



TSL/FAMD/SCM/FY25/1698

Date: - 29-11-2024

**To,**  
**Dy. Director General,**  
**Integrated Regional Office,**  
**Ministry of Environment and Forest & Climate Change, Eastern Region Office,**  
**A/3, Chandrasekharapur, Bhubaneswar-751023**

**Subject:** Submission of half-yearly compliance report on the stipulated environmental clearance terms and conditions in respect of Sukinda Chromite Block of M/s Tata Steel Limited, for the period from April 2024 to September 2024.

**Reference:**

- 1) MoEF Letter Ref No: J-11015/96/2011-IA. II (M), dated 06.09.2013
- 2) MoEF&CC's notification vide S.O-5845, dt. 28<sup>th</sup> Nov 2018

**Respected Sir,**

We are herewith submitting the six-monthly compliance report on the status of the implementation of the conditions stipulated in environmental clearance vested in favor of Sukinda Chromite Block of M/s Tata Steel Limited vide MoEF Letter Ref No: J-11015/96/2011-IA. II (M), dated 06.09.2013, for the period from April 2024 to September 2024 for your kind perusal.

This is in reference to the MoEF&CC's notification vide S.O-5845, dt. 28<sup>th</sup> Nov 2018, the six-monthly compliance report is being submitted only in soft copy mode, shared with your good office over e-mail @ [roez.bsr-mef@nic.in](mailto:roez.bsr-mef@nic.in) and is being uploaded in Parivesh portal. As per the Vesting order No. 5555 /SM/IV(B)SM-32/2020 dated 29th June'2020 issued by the Office of Nodal Officer, Steel & Mines Department of Government of Odisha, above environmental clearance has been vested to Tata Steel Mining Limited (Merged with Tata Steel Limited from 1<sup>st</sup> September 2023) for 50years (As per MMDR Act, 2021).

We believe the above submission is in order.

Thanking You.

Yours faithfully,  
f: Tata Steel Limited

*29.11.2024*

Mines Manager,  
Sukinda Chromite Block

**Copy to:**

1. The Director, Ministry of Environment, Forests & Climate Change, Indira Paryavaran Bhawan, Aliganj, Jorbagh Road, New Delhi-110 003
2. The Regional Directorate, Central Pollution Control Board, 'South end Conclave' Block-502, 5th & 6th Floor, 1582, Razidanga, Main Road, Kolkata- 700107
3. Member Secretary, State Pollution Control Board, Odisha, Paribesh Bhawan, A/118, Nilakantha Nagar, Bhubaneswar, 751012.

**TATA STEEL LIMITED**

Ferro Alloys & Minerals Division | Sukinda Chromite Mine | Kalarangiatta | Jajpur | Odisha-755028

Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India

Tel 91 22 6665 8282 Fax 91 22 6665 7724 Website [www.tatasteel.com](http://www.tatasteel.com)

Corporate Identity Number L27100MH1907PLC000260

**Half Yearly Compliance Report  
2024  
01 Dec(01 Apr - 30 Sep)**

**Acknowledgement**

<b>Proposal Name</b>	Sukinda Chromite Mines - Renewal of mine lease, expansion of Chrome Ore, Beneficiation Plant and Pyroxenite ore capacities and change of mining and beneficiation technologies of M/s Tata Steel Ltd. located at Sukinda P.O. Kalarangiatta, District Jajpur, Odisha - environmental clearance - regarding.		
<b>Name of Entity / Corporate Office</b>	Tata Steel Limited		
<b>Village(s)</b>	N/A		
<b>District</b>	JAJAPUR		
<b>Proposal No.</b>	IA/OR/MIN/114264/2007	<b>Category</b>	Non-Coal Mining
<b>Plot / Survey / Khasra No.</b>	N/A	<b>Sub-District</b>	N/A
<b>State</b>	ODISHA	<b>Entity's PAN</b>	*****2803M
<b>MoEF File No.</b>	J-11015/96/2011-IA.II(M)	<b>Entity name as per PAN</b>	UTSAV KASHYAP

**Compliance Reporting Details**

**Reporting Year** 2024  
**Remarks (if any)**  
**Reporting Period** 01 Dec(01 Apr - 30 Sep)

**Details of Production and Project Area**

<b>Name of Entity / Corporate Office</b>	Tata Steel Limited	
	<b>Project Area as per EC Granted</b>	<b>Actual Project Area in Possession</b>
Private	0	0
Revenue Land	332.303	332.303
Forest	247.382	247.382
Others	0	0
Total	579.685	579.685

**Production Capacity**

Sr. no	Product Name	units	Valid Upto	Capacity	Production last year	Capacity as per CTO
1	Pyroxenite	Tons per Annum (TPA)	31/03/2025	500000	0	0
2	Chrome Ore	Tons per Annum (TPA)	31/03/2025	2400000	301997	600000

## Conditions

### Specific Conditions

Sr.No.	Condition Type	Condition Details
1	Statutory compliance	No mining activities will be allowed in forest area for which the Forest Clearance is not available.

#### PPs Submission: Complied

The lease of 406.00ha comprised 404.669ha of forest land (73.697 ha as per HAL plus 330.972 ha as per SABIK) and 1.331ha of non-forest land. The details of Forest Clearance granted by MoEFCC are; a) Letter no. 8-78/96-FC dated 27.01.1998 over 73.797 ha. b) Letter No. 8-15/2016-FC dated 18.05.2018 over 330.972 ha. Mining and allied activities were carried within the lease hold area of 406.0ha within which the entire forest land had been diverted as per FC Act,1980. Copies of forest clearances enclosed as Annexure-I

Date:  
29/11/2024

2	Statutory compliance	The project proponent will seek and obtain approval under the FC Act, 1980 for diversion of the entire forest land located within the mining lease within a period of two years from 01.02.2013 i.e. the date of issue of guidelines by FC vide their letter-F. No. 11-362/2012-FC, failing which the mining lease area will be reduced to the non-forest area plus the forest area for which the project proponent had been able to obtain the FC at the end of this time period. In the case of reduction in mine lease area, the project proponent will need to get a revised mining plan approved from the competent authority for reduced area and enter into a new mining lease as per reduced lease area. The EC will be construed to be available for the mining lease area as per the revised mining lease deed.
---	----------------------	---

#### PPs Submission: Complied

Renewal Forest Diversion Proposal for entire forest land of 73.697 ha within the Mining Lease area was applied in time. The FDP has been duly recommended by the F and E department, Govt. of Odisha to the Ministry of Environment and Forests, Govt. of India for onward consideration for grant of Forest Clearance. MoEFCC has granted Stage-I Forest Clearance with one year working permission vide letter no. 8-78/1996-FC (pt-I), dated 03.11.2014. Copy of the letter is enclosed as Annexure-I. Subsequent to endorsement of the MMDR Amendment Act, 2015, the Govt. of Odisha extended the mining lease from 12.01.2013 to 31.03.2020 for which the supplementary lease deed was executed on 24.08.2015 and registered on 26.08.2015. In accordance to the MoEFCC s Circular No. F.No.11-51/2015-FC, dated.01.04.2015, the forest clearance dated 27.01.1998 got extended till 31.03.2020. Further, in accordance with the MoEFCC s Circular F.No.8-78/1996-FC, dated.10.03.2015, the forest area as on 25.10.1980 (i.e. Sabik Settlement) 404.669 ha. within the mining lease of 406 ha is now termed as forest land. Hence, fresh forest diversion proposal over an area of 330.972 ha (404.669 ha - already diverted area of 73.697 ha) has been applied on 02.11.2015 and with reference to the Agenda No.1 (F.No.8-15/2016-FC) of the Minutes of meeting of Forest Advisory Committee held on 25th April 2017 (published in the web site), the mine was accorded Stage-I clearance vide letter F.No 8-15/2016-FC , dated 04.07.2017 over 330.972 ha of forest land as on 25.10.1980 and stage -II in 2018. Copy of the letter is enclosed as Annexure-I. Thus, forest clearance was obtained in due time as per the rule then applicable. However, due to major change in land categorization of HAL and SABIK settlement by state government the identified SABIK forest land was diverted in 2018 as per the guidelines.

Date:  
29/11/2024

3	Statutory compliance	Till all the clearance are obtained for the proposed tailing pond/dam the project would only use existing tailing dam.
<b>PPs Submission:</b> Complied No chrome ore beneficiation plant is being operated at present. Thus, there is no tailing pond/dam.		Date: 29/11/2024
4	Statutory compliance	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the Standing Committee of National Board for Wildlife, as may be applicable to this project.
<b>PPs Submission:</b> Complied The project area neither fall partly/wholly within any protected areas viz. wildlife sanctuary, national park, biosphere reserves or other eco sensitive zones nor within 10 Kms from the boundaries of such protected areas, thus clearance under the Wildlife (Protection) Act, 1972 from the Standing Committee of National Board for Wildlife is not applicable.		Date: 29/11/2024
5	Statutory compliance	Environmental Clearance is subject to final order of the Hon ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004, as may be applicable to this project.
<b>PPs Submission:</b> Complied Final order of the Hon ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004, is awaited. The petition status from the website of Supreme court of India read as Pending for Motion hearing; however, this didnt affect the legal status of environmental clearance since The project area/ lease area neither falls partly/wholly within any protected areas (wildlife sanctuaries, national parks, biosphere reserves or any other sensitive zones) nor within 10kms from the boundaries of such protected areas concerning which the original petition was filed. We have not yet received any instructions from the Ministry of Environment, Forest and Climate Change in this regard. The previous Environmental Clearance is vested for 50 years.		Date: 29/11/2024
6	WASTE MANAGEMENT	The maximum height of the overburden dumps from its toe to the top of the dump on sloping ground shall not be more than 110 m. The dump slope shall be suitably terraced by leaving berms of adequate width in between lifts such that the overall slope angle (i.e. angle between the line joining the crest to the toe of the dump and across all such lifts with the horizontal) does not exceed 28 degrees.
<b>PPs Submission:</b> Complied As per approved mining plan, we are now backfilling the OB-II quarry and it will attain a height of 215 mRL. At present as per the approved mine plan only back filling is being carried out. The internal OB II back fill dump whas achieved a height of 70 meter which is proposed to be carried out up to a height of 85m in the plan period. Further, over all slope angle of OB II back fill dump is Approx. 12 degree which is under the prescribed limit of 28 degree.		Date: 29/11/2024
7	WASTE MANAGEMENT	Adequate precautionary measures shall be taken for strengthening the dump foundation. Particularly while dumping over soft ground, the toe region all along the extremities of such dumps shall be suitably buttressed with hard rocky boulders after excavating the topsoil and soft ground. Dumping operations shall commence only after such preparatory work for the dump foundation is completed in order to prevent its failure, which may trigger a slide of the entire dump.
<b>PPs Submission:</b> Complied Dumping is being carried out only after ensuring the preparatory works for the dump foundation and with careful consideration of the stability aspects.		Date: 29/11/2024
8	Statutory compliance	The project proponent shall obtain Consent to Establish and



		Consent to Operate from the State Pollution Control Board, Odisha and effectively implement all the conditions stipulated therein.
<b>PPs Submission:</b> Complied The Consent to Establish had already been obtained from Odisha State Pollution Control Board vide letter no. 17750/IND-II-NOC-5664 dated 30.09.2013 and same has been vested for 50 years. Copy enclosed as Annexure-IIa. We have also obtained the Consent to Operate as consent order No. 2950 issued vide letter No. 4424/IND-I-CON-226, dt. 29/03/2024, valid till 31.03.2025. Copy enclosed as Annexure-IIb.		Date: 29/11/2024
9	WATER QUALITY MONITORING AND PRESERVATION	Appropriate mitigative measures shall be taken to prevent pollution of Damsala Nallah, if any, in consultation with the State Pollution Control Board.
<b>PPs Submission:</b> Complied Following mitigative measures have been implemented to prevent pollution of Damsala Nallah: 1. ETP with capacity of 4500KI/hr, designed with settling pit, flash mixture, clarri-focculator, automatic dosing system, dry sludge collection system, multi sand filters etc. was in operation. 2. Treated water from the ETP is reused /recycled within the mine for various purposes like greenbelt, dust suppression, drinking water treatment etc. to minimize the discharge load on the Damsala Nallah. 3. No effluent is discharged beyond the mine premises without prior treatment and its conformance with the permissible discharge norms. 4. Effluents discharged from the outlet of ETP, are monitored on real-time basis with continuous effluent monitoring system for parameters like pH, TSS, flow and Cr6. 5. We have been utilising the mine effluents for drinking purpose within the camp since May2018 after two stage treatment processes such as primary treatment at ETP with correction to suspended solids, pH, Hexavalent Chromium and secondary treatment at WTP with disinfection and other subsequent processes.		Date: 29/11/2024
10	MISCELLANEOUS	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall not be overloaded.
<b>PPs Submission:</b> Complied Monitoring of vehicular emission done on six monthly basis for the HEMMs deployed in Mining through a third party recognised by state transport authority. Regular conditioning monitoring of the HEMMs is also carried out to keep the vehicle in good condition.		Date: 29/11/2024
11	Statutory compliance	Drills shall either be operated with dust extractors or equipped with water injection system.
<b>PPs Submission:</b> Complied All the drills deployed within mine are equipped with in-built wet drilling facilities to reduce dust generation. Apart from this, the drill operators as well as workmen working in the dust prone areas are provided with adequate PPEs.		Date: 29/11/2024
12	AIR QUALITY MONITORING AND PRESERVATION	As part of ambient air quality monitoring during operational phase of the project, the air samples shall also be analysed for their mineralogical composition as may be so prescribed or notified by this Ministry and records maintained.
<b>PPs Submission:</b> Complied The ambient air quality is monitored twice a week at six locations within the Core Zone. The air samples are also analysed for their mineralogical composition on quarterly basis. All the stipulated parameters are being analysed and reported in Annexure-XII- Extracts on Environmental Monitoring.		Date: 29/11/2024
13	MISCELLANEOUS	In case any village is located within the mining leasehold which is not likely to be affected due to mining activities during the life of mine, the Expert Appraisal Committee (EAC) should consider the

		proposal of Environmental Clearance (EC) for reduced mining area. The mining lease may be executed for the area for which EC is accorded. The mining plan also accordingly revised and required stipulation under the MMDR Act 1957 and MCR 1969 met.
<b>PPs Submission:</b> Complied There are no villages within the lease hold area of 406.0ha for which EC had been accorded by MoEFCC.		Date: 29/11/2024
14	MISCELLANEOUS	The ores and minerals shall be covered by tarpaulin or by such other means when transported out of the mine by road. The vehicles shall not be overloaded.
<b>PPs Submission:</b> Complied Mineral and ores, transported out of the mine lease boundary to the various destinations are completely covered by tarpaulin and secured in position by plastic straps. Photographs are enclosed as Annexure-III-Environmental Management Practices.		Date: 29/11/2024
15	AIR QUALITY MONITORING AND PRESERVATION	Effective safeguard measures such as conditioning of ore with water, regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.
<b>PPs Submission:</b> Complied To limit the fugitive emissions, following safeguard measures have been implemented: 1. Water sprinkling on haul road, transfer points, Ore stack yard, etc was ensured on regular basis. 2. Deployment of seven (4) water sprinklers (two of 20 KL and two of 12KL) within mine area for haul road dust suppression and at mineral storage yards. 3. Stationary water sprinklers are installed and in operation on the main/permanent haul roads with permanent concrete bunds and maintenance areas and stack yard. 4. Two Number of mist canon are provided at the ore stackyard area to reduce the ore dust emission. Ambient air quality is being monitored at six locations within the core zone/lease area as per NAAQS-2009 guidelines.		Date: 29/11/2024
16	WATER QUALITY MONITORING AND PRESERVATION	The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.
<b>PPs Submission:</b> Complied Rainwater harvesting measures in the form of series of harvesting ponds were constructed in the peripheral villages in coordination with Tata Steel Foundation, CSR wing of Tata Steel. Presently, a fully functional roof top rainwater harvesting project (water harvesting potential of 1220 m3) at the administrative office inaugurated in Oct 2014 is in working condition. The application for CGWA NOC has been submitted to CGWA with detailed hydrogeology study and proposal for rainwater harvesting. The final approval is awaited. However, we now have a fully functional roof top rainwater harvesting project operating at the administrative office inaugurated in Oct 2014. Further, feasibility study was conducted through KRG Foundation to explore the possibility of water harvesting in the nearby villages located in the mine periphery. As per the recommendations we have constructed 14 nos of rainwater harvesting ponds (30x30x3 mtr) and check dams for water recharge. Approximately 3500KL/ year of water is being recharged from the community ponds. Please refer to Annexure-III		Date: 29/11/2024
17	WATER QUALITY MONITORING AND PRESERVATION	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil, mineral and OB dump(s) to prevent run off of water and flow of sediments directly into the Damsala Nallah and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly

		after monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dump(s) to prevent run off of water and flow of sediments directly into the Damsala Nallah and other water bodies and sump capacity should be designed keeping 50 percent safety margin over and above peak sudden rainfall (based on 20 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.
<p><b>PPs Submission:</b> Complied</p> <p>Garland drain and settling pits of appropriate dimensions have been constructed to arrest the silts and sediments during the wash out/runoff from the mine workings/dumps. The adequacy of the surface runoff management is to be assessed and validated while considering the rainfall data of the region. Entire surface runoff from the mine is guided up to the Effluent Treatment Plant of capacity 4500KL/hr from where the treated effluent is reused/recycled back for greenbelt development and maintenance, dust suppression, drinking and other domestic utilities. Discharge of effluent beyond the mine lease is allowed only after adequate treatment preventing the silt/sediment surging into the adjoining areas/Damsala Nallah. As per approved mining plan, we are now backfilling the OB-II quarry as proposed. About 6772 mtr of garland drains has been made around the waste dump area. and the mineral storage area to collect the surface run-off. Additionally, 10 numbers of settling pits are also constructed around the dump to collect the silt from the run-off. During rainy season, the water is diverted to a sump capacity of 60000 KL, which was earlier used for COB plant feed water sump.</p>		Date: 29/11/2024
18	WASTE MANAGEMENT	Retaining wall having adequate dimensions shall be constructed at the toe of the over burden dumps to check run-off and siltation.
<p><b>PPs Submission:</b> Complied</p> <p>Toe wall along with garland drains have been constructed as per the mine plan. The ruptured retaining walls are boulder pitched and maintained around the periphery of the dump. About 1030 mtr of retaining has been provided around the old dump area. As per approved mining plan, we are now backfilling the OB-II quarry as proposed. After completion of backfilling and attaining optimum height, the retaining wall will be provided.</p>		Date: 29/11/2024
19	WATER QUALITY MONITORING AND PRESERVATION	Mine water discharge and/or any waste water shall be properly treated in an ETP/s for the removal of hexavalent chromium and to meet the prescribed standards before reuse/discharge. The runoff from OB dumps and other surface run off shall be analyzed for hexavalent chrome and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.
<p><b>PPs Submission:</b> Complied</p> <p>An Effluent Treatment Plant (ETP) of capacity 4500KL/hr designed with automated dosing system, clari-flocculator, and flash mixture, dry sludge collection system, multi-bed filtration system, etc, was in operation for surface runoff/mine water treatment. FeSO<sub>4</sub> is used as the reductant to ensure removal of Cr<sub>6</sub>. The effectiveness of the treatment was continuously monitored through real-time online monitoring system with Sensor based analysers for parameters like pH, TSS and Cr<sub>6</sub>. Apart from the continuous effluent monitoring system, samples from the Inlet and Outlet of ETP are also analysed at our laboratory (inhouse facility) on daily basis for all the operational shifts. Surface water samples are also analysed from the mine pits, runoffs from dumps, etc. by an OSPCB accredited third party on monthly basis and records are being maintained. No discharge of runoff/effluent is allowed without prior treatment and checking its conformance with the permissible standards.</p>		Date: 29/11/2024
20	WATER QUALITY MONITORING AND PRESERVATION	Regular monitoring of water quality upstream and downstream of Damsala Nallah shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment and

