg/ltr          | 0.2  | BDL      | BDL      | BDL      | ND       | ND   | ND   |
| 25     | Fluoride as F  | mg/ltr          | 2.0  | 0.06     | 0.04     | 0.07     | 0.01     | 0.014  | 0.011  |
| 26     | Diss. Phosphate as P                                   | mg/ltr          | 5.0  | BDL      | BDL      | BDL      | <0.025   | <0.025   | <0.025   |
| 27     | Sulphide as S  | mg/ltr          | 2.0  | ND       | ND       | ND       | ND       | ND   | ND   |
| 28     | Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH | mg/ltr          | 1.0  | BDL      | BDL      | BDL      | <0.001   | <0.001   | <0.001   |
| 29     | Bio-assay Test   | --              | 90% survival of fish after 96 hours in 100% effluent | 98%      | 98%      | 98%      | 98%      | 98% survival of fish after 96 hours in 100% effluent | 98% survival of fish after 96 hours in 100% effluent |
| 30     | Manganese as Mn  | mg/ltr          | 2.0  | 0.027    | 0.021    | 0.034    | <0.005   | <0.005   | <0.005   |
| 31     | Iron as Fe   | mg/ltr          | 3.0  | 0.57     | 0.46     | 0.64     | 0.2      | 0.18   | 0.19   |
| 32     | Vanadium as V  | mg/ltr          | 0.2  | BDL      | BDL      | BDL      | <0.001   | <0.001   | <0.001   |
| 33     | Nitrate Nitrogen                                       | mg/ltr          | 10   | 0.21     | 0.19     | 0.28     | 0.4      | 0.42   | 0.38   |
| 34     | Pesticides (as Benzene hexa chloride), μg/l Max.       | μg/l Max        | 10   | Absent   | Absent   | Absent   | Absent   | Absent   | Absent   |

