



To

The Additional Principal Chief Conservator of Forest, Eastern Central Zone  
Ministry of Environment, Forests & Climate Change, Govt. of India  
2nd Floor, Headquarter – Jharkhand State Housing Board  
Harmu Chowk, Ranchi-834002, Jharkhand  
Email: [ro.ranchi-mef@gov.in](mailto:ro.ranchi-mef@gov.in)

WBD/EMC/4071/035/22

Date: 30.05.2022

Ref: Environmental Clearance letter no. J-11015/108/2016-IA.II(M) dated: 17.05.2007

**Sub: Half-yearly EC Compliance Report for the period October'21 - March'22 in respect of West Bokaro Open Cast Coal Mine of Tata Steel Limited**

Dear Sir,

Environmental Clearance was accorded to West Bokaro Open Cast Coal Mine of Tata Steel Limited vide Letter No. J-11015/108/2006-IA.II(M), dated: 17.05.2007. We are herewith submitting the half yearly EC Compliance Report for the period from October'21 - March'22 as per EIA Notification, 2006 to your good office on email: [ro.ranchi-mef@gov.in](mailto:ro.ranchi-mef@gov.in) in soft copy for your ready reference.

We trust that the measures taken towards environmental safeguards comply with the stipulated environmental conditions. We look forward to your further guidance which shall certainly help us in our endeavor for further improve upon our Environmental Management practices.

Thanking you,  
Yours faithfully,

Head (Environment Management)  
Raw Materials Division  
TATA Steel Limited

Copy to: The Member Secretary, State Pollution Control Board, T.A. Division (Ground Floor), H.E.C. Dhurva, Ranchi - 834004 (Jharkhand);  
The Regional Officer, State Pollution Control Board, PTC Chowk, Matwari, Hazaribagh – 825301 (Jharkhand)

**TATA STEEL LIMITED**

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Corporate Identity Number L27100MH1907PLC000260 Website [www.tatasteel.com](http://www.tatasteel.com)

**Half Yearly Compliance Report**  
for the period October'21 – March'22  
of

Environment Clearance accorded by MoEF&CC  
vide no. J-11015/108/2006-IA.II(M)  
for

**West Bokaro Open Cast Coal Mine**  
**Tata Steel Limited**

PO: Ghatotand, Block: Mandu  
Dist.: Ramgarh, Jharkhand - 825314



**Specific Conditions:**

- (i) **No mining operations shall be undertaken in the forestland until clearance has been obtained under the provisions of FC Act, 1980.**

**Compliance:**

Being complied with.

- (ii) **The embankment along the River Bokaro shall be designed taking into account the highest flood level, based on past data, along the quarry area at the mine boundary along the River Bokaro so as to guard against mine inundation. The slope of the embankment shall at least 2:1 towards the ML and shall be stabilized by plantation. The height of the embankment shall be at least 5 m higher than the HFL.**

**Compliance:**

There is natural solid surface of the quarry area left at the mine boundary along the River Bokaro to guard against mine inundation. The height of the natural solid surface along the Bokaro river is more than 5 m higher than the HFL. The HFL observed was 336 meters while the lower most level of quarry boundary or natural solid surface is 346 meters. At the same time a thick wide solid surface has also been left from river to avoid any ingress of water in the mine pit. Plantation by seed spray was done on the slope surface for stabilization. Further, Seed balls spreading has been done for further stabilization of slope surface.

- (iii) **Topsoil should be stacked properly with proper slope at earmarked site(s) and should not be kept active and shall be used for reclamation and development of green belt.**

**Compliance:**

Topsoil is being accumulated for the plantation purpose. The accumulated topsoil was used to spread over dumps for the plantation purpose. Catch drain on the one side of the topsoil dump is cleaned before the monsoon. Photographs of Topsoil stack with maintained drain and use of topsoil for spreading on dump for plantation are shown below.

***Maintained catch drain of Topsoil Dump***



***Topsoil spreading on dump for plantation***



- (iv) **No new external OB dumps shall be created for storing OB. Monitoring and management of existing reclaimed dump sites should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forests and its Regional office located at Bhubaneswar on and yearly basis.**

**Compliance:**

Mined-out area and existing OB dumps are available in the operating mining area, which are being used for OB dumping. The existing afforested dump site is being monitored & maintained to sustain vegetation on regular basis and gap filling plantation is being done against the mortality of the plantation. Further, old dump area has been identified and taken up for reclamation. Soil spreading followed by grass seed spreading and native species plantation is ongoing. Apart from this, Eco restoration of dump slope is also in progress in parts. Compliance of the same is submitted with the Half Yearly EC Compliance Report.



**Half Yearly EC Compliance Report for period: October'21 - March'22**

***Soil & grass seed Spreading on dump slope***



***Grassing and Plantation on dump slope***



***Soil & grass Spreading on dump slope***



***Grassing and Plantation on dump slope***



***Back filling of quarry by Over Burden***



***Eco restoration: Before and After***



- (v) Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The water so collected should be utilized for watering the mine area, roads, green belt development, etc. The drains should be regularly de silted and maintained properly. Garland drains (size, gradient and length) and sump capacity should be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity should also be provided adequate retention period to allow proper settling of silt material.

**Half Yearly EC Compliance Report for period: October'21 - March'22**

**Compliance:**

OB dumps have been created with inward slope so no water flows outside the dump to prevent soil erosion and siltation. Further, catch drains on the toe of the OB dump were made with slope towards quarry to divert all the runoff water into the quarry pit. Collected rainwater is being used for dust suppression purpose. Catch drains were desilted before the monsoon and maintained thereafter. Construction of garland drain, and toe wall is a regular practice to take care of run-off water. The mine quarry act as a big sump with approximate sump capacity 50 - 120 million gallons, considering maximum rainfall & depending upon the catchment area. Further, accumulated mine pit water is also being used in industrial and domestic purpose after necessary treatment. One of the abandoned quarry is being used as Rain Water Harvesting Structure.

***Catch Drains at the toe of dumps***



***Catch Drains at the toe of dumps***



***Catch Drains with check dam at the toe of dumps***



***Active mine pit for water accumulation***



***Abandoned mine pit as Rain Water Harvesting***



- (vi) **Dimension of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation should be based on the rainfall data.**

**Compliance:**

Dumps have been created with inward slope so that maximum runoff water in monsoon comes into the mine pits and no runoff water goes outside the mining lease. Further, toe wall and garland drains have been made to channelize the water inside the mine pit. Damaged toe walls are being repaired on regular basis. Photographs of the toe wall and garland drains area shown below.



***Toe walls on dumps***



***Garland drain in the area***



- (vii) **Crushers at the CHP should be operated with high efficiency bag filters, water sprinkling system should be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.**

**Compliance:**

Crusher houses and CHP areas are equipped with dry fog dust suppression system. Fixed type dust suppression system is installed at all conveyor networks & various mineral transfer points. Conventional coal stock yards are replaced with concrete silos for dust controls. Mobile water sprinklers (pressurized water tankers) are used in mine haul roads and approach roads. Further, new water sprinklers have been procured to increase the capacity of the water sprinkling on the haul roads. Coal from mining to washery is being sent through pipe conveyor to reduce the fugitive emission. Water Mist Canon is being used in coal stacking area.

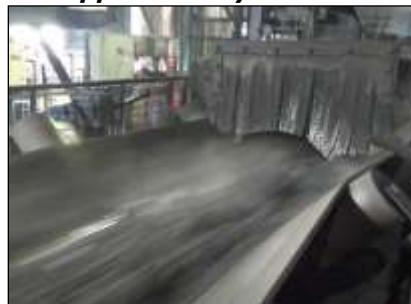
***Use of fixed & mobile water sprinklers***



***Mobile Road Cleaner***



***Dry fog dust suppression system in crushing units***



**Water Mist Canon in coal stacking area**



**Pipe Conveyor for material transport**



**Concrete silos for material storage**



**(viii) Drills should be wet operated.**

**Compliance:**

All the drills are wet operated and interlocked with drill operations.

**Wet Drilling**



**(ix) Controlled blasting should be practiced only during daytime with use of delay detonators. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders should be implemented.**

**Compliance:**

Blasting in mines area is regularly being practiced in daytime only. Controlled blasting is practiced in the proximity of structure, continuous monitoring along with data collection is being practiced. Delay detonators are being practiced minimizing vibration, dust & formation of fly rocks. However, at regular intervals scientific study is also been conducted from reputed & recognized organizations.

**(x) Area brought under afforestation shall not be less than 1260 ha which includes reclaimed external OB dump (85 ha), backfilled area (974 ha), along ML boundary, along roads, green belt (201 ha), in undisturbed areas and in colony within the mine lease area by planting native species in consultation with the local DFO/ Agriculture Department. The density of the trees should be around 2500 plants/ ha.**



**Half Yearly EC Compliance Report for period: October'21 - March'22**

**Compliance:**

Progressive afforestation is practiced as per plan in the area. This year about 10,000 native trees, shrubs and grass saplings have been planted. local and native species was planted, including OB dumps, lease boundary, residential colonies, and coal dispatch area. Voluntary afforestation in & around villages are also being done with company employees and local communities. Progressive afforestation is practiced as per plan in the area.