		Forests, its Regional Office, Bhubneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.
<b>PPs Submission:</b> Complied The monitoring of water quality at upstream and downstream of Damsala Nallah is being carried out by an OSPCB empanelled laboratory and the records were maintained and submitted to the State Pollution Control Board on monthly basis. Monitoring results were also submitted along with the compliance report to the MoEFCC (regional Office) with the abstract of the monitoring results.		Date: 29/11/2024
21	AIR QUALITY MONITORING AND PRESERVATION	Mineral handling plant shall be provided with either adequate number of high efficiency dust extraction system or water injection system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.
<b>PPs Submission:</b> Complied No mineral handing plant (COB Plant, Crushing and Screening Plant)		Date: 29/11/2024
22	MISCELLANEOUS	The illumination and sound at night at project sites disturb the village in respect of both human and animal population. Consequent sleeping disorder and stress may affect the health in the village located close to mining operation. Habitations have a right to darkness and minimal noise level at night. The Project Proponents must ensure that the biological clock of the village is not disturbed by orienting the floodlights mask way from the village and keeping the noise levels well within prescribed limits for day/ night hours.
<b>PPs Submission:</b> Complied No such long-range flood lights have been installed within mine. All Lighting masts installed within mine are oriented for optimal illumination within mine lease area. There are no such villages located in closed proximity to the mine other than village Kakudia, which is distantly located from the working pits and is near to OB dumps where mining operation (dumping) is no longer carried out since 2014 and moreover there lies a barrier of natural forest b/w dump and the village. Safety zone all along the lease periphery is maintained with plantation which also acts as a barrier. The noise monitoring data of nearby villages are attached as Annexure - XII.		Date: 29/11/2024
23	MISCELLANEOUS	The project Authority shall make necessary alternative arrangement, where required, in consultation with state Government to provided alternated areas for livestock grazing. In this case context, the Project Authority should implement the direction of Hon ble Supreme Court with regard to acquiring grazing land. The sparse tress on such grazing ground, which provides mid-day shelter from the scorching sun, should be scrupulously guarded felling lest the cattle abandon the grazing ground or return home by noon.
<b>PPs Submission:</b> Complied The entire mine area of 406.00ha is of govt lands (404.669ha of forest land and 1.331ha of non-forest land). No such grazing land have been acquired by the company.		Date: 29/11/2024
24	MISCELLANEOUS	The project Authority shall ensure that productivity of agriculture crops is not affected due to the mining operation. Crop Liability Insurance Policy has to be taken by PP as a precaution to compensate for the crop loss. The impact zone shall be 5 Km from the boundary of mine lease area for insurance policy. In case, several mines are located in cluster mines, formed inter alia, to sub serve such and objective shall be responsibility for securing such Crop Liability Policy.

<b>PPs Submission: Complied</b> The mine is surrounded by many mines owned by other lessees. So far there is no such potential adverse impact on the agricultural land had been evidence. However, in case of any such scenario is envisaged in future the same will be addressed in desired manner. We have agreed to insure the crop liability insurance policy as suitable to operation and impact.		Date: 29/11/2024
25	MISCELLANEOUS	Likewise, alteration or re-routing of foot paths, pagdandies, cart road and village infrastructure/ public utilities or roads (for purpose of land acquisition for mining) shall be avoided to extent possible and in such case acquisition is inevitable, alternative arrangements shall be made first and the only the area can be acquired. In these types of cases Inspection reports by site visit by expert may be insisted upon which should be done through reputed Institutes.
<b>PPs Submission: Complied</b> Entire lease area of 406.0ha is govt. land (404.669ha of forest land and 1.331ha of non-forest land thus this project is not subjected to land acquisition.		Date: 29/11/2024
26	MISCELLANEOUS	The CSR activates by companies including mining establishment has become mandatory up to 2 percent their financial turn over, socio Economic Development of neighbourhood. Habitats could also be planned and executed by the PPs more systemically based on need based door to door survey by established Social Institute/ Workers on the lines as required under TOR. R and R Plan// compensation details for Project Affected People (PAP) should be furnished. While preparing the R and R plant, the relevant State/ national Rehabilitation and Resettlement Policy should be kept in view. In respect of SCs and STs and weaker section of society in study, a need bashed sample survey, family-wise, should be undertaken to assess their requirement, and action programmes prepared and submitted accordingly, integrating the sectoral programs of line department of State Government. It may be clearly brought out whether the village including their R and R and socio-economics aspect should be discussed in EIA report.
<b>PPs Submission: Complied</b> CSR activities are undertaken by Tata Steel Foundation dept. of Tata Steel in and around the mine. A minimum of 2 percent of the average profit of the last 3 years is being spend towards expenditure on CSR. This mine is not subjected to land acquisition because the nature of land involved (govt. land) thereby eliminating the R and R obligations of the company. The utilization certificate of CSR expenditure incurred during FY2023-24 for three chromite mines of Tata Steel is attached as Annexure - X.		Date: 29/11/2024
27	MISCELLANEOUS	Transportation of minerals by road passing through the village shall not be allowed. A bypass road should be constructed (say leaving a gap of at least 200 m) for the purpose of transportation of minerals so that the impact of sound, dust and accidents could be mitigated. The PP shall bear the cost towards the widening and strengthening of existing public road network in case same is proposed to be used for the project. No road movement should be allowed on existing village road network without appropriately increasing carrying capacity of such road.
<b>PPs Submission: Complied</b> Mineral is transported via public Tamka-Mangalpur Road maintained by state R and B. Transit of mineral is regulated by valid transit permits issued under Odisha Minerals (prevention of theft, smuggling, illegal mining and regulation of possession, storage trading and transportation) Rules,2007. During the construction phase, M/s. Tata Steel Limited has contributed in the construction of a major segments of the road from Kaliapani up to Kankadapal of 12Kms (approx.) in totality. In future, TSL will construct the road as required.		Date: 29/11/2024

28	WATER QUALITY MONITORING AND PRESERVATION	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the mining operation. The periodic monitoring (at least four times in a year pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January), once in each season) shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.
<b>PPs Submission:</b> Complied Ground water levels are being monitored continuously through a network of piezometers constructed along the mine periphery. Apart from this, regular monitoring of ground water quality around nearby villages is also conducted on quarterly basis at approx. ten (10) locations through a network of open wells/ dug wells. Ground water monitoring is being carried in both core and buffer zones and reports are attached. Presently there are 3 nos. of piezometers installed in the periphery of the quarry and data on ground water level is being submitted to Ministry in six monthly basis. The trend analysis of the ground water level is attached.		Date: 29/11/2024
29	WASTE MANAGEMENT	The individual slopes and berms of each lift or bench of the overburden dump when completed shall be provided with adequate drainage arrangements or shall be suitably stabilized by such other means to prevent erosion due to surface run-offs.
<b>PPs Submission:</b> Complied Adequate stabilization measures which have been implemented for the dump slopes maintained with proper drainage network are outlined as follows: 1. Each tier of dump is provided with garland drains connected via concrete patch path for flow along the benches without creating gullies. 2. Practices like coir matting and vetiver plantation on the slopes to prevent wash off and rain cuts on the surface. 3. Garland drains and settling pit have been constructed as per approved mining plan. 4. Toe walls supporting the garland drains are constructed all along the dump periphery. 5. De-siltation activities for the drainage network are ensured before the onset of monsoon and during pre monsoon season every year. As per the gradient and water flow direction, proper drainage arrangement has been provided around the dump to collect surface and dump run-off to a sedimentation pit at the back side of the COB plant. Photograph of the drain around the dump is given as Annexure - III.		Date: 29/11/2024
30	Risk Mitigation and Disaster Management	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.
<b>PPs Submission:</b> Complied The blasting operation is carried out during the lean hours of the day and in acceptance with the district administrative authority. In summer season, the timing is around 08:00A.M to 09:00A.M., whereas in other times the timing resorts to 01:00P.M to 2:00 P.M. Practices like pre-wetting of blast, controlled blasting methods like pre-split blasting, use of both SME and NONEL, delay detonators were practiced ensuring ground vibration within permissible limits with improved fragmentation arresting fly rock and boulders and minimal dust generation.		Date: 29/11/2024
31	Statutory compliance	Consent to operate shall be obtained from State Pollution Control Board prior to start of enhanced production from the mine.
<b>PPs Submission:</b> Complied We have obtained the Consent to Operate as consent order No. 2950 issued vide letter No. 4424/IND-I-CON-226, dt. 29/03/2024, valid till 31.03.2025		Date: 29/11/2024



32	MISCELLANEOUS	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar.
<b>PPs Submission:</b> Complied Digital processing of the entire lease area using remote sensing technique was carried out for baseline information of land use pattern and the report was submitted to Ministry of Environment, Forests and Climate Change and its Regional Office, Bhubaneswar vide letter no. SCM/MPP/39/16 dated 24.11.2016. The drone image was submitted with compliance report for RO inspection on 02.08.2023 .		Date: 29/11/2024
33	WATER QUALITY MONITORING AND PRESERVATION	The natural water bodies and or stream which are flowing in and around the village should not be disturbed. The water table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the project authority has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug well
<b>PPs Submission:</b> Complied No such water bodies exist within mine lease area. Dumsala Nallah being the only water body flowing within the buffer zone of mine whereby mining operation doesn't have any direct intervention w.r.t diversion or alteration to its existence, however, effluent from mine is discharged into the streams of Dumsala Nallah but only after ensuring proper treatment within mine for which an ETP of capacity 4500KL/hr is in operation. Ground water monitoring is regularly carried out by means of a network of open dug wells at 10 locations in the buffer zone i.e nearby villages on quarterly basis. Water harvesting and water recharge structure like pond have been constructed in nearby villages. The change in ground water level is given in Annexure XI. During dry season we have supplied the drinking water to the near by villages. During 2023-24, we have supplied about 5348 KL of drinking water to the villages.		Date: 29/11/2024
34	LAND RECLAMATION	All external over burden dumps at the end of the mine life shall be reclaimed and rehabilitated by afforestation. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment and Forests and its Regional Office located at Bhubaneswar on six monthly basis
<b>PPs Submission:</b> Complied Rehabilitation of OB dumps will be carried out in accordance with the provisions of the approved mine plan and final mine closure plan.		Date: 29/11/2024
35	GREENBELT	Plantation shall be raised in an area of 384.44 ha including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around the higher benches of /excavated void etc. after the completion of opencast mining activity by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.
<b>PPs Submission:</b> Complied The plantation programme is being carried out as per the approved Mining Plan and Final Mine Closure Plan. The previous plantation details and proposed plantation programme is attached.		Date: 29/11/2024
36	AIR QUALITY MONITORING AND PRESERVATION	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of SPM and RPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.

<b>PPs Submission:</b> Complied To limit the fugitive emissions, following safeguard measures have been implemented: 1. Water sprinkling on haul road, transfer points, Ore stack yard, etc is ensured on regular basis. 2. Deployment of four (04) graders haul road maintenance and muck clearance along with water sprinklers for haul road dust suppression and at mineral storage yards. 3. Stationary water sprinklers have been installed and are in operation on the main/permanent haul roads, maintenance areas, stack yard, truck parking area, etc. Ambient air quality is monitored at six locations within the core zone/lease area as per NAAQS-2009 guidelines.		Date: 29/11/2024
37	WATER QUALITY MONITORING AND PRESERVATION	The decanted water from the beneficiation plant shall be re-circulated within the plant and there shall be zero discharge.
<b>PPs Submission:</b> Complied Beneficiation plant is not operational, hence there no waste-water is being generated.		Date: 29/11/2024
38	Statutory compliance	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water for the project.
<b>PPs Submission:</b> Complied The total water requirement is fulfilled from the ETP treated water. No surface water is being withdrawn for mining use.		Date: 29/11/2024
39	AIR QUALITY MONITORING AND PRESERVATION	Regular monitoring of ambient air quality including free silica shall be carried out and records maintained.
<b>PPs Submission:</b> Complied Regular monitoring of ambient air quality is carried out at six locations as per NAAQS-2009 and the free silica in ambient air is monitored by personal dust sampling to assess the workforce s exposure to RPM in ambient air and free silica content in it. The record is maintained.		Date: 29/11/2024
40	Human Health Environment	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.
<b>PPs Submission:</b> Complied Pre-Employment/Pre-placement medical examination is mandatorily ensured for employees prior to their joining. Apart from this, periodical medical examination (PME) is conducted for all and the records are maintained. Besides this the company is also undertaking various initiatives for the improvement in the occupational health and removing the safety hazards at industrial workplace.		Date: 29/11/2024
41	Statutory compliance	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna such as elephant etc. spotted in the buffer zone of the mine and contribute towards the cost of implementation of the plan and/or Regional Wildlife Management Plan for conservation of flora and fauna so prepared by the State Forest and Wildlife Department. The amount so contributed shall be included in the project cost. A copy of action plan shall be submitted to the Ministry and its Regional Office, Bhubaneswar within 3 months.
<b>PPs Submission:</b> Complied We have deposited Rs 81,20,000/- vide DD No 111682 dated 21.07.2009 and differential cost of Rs 24,36,000/- through RTGS dated 7.03.2014 respectively in the State Specific CAMPA account towards the cost of Wildlife Management Plan for implementation of Regional Wildlife		Date: 29/11/2024

		<p>Management Plan. Further, Site specific Wildlife Conservation Plan has already been submitted to DFO, Cuttack vide our letter no. SCM/ ENV/091/13, dated 18.12.2013. Same was recommended by RCCF, Angul vide his letter no. 1197, dated 19.03.2015 and presentation before PCCF (WL), Odisha was made on 10.04.2015 and got approved vide letter No. 4895/1 WL-SSP-92/2015, dated 10.06.2015. We have deposited Rs 6,86,86,240/-in RTGS Mode in State Specific CAMPA Fund towards contribution for Site Specific Wildlife Conservation Plan on 7.12.2015. All the precautionary measures stipulated by State Forest Department and laid down during the approval of Site-Specific Wildlife Conservation Plan is adhered to. As per proposal we have distributed saplings in community. As per year wise afforestation programme proposed in Mining Plan, plantation is being carried out in optimized waste dump floor and slope. During 2024-25, we have planted 10,826 nos of 6-8 ft height saplings in OB II. About 32.38 ha of Safety/Green zone is maintained in and around the mine lease area. About 5,27, 760 nos of saplings were planted over an area of 63.33ha of outside waste dump area. The Kakudia dump is reclaimed and rehabilitated completely. To cope with the Tata Steel's Net No Loss Biodiversity commitment, we have carried out Biodiversity Management plan and the activities like, eradication of invasive species, Butterfly Garden, and herbal cum medicinal garden. Initiatives cum awareness programmes were carried out to restore the flora and fauna of the area. We have also supported the Sukinda Eco-race to support the Sukinda taser variety. Details are attached as Annexure - IV.</p>	
42	MINING PLAN	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment and Forests 5 years in advance of final mine closure for approval.	
	<p><b>PPs Submission:</b> Complied</p> <p>This mine was obtained during auction process as per MMDR Act, 2020. We have already submitted the 10 percent of the total resource value to Govt, which will be adjusted during Final Mine Closure Plan. We will submit the same to the Ministry of Environment, Forests and CC, in advance for final mine closure approval.</p>		<p>Date: 29/11/2024</p>
43	Statutory compliance	Where ever blasting is undertaken as part of mining activity, the Project Authority shall carry out vibration studies well before approaching any such habitats or other building to evaluate the zone of influence and impact of blasting on neighbourhood. Within 500 meters of such sites vulnerable to blasting vibration, avoidance of use of explosives and adoption of alternative means of mineral extraction such as ripper/dozer combination/ rock breakers/ surface mineral etc should be seriously considered and practiced wherever practicable. A provision for monitoring of each blast should be made so that impact of blasting on nearby habitation and dwelling unit could be ascertained. The covenant of lease deed under rule 31 of MCR 1960 provided that no mining operation shall be carried out within 50 meters of public works such as public roads and building or inhabited sites except with prior permission from the competent Authority.	
	<p><b>PPs Submission:</b> Complied</p> <p>Vibrations studies have been carried out earlier by CIMFR Dhanbad and recommendations thereof are followed. Also Blast vibration study was conducted by NIT, Rourkela and its recommendations are being followed. Controlled blasting with the use of SME and NONEL and presplit blast is practiced minimizing ground vibration and Peak Particle velocity is monitored during blasting events. Public works such as public roads and building or inhabited sites are well away from the mine lease.</p>		<p>Date: 29/11/2024</p>
44	AIR QUALITY MONITORING AND PRESERVATION	Main haulage road in the mines should be provided with permanent water sprinkler and other road should be regularly wetted water tanker fitted with sprinkler. Crusher and material transfer points should be invariably be provided with bag filter and or dry fogging system. Belt conveyor fully covered to avoid air borne dust.	
	<p><b>PPs Submission:</b> Complied</p> <p>To limit the fugitive emissions, following safeguard measures are implemented: 1. Various control</p>		<p>Date: 29/11/2024</p>

measures like Mobile water sprinkling on haul road, transfer points, Ore stack yard, etc is done on regular basis. 2. Mineral is dispatched by means of trucks and which are completely covered with tarpaulins and regulated by system generated transit permits which prevents overloading. 3. We have already installed two (02) numbers of mist canon system at our ore stack yard to minimize the dust pollution. 4. A new fixed water sprinkling system of 1050 mts is also operative to control the dust in the mining haul road.			
45	WATER QUALITY MONITORING AND PRESERVATION	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	
<b>PPs Submission:</b> Complied One roof top rain-water harvesting structure had been constructed at administrative office building which is working effectively. Further, feasibility study was conducted through KRG Foundation to explore the possibility of water harvesting in the nearby villages located in the mine periphery. As per the recommendations we have constructed 14 nos of rainwater harvesting ponds (30x30x3 mtr) and check dams for water recharge. Approximately 3500KL/ year of water is being recharges from the community ponds.			Date: 29/11/2024
46	WATER QUALITY MONITORING AND PRESERVATION	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and waste water generated during mining operation.	
<b>PPs Submission:</b> Complied A Sewage Treatment Plant of 1000KLD had been constructed as per BIS standard for domestic effluent/sewerage and the treated effluent is being reused for garden development. An oil and grease trap system fitted with oil skimmers is constructed in the workshop. The effluents free from oil and grease is completely recycled back for vehicle washing purpose. An ETP with capacity of 4500 Kl/hr having the facilities like, settling pit, flash mixture, clarri-flocculator, dry sludge collection system, multi sand filters, etc. had been constructed and in operation for the treatment of mine pit water and surface runoff. As per CTO specific effluent discharge conditions, after attending required water quality parameters such as pH - 6.5 to 9.0; Total Suspended Solids - 100 mg/L; BOD - 30 mg/L and Fecal Coloform - above 1000 (MPN/100mL), the water is used for gardening or discharge.			Date: 29/11/2024
47	Statutory compliance	The project authority shall adopt best mining practices for given conditions in the mining area, adequate number of check dam, retaining wall/ structure, garland drains and settling ponds should be provided to arrest the wash off with rain water in catchment area.	
<b>PPs Submission:</b> Complied We are practicing best available mining technologies for given conditions in the mining area. Adequate number of check dam, retaining wall/ structure, garland drains and settling ponds have been provided to arrest the wash off with rainwater in catchment area as per approved mining plan.			Date: 29/11/2024
<b>General Conditions</b>			
Sr.No.	Condition Type	Condition Details	
1	AIR QUALITY MONITORING AND PRESERVATION	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NOX monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board. The data so recorded should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	