**NB** :C.L. Colourless, O.L – Odourless., ND- Not Detectable.

**Water Quality Report**  
**Oil separation System - INLET**

| Sl. No | Parameter  | Unit      | Standards  | Apr'17   | May'17   | June'17  | July'17   | Aug'17               | Sep'17               |
|--------|--|-----------|--|----------|----------|----------|---|----------------------|----------------------|
|        |  |           |  | Inlet    | Inlet    | Inlet    | Inlet   | Inlet                | Inlet                |
| 1      | Colour & Odour   | --        | 5 & U/O  | CL & U/O | CL & U/O | CL & U/O | CL & U/O  | CL & U/O             | CL & U/O             |
| 2      | Suspended Solids                                       | mg/l      | 100  | 74       | 66       | 82       | 120   | 134                  | 120                  |
| 3      | Particular Size of S.S.                                | μ(micron) | <850   | <850     | <850     | <850     | <850  | < 850                | <850                 |
| 4      | pH   | --        | 5.5-9.0  | 7.7      | 7.5      | 7.8      | 6.9   | 6.68                 | 6.78                 |
| 5      | Temperature  | °C        | Shall not exceed 5°C above the receiving water       | 25       | 25       | 25       | 25  | 25                   | 24                   |
| 6      | Oil & Grease   | mg/l      | 10   | 0.88     | 0.78     | 0.94     | 2.4   | 2.8                  | 2.3                  |
| 7      | Total Residual Chlorine                                | mg/l      | 1  | ND       | ND       | ND       | ND  | ND                   | ND                   |
| 8      | Amm. Nitrogen as N                                     | mg/l      | 50   | 0.41     | 0.39     | 0.52     | 2.8   | 2.6                  | 3.6                  |
| 9      | Total Kjeldal Nitrogen as NH <sub>3</sub>              | mg/l      | 100  | 1.33     | 1.25     | 1.48     | 4.6   | 6.8                  | 7.9                  |
| 10     | Free Ammonia as NH <sub>3</sub>                        | mg/l      | 5  | 0.004    | 0.004    | 0.005    | ND  | ND                   | ND                   |
| 11     | BOD(3) days at 27°C                                    | mg/l      | 30   | 1.28     | 1.19     | 1.37     | 6   | 8                    | 10                   |
| 12     | COD  | mg/l      | 250  | 3.56     | 3.32     | 3.68     | 30  | 38                   | 44                   |
| 13     | Arsenic as As  | mg/l      | 0.2  | BDL      | BDL      | BDL      | <0.001  | <0.001               | <0.001               |
| 14     | Mercury as Hg  | mg/l      | 0.01   | BDL      | BDL      | BDL      | <0.001  | <0.001               | <0.001               |
| 15     | Lead as Pb   | mg/l      | 0.1  | BDL      | BDL      | BDL      | 0.01  | <0.01                | <0.01                |
| 16     | Cadmium as Cd  | mg/l      | 2  | BDL      | BDL      | BDL      | <0.001  | <0.001               | <0.001               |
| 17     | Hexa Chromium as Cr <sup>+6</sup>                      | mg/l      | 0.1  | BDL      | BDL      | BDL      | 0.12  | 0.15                 | 0.19                 |
| 18     | Total Chromium as Cr                                   | mg/l      | 2  | 0.31     | 0.25     | 0.37     | 0.15  | <0.05                | <0.05                |
| 19     | Copper as Cu   | mg/l      | 3  | BDL      | BDL      | BDL      | <0.05   | <0.05                | <0.05                |
| 20     | Zinc as Zn   | mg/l      | 5  | 0.38     | 0.32     | 0.46     | 0.16  | 0.18                 | 0.22                 |
| 21     | Selenium as Se   | mg/l      | 0.05   | BDL      | BDL      | BDL      | <0.001  | <0.001               | <0.001               |
| 22     | Nickel as Ni   | mg/l      | 3  | BDL      | BDL      | BDL      | <0.001  | <0.001               | <0.001               |
| 23     | Cyanide  | mg/l      | 0.2  | BDL      | BDL      | BDL      | ND  | ND                   | ND                   |
| 24     | Fluoride as F  | mg/l      | 2  | 0.056    | 0.047    | 0.072    | 0.11  | 0.12                 | 0.15                 |
| 25     | Diss. Phosphate as P                                   | mg/l      | 5  | BDL      | BDL      | BDL      | 0.32  | 0.36                 | 0.42                 |
| 26     | Sulphide as S  | mg/l      | 2  | ND       | ND       | ND       | ND  | ND                   | ND                   |
| 27     | Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH | mg/l      | 1  | BDL      | BDL      | BDL      | <0.001  | <0.001               | <0.001               |
| 28     | Bio-assay Test,  | %         | 90% survival of fish after 96 hours in 100% effluent | 98%      | 98%      | 98%      | 94% Survival of fish after 96 hour in 100% effluent | 91% survival of fish | 90% survival of fish |
| 29     | Manganese as Mn, mg/l                                  | mg/l      | 2  | 0.027    | 0.022    | 0.038    | <0.005  | <0.005               | <0.005               |
| 30     | Iron as Fe, mg/l                                       | mg/l      | 3  | 0.37     | 0.32     | 0.47     | 0.58  | 0.52                 | 0.48                 |
| 31     | Vanadium as V, mg/l                                    | mg/l      | 0.2  | BDL      | BDL      | BDL      | <0.001  | <0.001               | <0.001               |
| 32     | Nitrate Nitrogen , mg/l                                | mg/l      | 10   | 0.22     | 0.18     | 0.3      | 1.3   | 1.4                  | 1.6                  |
| 33     | Pesticides (as Benzene hexa chloride)                  | μg/l      | 10   | Absent   | Absent   | Absent   | Absent  | Absent               | Absent               |