**Plantation activities**



TATA Steel is committed to conserve, enhance & restore the biodiversity in it's areas of operations and made a biodiversity policy to achieve no net loss of biodiversity over a period of time. Various initiatives are taken to conserve and restore the bio-diversity in the area in consultation with IUCN & forest officials. To enhance the bio diversity of the area, a butterfly park is made. To enhance the medicinal and hibiscus habitat, hibiscus and medicinal park were also made. Further, we are developing a native plant species nursery in the mined-out area.

**Biodiversity Initiatives**



**Mined out Area Development (Reclamation cum beautification)**



**Butterfly, Hibiscus and Medicinal Park development on mined out area**





***Spice Garden & Miyawaki Plot Development on mined out area***



***Inhouse development of Native Plant Species Nursery***



- (xi) **A Progressive Closure Plan shall be implemented by reclamation of quarry area of 974 ha which shall be backfilled and afforested by planting native plant species in consultation with the local DFO/ Agriculture Department. The density of the trees should be around 2500 plants per ha. The balance 20 ha of de-coaled area being converted into a water reservoir shall gently slope along the upper benches and stabilized and reclaimed with plantation.**

**Compliance:**

Mine plan & mine closure plan was approved by Ministry of Coal, which includes all plantation details. Afforestation & reclamation of de-coaled area shall be done by planting native species in consultation with DFO / Agriculture departments as per prevailing guidelines. As per approved mine plan, all dumps will be re-handled as the mine progress, however, to stabilize the dumps, plantation was done by lemon grass, native trees, native shrubs and we have also done the soil spreading on dump slopes followed by grass seed spreading and native tree plantation.

***Soil, grass spreading and plantation on dump slope***



***De-coaled Q-E converted into Water Reservoir***



- (xii) **A Conservation Plan for endangered species found in and around the project area shall be formulated and for the medicinal plants (in-situ and ex-situ) shall be prepared and implemented in consultation with the State Forest and Wildlife Departments. Separate funds shall be earmarked for implementation of the various activities there under and the status thereof shall be regularly reported to this Ministry and the MoEF Regional Office, Bhubaneswar.**

**Compliance:**

The project area doesn't have any endangered species found in and around area. However, some of the plants of having medicinal values are conserved by developing an area. To conserve, restore and enhance the medicinal plants in the area, a separate medicinal garden also being prepared at one of the OB dump and 33 nos. of species have been planted in the medicinal park. Besides above several medicinal plants such as Bael (*Aegle marmelos*), Neem (*Azadirachta indica*), Avla (*Phyllanthus emblica*), Karanj (*Millettia pinnata*), Ber (*Ziziphus mauritiana*), Sarifa (*Annona squamosa*) were also planted in the area. Further, to enhance the medicinal and hibiscus habitat, hibiscus and medicinal park were also made.

***Medicinal Park***



- (xiii) **No groundwater shall be used for the mining / project activities. Additional water required, if any, shall be met by recycling / reuse of the water from the existing activities and from rainwater harvesting measures.**

**Compliance:**

It is being complied and regularly practiced; no ground water is used for mining & other project activities. Active mine pits are being used for water accumulation followed by use for spraying in mine. An abandoned mine pit is converted into Rainwater Harvesting (RWH) pond of capacity of 1200 Million Gallon, which is being used for industrial and domestic purpose after proper treatment as per the requirement.



**Half Yearly EC Compliance Report for period: October'21 - March'22**

**Active mine pit for water accumulation**



**Abandoned mine pit as Rainwater Harvesting**



All the plants are operated at Zero Effluent Discharge (ZED) and entire processed water is recycled and reused. We are recycling the washery outlet water after dewatering process of tailings in our mechanical dewatering plant and further, recycling of water from the tailing's ponds in a closed circuit.

**Mechanical Tailing Dewatering Plant and Filter Press**



**Water Recycling from tailings ponds**



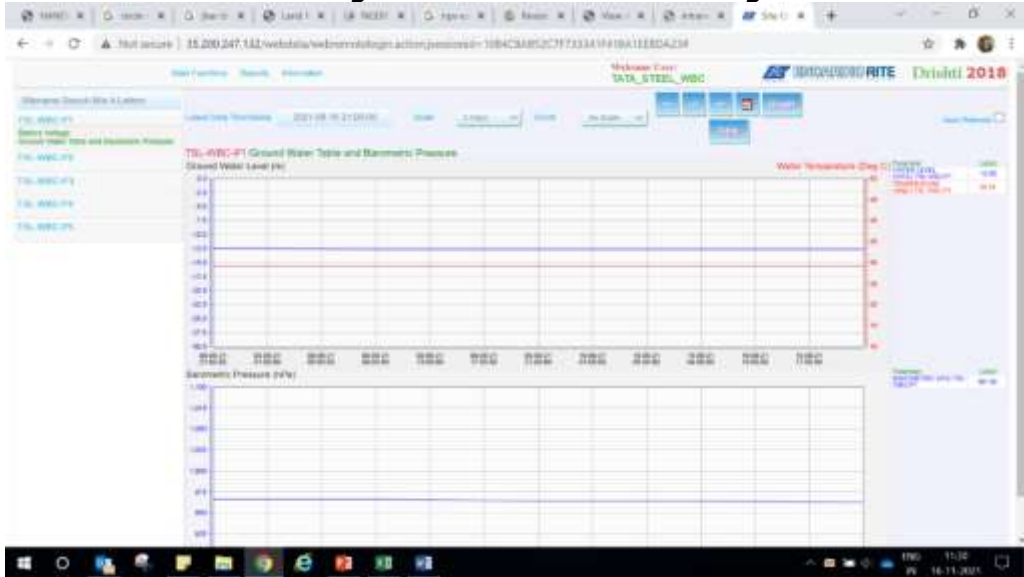
- (xiv) **Regular monitoring of groundwater level and quality should be carried out by establishing a network of existing wells and construction of new piezometers. The monitoring for quantity should be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected should be submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly within one month of monitoring.**

**Compliance:**

Regular monitoring of groundwater level and quality is being carried out by establishing a network of existing wells. The monitoring for quantity is being done four times a year in pre-monsoon, monsoon, post-monsoon and winter seasons and for quality in May. Piezometers had been installed in core and buffer zone for real time ground water level monitoring. Data thus collected is being submitted to the Ministry of Environment & Forests and to the Central Pollution Control Board quarterly.

**Half Yearly EC Compliance Report for period: October'21 - March'22**

**Screenshot of real time ground water level monitoring with Piezometers**



- (xv) The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource. The project authorities should meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine.

**Compliance:**

The ground water recharge measures are continuously being taken up and thrust has already been put up to streamline drinking water projects, which includes construction of ponds, bore well, check dams etc. in and around our leasehold areas. We have converted abandoned mined out pit near pundi area as a large water reservoir which helps to recharge the ground level.

**Abandoned Mine pit converted into RWH pond Check Dam to increase ground water recharge**



**Ponds cum Rain Water Harvesting structures in Village**

**Bhutai**



**Jodragora**



**Duni**



We are supplying the drinking water to the nearby villages by pipe line network from our mine pit water followed by water softening facility and we have also constructed a Rain Water Harvesting cum water treatment facility to supply water to nearby 7 villages.





***RWH cum drinking water project at Duni village***



(xvi) **ETP should also be provided for workshop, coal washery and CHP. There shall be zero discharge of wastewater from CHP and the coal washeries. Effluents from the tailings pond shall be treated to conform to prescribed standards in case of discharge into any water course outside the lease.**

**Compliance:**

Zero Effluent Discharge (ZED) is being maintained at Coal Washery, CHP, workshops & power plant; the effluent generated is completely recycled & reused. In addition to above, mechanical tailing dewatering system is installed for Washery & CHP area by which the tailing slurry is handled through high frequency screen and belt press to produce dry tailings and recover water for recycling and further, recycling of water from the tailings ponds in a closed circuit. The water from tailing pond after proper de-silting of tailings is recycled back to washeries to maintain zero discharge. Oil traps are also installed for workshops.

***Mechanical tailings de-watering system***



***Output of HFC at tailing dewatering plant***



**Half Yearly EC Compliance Report for period: October'21 - March'22**

**Water Recycling from tailings ponds**



**Oil & Grease trap at mines**



- (xvii) **A STP shall be provided for the township / colony to treat the domestic effluents to prescribed standards and for their reuse in project activities.**

**Compliance:**

A Sewage Treatment Plant (STP) of 240 KLD is already installed in the residential block and treated water is being reused in dust suppression of road. Due to undulated topography and advancement of mine, for other suitable locations of STP a detailed feasibility study was done by ISMU (IIT) Dhanbad. As per the recommendation of study by ISMU (IIT), Dhanbad, STP for suitable location in colony are being installed. Apart from these STP, 1 more STPs of capacity 100 KLD is under construction at Chainpur colony, for which groundwork like chamber construction, connection by HPDE pipes and excavation are in progress. Photographs of the installed and under construction STPs are shown below:

**240 KLD STP at Mukundbeda Colony**



**15 KLD STP at Chainpur Colony**



**5 KLD STP at Washery-2 Canteen**



**5 KLD STP at Washery-3 Canteen**



**500 KLD STP at Housing Colony**



**100 KLD STP at Chainpur (In Progress)**





**Half Yearly EC Compliance Report for period: October'21 - March'22**

- (xviii) R&R shall be based on norms laid down by the State Government and shall not be inferior than that in the National R&R Policy and shall be completed within a specified time - frame.**

**Compliance:**

Tata Steel's West Boakro Colliery was granted a mining lease of 1740 ha and all the operations are confined within the leasehold area and further, there is no additional land acquisition envisaged for the project so there is no applicability of R & R for the project. Although, we are shifting the illegal inhabitants (encroachers) outside the working area.