<b>PPs Submission: Complied</b> Six ambient air quality monitoring stations (four in the work zone, one in residential area and one near dispensary) is established for ambient air quality monitoring in line with CPCB guidelines fulfilling the requirements of NAAQS-2009. Apart from this, quarterly monitoring is also done at 10 buffer zone locations in the nearby villages. Parameters monitored are as per NAAQS-2009. The locations have been finalized in consultation with Regional Officer, State Pollution Control board according to the impact zone and wind direction. Quarterly monitoring of the same is being carried out by regional office, SPCB, Kalinganagar. The monthly monitoring report is being submitted to SPCB for compliance to the specific and general conditions.		Date: 29/11/2024
2	Statutory compliance	The calendar plan quantity of excavation, chrome ore, beneficiated chrome concentrates, pyroxenite ore and waste shall not be exceeded.
<b>PPs Submission: Complied</b> The calendar plan is followed as per approved mining plan. The EC was accorded for production of 2.4 MTPA chromite ore as ROM and concentrate. The EC was vested to TSML from TSL and again TSML merged into TSL. As per approved mining plan and CTO, we have excavated Ore and OB within the prescribed limit of approved mine plan proposal and CTO.		Date: 29/11/2024
3	WATER QUALITY MONITORING AND PRESERVATION	There will be zero waste water discharge from the plant.
<b>PPs Submission: Complied</b> No chromite Ore beneficiation plant is in operation. As per CTO specific effluent discharge conditions, after attending required water quality parameters such as pH - 6.5 to 9.0; Total Suspended Solids - 100 mg/L; Oil and Grease - 10 mg/L, Cr6 - 0.05 mg/L and Total Chromium 2.0mg/L, the water is being discharged to onland/Inland surface water body i.e. Damsala Nalla.		Date: 29/11/2024
4	Statutory compliance	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.
<b>PPs Submission: Complied</b> In accordance to the Rule 24 of MCDR 2017, the final mine closure plan was submitted on 20th Sept 2024 to IBM and same has been approved. The Ministry of Environment, Forests and Climate Change will be intimated in due course of time.		Date: 29/11/2024
5	Statutory compliance	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.
<b>PPs Submission: Complied</b> Six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data will be submitted to the Ministry of Environment, Forests and Climate Change and its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board in soft copy. The Six-monthly EC compliance report along with environmental monitoring data is being uploaded in our website (www.tatasteel.com).		Date: 29/11/2024

6	MISCELLANEOUS	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.
<b>PPs Submission:</b> Complied The Environmental Management Cell is headed by the Head Environment Management RM at the corporate level and is supported by Manager (Environment) and Environmental Monitoring Group at the site. The details of Environmental Management Cell is attached as Annexure-V.		Date: 29/11/2024
7	MISCELLANEOUS	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.
<b>PPs Submission:</b> Complied Earlier the Environment Clearance letter was sent to concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body. The receiving of the EC letter from concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body and the communication to Regional Office of the Ministry is attached as Annexure - IX.		Date: 29/11/2024
8	Statutory compliance	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/ information/ monitoring reports.
<b>PPs Submission:</b> Complied The mine management will always be extending full cooperation to officer(s) of Regional office by furnishing the requisite data/ information/ monitoring report as and when required.		Date: 29/11/2024
9	Noise Monitoring & Prevention	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.
<b>PPs Submission:</b> Complied Following measures were implemented to control the noise level below 85dB(A) in the work environment. 1. DG sets were provided with acoustic enclosures. 2. The operator s cabin of all the HEMM s were fitted with air conditioner. 3. Use of Earmuffs/ Ear plugs is ensured by putting it in the list of mandatory PPEs for the operational workforce engaged in high noisy areas.		Date: 29/11/2024
10	Human Health Environment	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.
<b>PPs Submission:</b> Complied Persons working in dusty areas are provided with DGMS approved dust masks. Regular training programmes are conducted for the employees for raising awareness on health and safety aspects.		Date: 29/11/2024
11	Statutory compliance	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment and Forests.
<b>PPs Submission:</b> Complied There was no change in mining technology and scope of working. Mine is operated within the scope of the vested EC and approved mining plan.		Date: 29/11/2024
12	MISCELLANEOUS	The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and



		widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project had been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.
<b>PPs Submission:</b> Complied The grant of Environmental Clearance was advertised earlier 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 also forwarded to the Eastern Regional Office of the MoEF vide letter no. SCM/ ENV/ 012/066/13, dated 18.06.2013. Now the same EC has been vested to Sukinda Chromite Block, M/s. Tata Steel Mining Limited (TSML) for fifty (50) years and name change done TSML to TSL.		Date: 29/11/2024
13	MISCELLANEOUS	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.
<b>PPs Submission:</b> Complied The Environment Statement in Form-V is submitted before 30th Sept of every year .Copy of Environmental Statement is being sent to the State Pollution Control Board and to the Regional Office of MoEFCC by e-mail. Environmental statement is being updated/uploaded on the website ( <a href="http://www.tatasteel.com">www.tatasteel.com</a> ). The Environment Statement for FY24 vide letter number TSL/SCM/FY25/1401, was submitted on 30.09.2024 and the same is also uploaded in the company website.		Date: 29/11/2024
14	Human Health Environment	Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.
<b>PPs Submission:</b> Complied All the employees have to undergo periodical medical examination (PME) in hospital. To improve the occupational health and removing the safety hazards at industrial workplace, TSL has formulated Zero harm policy. Apart from this, persons engaged in mining operations are also tested for their exposure to free silica content in respirable air (RPM) on quarterly basis.		Date: 29/11/2024
15	MISCELLANEOUS	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.
<b>PPs Submission:</b> Complied Separate budget is allocated for environmental protection measures every year and maintained under a separate cost centre. Actual Expenditure on Environmental Protection Measures will be reported at the end of the fiscal year i.e year ending 31st March 2025.		Date: 29/11/2024
16	MISCELLANEOUS	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collectors office/ Tehsildars Office for 30 days.
<b>PPs Submission:</b> Complied		Date:

Copy of the EC clearance letter has already been sent to Odisha State Pollution Control Board, its Regional office, District Industry Centre and the Collector s office/ Tehsildar s Office.

29/11/2024

### Visit Remarks

**Last Site Visit Report Date:**

N/A

**Additional Remarks:**

**Note:** This acknowledgement is as per the details submitted by project proponent. In no way is this document to be considered as conclusion on any action on the compliance of the project. This is strictly for the project proponent's reference purpose.



# **Half-Yearly Compliance Report**

**On**

## **Environmental Clearance Conditions**

**MoEF Letter Ref No: J-11015/96/2011-IA.II (M), dated 06.09.2013**

**Period: April'24 – September'24**

**Submitted By:**

**Sukinda Chromite Block**

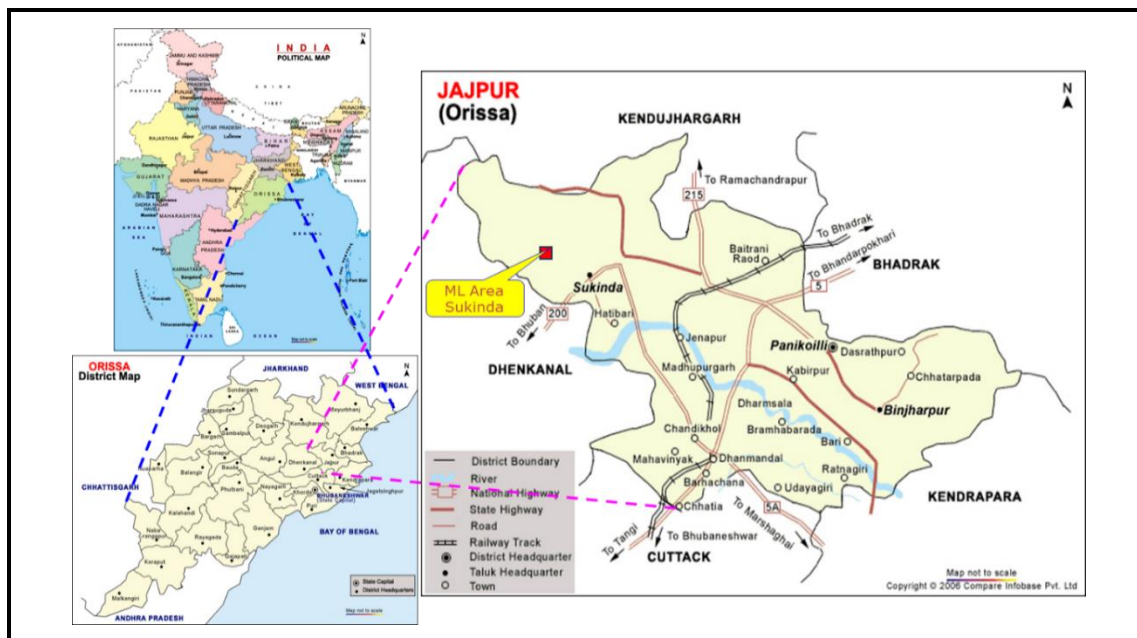
**M/s. Tata Steel Limited**

**At/Po: Kalarangiatta, Block-Sukinda**

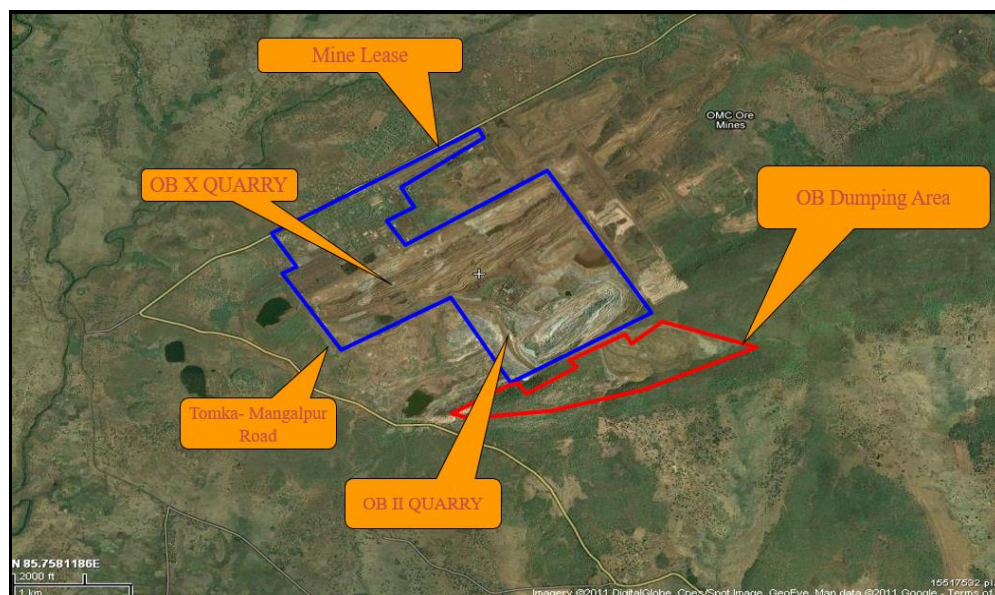
**District- Jajpur, Odisha -755028**

**A. INTRODUCTION:** Lease of Sukinda Chromite Block of M/s Tata Steel Mining Limited was executed over leased area of 406.0Ha in the Sukinda Block of Jajpur District in the State of Odisha, which was previously owned by M/s. Tata Steel Limited from 1952 to 2020. As per the Vesting order No. 5555/SM IV(B)SM-32/2020 Dated 29.06.2020 and amended vesting order No. 2357/SM, SM-MC1-MISC-0025-2020 Dated 15.03.2022 issued by the Office of Nodal Officer, Steel & Mines Department of Government of Odisha, Tata Steel Mining Limited (formerly known as T S Alloys Limited) has been vested with following Statutory Clearances/permissions/ NOCs for 50years (As per MMDR Act, 2021). Further, Subsequent to the Scheme of Amalgamation of Tata Steel Mining Limited ('TSML' CIN No. U27109OR2004PLC009683) into and with Tata Steel Limited (CIN-L27100MH1907PLC000260) ('Scheme of Amalgamation'), and its approval and sanction by the Hon'ble National Company Law Tribunal, Cuttack Bench vide Order ('NCLT Order'), in terms of Clause 8.1 read with Clause 9.1(h) of Part I of the Scheme of Amalgamation, the captioned Scheme of Amalgamation of Tata Steel Mining Limited ('TSML') into and with Tata Steel Limited has become operative and effective from September 1, 2023 ('Effective Date'). With the above merger the legal entity of Tata Steel Mining limited has now ceased, and all its respective business and operation has become part of Tata Steel Ltd. The schematic representation of the site is depicted in the fig.1 and its layout in fig.2 below.

***Fig.1: Location of Sukinda Chromite Block (Tata Steel Limited)***



***Fig.2 Mine Lay out (Aerial View of Sukinda Chromite Block)***



**B. Compliance to the Environment Clearance Letter No: J-11015/96/2011-IA. II (M), dated 06.09.2013 in respect of Sukinda Chromite Mine for Mining Lease renewal, increase in production for Chrome Ore (ROM): 2.40 MTPA, Pyroxenite Ore (ROM): 0.50 MTPA, Chrome Concentrate: 0.65 MTPA, change in mining technology to opencast & underground mining, change in beneficiation technology and increase in project area.**

**A. Specific Condition:**

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
I	No mining activities will be allowed in forest area for which the Forest Clearance is not available.	<p><b>Compliance:</b> The lease of 406.00ha comprised 404.669ha of forest land (73.697 ha as per HAL + 330.972 ha as per SABIK) and 1.331ha of non-forest land. The details of Forest Clearance granted by MoEF&amp;CC are;</p> <ul style="list-style-type: none"> <li>a) Letter no. 8-78/96-FC dated 27.01.1998 over 73.797 ha. &amp;</li> <li>b) Letter No. 8-15/2016-FC dated 18.05.2018 over 330.972 ha.</li> </ul> <p>Mining and allied activities were carried within the lease hold area of 406.0ha within which the entire forest land had been diverted as per FC Act,1980.</p> <p><b>[Copies of forest clearances enclosed as Annexure-I]</b></p>
II	The project proponent will seek and obtain approval under the FC Act, 1980 for diversion of the entire forest land located within the mining lease within a period of two years from 01.02.2013 i.e. the date of issue of guidelines by FC vide their letter-F. No. 11-362/ 2012-FC, failing which the mining lease area will be reduced to the non-forest area plus the forest area for which the project proponent had been able to obtain the FC at the end of this time period. In the case of reduction in mine lease area, the project proponent will need to get a revised mining plan approved from the competent authority for reduced area and enter	<p><b>Compliance:</b> Renewal Forest Diversion Proposal for entire forest land of 73.697 ha within the Mining Lease area was applied in time. The FDP has been duly recommended by the F&amp;E department, Govt. of Odisha to the Ministry of Environment &amp; Forests, Govt. of India for onward consideration for grant of Forest Clearance. MoEFCC has granted Stage-I Forest Clearance with one year working permission vide letter no. 8-78/1996-FC (pt-I), dated 03.11.2014. Copy of the letter is enclosed as Annexure-I.</p> <p>Subsequent to endorsement of the MMDR Amendment Act, 2015, the Govt. of Odisha extended the mining lease from 12.01.2013 to 31.03.2020 for which the supplementary lease deed was executed on 24.08.2015 and registered on</p>