**NB** :C.L. Colourless, O.L – Odourless., ND- Not Detectable.



## ANNEXURE XIX

### NOISE SURVEY REPORT AT COB PLANT, LOP PLANT OF SUKINDA CHROMITE MINE, TATA STEEL LTD.

| SL.No. | LOCATION                 | Apr'17               | Sep'17               | AVERAGE |
|--------|--------------------------|----------------------|----------------------|---------|
|        |                          | Noise level in dB(A) | Noise level in dB(A) |         |
| 1      | COB Plant Gate           | 69.9                 | 70.2                 | 70.1    |
| 2      | Canteen                  | 62.3                 | 68.2                 | 65.3    |
| 3      | Work Shop                | 65.4                 | 64.8                 | 65.1    |
| 4      | Office                   | 61.6                 | 62.5                 | 62.1    |
| 5      | D.G.Shed                 | 86.8                 | 70.1                 | 78.5    |
| 6      | MCC Room                 | 69.4                 | 65.4                 | 67.4    |
| 7      | Vibrating Screen         | 70.0                 | 72.5                 | 71.3    |
| 8      | Scrubber                 | 68.5                 | 62.8                 | 65.7    |
| 9      | Control Room             | 66.7                 | 63.4                 | 66.7    |
| 10     | Secondary Apron          | 64.2                 | 66.5                 | 65.4    |
| 11     | Cone Crusher             | 69.5                 | 68.2                 | 68.9    |
| 12     | DTJ Crusher              | 73.9                 | 70.8                 | 72.4    |
| 13     | Concentrated Ore Loading | 65.6                 | 64.2                 | 64.9    |
| 14     | Wobbler area             | 75.5                 | 69.1                 | 72.3    |
| 15     | Primary Apron feeder     | 72.7                 | 72.5                 | 72.6    |
| 16     | C -1A                    | 69.2                 | 63.8                 | 66.5    |
| 17     | Shaking Table            | 75.0                 | 70.8                 | 72.9    |
| 18     | Multiple Bin             | 79.9                 | 70.1                 | 75.0    |
| 19     | H.T Room                 | 63.0                 | 64.8                 | 63.9    |
| 20     | Hydro Cyclone            | 65.1                 | 67.8                 | 66.5    |
| 21     | Spirals                  | 64.4                 | 65.6                 | 65.0    |
| 22     | VS Ball Mill             | 93.0                 | 73.3                 | 83.2    |
| 23     | C.6A                     | 81.0                 | 72.4                 | 76.7    |
| 24     | H.F Screen               | 73.5                 | 71.9                 | 72.7    |
| 25     | Sieve band area          | 80.2                 | 74.1                 | 77.2    |
| 26     | C3                       | 75.4                 | 73.7                 | 74.6    |
| 27     | C4                       | 71.3                 | 74.5                 | 72.9    |
| 28     | LOPP Sayaji Crusher      | 60.9                 | 74.7                 | 67.8    |
| 29     | LOPP Screen              | 62.4                 | 72.3                 | 67.4    |
| 30     | LOPP Control Room        | 62.8                 | 72.3                 | 67.6    |
| 31     | LOPP Hopper              | 54.4                 | 71.2                 | 62.8    |