- (xix) For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1: 5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MoEF and its Regional office at Bhubaneswar.**

**Compliance:**

A Land use maps was prepared for core and buffer zone with a detailed study report and the same was submitted to Regional office of Ministry of Environment, Forest & Climate Change vide letter no. WBD/EMC/4071/016/21 dated: 01.03.2021.

- (xx) A Final Mine Closure Plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forests for approval 5 years in advance of final mine closure for approval.**

**Compliance:**

It will be complied five years in advance of final mine closure plan for approval. Although we are submitting Mine Closure Fund annually in Escrow account.

- (xxi) Consent to operate shall be obtained before expanding mining operations.**

**Compliance:**

Consent to operate is being obtained regularly.

## Half Yearly EC Compliance Report for period: October'21 - March'22

### General Conditions:

- (i) **No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.**

#### **Compliance:**

No change in mining technology shall be made without prior approval of the Ministry of Environment, Forests & Climate Change.

- (ii) **No change in the calendar plan including excavation, quantum of mineral coal and waste should be made.**

#### **Compliance:**

Complied with

- (iii) **Four ambient air quality monitoring stations should be established in the core zone as well as in the buffer zone for SPM, RPM, SO<sub>2</sub> and NO<sub>x</sub> monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the SPCB.**

#### **Compliance:**

Air monitoring stations in core zone as well as in the buffer zone has been established for ambient air quality monitoring in consultation with Regional Officer of State Pollution Control Board.

- (iv) **Fugitive dust emissions (SPM and RPM) from all the sources should be controlled regularly monitored and data recorded properly. Water spraying arrangement on haul roads, wagon loading, dump trucks (loading and unloading) points should be provided and properly maintained.**

#### **Compliance:**

All the strategic locations of operating plants with the possibilities of fugitive dust emissions has been provided with adequate enclosures, side skirt, chute, seal plate, sealing of transfer points along with adequate dust suppression system.

### ***Dry fog dust suppression system in crushing units***



The haul road, loading and unloading points are provided with pressurized water tanker for water spraying along with chemical dosing, wagon loading does not require any water spraying since the coal is in moist condition. Fixed water sprinklers have been provided on the roads.

### ***Use of fixed & mobile water sprinklers***



### ***Road Cleaner***





## **Half Yearly EC Compliance Report for period: October'21 - March'22**

Further, closed pipe conveyors and belt conveyors are being used for material transfer from mine pit head crushing plant to washeries. water mist canon is being used at material stock yards and water chemical crust is being used on outgoing material carrying trucks to eliminate the fugitive emission. All the sites are monitored regularly and data is kept for record.

**Water Mist Canon in coal stacking area**



**Pipe Conveyor for material transport**



**Concrete silos for material storage**



- (v) **Data on ambient air quality (SPM, RPM, SO<sub>2</sub> and NO<sub>x</sub>) should be regularly submitted to the Ministry including its Regional Office at Bhubneshwar and to the State Pollution Control Board and to the Central Pollution Control Board once in six months.**

### **Compliance:**

Being complied with. All environmental monitoring data for the period from Oct'21 to Mar'22 is attached as an **Annexure-I**. Continuous Ambient Air Quality Monitoring System (CAAQMS) is installed at division and being operational. All the parameters such as PM<sub>10</sub>, PM<sub>2.5</sub>, NO, NO<sub>2</sub>, NO<sub>x</sub>, CO, SO<sub>2</sub>, Wind Speed (in m/s), and Wind Direction (in degree) are recorded on every 15 minutes interval, all parameters were measured by analyzers equipped in mobile van. All the instruments including mobile van is supplied by CPCB authorized agency & approved from USEPA. The data connectivity with CPCB & JSPCB server and transmission facility is being installed.

**Continuous Ambient Air Quality machine (CAAQMS) for data monitoring system**



## **Half Yearly EC Compliance Report for period: October'21 - March'22**

Online emission monitoring for FBC based 2x10MW captive power plant is installed at for PM, SO<sub>2</sub> & NO<sub>x</sub> monitoring in stack and continuously being transmitted to JSPCB server. Electrostatic Precipitator (ESP) is attached with the power plant and is regularly being maintained. The quality & quantity of emission is maintained well within limit as per standard. All the data of PM, SO<sub>x</sub> & NO<sub>x</sub> are working smoothly. The data connectivity with CPCB & JSPCB server and transmission facility is being installed.

### ***Continuous Emission Monitoring for Power House for PM, SO<sub>2</sub> & NO<sub>x</sub> data***



Further, one PM<sub>10</sub> analyzer is installed for continuous PM<sub>10</sub> monitoring at Chainpur Railway Siding and continuous online data is being transmitted to JSPCB server.

### ***Continuous PM<sub>10</sub> analyzer for PM<sub>10</sub> data***



- (vi) **Adequate measures should be taken for control of noise levels below 85 db(A) in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc. should be provided with ear plugs/ muffs.**

#### **Compliance:**

Control measures are being taken up to keep noise level well within limit in working environment by providing adequate enclosure/ separation to the various high noise sources, proper maintenance, provision of control room, operator's a/c cabin etc. In addition, all the persons are provided with PPEs such as ear plug/ muff during work. Warning signs in local language are also displayed at various areas in mines & plant. An adequate green belt is also maintained in the area.

- (vii) **Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December 1993 or as amended from time to time before discharge. Oil and grease trap should be installed before discharge of workshop effluents.**

#### **Compliance:**

The Industrial wastewaters generated from various operations are handled through effluent management system provided in all operational dept. with the objective to treat the effluent and recycle the clear water into the system again. The HEMM maintenance shops have been provided with oil trap arrangement to recover the oil during washing of equipments. The recovered used oil during washing is sold to authorized recycler as per guideline and the effluent generated is checked for quality and recycled - reused in the system.



**Oil trap in mine's workshop**



- (viii) **Vehicular emissions should be kept under control and regularly monitored vehicles used for transporting the mineral should be covered with tarpaulins and optimally loaded.**

**Compliance:**

Vehicular emission is kept under control by regularly monitoring & maintenance of vehicles. overloading of vehicles is avoided during mineral transport. All the vehicles during transport of material covered with tarpaulin sheet. We also also transferring material by pipe conveyors.

**Pipe Conveyor**



**Covered Trucks**



**Conveyor belts**



- (ix) **Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.**

**Compliance:**

A full-fledged NABL accredited & JSPCB recognized Environmental laboratory is functioning with adequate number of pollution monitoring and analysis instruments.

**Heavy Metal Analysis by AAS**



**Instrumentation Room**



**Wet Analysis Room**



- (x) **Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance programme of the workers should be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed.**

**Compliance:**

All dusty areas such as crushers etc. are provided with dry fog system and fixed dust sprinklers so as to eliminate dust from source. All haul roads are equipped with fixed and mobile dust sprinklers. All drill operations are wet only. The operators of various HEMM being operated inside the mines are provided with air-condition cabins. In addition, dust mask has been provided to the personnel working in dusty area. The persons have been imparted necessary training on safe work practices and appraised the adverse consequences on health in case of any violation of the practices. Occupation health surveillance program is being conducted on regular basis in our Hospital for health checkup as per the coal mines rule. The health awareness program is also being conducted regularly in all the departments.

- (xi) **A separate environmental management cell with suitable qualified personnel should be set up under the control of a Senior Executive, who will report directly to the Head of the company.**

**Compliance:**

A separate Environment Management Cell is in place with qualified person reporting to Top management. Details of the personals of Environmental Management Cell is as follows:

Sl. No.	Name	Designation	Work Experience
1	Dr. M K Gupta	Head (Environment & Forest)	28 years
2	Mr. Utsav Kashyap	Sr. Manager (Environment)	12 years
3	Mr. Ajeet Singh	Manager (Forest)	19 years
4	Mr. Nageshwar Mahato	Lab. Asst.	21 years
5	Mr. Budhan Besra	Lab. Asst.	29 years
6	Mr. P K Singh	Chemist	30 years
7	Mr. G A Khan	Chemist	29 years
8	Dr. Suraj Ghosh	Chemist	3 Years
9	Mr. Bikram Mete	Chemist	2 Years
10	Mr. Pashupati Nath Gupta	Chemist	8 Years
11	Mr. Sunil Kumar	Ministerial staff	12 years
12	Mr. Ajay Ram	-do-	13 years

- (xii) **The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year-wise expenditure should be reported to this Ministry and its Regional Office at Bhubaneswar.**

**Compliance:**

The Environmental Management Cell of West Bokaro Division having separate fund for environmental protection measures / compliance to legal requirements. Besides above, all other departments are also maintaining expenditure details for environmental protection measures in their working area. The expenditure occurred during the FY-22 is approx. Rs.4035.42 Lakh. Details are attached as **Annexure-II**.



**Half Yearly EC Compliance Report for period: October'21 - March'22**

- (xiii) **The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/ information/monitoring reports.**

**Compliance:**

Being complied with.