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
	into a new mining lease as per reduced lease area. The EC will be construed to be available for the mining lease area as per the revised mining lease deed.	<p>26.08.2015. In accordance to the MoEFCC's Circular No. F.No.11-51/2015-FC, dated.01.04.2015, the forest clearance dated 27.01.1998 got extended till 31.03.2020.</p> <p>Further, in accordance with the MoEFCC's Circular F.No.8-78/1996-FC, dated.10.03.2015, the forest area as on 25.10.1980 (i.e. Sabik Settlement) 404.669 ha. within the mining lease of 406 ha is now termed as forest land. Hence, fresh forest diversion proposal over an area of 330.972 ha (404.669 ha – already diverted area of 73.697 ha) has been applied on 02.11.2015 and with reference to the Agenda No.1 (F.No.8-15/2016-FC) of the Minutes of meeting of Forest Advisory Committee held on 25th April 2017 (published in the web site), the mine was accorded Stage-I clearance vide letter F.No 8-15/2016-FC , dated 04.07.2017 over 330.972 ha of forest land as on 25.10.1980 and stage -II in 2018. Copy of the letter is enclosed as Annexure-I.</p> <p>Thus, forest clearance was obtained in due time as per the rule then applicable. However, due to major change in land categorization of HAL &amp; SABIK settlement by state government the identified SABIK forest land was diverted in 2018 as per the guidelines.</p>
III	Till all the clearance are obtained for the proposed tailing pond/dam the project would only use existing tailing dam.	<b>Compliance:</b> No chrome ore beneficiation plant is being operated at present. Thus, there is no tailing pond/dam.
IV	Environmental clearance is subject to obtaining clearance under the Wildlife (Protection) Act, 1972 from the Standing Committee of National Board for Wildlife, as may be applicable to this project.	<b>Compliance:</b> The project area neither fall partly/wholly within any protected areas viz. wildlife sanctuary, national park, biosphere reserves or other eco sensitive zones nor within 10 Kms from the boundaries of such protected areas, thus clearance under the Wildlife (Protection) Act, 1972 from the Standing Committee of National Board for Wildlife is not applicable.
V	The project proponent shall obtain Consent to Establish and Consent to Operate from the State Pollution Control Board, Odisha and effectively implement all the conditions stipulated therein.	<p><b>Compliance:</b> The Consent to Establish had already been obtained from Odisha State Pollution Control Board vide letter no. 17750/IND-II-NOC-5664 dated 30.09.2013 and same has been vested for 50 years. Copy enclosed as Annexure-IIa.</p> <p>We have also obtained the Consent to Operate as consent order No. 2950 issued vide letter No. 4424/IND-I-CON-226, dt. 29/03/2024, valid till 31.03.2025. Copy enclosed as Annexure-IIb.</p>
VI	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004, as may be applicable to this project.	<b>Compliance:</b> Final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No. 460 of 2004, is awaited. The petition status from the website of Supreme court of India read as " <b>Pending for Motion hearing</b> "; however, this didn't affect the legal status of environmental clearance since The project area/ lease area neither falls partly/wholly within any protected areas (wildlife sanctuaries, national parks, biosphere reserves or any other sensitive zones) nor within 10kms from the boundaries of such protected areas concerning which the original petition was filed. We have not yet received any instructions from the Ministry of Environment, Forest & Climate Change in this regard. The previous Environmental Clearance is vested for 50 years.
VII	As part of ambient air quality monitoring during operational phase of the project, the air	<b>Compliance:</b> The ambient air quality is monitored twice a week at six locations within the Core Zone. The air samples are



Sl. No	Specific Condition	Compliance Status (April'24 to September'24)															
	samples shall also be analysed for their mineralogical composition as may be so prescribed or notified by this Ministry and records maintained.	also analysed for their mineralogical composition on quarterly basis. All the stipulated parameters are being analysed and reported in <b>Annexure-XII</b> - Extracts on Environmental Monitoring.															
VIII	The ores and minerals shall be covered by tarpaulin or by such other means when transported out of the mine by road. The vehicles shall not be overloaded.	<b>Compliance:</b> Mineral and ores, transported out of the mine lease boundary to the various destinations are completely covered by tarpaulin and secured in position by plastic straps. Photographs are enclosed as <b>Annexure-III</b> -Environmental Management Practices.															
IX	Effective safeguard measures such as conditioning of ore with water, regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as around crushing and screening plant, loading and unloading point and transfer points. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	<b>Compliance:</b> To limit the fugitive emissions, following safeguard measures have been implemented: <ol style="list-style-type: none"><li>1. Water sprinkling on haul road, transfer points, Ore stack yard, etc was ensured on regular basis.</li><li>2. Deployment of seven (4) water sprinklers (two of 20 KL and two of 12KL) within mine area for haul road dust suppression and at mineral storage yards.</li><li>3. Stationary water sprinklers are installed and in operation on the main/permanent haul roads with permanent concrete bunds and maintenance areas and stack yard.</li><li>4. Two Number of mist canon are provided at the ore stackyard area to reduce the ore dust emission.</li></ol> The details of concrete road including provision of fixed water sprinkler are as follows: Table I: Movable and Fixed Water Sprinkler Details <table><tr><th>Particulars</th><th>Location</th><th>Length(m)</th><th>Width(m)</th></tr><tr><td>Stationary Water sprinkling</td><td>Mine Haulage Road</td><td>5000</td><td>15</td></tr><tr><td rowspan="2">Fixed water sprinkling system</td><td>Concrete mining road (old &amp; New)</td><td>800 &amp;1050</td><td>-</td></tr><tr><td>Workshop</td><td>100</td><td>-</td></tr></table> Ambient air quality is being monitored at six locations within the core zone/lease area as per NAAQS-2009 guidelines. <b>[Please refer to Annexure-III &amp; XII]</b>	Particulars	Location	Length(m)	Width(m)	Stationary Water sprinkling	Mine Haulage Road	5000	15	Fixed water sprinkling system	Concrete mining road (old & New)	800 &1050	-	Workshop	100	-
Particulars	Location	Length(m)	Width(m)														
Stationary Water sprinkling	Mine Haulage Road	5000	15														
Fixed water sprinkling system	Concrete mining road (old & New)	800 &1050	-														
	Workshop	100	-														
X	The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	<b>Compliance:</b> Rainwater harvesting measures in the form of series of harvesting ponds were constructed in the peripheral villages in coordination with Tata Steel Foundation, CSR wing of Tata Steel. Presently, a fully functional roof top rainwater harvesting project (water harvesting potential of 1220 m <sup>3</sup> ) at the administrative office inaugurated in Oct 2014 is in working condition. The application for CGWA NOC has been submitted to CGWA with detailed hydrogeology study and proposal for rainwater harvesting. The final approval is awaited. However, we now have a fully functional roof top rainwater harvesting project operating at the administrative office inaugurated in Oct 2014. Further, feasibility study was conducted through KRG Foundation to explore the possibility of water harvesting in the nearby villages located in the mine periphery. As per the recommendations we have constructed 14 nos of rainwater harvesting ponds (30x30x3 mtr) and check dams for water recharge. Approximately 3500KL/ year of water is being recharged from the community ponds. <b>[Please refer to Annexure-III]</b>															

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
XI	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and installing new piezometers during the mining operation. The periodic monitoring [(at least four times in a year pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity; necessary corrective measures shall be carried out.	<p><b>Compliance:</b> Ground water levels are being monitored continuously through a network of piezometers constructed along the mine periphery. Apart from this, regular monitoring of ground water quality around nearby villages is also conducted on quarterly basis at approx. ten (10) locations through a network of open wells/dug wells.</p> <p>Ground water monitoring is being carried in both core and buffer zones and reports are attached.</p> <p>Presently there are 3 nos. of piezometers installed in the periphery of the quarry and data on ground water level is being submitted to Ministry in six monthly basis. The trend analysis of the ground water level is attached.</p> <p style="text-align: right;"><b>[Please refer to Annexure-XII]</b></p>
XII	The maximum height of the overburden dumps from its toe to the top of the dump on sloping ground shall not be more than 110 m. The dump slope shall be suitably terraced by leaving berms of adequate width in between lifts such that the overall slope angle (i.e. angle between the line joining the crest to the toe of the dump and across all such lifts with the horizontal) does not exceed 28 degrees.	<p><b>Compliance:</b> As per approved mining plan, we are now backfilling the OB-II quarry and it will attain a height of 215 mRL. At present as per the approved mine plan only back filling is being carried out. The internal OB II back fill dump was achieved a height of 70 meter which is proposed to be carried out up to a height of 85m in the plan period. Further, over all slope angle of OB II back fill dump is Approx. 12 degree which is under the prescribed limit of 28 degree.</p>
XIII	The individual slopes and berms of each lift or bench of the overburden dump when completed shall be provided with adequate drainage arrangements or shall be suitably stabilized by such other means to prevent erosion due to surface run-offs.	<p><b>Compliance:</b> Adequate stabilization measures which have been implemented for the dump slopes maintained with proper drainage network are outlined as follows:</p> <ol style="list-style-type: none"> <li>1. Each tier of dump is provided with garland drains connected via concrete patch path for flow along the benches without creating gullies.</li> <li>2. Practices like coir matting and vetiver plantation on the slopes to prevent wash off and rain cuts on the surface.</li> <li>3. Garland drains and settling pit have been constructed as per approved mining plan.</li> <li>4. Toe walls supporting the garland drains are constructed all along the dump periphery.</li> <li>5. De-siltation activities for the drainage network are ensured before the onset of monsoon and during pre monsoon season every year.</li> </ol> <p>As per the gradient and water flow direction, proper drainage arrangement has been provided around the dump to collect surface &amp; dump run-off to a sedimentation pit at the back side of the COB plant. Photograph of the drain around the dump is given as Annexure – III.</p> <p style="text-align: right;"><b>[Please refer Annexure-III]</b></p>
XIV	Adequate precautionary measures shall be taken for strengthening the dump foundation. Particularly while dumping over soft ground, the toe region all along the extremities of such dumps shall be suitably buttressed with hard rocky boulders after excavating the topsoil and soft ground. Dumping operations shall commence only after such preparatory work for	<p><b>Compliance:</b> Dumping is being carried out only after ensuring the preparatory works for the dump foundation and with careful consideration of the stability aspects.</p>

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
	the dump foundation is completed in order to prevent its failure, which may trigger a slide of the entire dump.	
XV	All external over burden dumps at the end of the mine life shall be reclaimed and rehabilitated by afforestation. Monitoring and management of rehabilitated areas shall continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.	<b>Compliance:</b> Rehabilitation of OB dumps will be carried out in accordance with the provisions of the approved mine plan and final mine closure plan.
XVI	Catch drains and siltation ponds of appropriate size shall be constructed around the mine working, soil, mineral and OB dump(s) to prevent run off of water and flow of sediments directly into the Damsala Nallah and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed both around the mine pit and over burden dump(s) to prevent run off of water and flow of sediments directly into the Damsala Nallah and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 20 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.	<p><b>Compliance:</b> Garland drain and settling pits of appropriate dimensions have been constructed to arrest the silts and sediments during the wash out/runoff from the mine workings/dumps. The adequacy of the surface runoff management is to be assessed and validated while considering the rainfall data of the region.</p> <p>Entire surface runoff from the mine is guided up to the Effluent Treatment Plant of capacity 4500Kl/hr from where the treated effluent is reused/recycled back for greenbelt development &amp; maintenance, dust suppression, drinking and other domestic utilities.</p> <p>Discharge of effluent beyond the mine lease is allowed only after adequate treatment preventing the silt/sediment surging into the adjoining areas/Damsala Nallah.</p> <p>As per approved mining plan, we are now backfilling the OB-II quarry as proposed. About 6772 mtr of garland drains has been made around the waste dump area. and the mineral storage area to collect the surface run-off. Additionally, 10 numbers of settling pits are also constructed around the dump to collect the silt from the run-off. During rainy season, the water is diverted to a sump capacity of 60000 KL, which was earlier used for COB plant feed water sump.</p>
XVII	Retaining wall having adequate dimensions shall be constructed at the toe of the over burden dumps to check run-off and siltation.	<p><b>Compliance:</b> Toe wall along with garland drains have been constructed as per the mine plan. The ruptured retaining walls are boulder pitched &amp; maintained around the periphery of the dump.</p> <p>About 1030 mtr of retailing has been provided around the old dump area. As per approved mining plan, we are now backfilling the OB-II quarry as proposed. After completion of backfilling and attaining optimum height, the retaining wall will be provided.</p> <p style="text-align: right;"><b>[Please refer Annexure-III]</b></p>
XVII I	Plantation shall be raised in an area of 384.44 ha including a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around the higher benches of /excavated void etc. after the completion of opencast mining activity by planting the native species in consultation with the local DFO/Agriculture Department. The density of the trees should be around 2500 plants per ha.	<p><b>Compliance:</b> The plantation programme will be carried out as per the approved Mining Plan &amp; Final Mine Closure Plan. The previous plantation details and proposed plantation programme is attached.</p> <p style="text-align: right;"><b>[Please refer Annexure-IV]</b></p>
XIX	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high	<b>Compliance:</b> To limit the fugitive emissions, following safeguard measures have been implemented:

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
	levels of SPM and RPM such as haul road, loading and unloading point and transfer points. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	<ol style="list-style-type: none"> <li>1. Water sprinkling on haul road, transfer points, Ore stack yard, etc is ensured on regular basis.</li> <li>2. Deployment of four (04) graders haul road maintenance &amp; muck clearance along with water sprinklers for haul road dust suppression and at mineral storage yards.</li> <li>3. Stationary water sprinklers have been installed and are in operation on the main/permanent haul roads, maintenance areas, stack yard, truck parking area, etc.</li> </ol> <p>Ambient air quality is monitored at six locations within the core zone/lease area as per NAAQS-2009 guidelines.</p> <p><b>[Please refer Annexure-III]</b></p>
XX	Mine water discharge and/or any waste water shall be properly treated in an ETP/s for the removal of hexavalent chromium and to meet the prescribed standards before reuse/discharge. The runoff from OB dumps and other surface run off shall be analyzed for hexavalent chrome and in case its concentration is found higher than the permissible limit, the waste water should be treated before discharge/reuse.	<p><b>Compliance:</b> An Effluent Treatment Plant (ETP) of capacity 4500KL/hr designed with automated dosing system, clariflocculator, and flash mixture, dry sludge collection system, multi-bed filtration system, etc, was in operation for surface runoff/mine water treatment. <math>\text{FeSO}_4</math> is used as the reductant to ensure removal of <math>\text{Cr}^{+6}</math>.</p> <p>The effectiveness of the treatment was continuously monitored through real-time online monitoring system with Sensor based analysers for parameters like pH, TSS and <math>\text{Cr}^{+6}</math>.</p> <p>Apart from the continuous effluent monitoring system, samples from the Inlet &amp; Outlet of ETP are also analysed at our laboratory (inhouse facility) on daily basis for all the operational shifts. Surface water samples are also analysed from the mine pits, runoffs from dumps, etc. by an OSPCB accredited third party on monthly basis and records are being maintained.</p> <p>No discharge of runoff/effluent is allowed without prior treatment and checking it's conformance with the permissible standards.</p> <p><b>[Please Refer to Annexure-III]</b></p>
XXI	The decanted water from the beneficiation plant shall be re-circulated within the plant and there shall be zero discharge.	<p><b>Compliance:</b> Beneficiation plant is not operational, hence there no waste-water is being generated.</p>
XXII	Regular monitoring of water quality upstream and downstream of Damsala Nallah shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment and Forests, its Regional Office, Bhubneswar, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	<p><b>Compliance:</b> The monitoring of water quality at upstream and downstream of Damsala Nallah is being carried out by an OSPCB empanelled laboratory and the records were maintained and submitted to the State Pollution Control Board on monthly basis. Monitoring results were also submitted along with the compliance report to the MoEF&amp;CC (regional Office) with the abstract of the monitoring results.</p> <p><b>[Please Refer to Annexure-XII]</b></p>
XXII I	Appropriate mitigative measures shall be taken to prevent pollution of Damsala Nallah, if any, in consultation with the State Pollution Control Board.	<p><b>Compliance:</b> Following mitigative measures have been implemented to prevent pollution of Damsala Nallah:</p> <ol style="list-style-type: none"> <li>1. ETP with capacity of 4500KL/hr, designed with settling pit, flash mixture, clarri-focculator, automatic dosing system, dry sludge collection system, multi sand filters etc. was in operation.</li> <li>2. Treated water from the ETP is reused /recycled within the mine for various purposes like greenbelt, dust suppression, drinking water treatment etc. to minimize the discharge load on the Damsala Nallah.</li> <li>3. No effluent is discharged beyond the mine premises without prior treatment and its conformance with the permissible discharge norms.</li> </ol>

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
		<p>4. Effluents discharged from the outlet of ETP, are monitored on real-time basis with continuous effluent monitoring system for parameters like pH, TSS, flow and Cr+6.</p> <p>5. We have been utilising the mine effluents for drinking purpose within the camp since May'2018 after two stage treatment processes such as primary treatment at ETP with correction to suspended solids, pH, Hexavalent Chromium and secondary treatment at WTP with disinfection and other subsequent processes.</p>
XXI V	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water for the project.	<b>Compliance:</b> The total water requirement is fulfilled from the ETP treated water. No surface water is being withdrawn for mining use.
XXV	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with Regional Director, Central Ground Water Board.	<b>Compliance:</b> One roof top rain-water harvesting structure had been constructed at administrative office building which is working effectively. Further, feasibility study was conducted through KRG Foundation to explore the possibility of water harvesting in the nearby villages located in the mine periphery. As per the recommendations we have constructed 14 nos of rainwater harvesting ponds (30x30x3 mtr) and check dams for water recharge. Approximately 3500KL/ year of water is being recharges from the community ponds.
XXV I	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral from mine face to the beneficiation plant. The vehicles shall not be overloaded.	<b>Compliance:</b> Monitoring of vehicular emission done on six monthly basis for the HEMMs deployed in Mining through a third party recognised by state transport authority. Regular conditioning monitoring of the HEMMs is also carried out to keep the vehicle in good condition.
XXV II	Blasting operation shall be carried out only during the daytime. Controlled blasting shall be practiced. The mitigative measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	<p><b>Compliance:</b> The blasting operation is carried out during the lean hours of the day and in acceptance with the district administrative authority. In summer season, the timing is around 08:00A.M to 09:00A.M., whereas in other times the timing resorts to 01:00P.M to 2:00 P.M.</p> <p>Practices like pre-wetting of blast, controlled blasting methods like pre-split blasting, use of both SME and NONEL, delay detonators were practiced ensuring ground vibration within permissible limits with improved fragmentation arresting fly rock &amp; boulders and minimal dust generation.</p>
XXV III	Drills shall either be operated with dust extractors or equipped with water injection system.	<b>Compliance:</b> All the drills deployed within mine are equipped with in-built wet drilling facilities to reduce dust generation. Apart from this, the drill operators as well as workmen working in the dust prone areas are provided with adequate PPEs.
XXI X	Mineral handling plant shall be provided with either adequate number of high efficiency dust extraction system or water injection system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	<b>Compliance:</b> No mineral handling plant (COB Plant, Crushing and Screening Plant
XXX	Consent to operate shall be obtained from State Pollution Control Board prior to start of enhanced production from the mine.	<b>Compliance:</b> We have obtained the Consent to Operate as consent order No. 2950 issued vide letter No. 4424/IND-I-CON-226, dt. 29/03/2024, valid till 31.03.2025
XXX I	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for workshop and waste water generated during mining operation.	<b>Compliance:</b> A Sewage Treatment Plant of 1000KLD had been constructed as per BIS standard for domestic effluent/sewerage & the treated effluent is being reused for garden development.