**Ambient Noise Level Survey in Residential Areas of SCM, TSL from 6AM to 6AM (Next Day)**

| Sl.No | Time in Hrs. | Locations  | June'17              | Sep'17               | AVERAGE |
|-------|--------------|--|----------------------|----------------------|---------|
|       |              |  | Noise level in dB(A) | Noise level in dB(A) |         |
| 1     | 6.00         | Main Gate  | 67.8                 | 64.4                 | 66.1    |
| 2     | 6.30         | Market Complex                                   | 54.3                 | 59                   | 56.7    |
| 3     | 7.00         | Hospital   | 50.0                 | 48.5                 | 49.3    |
| 4     | 7.30         | Post Office                                      | 41.7                 | 42                   | 41.9    |
| 5     | 8.00         | Study Center                                     | 45.7                 | 47.4                 | 46.6    |
| 6     | 8.30         | Water treatment Plant (D.G was not in operation) | 53.4                 | 52.2                 | 52.8    |
| 7     | 9.00         | STP  | 50.2                 | 52.2                 | 51.2    |
| 8     | 9.30         | Shishu Mandir                                    | 50.2                 | <40                  | <40     |
| 9     | 10.00        | Children's Park                                  | <40                  | 49.2                 | 49.2    |
| 10    | 10.30        | 3RSF Qtrs  | 47.3                 | 50.7                 | 49.0    |
| 11    | 11.00        | L2R Qtrs   | 50.4                 | 51.6                 | 51.0    |
| 12    | 11.30        | Recreation Club                                  | 54.0                 | 48.4                 | 51.2    |
| 13    | 12.00        | B4-B6 Block Qtrs                                 | 45.4                 | 56.6                 | 51.0    |
| 14    | 12.30        | B3-B4 Block Qtrs                                 | 57.6                 | 50                   | 53.8    |
| 15    | 13.00        | Geological Camp                                  | 44.8                 | 46.5                 | 45.7    |
| 16    | 13.30        | Babu Line  | 50.2                 | 51                   | 50.6    |
| 17    | 14.00        | Guest House                                      | 48.4                 | 49                   | 48.7    |
| 18    | 14.30        | 3R Qtrs  | 58.4                 | 56                   | 57.2    |
| 19    | 15.00        | VT Centre  | 50.8                 | 53                   | 51.9    |
| 20    | 15.30        | SS High school                                   | 45.9                 | 46.8                 | 46.4    |
| 21    | 16.00        | 2RF Qtrs   | 47.5                 | 48.2                 | 47.9    |
| 22    | 16.30        | CT Qtrs  | <40                  | <40                  | <40     |
| 0.    | 17.00        | STP  | 47.2                 | 45.4                 | 46.3    |
| 24    | 17.30        | Police Out Post                                  | 49.6                 | 51.9                 | 50.8    |
| 25    | 18.00        | Jagannath Temple                                 | 49.7                 | 45.9                 | 47.8    |
| 26    | 18.30        | GM Banglow                                       | 46.0                 | 47.9                 | 47.0    |
| 27    | 19.00        | Market Complex                                   | 59.8                 | 60.1                 | 60.0    |
| 28    | 19.30        | Laboratory                                       | 47.5                 | 45.2                 | 46.4    |
| 29    | 20.00        | Chrome Vally Club                                | 50.1                 | 51.6                 | 50.9    |
| 30    | 20.30        | Atwal's Camp                                     | 45.2                 | 48                   | 46.6    |
| 31    | 21.00        | Duplex Qtrs                                      | 52.3                 | 45.6                 | 49.0    |
| 32    | 21.30        | FootBall Ground                                  | <40                  | <40                  | <40     |
| 33    | 22.00        | B4-B6 Block Qtrs                                 | 48.4                 | 43                   | 45.7    |
| 34    | 22.30        | Sisu Mandir                                      | <40                  | <40                  | <40     |
| 35    | 23.00        | 5 Star Qtrs                                      | 50.4                 | 46.6                 | 48.5    |
| 36    | 23.30        | Stewart School                                   | 49.9                 | <40                  | <40     |
| 37    | 0.00         | A9-A13 Qtrs                                      | 52.9                 | 48.4                 | 50.7    |
| 38    | 0.30         | A14-A19 Qtrs                                     | 50.8                 | 44                   | 47.4    |
| 39    | 1.00         | A-17 - A23 Qtrs                                  | <40                  | <40                  | <40     |
| 40    | 1.30         | B1-B3 Block                                      | <40                  | <40                  | <40     |
| 41    | 2.00         | Hospital   | <40                  | <40                  | <40     |
| 42    | 2.30         | SBI  | <40                  | <40                  | <40     |
| 43    | 3.00         | Jagannath Temple                                 | <40                  | <40                  | <40     |
| 44    | 3.30         | TSRDS  | <40                  | <40                  | <40     |
| 45    | 4.00         | Babu Line  | 42.4                 | 41.1                 | 41.8    |
| 46    | 4.30         | Guest House Annexe                               | <40                  | <40                  | <40     |
| 47    | 5.00         | Banabharati Dance School                         | <40                  | <40                  | <40     |
| 48    | 5.30         | Main Gate  | 43.2                 | 44.8                 | 44.0    |