- (xiv) **A copy of the clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom any suggestion / representation has been received while processing the proposal.**

**Compliance:**

A copy of the Environmental Clearance letter was submitted to The Panchayat Sewak vide letter no. WBD/EMC-10/59/07 dated: 12.06.2007.

- (xv) **State Pollution Control Board should display a copy of the clearance letter at the Regional Office, District Industry Centre and Collector's Office/ Tehsildar's Office for 30 days.**

**Compliance:**

Complied with.

- (xvi) **The Project authorities should advertise at least in two local newspapers widely circulated around the project, one of which shall be in the vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and may also be seen at the website of the ministry of Environment & Forests at <http://envfor.nic.in>.**

**Compliance:**

Complied with.

### AMBIENT AIR QUALITY REPORT

(As National Ambient air quality monitoring standard dated 18th November, 2009)

Period -October'2021 to December'2021

Industry Name: West Bokaro Division, Tata Steel Limited

Near Persabera				Near Chainpur Mandap				Near EMC OFFICE/TCH				Near Duni							
Date of Sampling	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>	Date of Sampling	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>	Date of Sampling	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>	Date of Sampling	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>
07-Oct-21	52.59	44.36	22.00	23.50	06-Oct-21	66.08	50.11	23.50	24.00	06-Oct-21	54.98	30.90	22.00	24.50	07-Oct-21	63.11	40.83	22.50	25.50
19-Oct-21	53.06	43.84	21.00	24.00	18-Oct-21	66.34	45.71	22.00	25.00	18-Oct-21	52.49	24.74	21.00	26.00	01-Oct-21	45.70	46.13	21.00	24.00
03-Nov-21	38.91	39.52	24.00	27.00	02-Nov-21	68.03	56.49	20.00	26.00	03-Nov-21	46.51	23.07	18.60	22.00	03-Nov-21	59.30	37.67	20.21	24.00
22-Nov-21	51.50	35.88	23.00	26.00	18-Nov-21	68.05	54.89	21.00	27.00	18-Nov-21	51.07	23.13	19.00	23.00	22-Nov-21	49.17	32.49	22.00	24.00
06-Dec-21	50.22	43.09	25.00	28.00	03-Dec-21	66.31	51.39	22.00	29.00	02-Dec-21	41.54	22.19	19.00	22.00	06-Dec-21	57.35	40.83	23.00	26.00
22-Dec-21	53.19	38.97	25.00	26.00	20-Dec-21	71.54	57.14	20.00	26.00	21-Dec-21	47.71	23.06	20.00	25.00	22-Dec-21	54.37	41.86	23.00	27.00
Minimum	38.91	35.88	21.00	23.50	Minimum	66.08	45.71	20.00	24.00	Minimum	41.54	22.19	18.60	22.00	Minimum	45.70	32.49	20.21	24.00
Maximum	53.19	44.36	25.00	28.00	Maximum	71.54	57.14	23.50	29.00	Maximum	54.98	30.90	22.00	26.00	Maximum	63.11	46.13	23.00	27.00
Average	49.91	40.94	23.33	25.75	Average	67.73	52.62	21.42	26.17	Average	49.05	24.52	19.93	23.75	Average	54.83	39.97	21.95	25.08
Limit (µg/m3)	100.00	60.00	80.00	80.00	Limit (µg/m3)	100.00	60.00	80.00	80.00	Limit (µg/m3)	100.00	60.00	80.00	80.00	Limit (µg/m3)	100.00	60.00	80.00	80.00

*[Signature]*

Mgr.(Env. Mgmt.)

West Bokaro Division

Tata Steel Limited



### AIR QUALITY REPORT AT WORK PLACE

(As per GSR 742 (E), dated 25th Sept 2009)

Period -October'2021 to December'2021

Industry Name: West Bokaro Colliery									
FRS-QAB					CMC-QSE				
Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>	Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
12-Oct-21	272.46	181.66	23.00	26.00	12-Oct-21	266.34	157.30	24.00	23.00
23-Oct-21	229.44	145.94	25.00	28.00	23-Oct-21	185.69	110.26	22.00	27.00
09-Nov-21	277.60	181.44	26.00	32.00	09-Nov-21	278.01	163.81	26.00	31.00
25-Nov-21	241.61	152.52	25.00	30.00	25-Nov-21	209.56	129.38	25.00	32.00
09-Dec-21	398.10	187.10	28.00	32.00	09-Dec-21	373.85	179.93	26.00	32.00
27-Dec-21	363.63	183.68	27.00	31.00	27-Dec-21	333.85	184.77	25.00	30.00
<b>Minimum</b>	<b>229.44</b>	<b>145.94</b>	<b>23.00</b>	<b>26.00</b>	<b>Minimum</b>	<b>185.7</b>	<b>110.26</b>	<b>22.00</b>	<b>23.00</b>
<b>Maximum</b>	<b>398.10</b>	<b>187.10</b>	<b>28.00</b>	<b>32.00</b>	<b>Maximum</b>	<b>373.9</b>	<b>184.77</b>	<b>26.00</b>	<b>32.00</b>
<b>Average</b>	<b>297.14</b>	<b>172.06</b>	<b>25.67</b>	<b>29.83</b>	<b>Average</b>	<b>274.6</b>	<b>154.24</b>	<b>24.67</b>	<b>29.17</b>
<b>Limit (µg/m3)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>	<b>Limit (µg/m3)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>

### MINE WATER QUALITY REPORT

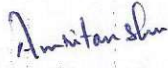
Period -October'2021 to December'2021

Industry Name: West Bokaro Colliery									
Q-AB					Q-SE				
Date of Sampling	pH	TSS	COD	Oil & Grease	Date of Sampling	pH	TSS	COD	Oil & Grease
21-Oct-21	7.84	21.0	30.9	BDL	21-Oct-21	7.92	8.0	19.3	BDL
12-Nov-21	7.55	11.0	26.9	BDL	10-Nov-21	7.60	10.0	7.8	BDL
09-Dec-21	7.13	8.0	0.0	BDL	09-Dec-21	7.37	24.0	7.6	BDL
<b>Minimum</b>	<b>7.13</b>	<b>8.00</b>	<b>0.00</b>	<b>&lt;1.0</b>	<b>Minimum</b>	<b>7.37</b>	<b>8.00</b>	<b>7.60</b>	<b>0.00</b>
<b>Maximum</b>	<b>7.84</b>	<b>21.00</b>	<b>30.90</b>	<b>&lt;1.0</b>	<b>Maximum</b>	<b>7.92</b>	<b>24.00</b>	<b>19.30</b>	<b>0.00</b>
<b>Average</b>	<b>7.51</b>	<b>13.33</b>	<b>19.27</b>	<b>&lt;1.0</b>	<b>Average</b>	<b>7.63</b>	<b>14.00</b>	<b>11.57</b>	<b>#DIV/0!</b>
<b>Limit</b>		<b>100 mg/L</b>	<b>250 mg/L</b>	<b>10 mg/L</b>	<b>Limit</b>		<b>100 mg/L</b>	<b>250 mg/L</b>	<b>10 mg/L</b>

### AMBIENT NOISE MONITORING REPORT

Period -October'2021 to December'2021

Industry Name: West Bokaro Colliery									
Q-AB					Q-SE				
Date of Sampling	Day Time		Night Time		Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level		Limit	Level	Limit	Level
12-Oct-21	75.00	62.69	70.00	59.26	12-Oct-21	75.00	60.76	70.00	57.33
09-Nov-21	75.00	64.76	70.00	61.33	09-Nov-21	75.00	62.83	70.00	59.40
09-Dec-21	75.00	63.93	70.00	51.27	09-Dec-21	75.00	62.00	70.00	51.34
<b>Minimum</b>	<b>75.00</b>	<b>62.69</b>	<b>70.00</b>	<b>61.33</b>	<b>Minimum</b>	<b>75.00</b>	<b>60.76</b>	<b>70.00</b>	<b>51.34</b>
<b>Maximum</b>	<b>75.00</b>	<b>64.76</b>	<b>70.00</b>	<b>61.33</b>	<b>Maximum</b>	<b>75.00</b>	<b>62.83</b>	<b>70.00</b>	<b>59.40</b>
<b>Average</b>	<b>75.00</b>	<b>63.79</b>	<b>70.00</b>	<b>57.29</b>	<b>Average</b>	<b>75.00</b>	<b>61.86</b>	<b>70.00</b>	<b>56.02</b>

  
**Mgr.(Env. Mgmt.)**  
**West Bokaro Division**  
**Tata Steel Limited**



**AIR QUALITY REPORT AT WORK PLACE**

(As per GSR 742 (E), dated 25th Sept 2009)

**Period -October'2021 to December'2021****Industry Name: Washey Complex (W-II)**

Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
11-Oct-21	300.21	198.68	22.00	25.00
22-Oct-21	275.13	186.53	24.00	26.00
08-Nov-21	275.98	170.37	25.00	30.00
24-Nov-21	273.69	180.31	23.00	31.00
09-Dec-21	377.64	200.96	27.00	31.00
25-Dec-21	379.57	196.98	26.00	32.00
<b>Minimum</b>	<b>273.69</b>	<b>170.37</b>	<b>22.00</b>	<b>25.00</b>
<b>Maximum</b>	<b>379.57</b>	<b>200.96</b>	<b>27.00</b>	<b>32.00</b>
<b>Average</b>	<b>313.70</b>	<b>188.97</b>	<b>24.50</b>	<b>29.17</b>
<b>Limit (µg/m3)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>

**EFFLUENT QUALITY REPORT****Period -October'2021 to December'2021****Industry Name: Washey Complex -TP-08**

Date of Sampling	pH	TSS	COD	BOD	Oil & Grease
21-Oct-21	7.80	62.0	100.6	24.7	BDL
12-Nov-21	7.58	16.0	30.7	7.0	BDL
09-Dec-21	7.56	40.0	45.9	10.6	BDL
<b>Minimum</b>	<b>7.56</b>	<b>16.00</b>	<b>30.70</b>	<b>44.40</b>	<b>0.0</b>
<b>Maximum</b>	<b>7.80</b>	<b>62.00</b>	<b>100.60</b>	<b>24.70</b>	<b>0.0</b>
<b>Average</b>	<b>7.65</b>	<b>39.33</b>	<b>59.07</b>	<b>14.10</b>	<b>#DIV/0!</b>
<b>Limit</b>		<b>100 mg/L</b>	<b>250 mg/L</b>	<b>30 mg/L</b>	<b>10 mg/L</b>

**Note:**

1. Zero Effluent Discharge (ZED) is being maintained at Washery. Effluent generated is 100% recycled and reused.
2. All values are well within limits.