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
		<p>An oil and grease trap system fitted with oil skimmers is constructed in the workshop. The effluents free from oil and grease is completely recycled back for vehicle washing purpose.</p> <p>An ETP with capacity of 4500 Kl/hr having the facilities like, settling pit, flash mixture, clarri-flocculator, dry sludge collection system, multi sand filters, etc. had been constructed and in operation for the treatment of mine pit water and surface runoff.</p> <p>As per CTO specific effluent discharge conditions, after attending required water quality parameters such as pH – 6.5 to 9.0; Total Suspended Solids – 100 mg/L; BOD – 30 mg/L and Fecal Coloform &lt;1000 (MPN/100mL), the water is used for gardening or discharge.</p> <p><b>[Please Refer to Annexure-III]</b></p>
XXX II	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	<p><b>Compliance:</b> Digital processing of the entire lease area using remote sensing technique was carried out for baseline information of land use pattern and the report was submitted to Ministry of Environment, Forests &amp; Climate Change and its Regional Office, Bhubaneswar vide letter no. SCM/MPP/39/16 dated 24.11.2016.</p> <p>The drone image was submitted with compliance report for RO inspection on 02.08.2023 .</p>
XXX III	Regular monitoring of ambient air quality including free silica shall be carried out and records maintained.	<p><b>Compliance:</b> Regular monitoring of ambient air quality is carried out at six locations as per NAAQS-2009 and the free silica in ambient air is monitored by personal dust sampling to assess the workforce's exposure to RPM in ambient air and %free silica content in it. The record is maintained.</p> <p><b>[Please Refer to Annexure-XII]</b></p>
XXX IV	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	<p><b>Compliance:</b> Pre-Employment/Pre-placement medical examination is mandatorily ensured for employees prior to their joining.</p> <p>Apart from this, periodical medical examination (PME) is conducted for all and the records are maintained.</p> <p>Besides this the company is also undertaking various initiatives for the improvement in the occupational health and removing the safety hazards at industrial workplace.</p> <p><b>[Please Refer to Annexure-XI]</b></p>
XXX V	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna such as elephant etc. spotted in the buffer zone of the mine and contribute towards the cost of implementation of the plan and/or Regional Wildlife Management Plan for conservation of flora and fauna so prepared by the State Forest and Wildlife Department. The amount so contributed shall be included in the project cost. A copy of action plan shall be submitted to the Ministry and its Regional Office, Bhubaneswar within 3 months.	<p><b>Compliance:</b> We have deposited Rs 81,20,000/- vide DD No 111682 dated 21.07.2009 and differential cost of Rs 24,36,000/- through RTGS dated 7.03.2014 respectively in the State Specific CAMPA account towards the cost of Wildlife Management Plan for implementation of Regional Wildlife Management Plan. Further, Site specific Wildlife Conservation Plan has already been submitted to DFO, Cuttack vide our letter no. SCM/ ENV/091/13, dated 18.12.2013. Same was recommended by RCCF, Angul vide his letter no. 1197, dated 19.03.2015 and presentation before PCCF (WL), Odisha was made on 10.04.2015 and got approved vide letter No. 4895/1 WL-SSP-92/2015, dated 10.06.2015. We have deposited Rs 6,86,86,240/-in RTGS Mode in State Specific CAMPA Fund towards contribution for Site Specific Wildlife Conservation Plan on 7.12.2015. All the precautionary measures stipulated by State Forest Department and laid down during the approval of Site-Specific Wildlife Conservation Plan is adhered to. As per proposal we have distributed saplings in community.</p>



Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
		<p>As per year wise afforestation programme proposed in Mining Plan, plantation is being carried out in optimized waste dump floor and slope. During 2024-25, we have planted 10,826 nos of 6-8 ft height saplings in OB II.</p> <p>About 32.38 ha of Safety/Green zone is maintained in and around the mine lease area. About 5,27, 760 nos of saplings were planted over an area of 63.33ha of outside waste dump area. The Kakudia dump is reclaimed and rehabilitated completely. To cope with the Tata Steel's Net No Loss Biodiversity commitment, we have carried out Biodiversity Management plan and the activities like, eradication of invasive species, Butterfly Garden, and herbal cum medicinal garden. Initiatives cum awareness programmes were carried out to restore the flora and fauna of the area. We have also supported the Sukinda Eco-race to support the Sukinda taser variety. Details are attached as Annexure – IV.</p>
XXX VI	A Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment & Forests 5 years in advance of final mine closure for approval.	<b>Compliance:</b> This mine was obtained during auction process as per MMDR Act, 2020. We have already submitted the 10% of the total resource value to Govt, which will be adjusted during Final Mine Closure Plan. We will submit the same to the Ministry of Environment, Forests & CC, in advance for final mine closure approval.

## B. General Conditions of Environmental Clearance

I	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forests.	<b>Compliance:</b> There was no change in mining technology and scope of working. Mine is operated within the scope of the vested EC and approved mining plan.																									
II	The calendar plan quantity of excavation, chrome ore, beneficiated chrome concentrates, pyroxenite ore and waste shall not be exceeded.	<b>Compliance:</b> The calendar plan is followed as per approved mining plan. The EC was accorded for production of 2.4 MTPA chromite ore as ROM and concentrate. The EC was vested to TSML from TSL and again TSML merged into TSL. As per approved mining plan and CTO, we have excavated Ore & OB within the prescribed limit of approved mine plan proposal & CTO. Year wise proposal of excavation is given below. <table><tr><th>FY</th><th>ROM as per EC</th><th>ROM as per MP</th><th>ROM as per CTO</th><th>OB as per MP</th></tr><tr><td>20-21</td><td>2.4</td><td>0.8</td><td>1.6</td><td>4.48</td></tr><tr><td>21-22</td><td>2.4</td><td>1.36</td><td>1.36</td><td>6.13</td></tr><tr><td>22-23</td><td>2.4</td><td>1.31</td><td>1.6</td><td>16.6</td></tr><tr><td>23-24</td><td>2.4</td><td>0.6</td><td>0.6</td><td>9.14</td></tr></table>	FY	ROM as per EC	ROM as per MP	ROM as per CTO	OB as per MP	20-21	2.4	0.8	1.6	4.48	21-22	2.4	1.36	1.36	6.13	22-23	2.4	1.31	1.6	16.6	23-24	2.4	0.6	0.6	9.14
FY	ROM as per EC	ROM as per MP	ROM as per CTO	OB as per MP																							
20-21	2.4	0.8	1.6	4.48																							
21-22	2.4	1.36	1.36	6.13																							
22-23	2.4	1.31	1.6	16.6																							
23-24	2.4	0.6	0.6	9.14																							
III	At least four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM10) and NOX monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency	<b>Compliance:</b> Six ambient air quality monitoring stations (four in the work zone, one in residential area and one near dispensary) is established for ambient air quality monitoring in line with CPCB guidelines fulfilling the requirements of NAAQS-2009. Apart from this, quarterly monitoring is also done at 10 buffer zone locations in the nearby villages. Parameters monitored are as per NAAQS-2009.																									

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
	of monitoring should be undertaken in consultation with the State Pollution Control Board. The data so recorded should be regularly submitted to the Ministry including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	The locations have been finalized in consultation with Regional Officer, State Pollution Control board according to the impact zone and wind direction. Quarterly monitoring of the same is being carried out by regional office, SPCB, Kalinganagar. The monthly monitoring report is being submitted to SPCB for compliance to the specific and general conditions. <b>[Please Refer to Annexure-XII]</b>
IV	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs / muffs.	<b>Compliance:</b> Following measures were implemented to control the noise level below 85dB(A) in the work environment. 1. DG sets were provided with acoustic enclosures. 2. The operator's cabin of all the HEMM's were fitted with air conditioner. 3. Use of Earmuffs/ Ear plugs is ensured by putting it in the list of mandatory PPEs for the operational workforce engaged in high noisy areas.
V	There will be zero waste water discharge from the plant.	<b>Compliance:</b> No chromite Ore beneficiation plant is in operation. As per CTO specific effluent discharge conditions, after attending required water quality parameters such as pH – 6.5 to 9.0; Total Suspended Solids – 100 mg/L; Oil & Grease – 10 mg/L, Cr+6 – 0.05 mg/L and Total Chromium 2.0mg/L, the water is being discharged to onland/Inland surface water body i.e. Damsala Nalla.
VI	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.	<b>Compliance:</b> Persons working in dusty areas are provided with DGMS approved dust masks. Regular training programmes are conducted for the employees for raising awareness on health & safety aspects.
VII	Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	<b>Compliance:</b> All the employees have to undergo periodical medical examination (PME) in hospital. To improve the occupational health and removing the safety hazards at industrial workplace, TSL has formulated "Zero harm" policy. Apart from this, persons engaged in mining operations are also tested for their exposure to free silica content in respirable air (RPM) on quarterly basis.
VIII	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	<b>Compliance:</b> The Environmental Management Cell is headed by the Head Environment Management RM at the corporate level and is supported by Manager (Environment) and Environmental Monitoring Group at the site. The details of Environmental Management Cell is attached as Annexure-V. <b>[Please Refer to Annexure-V]</b>
IX	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	<b>Compliance:</b> Separate budget is allocated for environmental protection measures every year and maintained under a separate cost centre. Actual Expenditure on Environmental Protection Measures will be reported at the end of the fiscal year i.e year ending 31 <sup>st</sup> March 2025. <b>[ Please Refer to Annexure-VI]</b>
X	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	<b>Compliance:</b> In accordance to the Rule 24 of MCDR 2017, the final mine closure plan was submitted on 20 <sup>th</sup> Sept 2024 to IBM and same has been approved. The Ministry of Environment, Forests & Climate Change will be intimated in due course of time.

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
XI	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data/ information/ monitoring reports.	<b>Compliance:</b> The mine management will always be extending full cooperation to officer(s) of Regional office by furnishing the requisite data/ information/ monitoring report as and when required.
XII	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Officer of Central Pollution Control Board and the State Pollution Control Board.	<b>Compliance:</b> Six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data will be submitted to the Ministry of Environment, Forests & Climate Change and it's Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board in soft copy. The Six-monthly EC compliance report along with environmental monitoring data is being uploaded in our website ( <a href="http://www.tatasteel.com">www.tatasteel.com</a> ).
XIII	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	<b>Compliance:</b> Earlier the Environment Clearance letters were sent to concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body. The receiving of the EC letter from concerned Panchayat, Zila Parisad / Municipal Corporation, Urban Local Body and the communication to Regional Office of the Ministry is attached as Annexure - IX. <b>[Please Refer to Annexure-VIII &amp; IX]</b>
XIV	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	<b>Compliance:</b> Copy of the EC clearance letter has already been sent to Odisha State Pollution Control Board, its Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office.
XV	The environmental statement for each financial year ending 31 <sup>st</sup> March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the respective Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.	<b>Compliance:</b> The Environment Statement in Form-V is submitted before 30th Sept of every year. Copy of Environmental Statement is being sent to the State Pollution Control Board and to the Regional Office of MoEF&CC by e-mail. Environmental statement is being updated/uploaded on the website ( <a href="http://www.tatasteel.com">www.tatasteel.com</a> ). The Environment Statement for FY24 vide letter number TSL/SCM/FY25/1401, was submitted on 30.09.2024 and the same is also uploaded in the company website.
XVI	The project authorities should advertise at least in two local newspapers of the District or State in which the project is located and widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project had been accorded environmental clearance and a copy of the	<b>Compliance:</b> The grant of Environmental Clearance was advertised earlier in the Oriya daily " <b>The Samaja</b> " (date: 11.09.2013, page-5) and in English daily " <b>The New Indian Express</b> " (date: 11.09.2013, page-5). Copy of the above advertisement is also forwarded to the Eastern Regional Office of the MoEF vide letter no. SCM/ ENV/ 012/066/13, dated 18.06.2013.

Sl. No	Specific Condition	Compliance Status (April'24 to September'24)
	clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at <a href="http://envfor.nic.in">http://envfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Now the same EC has been vested to Sukinda Chromite Block, M/s. Tata Steel Mining Limited (TSML) for fifty (50) years and name change done TSML to TSL.  [ Please Refer to Annexure-VIII]

**C. Additional Conditions as per MoEF&CC OM No. Z-1101.3/57/2014-IA-II (M) dated 9th October, 2014 issued to all Non-Coal Mining Projects.**

Sl. No.	Stipulated Condition	Compliance Status (April'24 to September'24)
a.	The project authority shall adopt best mining practices for given conditions in the mining area, adequate number of check dam, retaining wall/ structure, garland drains and settling ponds should be provided to arrest the wash off with rain water in catchment area.	<b>Compliance:</b> We are practicing best available mining technologies for given conditions in the mining area. Adequate number of check dam, retaining wall/ structure, garland drains and settling ponds have been provided to arrest the wash off with rainwater in catchment area as per approved mining plan.
b.	The natural water bodies and or stream which are flowing in and around the village should not be disturbed. The water table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the project authority has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug well.	<b>Compliance:</b> No such water bodies exist within mine lease area. Dumsala Nallah being the only water body flowing within the buffer zone of mine whereby mining operation doesn't have any direct intervention w.r.t diversion or alteration to its existence, however, effluent from mine is discharged into the streams of Dumsala Nallah but only after ensuring proper treatment within mine for which an ETP of capacity 4500KL/hr is in operation.  Ground water monitoring is regularly carried out by means of a network of open dug wells at 10 locations in the buffer zone i.e nearby villages on quarterly basis. Water harvesting and water recharge structure like pond have been constructed in nearby villages. The change in ground water level is given in Annexure XI. During dry season we have supplied the drinking water to the near by villages. During 2023-24, we have supplied about 5348 KL of drinking water to the villages.
C.	The illumination and sound at night at project sites disturb the village in respect of both human and animal population. Consequent sleeping disorder and stress may affect the health in the village located close to mining operation. Habitations have a right to darkness and minimal noise level at night. The Project Proponents must ensure that the biological clock of the village is not disturbed by orienting the floodlights mask way from the village and keeping the noise levels well within prescribed limits for day/ night hours.	<b>Compliance:</b> No such long-range flood lights have been installed within mine. All Lighting masts installed within mine are oriented for optimal illumination within mine lease area.  There are no such villages located in closed proximity to the mine other than village Kakudia, which is distantly located from the working pits and is near to OB dumps where mining operation (dumping) is no longer carried out since 2014 and moreover there lies a barrier of natural forest b/w dump and the village. Safety zone all along the lease periphery is maintained with plantation which also acts as a barrier.

Sl. No.	Stipulated Condition	Compliance Status (April'24 to September'24)
		The noise monitoring data of nearby villages are attached as Annexure – XII.
d.	The project Authority shall make necessary alternative arrangement, where required, in consultation with state Government to provided alternated areas for livestock grazing. In this case context, the Project Authority should implement the direction of Hon'ble Supreme Court with regard to acquiring grazing land. The sparse tress on such grazing ground, which provides mid-day shelter from the scorching sun, should be scrupulously guarded felling lest the cattle abandon the grazing ground or return home by noon.	<b>Compliance:</b> The entire mine area of 406.00ha is of govt lands (404.669ha of forest land and 1.331ha of non-forest land). No such grazing land have been acquired by the company.
e.	Where ever blasting is undertaken as part of mining activity, the Project Authority shall carry out vibration studies well before approaching any such habitats or other building to evaluate the zone of influence and impact of blasting on neighbourhood. Within 500 meters of such sites vulnerable to blasting vibration, avoidance of use of explosives and adoption of alternative means of mineral extraction such as ripper/dozer combination/ rock breakers/ surface mineral etc should be seriously considered and practiced wherever practicable. A provision for monitoring of each blast should be made so that impact of blasting on nearby habitation and dwelling unit could be ascertained. The covenant of lease deed under rule 31 of MCR 1960 provided that no mining operation shall be carried out within 50 meters of public works such as public roads and building or inhabited sites except with prior permission from the competent Authority.	<b>Compliance:</b> Vibrations studies have been carried out earlier by CIMFR Dhanbad and recommendations thereof are followed. Also Blast vibration study was conducted by NIT, Rourkela and its recommendations are being followed. Controlled blasting with the use of SME & NONEL and presplit blast is practiced minimizing ground vibration and Peak Particle velocity is monitored during blasting events. Public works such as public roads and building or inhabited sites are well away from the mine lease.
f.	Main haulage road in the mines should be provided with permanent water sprinkler and other road should be regularly wetted water tanker fitted with sprinkler. Crusher and material transfer points should be invariably be provided with bag filter and or dry fogging system. Belt conveyor fully covered to avoid air borne dust.	<b>Compliance:</b> To limit the fugitive emissions, following safeguard measures are implemented: 1. Various control measures like Mobile water sprinkling on haul road, transfer points, Ore stack yard, etc is done on regular basis. 2. Mineral is dispatched by means of trucks and which are completely covered with tarpaulins and regulated by system generated transit permits which prevents overloading. 3. We have already installed two (02) numbers of mist canon system at our ore stack yard to minimize the dust pollution. 4. A new fixed water sprinkling system of 1050 mts is also operative to control the dust in the mining haul road. <b>[Please Refer to Annexure-III]</b>
g.	The project Authority shall ensure that productivity of agriculture crops is not affected due to the mining operation. Crop Liability Insurance Policy has to be taken by PP as a precaution to compensate for the crop loss. The impact zone shall be 5 Km from the boundary of mine lease area for insurance policy. In case, several mines are located in cluster mines, formed inter – alia, to sub serve such and objective shall be responsibility for securing such Crop Liability Policy.	<b>Compliance:</b> The mine is surrounded by many mines owned by other lessees. So far there is no such potential adverse impact on the agricultural land had been evidence. However, in case of any such scenario is envisaged in future the same will be addressed in desired manner. We have agreed to insure the crop liability insurance policy as suitable to operation and impact.