**Ambient Noise Level Survey in Industrial Areas of SCM, TSL from 6AM to 6AM (Next Day)**

| Sl.No | Time in Hrs. | Location              | June'17               | Sep'17                | Dec'17                | March'18              | AVERAGE |
|-------|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|---------|
|       |              |                       | Noise level in d B(A) | Noise level in d B(A) | Noise level in d B(A) | Noise level in d B(A) |         |
| 1     | 6.00         | Canteen Gate          | 49.9                  | 52.8                  |                       |                       | 51.4    |
| 2     | 6.30         | Quarry Pump House     | 58.7                  | 63.2                  |                       |                       | 61.0    |
| 3     | 7.00         | Stack Yard            | 66.7                  | 60.2                  |                       |                       | 334.4   |
| 4     | 7.30         | Lumpy Plot            | 54.6                  | 60.8                  |                       |                       | 57.7    |
| 5     | 8.00         | 40 t. Weigh Bridge    | 65.0                  | 63.1                  |                       |                       | 64.1    |
| 6     | 8.30         | Concentrated Ore Sta  | 60.5                  | 65                    |                       |                       | 62.8    |
| 7     | 9.00         | OB Dump               | 67.9                  | 61.4                  |                       |                       | 64.7    |
| 8     | 9.30         | OB IX Quarry          | 43.9                  | 47.2                  |                       |                       | 45.6    |
| 9     | 10.00        | Atwal's Pyroxinate Cr | 64.2                  | 66.6                  |                       |                       | 65.4    |
| 10    | 10.30        | Magazine              | 69.2                  | 66.6                  |                       |                       | 67.9    |
| 11    | 11.00        | Pyroxinate Quarry     | 68.4                  | 70.3                  |                       |                       | 69.4    |
| 12    | 11.30        | OB-II Quarry          | 64.7                  | 65                    |                       |                       | 64.9    |
| 13    | 12.00        | OB Dump               | 63.5                  | 61.1                  |                       |                       | 62.3    |
| 14    | 12.30        | Naresh Kumar Crushe   | 69.2                  | 73                    |                       |                       | 71.1    |
| 15    | 13.00        | OB-X Quarry           | 72.5                  | 70.2                  |                       |                       | 71.4    |
| 16    | 13.30        | Old ETP               | 48.4                  | 50.9                  |                       |                       | 49.7    |
| 17    | 14.00        | Mining Complex        | 72.7                  | 68.4                  |                       |                       | 70.6    |
| 18    | 14.30        | Slime Dam             | 54.5                  | 56.4                  |                       |                       | 55.5    |
| 19    | 15.00        | OB-IX Quarry          | 59.9                  | 62.7                  |                       |                       | 61.3    |
| 20    | 15.30        | Pyroxinate Plot       | 61.0                  | 62.9                  |                       |                       | 62.0    |
| 21    | 16.00        | OB Dump               | 63.8                  | 61                    |                       |                       | 62.4    |
| 22    | 16.30        | Temple Gate           | 44.6                  | 42.9                  |                       |                       | 43.8    |
| 23    | 17.00        | Air Strip             | 47.1                  | 47.7                  |                       |                       | 47.4    |
| 24    | 17.30        | Hauling Gate          | 61.8                  | 57.4                  |                       |                       | 59.6    |
| 25    | 18.00        | Work Shop             | 63.6                  | 67.2                  |                       |                       | 65.4    |
| 26    | 18.30        | New ETP               | 46.6                  | 47.5                  |                       |                       | 47.1    |
| 27    | 19.00        | 20T Weigh Bridge      | 51.4                  | 47.3                  |                       |                       | 49.4    |
| 28    | 19.30        | Engg. Complex         | 46.5                  | 48.4                  |                       |                       | 47.5    |
| 29    | 20.00        | Atwal's Chrome Crushe | 54.8                  | 55.6                  |                       |                       | 55.2    |
| 30    | 20.30        | New ETP               | 50.0                  | 52.5                  |                       |                       | 51.3    |
| 31    | 21.00        | Canteen Gate          | 61.0                  | 57.5                  |                       |                       | 59.3    |
| 32    | 21.30        | Hauling Gate          | 51.0                  | 52.4                  |                       |                       | 51.7    |
| 33    | 22.00        | Work Shop             | 46.4                  | 54.3                  |                       |                       | 50.4    |
| 34    | 22.30        | Old ETP               | 44.7                  | 46.2                  |                       |                       | 45.5    |
| 35    | 23.00        | Petrol Pump           | 47.2                  | 47                    |                       |                       | 47.1    |
| 36    | 23.30        | Quarry Pump House     | 47.9                  | 45.9                  |                       |                       | 46.9    |
| 37    | 0.00         | Hospital Gate         | 65.0                  | 43.6                  |                       |                       | 54.3    |
| 38    | 0.30         | OB X Quarry           | 70.2                  | 60.7                  |                       |                       | 65.5    |
| 39    | 1.00         | Alwal's chrome crushe | 63.6                  | 63.5                  |                       |                       | 63.6    |
| 40    | 1.30         | Atwal's Garage        | 46.6                  | 56.2                  |                       |                       | 51.4    |
| 41    | 2.00         | Old OK Line           | <40                   | 41.9                  |                       |                       | 41.9    |
| 42    | 2.30         | Air Strip             | 60.8                  | <40                   |                       |                       | <40     |
| 43    | 3.00         | Stack Yard            | 68.4                  | 58.7                  |                       |                       | 63.6    |
| 44    | 3.30         | 40Ton Weigh Bridge    | 73.6                  | 61.8                  |                       |                       | 67.7    |
| 45    | 4.00         | Naresh Kumar Crushe   | 65.6                  | 66.8                  |                       |                       | 66.2    |
| 46    | 4.30         | OB IX Quarry          | 73.7                  | 60.7                  |                       |                       | 67.2    |
| 47    | 5.00         | Work shop             | 58.6                  | 71.5                  |                       |                       | 65.1    |
| 48    | 5.30         | Canteen Gate          | 58.6                  | 50.1                  |                       |                       | 54.4    |