**AMBIENT NOISE MONITORING REPORT****Period -October'2021 to December'2021****Industry Name: Washey Complex (W-II)**

Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level
13-Oct-21	75.00	62.23	70.00	58.80
15-Nov-21	75.00	64.30	70.00	60.87
10-Dec-21	75.00	63.47	70.00	55.81
<b>Minimum</b>	<b>75.00</b>	<b>62.23</b>	<b>70.00</b>	<b>55.81</b>
<b>Maximum</b>	<b>75.00</b>	<b>64.30</b>	<b>70.00</b>	<b>60.87</b>
<b>Average</b>	<b>75.00</b>	<b>63.33</b>	<b>70.00</b>	<b>58.49</b>

*Anurag Kumar*  
**Mgr.(Env. Mgmt.)**  
**West Bokaro Division**  
**Tata Steel Limited**



**AIR QUALITY REPORT AT WORK PLACE**

(As per GSR 742 (E), dated 25th Sept 2009)

**Period -October'2021 to December'2021****Industry Name: Washey Complex (W-III)**

Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
11-Oct-21	300.21	198.68	22.00	25.00
22-Oct-21	275.13	186.53	24.00	26.00
08-Nov-21	275.98	170.37	25.00	30.00
24-Nov-21	273.69	180.31	23.00	31.00
09-Dec-21	377.64	200.96	27.00	31.00
25-Dec-21	379.57	196.98	26.00	32.00
<b>Minimum</b>	<b>273.69</b>	<b>170.37</b>	<b>22.00</b>	<b>25.00</b>
<b>Maximum</b>	<b>379.57</b>	<b>200.96</b>	<b>27.00</b>	<b>32.00</b>
<b>Average</b>	<b>313.70</b>	<b>188.97</b>	<b>24.50</b>	<b>29.17</b>
<b>Limit (µg/m<sup>3</sup>)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>

**EFFLUENT QUALITY REPORT****Period -October'2021 to December'2021****Industry Name: Washey Complex -TP-08**

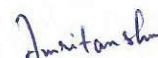
Date of Sampling	pH	TSS	COD	BOD	Oil & Grease
21-Oct-21	7.80	62.0	100.6	24.7	BDL
12-Nov-21	7.58	16.0	30.7	7.0	BDL
09-Dec-21	7.56	40.0	45.9	10.6	BDL
<b>Minimum</b>	<b>7.56</b>	<b>16.00</b>	<b>30.70</b>	<b>7.00</b>	<b>0.0</b>
<b>Maximum</b>	<b>7.80</b>	<b>62.00</b>	<b>100.60</b>	<b>24.70</b>	<b>0.0</b>
<b>Average</b>	<b>7.65</b>	<b>39.33</b>	<b>59.07</b>	<b>14.10</b>	<b>#DIV/0!</b>
<b>Limit</b>		<b>100 mg/L</b>	<b>250 mg/L</b>	<b>30 mg/L</b>	<b>10 mg/L</b>

**Note:**

1. Zero Effluent Discharge (ZED) is being maintained at Washery. Effluent generated is 100% recycled and reused.
2. All values are well within limits.

**AMBIENT NOISE MONITORING REPORT****Period -October'2021 to December'2021****Industry Name: Washey Complex (W-III)**

Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level
13-Oct-21	75.00	64.12	70.00	59.57
15-Nov-21	75.00	66.19	70.00	61.64
10-Dec-21	75.00	65.36	70.00	52.58
<b>Minimum</b>	<b>75.00</b>	<b>64.12</b>	<b>70.00</b>	<b>52.58</b>
<b>Maximum</b>	<b>75.00</b>	<b>66.19</b>	<b>70.00</b>	<b>61.64</b>
<b>Average</b>	<b>75.00</b>	<b>65.22</b>	<b>70.00</b>	<b>57.93</b>



**Mgr.(Env. Mgmt.)**  
**West Bokaro Division**  
**Tata Steel Limited**

**AIR QUALITY REPORT AT WORK PLACE**

(As per GSR 742 (E), dated 25th Sept 2009)

**Period -October'2021 to December'2021****Industry Name: Logistics (Dispatch)**

Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
11-Oct-21	256.27	164.27	24.00	26.00
22-Oct-21	267.49	167.07	25.00	29.00
08-Nov-21	260.38	163.93	28.50	32.00
24-Nov-21	272.61	166.82	25.00	30.00
08-Dec-21	291.93	170.26	28.00	30.00
24-Dec-21	370.97	182.61	27.00	29.00
<b>Minimum</b>	<b>49.16</b>	<b>36.63</b>	<b>24.0</b>	<b>26.0</b>
<b>Maximum</b>	<b>151.84</b>	<b>98.20</b>	<b>28.5</b>	<b>32.0</b>
<b>Average</b>	<b>104.15</b>	<b>73.91</b>	<b>26.3</b>	<b>29.3</b>
<b>Limit (µg/m3)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>

**EFFLUENT QUALITY REPORT****Period -October'2021 to December'2021****Industry Name: Logistics (Dispatch)**

Date of Sampling	pH	TSS	COD	BOD	Oil & Grease
21-Oct-21	7.53	28.00	19.30	4.80	BDL
10-Nov-21	7.32	30.00	15.30	4.00	BDL
09-Dec-21	7.76	16.00	11.40	6.00	BDL
<b>Minimum</b>	<b>7.32</b>	<b>16.00</b>	<b>11.40</b>	<b>4.00</b>	<b>0.0</b>
<b>Maximum</b>	<b>7.76</b>	<b>30.00</b>	<b>19.30</b>	<b>6.00</b>	<b>0.0</b>
<b>Average</b>	<b>7.54</b>	<b>24.67</b>	<b>15.33</b>	<b>4.93</b>	<b>#DIV/0!</b>

**Note:**

1. Zero Effluent Discharge (ZED) is being maintained at Dispatch / Logistic (Railway siding).
2. Oil tarp is installed at HEMM washing area.
3. All values are well within limits.

**AMBIENT NOISE MONITORING REPORT****Period -October'2021 to December'2021****Industry Name: Logistics (Dispatch)**

Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level
06-Oct-21	75.00	51.22	70.00	47.79
08-Nov-21	75.00	64.81	70.00	61.38
08-Dec-21	75.00	63.98	70.00	52.32
<b>Minimum</b>	<b>75.00</b>	<b>51.22</b>	<b>70.00</b>	<b>47.79</b>
<b>Maximum</b>	<b>75.00</b>	<b>64.81</b>	<b>70.00</b>	<b>61.38</b>
<b>Average</b>	<b>75.00</b>	<b>60.00</b>	<b>70.00</b>	<b>53.83</b>

*Amitanshu*

**Mgr.(Env. Mgmt.)**  
**West Bokaro Division**  
**Tata Steel Limited**



**AIR QUALITY REPORT AT WORK PLACE**

(As per GSR 742 (E), dated 25th Sept 2009)

Period -October'2021 to December'2021

Industry Name: Power House

Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
11-Oct-21	300.21	198.68	22.00	25.00
22-Oct-21	275.13	186.53	24.00	26.00
08-Nov-21	275.98	170.37	25.00	30.00
24-Nov-21	273.69	180.31	23.00	31.00
09-Dec-21	377.64	200.96	27.00	31.00
25-Dec-21	379.57	196.98	26.00	32.00
Minimum	273.69	170.37	22.00	25.00
Maximum	379.57	200.96	27.00	32.00
Average	313.70	188.97	24.50	29.17
Limit (µg/m <sup>3</sup> )	700.00	300.00	120.00	120.00

**AMBIENT NOISE MONITORING REPORT**

Period -October'2021 to December'2021

Industry Name: Power House

Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level
14-Oct-21	75.00	62.74	70.00	59.31
16-Nov-21	75.00	64.81	70.00	61.38
13-Dec-21	75.00	63.98	70.00	51.32
Minimum	75.00	62.74	70.00	51.32
Maximum	75.00	64.81	70.00	61.38
Average	75.00	63.84	70.00	57.34

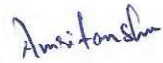
**EFFLUENT QUALITY REPORT**

Period -October'2021 to December'2021

Industry Name: Power House (Ash Pond)