Sl. No.	Stipulated Condition	Compliance Status (April'24 to September'24)
h.	In case any village is located within the mining leasehold which is not likely to be affected due to mining activities during the life of mine, the Expert Appraisal Committee (EAC) should consider the proposal of Environmental Clearance (EC) for reduced mining area. The mining lease may be executed for the area for which EC is accorded. The mining plan also accordingly revised and required stipulation under the MMDR Act 1957 and MCR 1969 met.	<b>Compliance:</b> There are no villages within the lease hold area of 406.0ha for which EC had been accorded by MoEF&CC.
i.	Transportation of minerals by road passing through the village shall not be allowed. A "bypass" road should be constructed (say leaving a gap of at least 200 m) for the purpose of transportation of minerals so that the impact of sound, dust and accidents could be mitigated. The PP shall bear the cost towards the widening and strengthening of existing public road network in case same is proposed to be used for the project. No road movement should be allowed on existing village road network without appropriately increasing carrying capacity of such road	<b>Compliance:</b> Mineral is transported via public Tamka-Mangalpur Road maintained by state R&B. Transit of mineral is regulated by valid transit permits issued under Odisha Minerals (prevention of theft, smuggling, illegal mining and regulation of possession, storage trading and transportation) Rules,2007.  During the construction phase, M/s. Tata Steel Limited has contributed in the construction of a major segments of the road from Kaliapani up to Kankadapal of 12Kms (approx.) in totality. In future, TSL will construct the road as required.
j.	Likewise, alteration or re-routing of foot paths, pagdandies, cart road and village infrastructure/ public utilities or roads (for purpose of land acquisition for mining) shall be avoided to extent possible and in such case acquisition is inevitable, alternative arrangements shall be made first and the only the area can be acquired. In these types of cases Inspection reports by site visit by expert may be insisted upon which should be done through reputed Institutes.	<b>Compliance:</b> Entire lease area of 406.0ha is govt. land (404.669ha of forest land and 1.331ha of non-forest land thus this project is not subjected to land acquisition.
k.	The CSR activates by companies including mining establishment has become mandatory up to 2% their financial turn over, socio Economic Development of neighbourhood. Habitats could also be planned and executed by the PPs more systemically based on need based door to door survey by established Social Institute/ Workers on the lines as required under TOR. " R&R Plan// compensation details for Project Affected People (PAP) should be furnished. While preparing the R&R plant, the relevant State/ national Rehabilitation & Resettlement Policy should be kept in view. In respect of SCs and STs and weaker section of society in study, a need bashed sample survey, family-wise, should be undertaken to assess their requirement, and action programmes prepared and submitted accordingly, integrating the sectoral programs of line department of State Government. It may be clearly brought out whether the village including their R&R and socio-economics aspect should be discussed in EIA report.	<b>Compliance:</b> CSR activities are undertaken by Tata Steel Foundation dept. of Tata Steel in and around the mine. A minimum of 2% of the average profit of the last 3 years is being spend towards expenditure on CSR. This mine is not subjected to land acquisition because the nature of land involved (govt. land) thereby eliminating the R&R obligations of the company. The utilization certificate of CSR expenditure incurred during FY2023-24 for three chromite mines of Tata Steel is attached as Annexure – X.





तार :

Telegram : PARYAVARAN,  
NEW DELHI

दूरभाष :

Telephone :

Telex : (bi-lingual) : W-66185 DOE IN

FAX :

भारत सरकार

पर्यावरण एवं वन मंत्रालय

GOVERNMENT OF INDIA

MINISTRY OF ENVIRONMENT & FORESTS

पर्यावरण भवन, सी. जी. ओ. कॉम्प्लेक्स

PARYAVARAN BHAVAN, C.G.O. COMPLEX

लोदी रोड, नई दिल्ली-110003

LODHI ROAD, NEW DELHI-110003

No.8-78/96-FC

Dated: 27.01.1998

To

The Secretary (Forests),  
Government of Orissa,  
BHUBANESWAR.

Sub:- Diversion of 73.697 ha. of forest land for renewal of  
Sukinda Chromite mine lease of M/s. TISCO in Athgarh Forest  
Division of Jajpur district.

Sir,

I am directed to refer to your letter No.10F(Cons)10/97-  
5380/F&E dated 15.1.97 on the above mentioned subject seeking  
prior approval of the Central Government in accordance with  
Section-2 of the Forest (Conservation) Act, 1980 and to say that  
the proposal has been examined by the Advisory Committee  
constituted by the Central Government under Section-3 of the  
aforesaid Act.

After careful consideration of the proposal of the State  
Government and on the basis of the recommendation of the above  
mentioned Advisory Committee, the Central Government hereby  
conveys its approval under Section-2 of the Forest (Conservation)  
Act, 1980 for diversion of 73.697 ha. of forest land for renewal of  
Sukinda Chromite mining lease of M/s. TISCO in Jajpur district,  
subject to following conditions:-

- (i) Legal status of forest land shall remain unchanged.
- (ii) Penal compensatory afforestation will be carried out over  
eight times of 73.697 ha. of degraded forest land at the  
project cost.
- (iii) The user agency will bear the cost of fencing, protection  
and regeneration of safety zone area and also the cost of  
afforestation over one and a half times of safety zone area  
in degraded forest area elsewhere.

Contd..2/p...



- (iv) Reclamation of mining area will be done at the project cost under the supervision of State Forest Department in a time bound manner not exceeding five years.
- (v) Demarcation of mining lease area will be done on the ground at the project cost using 4 feet height. Concrete pillars having serial No., bearing and distance from pillar to pillar.
- (vi) The user agency will provide free fuelwood to labourers and staff working at the project site so as to avoid any pressure on the adjoining forest areas.
- (vii) The period of permission under the Forest (Conservation) Act, 1980 will be 20 years, co-terminus with lease under the MMRD Act.
- (viii) The environmental safeguards enclosed herewith will be strictly adhered to.
- (ix) No fresh forest land will be broken up during the mining lease period.
- (xii) Any other condition that the State Government may impose from time to time.

Disciplinary action against erring officials for violation of F(C) Act, 1980 shall be taken and compliance report shall be submitted at earliest.

Yours faithfully,

(V.B. KUMAR)

ASSTT. INSPECTOR GENERAL OF FORESTS

Copy to:-

1. Principal Chief Conservator of Forests, Govt. of Orissa, Bhubaneswar.
2. Nodal Officer, Office of PCCF, Govt. of Orissa, Bhubaneswar.
3. The CCF (Central), Regional Office, Bhubaneswar.
4. RO(HQ), New Delhi.
5. Guard File.

(V.B. KUMAR)

ASSTT. INSPECTOR GENERAL OF FORESTS

*Handwritten:*  
27/1/58

*Handwritten:*  
27.1.58



(CA)

## GENERAL ENVIRONMENTAL CONDITIONS FOR THE MINING PROJECTS

- i. Maximum overburden (OB) dump should be restricted to 60 m. Benches should be provided and slope should be maintained below  $28^{\circ}$ .
- ii. OB and other wastes should be dumped using proper techniques and precaution.
- iii. The OB dumps should not be kept active for long period. Inactive dumps should be reclaimed and suitably planted all over.

A time bound action plan for reclamation detailing measures to stabilize the dumps, monitoring and management of rehabilitated areas until the vegetation is self sustaining and funds earmarked for implementing the plan should be submitted to the Ministry within 3 months for approval.

- iv. Ambient air quality monitoring stations should be established in the core zone as well as buffer zone for SPM, RPM,  $SO_2$ , NO and CO. Location of the ambient air quality stations should be decided based on the meteorological data, topographical features, environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board.
- v. Data on ambient air quality should be regularly submitted to this Ministry including its Regional Office at Bhubaneswar and the State Pollution Control Board/Central Pollution Control Board once in six months.
- vi. Drills should be operated with dust extractors only.
- vii. Fugitive emissions from all the sources should be controlled, regularly monitored and data recorded properly. The material transfer point should be attached to proper dust control arrangements such as multiclone or bag filters.  
  
Water spraying arrangement in haul road, wagon loading, dump trucks should be provided and properly maintained.
- viii. Adequate measures should be taken for control of noise levels below the limit of 85 dB in the work environment. Workers engaged in blasting/drilling operations, operations of HEMM, etc. should be provided with ear plugs/muffs.
- ix. Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under CSR 422(E) dated 19th May, 1993 and 31st December, 1993. Sewage treatment plant should be provided for treatment of the domestic effluents.
- x. Acid mine water, if any, has to be treated and disposed off after conforming to the standards prescribed by the competent authority.

*Shiv Kumar*  
4/2/01  
(SHIV KUMAR)  
Section Officer  
Min. of Env. & Forests  
Govt. of India, New Delhi



- xi. Land drains of appropriate size should be constructed to collect the surface run-off from the OB dumps and other dumps. The collected run-off should be diverted to the sedimentation tank.
- xii. Ground water quality should be regularly monitored and the data recorded should be furnished to this Ministry and its Regional Office at Bhubaneswar and the State Pollution Control Board/Central Pollution Control Board once in six months.
- xiii. Depth of lagoon, if any, should not be more than 40 m at the time of abandoning of the mine.
- xiv. A green belt of adequate width by planting the native species should be raised around the lease area, township, roads, OB dump site, etc. in consultation with the local DFO/Agriculture Department. The density of the trees should be at least 2500 plants/ha.
- xv. Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipments in consultation with the State Pollution Control Board.
- xvi. Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on necessary 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 take corrective measures, if needed.
- xvii. 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 Organisation.
- xviii. The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purposes and yearwise expenditure should be reported to the Ministry.

3. The Ministry or any other competent authority may stipulate any further conditions for environmental protection.

4. Failure to comply with any of the conditions mentioned above should result in withdrawal of this clearance.

5. The above conditions will be enforced, inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, Air (Prevention & Control of Pollution) Act, 1981, Forest (Conservation) Act, 1980, Environment (Protection) Act, 1986 and Public Liability Insurance Act, 1991 along with their amendments and rules.

*Shiv Kumar*  
(SHIV KUMAR)  
Section Officer  
Min. of Env. & Forests  
Govt. of India, New Delhi

F. No. 8-15/2016-FC  
Government of India  
Ministry of Environment, Forest and Climate Change  
(Forest Conservation Division)

Indira Paryavaran Bhawan  
Aliganj, Jorbagh Road  
New Delhi – 110003

Dated: 15<sup>th</sup> May, 2018

To,

The Principal Secretary (Forests),  
Dept. of Environment & Forests,  
Government of Orissa,  
Bhubaneswar

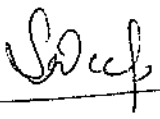
**Sub: Diversion of balance 330.972 ha of Sabik Kisam forest land as on 25.10.1980 in addition to already diverted forest land of 73.697 ha for Chromite mining in their Sukinda Chromite mine in Jajpur District under Cuttack Forest Division by M/s TATA STEEL LIMITED.**

Sir,

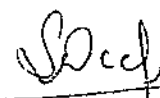
I am directed to refer to the State Government's letter no. 10F (Cons) 73/2014-11975F&E, Bhubaneswar, dated 28.06.2016 on the subject mentioned above seeking prior approval of the Central Government under Section-2 of the Forest (Conservation) Act, 1980 and to say that the said proposal has been examined by the Forest Advisory Committee constituted by the Central Government under Section-3 of the aforesaid Act. After careful consideration of the proposal by the Forest Advisory Committee (FAC) constituted under Section-3 of the said Act, *In-principle* approval was granted vide this Ministry's letter of even number dated 04.07.2017 subject to fulfilment of certain conditions. The State Government has furnished compliance report in respect of the conditions stipulated in the approval and has requested the Central Government to grant final approval.

In this connection, I am directed to say that on the basis of the compliance report furnished by the Addl. Pr. Chief Conservation of Forests & Nodal Officer (FCA), State Government of Odisha vide their letter No. 4142/9F(MG)/323/2016 dated 28.02.2018, *Stage-II/Final approval* of the Central Government is hereby granted under Section-2 of the Forest (Conservation) Act, 1980 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 subject to the following conditions:

- (i) Legal status of the diverted forest land shall remain unchanged;
- (ii) Compensatory afforestation is exempted in light of submission of documentary evidences submitted by state government that the area is broken prior to 1980.
- (iii) The State Govt. shall ensure that the Safety zone shall be afforested and maintained in accordance with **approved scheme of Rs. Rs.90,84,737/-** at the cost of user agency in consultation with State Forest Department on the following area:
  - a. 9.26 ha with in the mining lease area
  - b. 15 ha (on south east and south west corner of the lease boundary) outside mining lease area in side Mahagiri DPF.
- (iv) The user agency shall pay the additional amount of NPV, if so determined, as per the final decision of the Hon'ble Supreme Court of India;
- (v) 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, as amended and the Rules framed there-under;

  
18.5.18

- (vi) The User Agency shall obtain the Environment Clearance as per the provisions of the Environmental (Protection) Act, 1986, if required;
- (vii) The State Govt. shall ensure that no labour camp shall be established on the forest land;
- (viii) The State Govt. shall ensure that the User Agency shall provide fuels preferably alternate fuels to the labourers and the staff working at the site so as to avoid any damage and pressure on the nearby forest areas;
- (ix) The State Govt. shall ensure that the boundary of the diverted forest land, mining lease and safety zone, as applicable, shall be demarcated on ground at the project cost, by erecting four feet high reinforced cement concrete pillars, each inscribed with its serial number, distance from pillar to pillar and GPS co-ordinates;
- (x) The State Govt. shall ensure that the User Agency shall undertake mining in a phased manner after taking due care for reclamation of the mined over area. The concurrent reclamation plan as per the approved mining plan shall be executed by the User Agency from the very first year, and an annual report on implementation thereof shall be submitted to the Nodal Officer, Forest (Conservation) Act, 1980, in the concerned State Government and the concerned Regional Office of the Ministry. 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. Principle Chief Conservator of Forests (Central) may direct that the mining activities shall remain suspended till such time, such reclamation activities area satisfactorily executed;
- (xi) The State Govt. shall ensure that the layout plan of the mining plan/ proposal shall not be changed without the prior approval of the Central Government;
- (xii) The State Govt. shall ensure that the forest land shall not be used for any purpose other than that specified in the proposal;
- (xiii) The State Govt. shall ensure that the forest land proposed to be diverted shall under no circumstances be transferred to any other agency, department or person without prior approval of the Central Government;
- (xiv) The State Govt. shall ensure that no damage to the flora and fauna of the adjoining area shall be caused;
- (xv) The State Govt. shall ensure that any tree felling shall be done only when it is unavoidable and that too under strict supervision of the State Forest Department;
- (xvi) The State Govt. shall ensure that the following activities shall be undertaken by the User Agency under the supervision of the State Forest Department:
  - a) The **approved scheme of Rs. 28,73,097/-** for mitigative measures to minimize soil erosion and choking of stream shall be implemented **at the cost of user agency** in consultation with State Forest Department.
  - b) The **approved scheme of Rs.28,075/-** for planting of adequate drought hardy plant species and sowing of seeds, in the appropriate area within the mining lease to arrest soil erosion shall be implemented **at the cost of user agency** in consultation with State Forest Department;
  - c) Construction of check dams, retention /toe walls to arrest sliding down of the excavated material along the contour in accordance with the approved scheme;

  
 . . 18.5.14

- d) The **approved scheme of Rs. 24,07,469/-** for stabilize the overburden dumps by appropriate grading/benching, in accordance with the approved scheme, so as to ensure that angles of repose at any given place is less than  $28^{\circ}$ , shall be implemented **at the cost of user agency** in consultation with State Forest Department; and
- e) No damage shall be caused to the top-soil and the user agency will follow the top soil management plan.
- (xvii) The State Govt. shall ensure that the State Forest Department will implement the approved scheme for gap planting and soil & moisture conservation activities to restock and rejuvenate the degraded open forests (having crown density less than 0.40) located in the area within 100 m. from outer perimeter of the mining lease **from the funds of Rs. 64,06,921/- deposited in Ad-hoc CAMPA account** by the user agency;
- (xviii) The State Govt. shall ensure that the user agency will implement scheme for 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 in accordance with **approved scheme of Rs. 33,96,800/- at the cost of user agency** in consultation with State Forest Department;
- (xix) The State Govt. shall ensure that the User Agency shall submit the annual self compliance report in respect of the above stated conditions to the State Government, concerned Regional Office and to this Ministry by the end of March every year;
- (xx) The State Govt. shall ensure that any other condition that the concerned Regional Office of this Ministry may stipulate, from time to time, in the interest of conservation, protection and development of forests & wildlife; and
- (xxi) The State Govt. shall ensure that the user agency shall comply all the provisions of the all Acts, Rules, Regulations, Guidelines & Hon'ble Court Order (s) pertaining to this project, if any, for the time being in force, as applicable to the project.

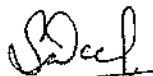
Yours faithfully,

  
(Sandeep Sharma) 16.5.18

Assistant Inspector General of Forests (FC)

**Copy to:**

1. The Principal Chief Conservator of Forests, Government of Odisha, Bhubaneswar.
2. The Nodal Officer (FCA), 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.

  
(Sandeep Sharma) 16.5.18

Assistant Inspector General of Forests (FC)



BY REGD POST

OFFICE OF THE  
STATE POLLUTION CONTROL BOARD, ODISHA  
Parivesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII,  
Bhubaneswar - 751 012

No. 17752/

IND-II-NOC-5664

Date 30.9.12

**OFFICE MEMORANDUM**

In consideration of the application for obtaining Consent to Establish for **Sukinda Chromite Mine of M/s. Tata Steel Ltd.**, the State Pollution Control Board has been pleased to convey its Consent to Establish under section 25 of Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 for **Production of Chrome ore- 2.4MTPA (ROM), Pyroxenite ore- 0.50MTPA (ROM) and Chrome concentrate- 0.65MTPA(ROM)** from both open cast and underground mines, over mining lease area of 406ha, additional area of 100ha allotted for over burden dumping, applied area of 73.685ha for storage of tailing At – Kalarangiatta, Kaliapani and Mahulkhal in the district of Jajpur with the following conditions.

**GENERAL CONDITIONS:-**

1. This consent to establish is valid for the product, method of mining and capacity mentioned in the application form. This order is valid for five years, which means the proponent shall commence mining activities for the proposal within a period of five years from the date of issue of this consent to establish order. If the proponent fails to commence mining activities for the proposal within five years then a renewal of this consent to establish shall be sought by the proponent.
2. Adequate effluent treatment facilities are to be provided such that the quality of sewage and trade effluent satisfies the standards as prescribed under Environment Protection Rule, 1986 or as prescribed by the Central Pollution Control Board and/or State Pollution Control Board or otherwise stipulated in the special conditions.
3. All emission from the mining activities as well as the ambient air quality and noise shall conform to the standards as laid down under Environment (Protection) Act. 1986 or as prescribed by Central Pollution Control Board/State Pollution Control Board or otherwise stipulated in the special conditions.
4. Appropriate method of disposal of solid waste is to be adopted to avoid environmental pollution.
5. The mine shall comply to the provisions of Environment Protection Act, 1986 and the rules made there under with their amendments from time to time such as the Hazardous Waste (Management, Handling & Transboundary Movement) Rules 2008, Hazardous Chemical Rules /Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 etc. and amendments there under. The mine shall also comply to the provisions of Public Liability Insurance Act, 1991, if applicable.
6. The mine shall apply for grant of Consent to operate under section 25/26 of Water(Prevention & Control of Pollution)Act, 1974 & Air (Prevention & Control of Pollution)Act, 1981 at least 3 (three) months before the commencement of production and obtain Consent to Operate from this Board.