# ANNEXURE-XX

## Uploaded Last EC Status Condition

The screenshot displays a web browser window with the following elements:

- Browser Tabs:** "Inbox (17) - nikhil13392" and "Environment Compliance".
- Address Bar:** "www.tatasteel.com/sustainability/environment-compliance-reports/"
- Page Header:** "TATA STEEL" logo and "MENU" on the left; navigation icons (home, phone, search, globe) and "TATA" logo on the right.
- Breadcrumbs:** "Sustainability » Environment Compliance Reports"
- Report List:**
  - HYCR- TSK- Integrated Steel Plant- Period- Oct'16 to Mar'17
  - HYCR-TSK Residential Complex- Period- Oct'16 to Mar'17
  - Annexure EC\_compliance\_Oct'16 - March'17 Sukinda
  - Cover letter of EC compliance Oct16- March17
  - EC Compliance Oct16 to March 17
  - Half Yearly EC Compliance Report of Kalimela Open Cast Project Oct'16 to Mar'17
- Taskbar:** Shows icons for Windows, Internet Explorer, File Explorer, Chrome, and other applications. The system clock indicates "2:16 PM 11/30/2017".

**ANEXURE-XXI**  
**Environment Clearance Intimation letters Panchayat, Zila Parisad**



Ref: SCM/ENV/ 81 / 13  
Date: 25/09/13

Mrs. Bhagabati Mohanta,  
Chairman,  
Panchayat Samiti, Sukinda Block,  
Sukinda

**Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sukinda Chromite Mine having Mining Lease area over 406 ha in Jajpur District.**

Dear Madam,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sukinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore Beneficiation plant and Pyrocerm ore capacities and change of sintering & beneficiation technologies vide its letter no. J-11015/96/2011-GA(JM), Dated 06.09.2011.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully  
E: Tata Steel Limited

  
Manoj Kumar  
&  
Manager-Cum Agent  
Sukinda Chromite Mine

Encl: As above

*Bhagabati Mohanta  
Chairman  
Sukinda*



Ref: SCM/EMV/ 66 / 13

Date: 25/9/13

Mr. Bidhyadhar Patra  
Member,  
Zila Parishad, Jaipur

Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sukinda Chromite Mine having Mining Lease area over 406 ha in Jaipur District.