Date of Sampling	pH	TSS	COD	BOD	Oil & Grease
21-Oct-21	7.38	15	11.6	2.4	BDL
10-Nov-21	7.46	20	0	4.4	BDL
09-Dec-21	8.21	7	22.9	6.0	BDL
Minimum	7.38	7	0	2.4	0.0
Maximum	8.21	20	22.9	6.0	0.0
Average	7.7	14	12	4.3	#DIV/0!
Limit		100 mg/L	250 mg/L	30 mg/L	10 mg/L

Note:



Mgr.(Env. Mgmt.)  
West Bokaro Division  
Tata Steel Limited



## AMBIENT AIR QUALITY REPORT

(As National Ambient air quality monitoring standard dated 18th November, 2009)

Period - January'2022 to March'2022

Industry Name: West Bokaro Division, Tata Steel Limited

Near Persabera				Near Chainpur Mandap				Near EMC OFFICE/TCH				Near Duni							
Date of Sampling	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>	Date of Sampling	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>	Date of Sampling	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>	Date of Sampling	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>
05-Jan-22	46.63	40.02	22.18	24.34	04-Jan-22	62.37	46.39	22.59	23.72	04-Jan-22	43.53	21.19	21.09	23.21	05-Jan-22	50.62	38.56	24.54	26.43
20-Jan-22	51.13	34.72	25.16	28.00	19-Jan-22	69.54	53.14	21.07	28.94	16-Jan-22	43.31	22.06	18.63	22.45	20-Jan-22	51.73	39.86	19.26	23.89
04-Feb-22	47.73	39.09	26.00	26.00	02-Feb-22	61.22	50.77	22.00	27.00	02-Feb-22	38.31	23.28	22.00	25.00	04-Feb-22	50.56	40.87	24.00	28.00
18-Feb-22	46.62	32.14	24.00	30.00	16-Feb-22	65.28	51.76	24.00	31.00	16-Feb-22	39.81	27.35	20.00	21.00	18-Feb-22	50.93	41.45	24.00	26.00
04-Mar-22	54.75	42.81	23.41	23.83	03-Mar-22	69.32	53.19	22.99	24.03	03-Mar-22	44.61	31.32	21.87	23.28	04-Mar-22	52.18	44.13	24.01	25.62
16-Mar-22	52.27	45.32	25.59	26.67	15-Mar-22	72.18	56.02	22.51	29.97	15-Jan-00	42.59	30.94	18.63	20.72	16-Mar-22	51.55	42.48	19.99	30.88
Minimum	46.62	32.14	22.18	23.83	Minimum	61.22	46.39	21.07	23.72	Minimum	38.31	21.19	18.63	20.72	Minimum	50.56	38.56	19.26	23.89
Maximum	54.75	45.32	26.00	30.00	Maximum	72.18	56.02	24.00	31.00	Maximum	44.61	31.32	22.00	25.00	Maximum	52.18	44.13	24.54	30.88
Average	49.86	39.02	24.39	26.47	Average	66.65	51.88	22.53	27.44	Average	42.03	26.02	20.37	22.61	Average	51.26	41.23	22.63	26.80
Limit (µg/m <sup>3</sup> )	100.00	60.00	80.00	80.00	Limit (µg/m <sup>3</sup> )	100.00	60.00	80.00	80.00	Limit (µg/m <sup>3</sup> )	100.00	60.00	80.00	80.00	Limit (µg/m <sup>3</sup> )	100.00	60.00	80.00	80.00

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Tata Steel Limited



### AIR QUALITY REPORT AT WORK PLACE

(As per GSR 742 (E), dated 25th Sept 2009)

Period -January'2022 to March'2022

Industry Name: West Bokaro Colliery									
FRS-QAB					CMC-QSE				
Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>	Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
08-Jan-22	398.10	187.10	27.00	34.00	07-Jan-22	373.85	179.93	24.00	29.00
28-Jan-22	363.63	183.68	25.00	32.00	28-Jan-22	333.85	184.77	26.00	33.00
11-Feb-22	508.40	240.44	28.00	31.00	11-Feb-22	474.20	229.00	27.00	32.00
23-Feb-22	488.44	248.79	29.00	31.00	23-Feb-22	432.92	221.34	29.00	34.00
11-Mar-22	392.05	223.74	26.91	30.04	09-Mar-22	433.20	241.52	26.07	33.54
30-Mar-22	445.00	236.86	25.09	28.49	30-Mar-22	388.65	209.52	24.93	31.96
<b>Minimum</b>	<b>363.63</b>	<b>183.68</b>	<b>25.00</b>	<b>28.49</b>	<b>Minimum</b>	<b>333.9</b>	<b>179.93</b>	<b>24.00</b>	<b>29.00</b>
<b>Maximum</b>	<b>508.40</b>	<b>248.79</b>	<b>29.00</b>	<b>34.00</b>	<b>Maximum</b>	<b>474.2</b>	<b>241.52</b>	<b>29.00</b>	<b>34.00</b>
<b>Average</b>	<b>432.60</b>	<b>220.10</b>	<b>26.83</b>	<b>31.09</b>	<b>Average</b>	<b>406.1</b>	<b>211.01</b>	<b>26.17</b>	<b>32.25</b>
<b>Limit (µg/m3)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>	<b>Limit (µg/m3)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>

### MINE WATER QUALITY REPORT

Period -January'2022 to March'2022

Industry Name: West Bokaro Colliery									
Q-AB					Q-SE				
Date of Sampling	pH	TSS	COD	Oil & Grease	Date of Sampling	pH	TSS	COD	Oil & Grease
25-Jan-22	7.80	29.0	55.6	BDL	25-Jan-22	7.69	38.0	43.6	BDL
02-Feb-22	7.52	23.0	70.9	BDL	02-Feb-22	7.58	34.0	55.1	BDL
28-Mar-22	8.20	11.7	3.97	BDL	28-Mar-22	8.15	5.10	19.84	BDL
<b>Minimum</b>	<b>7.52</b>	<b>11.70</b>	<b>3.97</b>	<b>&lt;1.0</b>	<b>Minimum</b>	<b>7.58</b>	<b>5.10</b>	<b>19.84</b>	<b>0.00</b>
<b>Maximum</b>	<b>8.20</b>	<b>29.00</b>	<b>70.90</b>	<b>&lt;1.0</b>	<b>Maximum</b>	<b>8.15</b>	<b>38.00</b>	<b>55.10</b>	<b>0.00</b>
<b>Average</b>	<b>7.84</b>	<b>21.23</b>	<b>43.49</b>	<b>&lt;1.0</b>	<b>Average</b>	<b>7.81</b>	<b>25.70</b>	<b>39.51</b>	<b>#DIV/0!</b>
<b>Limit</b>		<b>100 mg/L</b>	<b>250 mg/L</b>	<b>10 mg/L</b>	<b>Limit</b>		<b>100 mg/L</b>	<b>250 mg/L</b>	<b>10 mg/L</b>

### AMBIENT NOISE MONITORING REPORT

Period -January'2022 to March'2022

Industry Name: West Bokaro Colliery									
Q-AB					Q-SE				
Date of Sampling	Day Time		Night Time		Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level		Limit	Level	Limit	Level
07-Jan-22	75.00	62.03	70.00	51.43	07-Jan-22	75.00	62.60	70.00	53.25
11-Feb-22	75.00	63.28	70.00	52.68	11-Feb-22	75.00	63.85	70.00	54.50
10-Mar-22	75.00	61.24	70.00	50.60	09-Mar-22	75.00	62.44	70.00	52.42
<b>Minimum</b>	<b>75.00</b>	<b>61.24</b>	<b>70.00</b>	<b>52.68</b>	<b>Minimum</b>	<b>75.00</b>	<b>62.44</b>	<b>70.00</b>	<b>52.42</b>
<b>Maximum</b>	<b>75.00</b>	<b>63.28</b>	<b>70.00</b>	<b>52.68</b>	<b>Maximum</b>	<b>75.00</b>	<b>63.85</b>	<b>70.00</b>	<b>54.50</b>
<b>Average</b>	<b>75.00</b>	<b>62.18</b>	<b>70.00</b>	<b>51.57</b>	<b>Average</b>	<b>75.00</b>	<b>62.96</b>	<b>70.00</b>	<b>53.39</b>

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**AIR QUALITY REPORT AT WORK PLACE**

(As per GSR 742 (E), dated 25th Sept 2009)

Period -January'2022 to March'2022

Industry Name: Washey Complex (W-II)

Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
06-Jan-22	377.64	200.96	26.00	32.00
20-Jan-22	379.57	196.98	26.00	30.00
08-Feb-22	435.22	237.54	26.00	30.00
22-Feb-22	385.09	198.09	24.00	28.00
08-Mar-22	430.33	228.26	24.00	29.80
22-Mar-22	434.01	230.39	26.50	33.20
Minimum	377.64	196.98	24.00	28.00
Maximum	435.22	237.54	26.50	33.20
Average	406.98	215.37	25.42	30.50
Limit (µg/m3)	700.00	300.00	120.00	120.00

**EFFLUENT QUALITY REPORT**

Period -January'2022 to March'2022

Industry Name: Washey Complex -TP-08

Date of Sampling	pH	TSS	COD	BOD	Oil & Grease
27-Jan-22	7.25	24.0	83.4	17.0	BDL
23-Feb-22	7.75	23.0	43.3	12.7	BDL
28-Mar-22	7.64	4.2	23.8	3.0	BDL
Minimum	7.25	4.20	23.81	44.40	0.0
Maximum	7.75	24.00	83.40	17.00	0.0
Average	7.55	17.07	50.17	10.90	#DIV/0!
Limit		100 mg/L	250 mg/L	30 mg/L	10 mg/L

**Note:**

1. Zero Effluent Discharge (ZED) is being maintained at Washery. Effluent generated is 100% recycled and reused.
2. All values are well within limits.