7. This consent to establish is subject to statutory and other clearances from Govt. of Odisha and/or Govt. of India, as and when applicable.

**SPECIAL CONDITIONS : -**

1. The proponent shall comply the conditions imposed in environmental clearance granted by the MoEF, Govt. of India, vide letter no. J-11015/96/2011-IA.II(M), dtd. 06.09.2013.
2. The proponent shall obtain forest clearance for the forest land involved in the mine lease area. This consent to establish is subject to forest clearance.
3. The mine shall obtain permission for drawal of water from Damsala nalla from concerned authority.
4. The mine shall provide treatment facilities as per design of "WAPCOS Ltd" as proposed for surface run off generated from tailing disposal area over 73.685 ha. proposed at "Garamian" under Sukinda Tahasil .
5. Sewage Treatment Plant shall be installed for the treatment of domestic effluent generated from the colony and mines so as to meet the prescribed standard such as pH=6.5-8.0, SS=50mg/l, BOD=30mg/l & O&G=5mg/l and shall be reused for green belt development.
6. No change in mining technology and scope of working shall be made without prior approval of the Board.
7. Top soil should be stacked properly with proper slope at earmarked site(s) with adequate measures and shall be used for reclamation and rehabilitation of mined out areas.
8. Dimension of the retaining wall at the toe of dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data. The detail specification shall be worked out and submitted to the Board at the time of consent to operate application.
9. Reclamation programme along with the post closure plan is to be submitted within 06 months from the date of issue of this order.
10. Catch drains, and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from soil, OB and mineral dumps. The drains should be regularly de-silted and maintained properly. The 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 provide adequate retention period to allow proper settling of silt material.
11. The OB/waste dumps shall be properly dressed benched stopped at low angle with terracing and bamboo barricades in the slopes making retaining walls stone barriers at the toe of the dumps gully plugging etc to prevent the solid erosion during monsoon, besides establishing vegetation on dump top as well as its slope surface. In difficult cases, hydro-seedling technique or use of geo-tiles mat embedded with seeds shall be adopted.
12. Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells. The monitoring should be done four times a year in pre-monsoon (April/May), Monsoon (August), Post-monsoon(November) and winter (January) seasons. Data thus collected should be submitted to the Board quarterly. Following heavy metals need to be monitored at least once during post monsoon period whose values shall not exceed as per following standard.

i)	Cd	-	2.0 mg/l
ii)	Cr+6	-	0.10 mg/l
iii)	Copper	-	3.0 mg/l
iv)	Lead	-	0.10 mg/l
v)	Mercury-		0.01 mg/l



- vi) Nickel - 0.50 mg/l
- vii) Zinc - 5.0 mg/l

13. Wastewater (workshop, wastewater from the mine i.e. pit water, check dams or any other discharge leaving lease boundary of the mine) should be properly collected, treated so as to conform the prescribed standard i.e pH = 6 – 9.0, SS = 50 mg/l, & O & G = 5 mg/l and Cr<sup>+6</sup>= 0.1 mg/l or as amended from time to time. Oil and grease trap should be installed before discharge of effluents from workshop. Domestic effluent shall be discharged to soak pit via septic tank.
14. The mine shall provide full-fledged effluent treatment plant for removal of Hexavalent Chromium from wastewater from mine pit and shall discharge after conforming to the standard prescribed by the Board i.e. pH – 6-9.0, total SS=50mg/l & O&G = 5 mg/l and Cr<sup>+6</sup>= 0.1 mg/l.
15. The treated water from the tailing pond is to be collected in an organized pit for recycling. The tailing generated from COB plant shall be adequately treated for solids and hexavalent chromium and shall be recycled back to process.
16. The solid waste shall be suitably disposed off, so that there shall be no wash out of solids during rains nor any dust nuisance due to wind.
17. The garland drain shall be provided around the COB plant & tailing pond for preventing the entry of rain water into the tailing pond.
18. Two ambient air quality monitoring stations for 24 hours operation should be established in the core zone as well as in the buffer zone for RPM, SPM, SO<sub>2</sub>, NO<sub>x</sub> and CO 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 State Pollution Control Board (i) Data on ambient air quality (RPM, SPM, SO<sub>2</sub>, NO<sub>x</sub> and CO) should be regularly submitted to the State Pollution Control Board once in six months.
19. The haulage roads and arterial roads shall be made black topped / concrete with avenue plantation. The speed of dumpers / trucks on haul roads shall be controlled as increased speed increases dust emission. Overloading of transport vehicles shall be avoided. Further, during transportation of ore by trucks through public roads, the truck shall be properly covered with tarpaulin sheets / leak proof coverings and shall ply at safe speed.
20. Dust suppression on mine haul roads, active OB dumps and mine working benches shall be done by spraying water through water sprinklers along with chemical binders/wetting agents at frequent interval in order to reduce water consumption and to improve retention and re-absorption capacity of water. The additive chemicals should not have any adverse impact on the environment. Water sprinklers of fixed type shall also be provided at the mine HEMM maintenance shop, other service centers and approach roads from mines to crusher hopper to prevent the generation of dust to be air borne.
21. Regular collection of spilled over raw material from haul roads shall be practiced to prevent the generation of dust due to movement of dumpers /truck.
22. Air blast level resulting from blasting on any premises or public place must not exceed 90 dB linear, peak at any other premises outside the period between 7 AM and 6 PM on any day. Noise levels at the boundary line of M.L area shall not exceed 75 dB(A) during day time ( 6 AM to 10 AM) and 70 dB(A) during night time (10, PM to 6 AM).
23. At stockpile and loading plant area, a network of drains with concrete bottom shall be constructed at a depth of 1.5 meter below the lowest level on the sites parallel to the stockpile area with interconnected box culverts. The sloping of surface shall be given inward to the stockpiles so that surface water will only infiltrate in to the drain.
24. Sedimentation ponds shall be constructed at strategic points in order to guide all surface run-off water containing sediments for settlement of suspended solids before discharge of water in to natural stream/water courses during monsoon.
25. The waste dumps shall be located away from the natural nallas, rivers in the area and on an impervious & non-mineralized area to minimize the water pollution.



26. The completed out slope of the waste dumps should not exceed 20 degrees from horizontal to avoid excessive erosion and easy vegetation.
27. Adequate measures shall be taken to prevent land subsidence.
28. The mine water from the underground mine shall be monitored regularly and be treated to remove  $\text{Cr}^{+6}$  if found more than the standard of 0.1mg/l.
29. **A green belt of adequate width and density preferably with local species along the periphery of the mine shall be raised so as to provide protection against particulates and noise. It must be ensured that at least 33% of the total land area shall be under permanent green cover, in such a manner that, atleast plantation shall be taken up at least in 20% of the total green belt area and progressively achieve 100% in a span of five years.**
30. Consent to operate shall be obtained from this Board before commencing the mining activities of proposed expansion project.
31. Environmental laboratory should be established with adequate number and type of pollution monitoring and analysis equipment in consultation with the State Pollution Control Board.
32. A separate environmental management cell with suitable qualified personnel should be set up under the control of a Senior Executive, who will report directly to the Head of the organization.
33. The Board may impose further conditions or modify the conditions stipulated in this order during installation and/or at the time of obtaining consent to operate and may revoke this clearance in case the stipulated conditions are not implemented.
34. The above conditions will be enforced, inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974 the Air (Prevention & Control of Pollution) Act, 1981 the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules.

*C. S. S.*  
**MEMBER SECRETARY**

To

**Mr. Rajesh Patel (Mines Manager-cum-Agent)  
Sukinda Chromite Mines,  
M/s Tata Steel Ltd.  
Po- Kalarangiatta, Sukinda  
Dist- Jajpur, Odisha-755028.**

Memo No. 17751 /Dt. 30.9.13

Copy forwarded to:

1. Secretary Steels & Mines, Govt. of Odisha, Bhubaneswar
2. District Magistrate & Collector, Jajpur
3. District Industries Centre, Jajpur
4. Consent Section, SPC Board, BBSR
5. Director, Factories & Boiler, Bhubaneswar
6. Director of Mines, Odisha, BBSR
7. Regional Officer, SPC Board, Cuttack
8. DFO, Jajpur
9. HSM Cell, SPC Board, BBSR
10. Copy to Guard file

*Arin*  
**SR. ENV. ENGINEER (N)**



BY REGD. POST WITH AD

## STATE POLLUTION CONTROL BOARD, ODISHA

[DEPARTMENT OF FOREST, ENVIRONMENT & CLIMATE CHANGE, GOVERNMENT OF ODISHA]

A/118, Nilakantha Nagar, Unit-VIII, Bhubaneswar-751012

Phone-2561909, Fax: 2562822, 2560955 E-mail: [paribesh1@ospcboard.org](mailto:paribesh1@ospcboard.org), Website: [www.ospcboard.org](http://www.ospcboard.org)

### CONSENT ORDER

No. 4424 /

IND-I-CON-226

Dt. 29.03.2024 /

CONSENT ORDER NO. 2950

**Sub:** Consent for discharge of sewage and trade effluent under section 25/26 of Water (PCP) Act, 1974 and for existing / new operation of the plant under section 21 of Air (PCP) Act, 1981.

**Ref:** Your online application No. 5381807, dated 25-01-2024.

Consent to operate is hereby granted under section 25/26 of Water (Prevention & Control of Pollution) Act, 1974 and under section 21 of Air (Prevention & Control of Pollution) Act, 1981 and rules framed thereunder to

Name of the Industry: SUKINDA CHROMITE BLOCK OF M/S. TATA STEEL LTD.

Name of the Occupier & Designation: SRI T. V. NARENDRAN, MANAGING DIRECTOR

Address: AT/PO: KALARANGIATTA, DIST: JAJPUR, PIN-755028

This consent order is valid for the period from 01.04.2024 to 31.03.2025.

#### Details of Products Manufactured:

Sl. No	Product	Quantity
01.	Chrome ore(ROM)	0.6 MTPA

This consent order is valid for the specified outlets, discharge quantity and quality, specified chimney/stack, emission quantity and quality of emissions as specified below. This consent is granted subject to the general and special conditions stipulated therein.



**A. Discharge permitted through the following outlet subject to the standard**

Outlet No.	Description of outlet	Point of discharge	Quantity of discharge KL/hr	Prescribed Standard							
				pH	TSS (mg/l)	BOD (mg/l)	COD (mg/l)	Oil & Grease (mg/l)	Cr+6 (mg/l)	Total Chromium (mg/l)	Fecal Coliform (MPN/100 ml)
01.	Outlet of STP (Domestic effluent)	Reused for plantation	800 KLD	6.5 to 9.0	100	30	--	--	--	--	<1000
02.	Mine drainage water / surface run off/ other wastewater	On land / inland surface water body	19800	5.5 to 9.0	100	--	--	10	0.05	2.0	-

**B. Emission permitted through the following stack subject to the prescribed standard**

Chimney Stack No.	Description of Stack	Stack height (m)	Quantity of emission	Prescribed Standard							

**C. Disposal of solid waste permitted in the following manner**

Sl. No.	Type of Solid waste	Quantity generated (TPD)	Quantity to be reused on site(TPD)	Quantity to be reused off site(TPD)	Quantity disposed off (TPD)	Description of disposal site.
01.	Top soil / overburden	As per approved mining plan	--	--	--	As per approved mining plan





**D. GENERAL CONDITIONS FOR ALL UNITS**

1. The consent is given by the Board in consideration of the particulars given in the application. Any change or alternation or deviation made in actual practice from the particulars furnished in the application will also be the ground for liable to review/variation/revocation of the consent order under section 27 of the Water (Prevention & Control of Pollution) Act, 1974 and section 21 of Air (Prevention & Control of Pollution) Act, 1981 and to make such variations as deemed fit for the purpose of the Acts.
  2. The occupier would immediately submit revised application for consent to operate to this Board in the event of any change in the quantity and quality of raw material / products / manufacturing process or quantity /quality of the effluent rate of emission / air pollution control equipment / system etc.
  3. The applicant shall not change or alter either the quality or quantity or the rate of discharge or temperature or the route of discharge without the previous written permission of the Board.
  4. The application shall comply with and carry out the directives/orders issued by the Board in this consent order without any negligence on his/her part. In case of non-compliance of any order/directives issued at any time and/or violation of the terms and conditions of this consent order, the applicant shall be liable for legal action as per the provisions of the Law.
  5. The applicant shall make an application for grant of fresh consent at least 90 days before the date of expiry of this consent order.
  6. The issuance of this consent does not convey any property right in either real or personal property or any exclusive privileges nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of Central, State laws or regulation.
  7. This consent does not authorize or approve the construction of any physical structure or facilities or the undertaking of any work in any natural water course.
  8. The applicant shall display this consent granted to him in a prominent place for perusal of the public and inspecting officers of this Board.
  9. An inspection book shall be opened and made available to Board's Officers during the visit to the factory.
  10. The applicant shall furnish to the visiting officer of the Board any information regarding the construction, installation or operation of the plant or of effluent treatment system / air pollution control system / stack monitoring system any other particulars as may be pertinent to preventing and controlling pollution of Water / Air.
  11. The applicant shall display suitable caution board at the place where the effluent is entering into any water-body or any other place to be indicated by the Board, indicating therein that the area into which the effluents are being discharged is not fit for the domestic use/bathing.
  12. Storm water shall not be allowed to mix with the trade and/or domestic effluent on the upstream of the terminal manholes where the flow measuring devices will be installed.
  13. The applicant shall maintain good house-keeping both within the factory and the premises. All pipes, valves, sewers and drains shall be leak-proof. Floor washing shall be admitted into the effluent collection system only and shall not be allowed to find their way in storm drains or open areas.
  14. The applicant shall at all times maintain in good working order and operate as efficiently as possible all treatment or control facilities or systems install or used by him to achieve with the term(s) and conditions of the consent.
  15. Care should be taken to keep the anaerobic lagoons, if any, biologically active and not utilized as mere stagnation ponds. The anaerobic lagoons should be fed with the required nutrients for effective digestion. Lagoons should be constructed impervious.
  16. The utilization of treated effluent on factory's own land, if any, should be completed and there should be no possibility of the effluent gaining access into any drainage channel or other water courses either directly or by overflow.
  17. The effluent disposal on land, if any, should be done without creating any nuisance to the surroundings or inundation of the lands at any time.
  18. If at any time the disposal of treated effluent on land becomes incomplete or unsatisfactory or create any problem or becomes a matter of dispute, the occupier must adopt alternate satisfactory treatment and disposal measures.
  19. The sludge from treatment units shall be dried in sludge drying beds and the drained liquid shall be taken to equalization tank.
  20. The effluent treatment units and disposal measures shall become operative at the time of commencement of production.
  21. The applicant shall provide port holes for sampling the emissions and access platform for carrying out stack sampling and provide electrical outlet points and other arrangements for chimneys/stacks and other sources of emissions so as to collect samples of emission by the Board or the applicant at any time in accordance with the provision of the Acts or Rules made therein.
  22. The applicant shall provide all facilities and render required assistance to the Board staff for collection of samples / stack monitoring / inspection.
-





**CONSENT ORDER**  
**SUKINDA CHROMITE BLOCK OF M/S. TATA STEEL LTD.**

Page 4 of 12

23. The applicant shall not change or alter either the quality or quantity or rate of emission or install, replace or alter the air pollution control equipment or change the raw material or manufacturing process resulting in any change in quality and/or quantity of emissions, without the previous written permission of the Board.
  24. No control equipments or chimney shall be altered or replaced or as the case may be erected or re-erected except with the previous approval of the Board.
  25. The liquid effluent arising out of the operation of the air pollution control equipment shall be treated in the manner so as to meet the standards prescribed by the Board in accordance with the provisions of Water (Prevention and Control of Pollution) Act, 1974 (as amended).
  26. The stack monitoring system employed by the applicant shall be opened for inspection to this Board at any time.
  27. There shall not be any fugitive or episodal discharge from the premises.
  28. In case of such episodal discharge/emissions the occupier shall take immediate action to bring down the emission within the limits prescribed by the Board and stop the operation of the plant if required. Report of such accidental discharge /emission shall be brought to the notice of the Board within 24 hours of occurrence.
  29. The applicant shall keep the premises and air pollution control equipments clean and make all hoods, pipes, valves, stacks/chimneys leak proof. The air pollution control equipments, location, inspection chambers, sampling port holes shall be made easily accessible at all times.
  30. Any upset condition in any of the plant/plants of the factory which is likely to result in increased effluent discharge/emission of air pollutants and / or result in violation of the standards mentioned shall be reported to the Headquarters and Regional Office of the Board by E-mail within 2 hours of its occurrence.
  31. The occupier has to ensure that minimum three varieties of trees are planted at the density of not less than 1000 trees per acre. The trees may be planted along boundaries of the premises. This plantation is stipulated over and above the bulk plantation of trees in that area.
  32. The solid waste such as sweeping, wastage packages, empty containers residues, sludge including that from air pollution control equipments collected within the premises of the shall be disposed off scientifically to the satisfaction of the Board.
  33. All solid wastes arising in the premises shall be properly classified and disposed off to the satisfaction of the Board by :
    - i) Land fill in case of inert material, care being taken to ensure that the material does not give rise to leachate which may percolate into ground water or carried away with storm run-off.
    - ii) Controlled incineration, wherever possible in case of combustible organic material.
    - iii) Composting, in case of bio-degradable material.
  34. Any toxic material shall be detoxicated if possible, otherwise be sealed in steel drums and buried in protected areas after obtaining approval of this Board in writing. The detoxication or sealing and burying shall be carried out in the presence of Board's authorized persons only. Letter of authorization shall be obtained for handling and disposal of hazardous wastes.
  35. If due to any technological improvement or otherwise this Board is of opinion that all or any of the conditions referred to above requires variation (including the change of any control equipment either in whole or in part) this Board shall after giving the applicant an opportunity of being heard, vary all or any of such condition and thereupon the applicant shall be bound to comply with the conditions so varied.
  36. The applicant, his/heirs/legal representatives or assignees shall have no claim whatsoever to the condition or renewal of this consent after the expiry period of this consent.
  37. The Board reserves the right to review, impose additional conditions or condition, revoke change or alter the terms and conditions of this consent.
  38. Notwithstanding anything contained in this conditional letter of consent, the Board hereby reserves to it the right and power under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 to review any and/or all the conditions imposed herein above and to make such variations as deemed fit for the purpose of the Act by the Board.
  39. The conditions imposed as above shall continue to be in force until revoked under section 27(2) of the Water (Prevention & Control of Pollution) Act, 1974 and section 21 A of Air (Prevention & Control of Pollution) Act, 1981.
  40. The occupier shall comply to the conditions stipulated in CTE order issued by Odisha State Pollution Control Board and conditions stipulated in Environmental Clearances issued by MoEF&CC, Govt. of India.
  41. The occupier shall abide by E(P) Act, 1986 and Rules framed there-under.
  42. In case the consent fee is revised upward during this period, the industry shall pay the differential fees to the Board (for the remaining years) to keep the consent order in force. If they fail to pay the amount within the period stipulated by the Board the consent order will be revoked without prior notice.
-