Dear Sir,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sukinda Chromite Mine, M/v Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore Beneficiation plant and Pyrocentric ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2013-I.A.II(M), Dated 06/09/2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully  
T. Tata Steel Limited

Chief (Mining)  
&  
Manager Cum Agent  
Sukinda Chromite Mine

End: As above

*Bidhyadhar Patra*  
Bidhyadhar Patra 25/9/13  
Zilaparisad Member  
IT Zone, Sukinda, Jaipur

TATA STEEL LIMITED

Head Office: TATA STEEL LIMITED, Sakinaka, Jamshedpur - 831001, Jharkhand  
Bhilai Office: TATA STEEL LIMITED, Bhilai, Chhattisgarh - 492015  
Corporate Office: TATA STEEL LIMITED, 100, Park Road, Kolkata - 700016



Ref: SCM/ENV/ 25 / 13

Date: 25/09/13

Mrs. Jinita Manda,  
Sarpanch,  
Kaliapuri Gram Panchayat  
Kaliapuri

**Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sukinda Chromite Mine having Mining Lease area over 406 ha in Jajpur District.**

Dear Madam,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sukinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore, Beneficiation plant and Pyrocentric ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2013-I.A.II(M), Dated 06.09.2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully,  
T. Tata Steel Limited

  
Chief (Mining)  
&  
Manager Care Agent  
Sukinda Chromite Mine

Jinita Manda  
Sarpanch  
KALIAPURI G.P.

Encl: As above

**TATA STEEL LIMITED**

Kaliapuri Chromite Mine, Sukinda, Jajpur District, Orissa-751005  
Phone No. 76 3796 3891/3792 3793/3794  
Registered Office: Kalyanpur, Bhubaneswar, Orissa-751005  
www.tatasteel.com



Ref: SCM/ENW/ 70 / 13  
Date: 26/11/13

Mrs. Sashama Nayak  
Sarpanch,  
Ransel Grama Panchayat,  
Ransel

**Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sakinda Chromite Mine having Mining Lease area over 406 ha in Jajpur District.**

Dear Madam,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sakinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore Beneficiation plant and Pyrometallurgic capacity and change of mining & beneficiation technologies vide its letter no. J-11015/96/2013-LA.II(M), Dated 06.09.2013.

We, therefore, request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully  
F: Tata Steel Limited

Chief (Mining)  
&  
Manager Core Agent  
Sakinda Chromite Mine

Encl: As above

S. Nayak  
Sarpanch  
Ransel Grama Panchayat

**TATA STEEL LIMITED**

Corporate Office: Plot No. 1, Sector-1, Gurgaon, Haryana  
Registered Office: Plot No. 1, Sector-1, Gurgaon, Haryana  
Registered Office: Plot No. 1, Sector-1, Gurgaon, Haryana



Ref: SCM/ENV/71 / 13

Date: 25/09/13

Mrs. Renuka Dehari  
Sarpanch,  
Chingadipal Grama Panchayat,  
Chingadipal

**Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sakinda Chromite Mine having Mining Lease area over 400 ha in Jajpur District.**

Dear Madam,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sakinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore, Beneficiation plant and Pyrovents ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2011-IA(E/M), Dated 06.09.2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours Faithfully  
F: Tata Steel Limited

  
Chief (Mining)  
&  
Manager Cum Agent  
Sakinda Chromite Mine

Encl. As above

*Renuka Dehari*  
Sarpanch  
Chingadipal G.P.

**TATA STEEL LIMITED**

Sakinda-Chromite Mine, Jajpur District, Orissa  
Bhilai, Orissa - 751005, India  
Telephone: 06742 202101 Fax: 06742 202102  
Telex: 92001 Tata Steel India  
E-mail: [steel@tatasteel.com](mailto:steel@tatasteel.com)





Ref: SCM/ENV/ 71 /13

Date: 25/04/13

Mr. Gobinda Chandra Dethari,  
Sarpanch,  
Kankadpal Grama Panchayat,  
Kankadpal

**Sub: Intimation of obtaining Environmental Clearance under EIA Notification, 2006 in respect of Sukinda Chromite Mine having Mining Lease area over 406 ha in Jajpur District.**

Dear Sir,

We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sukinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore Beneficiation plant and Pyrocentric ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2011-(AJEM), Dated 06.09.2013.

We, therefore request your good self to kindly acknowledge the receipt of the above letter.