**AMBIENT NOISE MONITORING REPORT**

Period -January'2022 to March'2022

Industry Name: Washey Complex (W-II)

Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level
08-Jan-22	75.00	63.07	70.00	53.22
14-Feb-22	75.00	64.32	70.00	54.47
07-Mar-22	75.00	62.66	70.00	52.39
Minimum	75.00	62.66	70.00	52.39
Maximum	75.00	64.32	70.00	54.47
Average	75.00	63.35	70.00	53.36

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**AIR QUALITY REPORT AT WORK PLACE**

(As per GSR 742 (E), dated 25th Sept 2009)

Period -January'2022 to March'2022

Industry Name: Washey Complex (W-III)

Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
06-Jan-22	377.64	200.96	26.00	32.00
20-Jan-22	379.57	196.98	26.00	30.00
08-Feb-22	435.22	237.54	26.00	30.00
22-Feb-22	385.09	198.09	24.00	28.00
08-Mar-22	430.33	228.26	24.00	29.80
22-Mar-22	434.01	230.39	26.50	33.20
<b>Minimum</b>	<b>377.64</b>	<b>196.98</b>	<b>24.00</b>	<b>28.00</b>
<b>Maximum</b>	<b>435.22</b>	<b>237.54</b>	<b>26.50</b>	<b>33.20</b>
<b>Average</b>	<b>406.98</b>	<b>215.37</b>	<b>25.42</b>	<b>30.50</b>
<b>Limit (µg/m3)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>

**EFFLUENT QUALITY REPORT**

Period -January'2022 to March'2022

Industry Name: Washey Complex -TP-08

Date of Sampling	pH	TSS	COD	BOD	Oil & Grease
27-Jan-22	7.25	24.0	83.4	17.0	BDL
02-Feb-22	7.75	23.0	43.3	12.7	BDL
28-Mar-22	7.64	4.2	23.8	3.0	BDL
<b>Minimum</b>	<b>7.25</b>	<b>4.20</b>	<b>23.81</b>	<b>3.00</b>	<b>0.0</b>
<b>Maximum</b>	<b>7.75</b>	<b>24.00</b>	<b>83.40</b>	<b>17.00</b>	<b>0.0</b>
<b>Average</b>	<b>7.55</b>	<b>17.07</b>	<b>50.17</b>	<b>10.90</b>	<b>#DIV/0!</b>
<b>Limit</b>		<b>100 mg/L</b>	<b>250 mg/L</b>	<b>30 mg/L</b>	<b>10 mg/L</b>

**Note:**

1. Zero Effluent Discharge (ZED) is being maintained at Washery. Effluent generated is 100% recycled and reused.
2. All values are well within limits.

**AMBIENT NOISE MONITORING REPORT**

Period -January'2022 to March'2022

Industry Name: Washey Complex (W-III)

Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level
08-Jan-22	75.00	63.40	70.00	52.77
14-Feb-22	75.00	64.65	70.00	54.02
01-Mar-22	75.00	62.60	70.00	51.94
<b>Minimum</b>	<b>75.00</b>	<b>62.60</b>	<b>70.00</b>	<b>51.94</b>
<b>Maximum</b>	<b>75.00</b>	<b>64.65</b>	<b>70.00</b>	<b>54.02</b>
<b>Average</b>	<b>75.00</b>	<b>63.55</b>	<b>70.00</b>	<b>52.91</b>

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**AIR QUALITY REPORT AT WORK PLACE**

(As per GSR 742 (E), dated 25th Sept 2009)

Period -January'2022 to March'2022

Industry Name: Logistics (Dispatch)

Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
06-Jan-22	291.93	170.26	27.00	31.00
20-Jan-22	370.97	182.61	25.00	29.00
08-Feb-22	371.41	203.25	26.00	30.00
22-Feb-22	420.50	243.93	30.00	34.00
08-Mar-22	422.36	219.24	24.12	27.53
22-Mar-22	402.88	216.39	22.88	29.47
<b>Minimum</b>	<b>49.16</b>	<b>36.63</b>	<b>22.9</b>	<b>27.5</b>
<b>Maximum</b>	<b>151.84</b>	<b>98.20</b>	<b>30.0</b>	<b>34.0</b>
<b>Average</b>	<b>104.15</b>	<b>73.91</b>	<b>25.8</b>	<b>30.2</b>
<b>Limit (µg/m3)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>

**EFFLUENT QUALITY REPORT**

Period -January'2022 to March'2022

Industry Name: Logistics (Dispatch)

Date of Sampling	pH	TSS	COD	BOD	Oil & Grease
25-Jan-22	7.92	93.00	15.80	3.0	BDL
02-Feb-22	7.79	81.00	19.70	5.9	BDL
10-Mar-22	7.93	10.10	45.65	13.0	BDL
<b>Minimum</b>	<b>7.79</b>	<b>10.10</b>	<b>15.80</b>	<b>3.0</b>	<b>0.0</b>
<b>Maximum</b>	<b>7.93</b>	<b>93.00</b>	<b>45.65</b>	<b>13.0</b>	<b>0.0</b>
<b>Average</b>	<b>7.88</b>	<b>61.37</b>	<b>27.05</b>	<b>7.3</b>	<b>#DIV/0!</b>
<b>Limit</b>		<b>100 mg/L</b>	<b>250 mg/L</b>	<b>30 mg/L</b>	<b>10 mg/L</b>

**Note:**

1. Zero Effluent Discharge (ZED) is being maintained at Dispatch / Logistic (Railway siding).
2. Oil tarp is installed at HEMM washing area.
3. All values are well within limits.

**AMBIENT NOISE MONITORING REPORT**

Period -January'2022 to March'2022

Industry Name: Logistics (Dispatch)

Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level
06-Jan-22	75.00	62.58	70.00	52.23
08-Feb-22	75.00	63.83	70.00	53.48
08-Mar-22	75.00	61.92	70.00	51.40
<b>Minimum</b>	<b>75.00</b>	<b>61.92</b>	<b>70.00</b>	<b>51.40</b>
<b>Maximum</b>	<b>75.00</b>	<b>63.83</b>	<b>70.00</b>	<b>53.48</b>
<b>Average</b>	<b>75.00</b>	<b>62.78</b>	<b>70.00</b>	<b>52.37</b>

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**AIR QUALITY REPORT AT WORK PLACE**

(As per GSR 742 (E), dated 25th Sept 2009)

Period -January'2022 to March'2022

Industry Name: Power House

Date of Sampling	SPM	RPM	NO <sub>x</sub>	SO <sub>2</sub>
06-Jan-22	377.64	200.96	26.00	32.00
20-Jan-22	379.57	196.98	26.00	30.00
08-Feb-22	435.22	237.54	26.00	30.00
22-Feb-22	385.09	198.09	24.00	28.00
08-Mar-22	430.33	228.26	24.00	29.80
22-Mar-22	434.01	230.39	26.50	33.20
<b>Minimum</b>	<b>377.64</b>	<b>196.98</b>	<b>24.00</b>	<b>28.00</b>
<b>Maximum</b>	<b>435.22</b>	<b>237.54</b>	<b>26.50</b>	<b>33.20</b>
<b>Average</b>	<b>406.98</b>	<b>215.37</b>	<b>25.42</b>	<b>30.50</b>
<b>Limit (µg/m3)</b>	<b>700.00</b>	<b>300.00</b>	<b>120.00</b>	<b>120.00</b>

**AMBIENT NOISE MONITORING REPORT**

Period -January'2022 to March'2022

Industry Name: Power House

Date of Sampling	Day Time		Night Time	
	Limit	Level	Limit	Level
10-Jan-22	75.00	62.08	70.00	51.48
07-Feb-22	75.00	63.66	70.00	52.73
07-Mar-22	75.00	61.29	70.00	50.65
<b>Minimum</b>	<b>75.00</b>	<b>61.29</b>	<b>70.00</b>	<b>50.65</b>
<b>Maximum</b>	<b>75.00</b>	<b>63.66</b>	<b>70.00</b>	<b>52.73</b>
<b>Average</b>	<b>75.00</b>	<b>62.34</b>	<b>70.00</b>	<b>51.62</b>

**EFFLUENT QUALITY REPORT**

Period -January'2022 to March'2022

Industry Name: Power House (Ash Pond)

Date of Sampling	pH	TSS	COD	BOD	Oil & Grease
25-Jan-22	8.12	22.0	35.7	9.0	BDL
02-Feb-22	7.94	28.0	23.6	5.9	BDL
28-Mar-22	7.49	6.8	23.81	3.0	BDL
<b>Minimum</b>	<b>7.49</b>	<b>6.8</b>	<b>23.6</b>	<b>3</b>	<b>0.0</b>
<b>Maximum</b>	<b>8.12</b>	<b>28</b>	<b>35.7</b>	<b>9.0</b>	<b>0.0</b>
<b>Average</b>	<b>7.9</b>	<b>19</b>	<b>28</b>	<b>6.0</b>	<b>#DIV/0!</b>
<b>Limit</b>		<b>100 mg/L</b>	<b>250 mg/L</b>	<b>30 mg/L</b>	<b>10 mg/L</b>

Note:

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## Annexure - II

## Annexure-II: Expenditure on Environmental Safeguards - FY'22

## QAB

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Effluent recycling system in FRS to reduce effluent generation		11.00
2	Tree plantation & lawn maintenance		44.97
3	Water tanker operation (includes wages cost) & maintenance cost for dust suppression		368.87
4	Cleaning of workshop		38.33
<b>Sub Total =</b>		<b>0.00</b>	<b>463.18</b>

## QSE

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Effluent recycling system operation/maintenance to reduce effluent generation		8.51
2	Water tanker operation (including wages) & maintenance cost for dust suppression		432.53
3	Cleaning of workshop		59.61
4	Wet drilling operation and maintenance & modification to minimize water consumption		139.6
5	Replacement /Repair of oil tray & oil barrel stored to reduce oil spillage		3.5
6	New pump for recycling system		1.79
<b>Sub Total =</b>		<b>0.00</b>	<b>645.54</b>

## W-II

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Installation of bluescope sheet at conveyor transfer point area and crusher house to reduce fugitive dust pollution		11.52
2	Dust suppression (maintenance spares)		8.22
3	Water Sprinkling for dust suppression		8.09
4	Effluent recycling for resource conservation and zero effluent discharge		17.50
5	Cleaning and housekeeping to reduce fugitive emission in washery area		74.85
6	Primary & secondary and dilute Wrapping to prevent leakage		3.45
7	Installation of APFC panels to reduce power consumption		23.76
8	Modification for Conveyor Spillage Control in conveyor belts to prevent soil contamination		4.26
9	Spillage Control by Hosch/Tegga Equipment's to prevent soil contamination		21.75
10	Dry Fog System Operation and Maintenance for dust suppression		22.92
11	Tailing pond structural maintenance to maintain zero effluent discharge		15.00
<b>Sub Total =</b>		<b>0.00</b>	<b>211.32</b>

## W-III

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Dust suppression by sprinkling		12.22
2	New pump for water recycling		2.77
3	Effluent Recycling including power cost for zero effluent discharge		1.53
4	Maintenance of Dry Fog System for dust suppression		10.14
5	Cleaning and Housekeeping for fugitive dust suppression		20.16
6	Mechanical Tailing Dewatering to ensure Zero Effluent Discharge		1202.03
7	Power cost for Tailing Dewatering Plant to ensure Zero Effluent Discharge		75.44
8	Better efficient Light replacement and repair to reduce power consumption		6.55
9	Road construction for Tailing transportation to minimize dust generation		6.76
10	Spillage control in conveyors		21.23
11	Overhauling of media filter		11.22
12	Housekeeping in office building		12.02
<b>Sub Total =</b>		<b>0.00</b>	<b>1382.07</b>

## Logistics

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Water sprinkling on road for dust suppression		2.75
2	Spillage cleaning for Waste Management		43.37
3	Cleaning at B point to reduce fugitive dust generation		24.15
4	Boulder stacking from new and old yard to reduce water flow		0.00
5	Transportation from yard for minimize dust generation		23.29
<b>Sub Total =</b>		<b>0.00</b>	<b>93.56</b>



**Annexure-II: Expenditure on Environmental Safeguards - FY'22**

**Power House**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Dry fog maintenance to prevent dust suppression		7.15
2	Pipeline laying in existing ash system to reduce water leakages		26.50
3	ESP field O/H maintenance and operation to increase efficiency		27.76
4	Slurry ash line maintenance to prevent spillage		34.50
5	Cleaning and housekeeping maintenance of power house area to prevent fugitive dust		32.95
6	Power cost-Tailing pond water recycling system		34.75
7	Reject shed maintenance to reduce fugitive dust		2.70
8	Tailing pond & ash pond embankment strengthening/toe wall to prevent spillage		2.72
9	DM plant corrosion resistant painting to avoid seepage/ land contamination & Clarifloculator painting		1.50
10	Maintenance of Continuous Emission Monitoring Station		0.00
11	Renewal of Boiler Insulation to reduce heat loss and dust		18.80
<b>Sub Total =</b>		<b>0.00</b>	<b>189.33</b>

**IBMD**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Nalco dust seal chemical		15.00
2	Water sprinkling through Water tanker expenditure		18.00
3	Material for wheel washing	36.00	
4	Extension water sprinkling pipeline		6.00
5	Road sweeping machine on Hiring basis		24.00
<b>Sub Total =</b>		<b>36.00</b>	<b>63.00</b>

**Environment Management Cell**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Annual maintenance of environmental monitoring station (CAAQMS, CEMS & PM10 analyser)		7.65
2	Support for Environmental Activities and Jobs (Manpower, Vehicle etc.)		16.16
3	NABL Consultancy & Chemists for Environmental laboratory		8.01
4	Environmental Laboratory consumables		7.11
5	Hydrogeology Study Report		14.00
6	Statutory Payment Charges		22.82
<b>Sub Total =</b>		<b>0.00</b>	<b>52.93</b>

**Tata Steel Foundation**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Construction of water harvesting structures ( i.e Ponds for natural ground water recharging )		35.06
2	Watershed projects at Basantpur village ( to encompass the forests and wetlands surrounding it.Boost to the agriculture , forestry and prevent climate change ) .		20.26
<b>Sub Total =</b>		<b>0.00</b>	<b>55.32</b>

**Planning & Horticulture**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Parks Maintenance (Maintenance, Security, Material etc.)		94.68
2	Fountain Maintenance for Parks & Garden		0.19
3	Annual Flower Show Celebration		4.47
4	Bush Cleaning		35.00
5	New Area Development for New Parks		19.31
6	Nursery development		3.98
7	Poly bags & seeds, pot for Nursery		5.03
8	Annual Plantation		26.97
<b>Sub Total =</b>		<b>0.00</b>	<b>54.92</b>

**Water Supply**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Pipeline laying activities at park and other areas		19.00
2	STP/ETP operation and maintenance activities		23.00
<b>Sub Total =</b>		<b>0.00</b>	<b>42.00</b>

**Annexure-II: Expenditure on Environmental Safeguards - FY'22**

**Hospital**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Handling and Disposal of BMW		2.5
2	Procurement of BMW Color Bags for BMW management		0.80
3	Bleaching Powder for effluent treatment		0.30
4	Effluent Treatment Plant Operation		24.00
5	Cleaning staff (10 contract workers)		24.00
<b>Sub Total =</b>		<b>0.00</b>	<b>51.60</b>

**E&P**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	STPs Installation (5 nos.) for colony areas	555.00	
2	STPs & ETPs (2 each) in Equipment & Maintenance areas of DMC & FRS	161.00	
<b>Sub Total =</b>		<b>716.00</b>	<b>0.00</b>

**Projects**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Long pipe conveyor for dust and spillage control	13.43	
2	Fire Hydrant System for LPC	67.81	
3	Wheel Washing System	91.35	
4	Mist Cannon	29.71	
<b>Sub Total =</b>		<b>202.30</b>	<b>0.00</b>

**C&SM**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Town cleaning/garbage dumping fogging/ drain cleaning		91.00
2	Fencing work:- 1.Q-SEB Green cloth with cahin link fencing(Physiographic)=11.0 Lakhs 2. Q-SEB Concertina wire fencing =1.5Lakhs 3. Q-AB Concertina=5.0 Lakhs 4. Q-AB chain link fencing= 12.0 Lakh 5.Q-SE Brick wall fencing=10.0 Lakhs		39.50
3	PCC road at different location of Township		10.00
4	Park development workJRD		10.00
5	Drain repair and development at Township		9.00
6	PCC/RCC road IBMD		18.00
7	PCC road Pundi park		10.00
8	PCC/ RCC road Chainpur		35.00
9	Mechanised cleaning of septic tank and overhead water tank		5.00
10	Re-surfacing of black top road and marking on road in township area		58.00
<b>Sub Total =</b>		<b>0.00</b>	<b>285.50</b>

**Infra and Utility (CEP)**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Bhelgarha cleaning/garbage dumping fogging/ drain cleaning		5.40
2	Physiography barrier to reduce fugitive emission: Butcher mohallah to 12 no. chowk (length = 500 RM), Near stock yard ( Length= 150 Rm) & Bhadani to RML (Length= 250 Rm)		15.00
3	Drain repair and development at Bhelgarha to reduce waste spillage		3.00
4	RCC road at Bongahara school to reduce fugitive emission		25.00
5	PCC inside steel yard to reduce fugitive emission		25.00
6	Grey water tretment plant at Bhelgarha		6.00
7	Re-surfacing of road at Pundi and Bongahara		35.00
<b>Sub Total =</b>		<b>0.00</b>	<b>114.40</b>

**Misc.**

Sl. No.	Item for expenditure	Rs. In Lakh	
		Capital	Revenue
1	Ground Water Abstraction Charges		330.75

<b>Expenditure incurred towards environmental safeguard activities of West Bokaro Division =</b>		<b>954.30</b>	<b>4035.42</b>
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