Yours faithfully  
Tata Steel Limited

  
Chief (Mining)  
&  
Manager-Cum Agent  
Sukinda Chromite Mine

Encl: As above

  
25-09-2013  
SARAPANCH  
KANKADAPAL G.P.

**TATA STEEL LIMITED**

Corporate Office: Tata Steel Limited, Sakinaka, Jamshedpur - 831001, India  
Registered Office: Tata Steel Limited, Sakinaka, Jamshedpur - 831001, India  
www.tatasteel.com

# ANNEXURE XXIII

## Annual Environment Statement uploaded on website

The screenshot shows a web browser window displaying the Tata Steel website. The page title is "Environmental Statement for Preamsingdih Sand Minig Project for 2016-17". The URL is "www.tatasteel.com/sustainability/environment-compliance-reports/". The page features a navigation menu with "Sustainability" and "Environment Compliance Reports". Below the navigation, there is a list of six environmental statements, each with a PDF icon to its right:

- Environmental Statement for Tata Central Hospital, Jamadoba for 2016-17
- Annual Environmental Statement of Sukinda Chromite Mine for 2016-17
- Annual Environmental Statement of Gomardih pertaining for 2016-17
- Environmental Statement for Lagla Mahal Sand Mining Project for 2016-17
- Environmental Statement for Kalimela Open Cast Project for 2016-17
- Environmental Statement for Jamadoba Colliery for 2016-17

The browser's taskbar at the bottom shows several open applications: PO\_3000115671.PDF, Internet Explorer, File Explorer, Google Chrome, a calculator, Microsoft Excel, Microsoft Word, and Adobe Reader. The system tray on the right indicates the time is 2:24 PM on 11/30/2017.

**ANEXURE-XXIV**

**Environmental Clearance Advertisement and Intimation to Eastern Regional Office of the MoEF**



**Add. Director(S)  
Ministry of Environment & Forests  
Eastern Regional Office  
A/3, Chandrasekharpur,  
Bhubaneswar- 751023**

Ref: SCM/ ENV/ 012/066 /13  
Date: 18<sup>th</sup> June' 2013

Sub: Advertisement for grant of Environmental Clearance in respect of Sukinda Chromite Mine in Jajpur District of Odisha (Mining Lease area: 406 ha).

Ref: Ministry of Environment & Forests, Govt. of India letter no. J-11015/96/2011-IA.II(M). Dated 06.09.2013.

Dear Sir,

As per the General Condition no. xvi of the Environmental Clearance granted by Ministry of Environment & Forests, Govt. of India in respect of Sukinda Chromite Mine vide letter no. J-11015/96/2011-IA.II(M). Dated 06.09.2013, the matter was advertised in the Oriya daily " **The Samaja**" (date: 11.09.2013, page-5) and in English daily " **The New Indian Express**" ( date: 11.09.2013, page-5). Copy of the above advertisement is enclosed as annexure for your ready reference.

Thanking you,

Yours sincerely,  
f: Tata Steel Ltd.

  
Manager cum Agent  
Sukinda Chromite Mine

Encl: as above

**TATA STEEL LIMITED**

Sukinda Chromite Mine (S) Kalamangala Dist Jajpur (Dist) 751023  
Phone no: 01 6726 266761 Fax : 01 6726 268134  
Registered Office: 94/95/10/11/12/13/14/15/16/17/18/19/20/21/22/23/24/25/26/27/28/29/30/31/32/33/34/35/36/37/38/39/40/41/42/43/44/45/46/47/48/49/50/51/52/53/54/55/56/57/58/59/60/61/62/63/64/65/66/67/68/69/70/71/72/73/74/75/76/77/78/79/80/81/82/83/84/85/86/87/88/89/90/91/92/93/94/95/96/97/98/99/100

**ANNEXURE XXIV**



**Advertisement in Daily "SAMA J" on EC Notification of Sukinda Chromite Mine**

# Environment Awareness Programs at Sukinda Chromite Mine

## 1. Jaiba Kala Vividhata



## 2. Prajatiya Khadyotsav



**3. Snakes are Friends**



**4. SUKINDA ECORACE**



**5. World Environment Day**