**GENERAL CONDITIONS FOR UNITS WITH INVESTMENT OF MORE THAN Rs 50 CRORES, AND 17 CATEGORIES OF HIGHLY POLLUTING INDUSTRIES (RED A).**

1. The applicant shall analyse the emissions every month for the parameters indicated in TABLE B & C as mentioned in this order and shall furnish the report thereof to the Board by the 10<sup>th</sup> of the succeeding month.
2. The applicant shall provide and maintain at his own cost three ambient air quality monitoring stations for monitoring Suspended Particulate Matter, Sulphur Dioxide, Oxides of Nitrogen, Hydro-Carbon, Carbon-Monoxide and monitor the same once in a day/week/fortnight/month. The data collected shall be maintained in a register and a monthly extract be furnished to the Board.
3. The applicant shall provide and maintain at his own cost a meteorological station to collect the data on wind velocity, direction, temperature, humidity, rainfall, etc. and the daily reading shall be recorded and the extract sent to the Board once in a month.
4. The applicant shall forward the following information to the Member Secretary, State Pollution Control Board, Odisha, Bhubaneswar regularly.
  - a. Report of analysis of stack monitoring, ambient air quality monitoring meteorological data as required every month.
  - b. Progress on planting of trees quarterly.
5. The applicant shall install mechanical composite sampling equipment and continuous flow measuring / recording devices on the effluent drains of trade as well as domestic effluent. A record of daily discharge shall be maintained.
6. The following information shall be forwarded to the Member Secretary on or before 10<sup>th</sup> of every month.
  - a. Performance / progress of the treatment plant.
  - b. Monthly statement of daily discharge of domestic and/or trade effluent.
7. Non-compliance with effluent limitations
  - a) If for any reason the applicant does not comply with or is unable to comply with any effluent limitations specified in this consent, the applicant shall immediately notify the consent issuing authority by telephone and provide the consent issuing authority with the following information in writing within 5 days of such notification.
    - i) Causes of non-compliance
    - ii) A description of the non-compliance discharge including its impact on the receiving waters.
    - iii) Anticipated time of continuance of non-compliance if expected to continue or if such condition has been corrected the duration or period of non-compliance.
    - iv) Steps taken by the applicant to reduce and eliminate the non-complying discharge and
    - v) Steps to be taken by the applicant too prevent the condition of non-compliance.
  - b) The applicant shall take all reasonable steps to minimize any adverse impact to natural waters resulting from non-compliance with any effluent limitation specified in this consent including such accelerated or additional monitoring as necessary to determine the nature and impact of the non-complying discharge.
  - c) Nothing in this consent shall be construed to relieve the applicant from civil or criminal penalties for non-compliance whether or not such non-compliance is due to factors beyond his control, such as break-down, electric failure, accident or natural disaster.
8. The applicant shall at his own cost get the effluent samples collected both before and after treatment and get them analysed at an approval laboratory every month for the parameters indicated in Part-D and shall submit in duplicate the report thereof to the Board.
9. The addition of various treatment chemicals should be done only with mechanical dosers and proper equipment for regulation of correct dosages determined daily and for proper uniform feeding. Crude practices such as dumping of chemicals in drains or sumps or trickling of acids or alkalis arbitrarily and utilizing poles for stirring etc. should not be resorted to.
10. In the disposal of treated effluent on land for irrigation, the industry shall keep in view of the need for:
  - a) Rotation of crops
  - b) Change of point of application of effluent on land
  - c) A portion of land kept fallow.
11. The adoption of these would avoid soil becoming sick or slate, the industry may ensure this in consultation with the Agriculture Department.
12. It is the sole responsibility of the industry to ensure that there are no complaints at any time from the royats in the surrounding areas as a result of discharge of sewage or trade effluent if any.
13. Proper housekeeping shall be maintained by a dedicated team.
14. The industry must constitute a team of responsible and technically qualified personnel who will ensure continuous operation of all pollution control devices round the clock (including night hours) and should be in a position to explain the status of operation of the pollution control measures to the inspecting officers of the Board at any point of time. The name of these persons with their contact telephone numbers shall be intimated to the concerned. Regional Officer and Head Office of the Board and in case of any change in the team it shall be intimated to the Board immediately.





**E. SPECIAL CONDITIONS:**

1. Mining operation is subject to availability of all other statutory clearances required under relevant Acts/Rules.
  2. Wet drilling shall be practiced or suitably designed dust extractor shall be provided for dry drilling to prevent generation of dust.
  3. Pre-wetting of blasting site and controlled blasting shall be practiced.
  4. Water sprinkling through mobile water tankers / fixed sprinklers shall be carried out at the desired intervals on mine haulage roads to keep the roads in wet condition so as to prevent generation of fugitive dust. The vehicles carrying ore for transportation from the mine shall be covered with tarpaulin (both bottom & top).
  5. All the mobile water tankers shall be made operational all the time and be deployed with adequate nos. of frequency for water sprinkling till installation of fixed sprinklers to bring down the PM<sub>10</sub> concentration within stipulated standard in Consent Order.
  6. Regular water sprinkling on mineral transportation roads passing through the habitation area as well as other strategic point on the National Highway shall be done jointly by the mining lessees in consultation with the Regional Officer.
  7. All mine haulage roads and other transportation roads shall be maintained properly to avoid creation of ruts and potholes.
  8. Mechanized wheel washing facility for the ore transport vehicles shall be provided at the exit point of the mine. The wheel washing facility shall be integrated with complete recirculation system.
  9. Regular monitoring of ambient air quality shall be carried out at the appropriate places (at least three places) and monitoring report shall be furnished to the Board once in six months. The permanent monitoring stations shall be fixed in consultation with the Regional Officer of the Board.
  10. Ambient air quality of the mine shall meet the prescribed standards for industrial area.
  11. Overburden / waste rock shall be properly stacked in the earmarked areas approved by IBM and shall be suitably terraced and stabilized through vegetative cover or otherwise.
  12. Retention wall shall be constructed at the toe of OB dump & mineral stockyard. The runoff from OB, ore stack yard and other areas of the mine shall be diverted to the ETP. Garland drains, channels and sedimentation pits constructed for the purpose shall be desilted as and when required and after monsoon.
  13. Mine drainage water shall be discharged into surface water body after adequate treatment in the ETP. The treated wastewater of ETP shall also be utilized for sprinkling activities at various sources of generation of dust.
  14. The ETP, online continuous monitoring system at the inlet & outlet of ETP with data transfer facility to SPCB server shall be effectively operated and the quality of treated wastewater shall not exceed the prescribed standards (Part A, Sl. No. 2). The online continuous monitoring system shall be properly maintained and calibrated from time to time to ensure that spurious data are not transmitted to the SPCB server and correct data shall be transmitted continuously to the SPCB server.
  15. The slime generated earlier, from the ore beneficiation plant, shall be disposed of safely as per mining plan and action shall be taken to prevent the contamination of ground water due to its disposal.
  16. Domestic effluents shall be treated in a sewage treatment plant (STP) and or shall be discharged to soak pit via septic tank constructed as BIS specification. The treated
-





wastewater quality of STP shall remain within the following standards and shall be used for plantation:

pH	-	6.5 -9.0
TSS	-	<100 mg/l
BOD	-	30 mg/l
Fecal Coliform	-	<1000 MPN/100 ml.

17. ETP comprising of oil and grease trap with sedimentation pit shall be provided for treatment of workshop effluent and treated effluent shall remain within the following prescribed standards and shall be re-used for washing of vehicles:

pH	-	6.5 -8.5
TSS	-	50 mg/l
Oil & grease	-	10 mg/l
COD	-	150 mg/l

18. Seasonal monitoring of ground water level and its quality shall be carried out four times a year and report shall be submitted to the Board.

19. Adequate measures shall be taken for control of noise levels below the following limits.

(6.00 AM - 9.00 PM) - Leq 75 dB(A)

(9.00PM - 6.00 AM) - Leq 70 dB(A)

20. The following actions shall be taken for better environmental management in consultation with Regional Officer, SPCB, Kalinganagar.

(i) Fixed sprinklers shall be installed at ore stockyard to strengthen the dust suppression activity and to bring down the PM<sub>10</sub> concentration.

(ii) Retaining wall shall be provided for ore stockyard.

A progress report in this regard shall be submitted by 15.04.2024 at the Regional Office as well at Head Office of SPCB, Odisha.

21. Ambient Air Quality monitoring data, Noise Monitoring data & Water/Waste Water Quality Monitoring data shall be electronically displayed at the entry point of the mine or at a suitable location of the mine.

22. The height of the stack connected to DG sets of capacity more than 800 KVA shall conform to the following:

i)  $14Q^{0.3}$ , Q = Total SO<sub>2</sub> emission from the plant in kg/hr.

ii) Minimum 6m. above the building where generator set is installed.

iii) 30 m.

23. The height of the stack connected to DG set of capacity less than and upto 800 KVA shall conform to the following:

i)  $H = h + 0.2\sqrt{KVA}$

ii) h= Height of the building where it is installed in meter

iii) KVA = Capacity of DG set

iv) H = Height of the stack in meter above ground level.

24. All DG sets installed before 1.7.2004 shall be scrapped. DG sets complying with either State-I or Stage-II emission norms shall reduce Particulate Matter Emission by 70% by installing RECD without affecting any other emission parameters as per the CPCB guidelines and Board's letter vide No.17927, dated 14.11.2023, in this regard.

25. Plantation of trees shall be undertaken in the colony/ township, over top soil dumps, OB dumps, back filled areas, along the side of haul road and in other areas of the mines not





- being utilized for mining activities. The mine shall take up avenue plantation and plantation in nearby village areas in consultation with DFO/Horticulture Department. The plantation details shall be submitted to the Board before end of April every year.
26. A copy of the annual return (annual return submitted to IBM, Govt. of India/ Directorate of Mines, Govt. of Odisha) shall be submitted to the Board every year.
27. The environmental statement report for the financial year ending 31<sup>st</sup> March shall be submitted to the Board in Form-V on or before 30<sup>th</sup> September every year
28. The mine shall submit a declaration by 30<sup>th</sup> April every year that all pollution control systems are in good condition, are operated efficiently and ambient air quality as well as wastewater quality are conforming to the prescribed standards.

**MEMBER SECRETARY**  
**STATE POLLUTION CONTROL BOARD, ODISHA**

**TO,**  
**THE MANAGING DIRECTOR,**  
**SUKINDA CHROMITE BLOCK OF**  
**M/S. TATA STEEL LIMITED,**  
**N-3/24, IRC VILLAGE, NAYAPALLI,**  
**BHUBANESWAR, PIN-751015**

Memo No. \_\_\_\_\_ /Dt. \_\_\_\_\_ /

Copy forwarded to :

- i) Regional Officer, State Pollution Control Board, **Kalinganagar.**
- ii) District Collector, **Jajpur**
- iii) Director of Mines, Govt. of Odisha, Bhubaneswar,
- iv) Director, Environment -cum-Special Secretary, F, E & CC Dept., Govt. of Odisha, Bhubaneswar.
- v) D.F.O., **Cuttack**
- vi) Deputy Director of Mines, **Jajpur Road**
- vii) Chief Env. Scientist, Central Lab. SPCB, Bhubaneswar
- viii) Addl. Chief. Env. Engineer (Hazardous Waste Management Cell)
- ix) Consent Register

**CHIEF ENV. ENGINEER (M)**  
**STATE POLLUTION CONTROL BOARD, ODISHA**



**GENERAL STANDARDS FOR DISCHARGE OF  
ENVIRONMENTAL POLLUTANTS**

---



**GENERAL STANDARDS FOR DISCHARGE OF  
ENVIRONMENTAL POLLUTANTS PART – A : EFFLUENTS**

Sl. No.	Parameters	Prescribed Standards			
		Inland surface	Public sewers	Land for irrigation	Marine Costal Areas
		(a)	(b)	(c)	(d)
1.	Colour & odour	Colourless/ Odourless as far as practicable	--	See 6 of Annex-1	See 6 of Annex-1
2.	Suspended Solids (mg/l)	100	600	200	a. For process wastewater – 100 b. For cooling water effluent 10% above total suspended matter of influent.
3.	Particular size of SS	Shall pass 850	--	--	--
5.	pH value	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0	5.5 to 9.0
6.	Temperature	Shall not exceed 5°C above the receiving water temperature	--	--	Shall not exceed 5°C above the receiving water temperature
7.	Oil & Grease mg/l max.	10	20	10	20
8.	Total residual chlorine	1.0	--	--	1.0
9.	Ammonical nitrogen (as N) mg/l max.	50	50	--	50
10.	Total Kjeldahl nitrogen (as NH <sub>3</sub> ) mg/l max.	100	--	--	100
11.	Free ammonia (as NH <sub>3</sub> ) mg/l max.	5.0	--	--	5.0
12.	Biochemical Oxygen Demand (5 days at 20°C) mg/l max.	30	350	100	100
13.	Chemical Oxygen Demand, mg/l max.	250	--	--	250
14.	Arsenic (as As) mg/l max.	0.2	0.2	0.2	0.2
15.	Mercury (as Hg) mg/l max.	0.01	0.01	--	0.001
16.	Lead (as pb) mg/l max.	01.	1.0	--	2.0
17.	Cardmium (as Cd) mg/l max.	2.0	1.0	--	2.0





**CONSENT ORDER**  
SUKINDA CHROMITE BLOCK OF M/S. TATA STEEL LTD.

Page 11 of 12

Sl. No.	Parameters	Prescribed Standards			
		Inland surface	Public sewers	Land for irrigation	Marine Costal Areas
		(a)	(b)	(c)	(d)
18.	Hexavalent Chromium (as Cr + 6) mg/l max.	0.1	2.0	--	1.0
19.	Total Chromium (as Cr) mg/l max.	2.0	2.0	--	2.0
20.	Copper (as Cu) mg/l max.	3.0	3.0	--	3.0
21.	Zinc (as Zn) mg/l max.	5.0	15	--	15
22.	Selenium (as Se) mg/l max.	0.05	0.05	--	0.05
23.	Nickel (as Ni) mg/l max.	3.0	3.0	--	5.0
24.	Cyanide (as CN) mg/l max.	0.2	2.0	0.2	0.02
25.	Fluoride ( as F) mg/l max.	2.0	15	--	15
26.	Dissolved Phosphates (as P) mg/l max.	5.0	--	--	--
27.	Sulphide (as S) mg/l max.	2.0	--	--	5.0
28.	Phenolic compounds as (C <sub>6</sub> H <sub>5</sub> OH) mg/l max.	1.0	5.0	--	5.0
29.	Radioactive materials				
	a. Alpha emitter micro curie/ml.	10 <sup>7</sup>	10 <sup>7</sup>	10 <sup>8</sup>	10 <sup>7</sup>
	b. Beta emitter micro curie/ml.	10 <sup>6</sup>	10 <sup>6</sup>	10 <sup>7</sup>	10 <sup>6</sup>
30.	Bio-assay test	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent	90% survival of fish after 96 hours in 100% effluent
31.	Manganese (as Mn)	2 mg/l	2 mg/l	--	2 mg/l
32.	Iron (Fe)	3 mg/l	3 mg/l	--	3 mg/l
33.	Vanadium (as V)	0.2 mg/l	0.2 mg/l	--	0.2 mg/l
34.	Nitrate Nitrogen	10 mg/l	--	--	20 mg/l



### NATIONAL AMBIENT AIR QUALITY STANDARDS

Sl. No.	Pollutants	Time Weighed Average	Concentrate of Ambient Air		
			Industrial Residential, Rural and other Area	Ecologically Sensitive Area (notified by Central Government)	Methods of Measurement
(1)	(2)	(3)	(4)	(5)	(6)
1.	Sulphur Dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	Annual * 24 Hours **	50 80	20 80	-Improved west and Gaeke - Ultraviolet fluorescence
2.	Nitrogen Dioxide (NO <sub>2</sub> ), µg/m <sup>3</sup>	Annual * 24 Hours **	40 80	30 80	- Modified Jacob & Hochheiser ( Na-Arsenite) - Chemiluminescence
3.	Particulate Matter (size less than 10µm) or PM <sub>10</sub> , µg/m <sup>3</sup>	Annual * 24 Hours **	60 100	60 100	-Gravimetric - TOEM - Beta Attenuation
4.	Particulate Matter (size less than 2.5µm) or PM <sub>2.5</sub> , µg/m <sup>3</sup>	Annual * 24 Hours **	40 60	40 60	-Gravimetric - TOEM - Beta Attenuation
5.	Ozone (O <sub>3</sub> ), µg/m <sup>3</sup>	8 Hours ** 1 Hours **	100 180	100 180	- UV Photometric - Chemiluminescence - Chemical Method
6.	Lead (Pb), µg/m <sup>3</sup>	Annual * 24 Hours **	0.50 1.0	0.50 1.0	-AAS/ICP method after sampling on EMP 2000 or equivalent filter paper. - ED-XRF using Teflon filter
7.	Carbon Monoxide (CO), mg/m <sup>3</sup>	8 Hours ** 1 Hours **	02 04	02 04	- Non Dispersive Infra Red (NDIR) Spectroscopy
8.	Ammonia (NH <sub>3</sub> ), µg/m <sup>3</sup>	Annual* 24 Hours**	100 400	100 400	-Chemiluminescence - Indophenol Blue Method
9.	Benzene (C <sub>6</sub> H <sub>6</sub> ), µg/m <sup>3</sup>	Annual *	05	05	-Gas Chromatography based continuous analyzer - Adsorption and Desorption followed by GC analysis
10.	Benzo (a) Pyrene (BaP)-Particulate phase only, ng/m <sup>3</sup>	Annual*	01	01	-Solvent extraction followed by HPLC/GC analysis
11.	Arsenic (As), ng/m <sup>3</sup>	Annual*	06	06	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12.	Nickel (Ni), ng/m <sup>3</sup>	Annual*	20	20	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

\* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals.

\*\* 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year, 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.



### **Annexure – III: ENVIRONMENTAL MANAGEMENT PRACTICES-SUKINDA CHROMITE MINE**

#### **COVERING OF LOADED TRUCK BY TARPAULIN**



#### **CONCRETE PATH:**



#### **DUST CONTROLLING MEASURES**



**HAUL ROAD DUST SUPPRESSION SYSTEM:**



**CONCRETE STACK WITH TRAUPLIN**

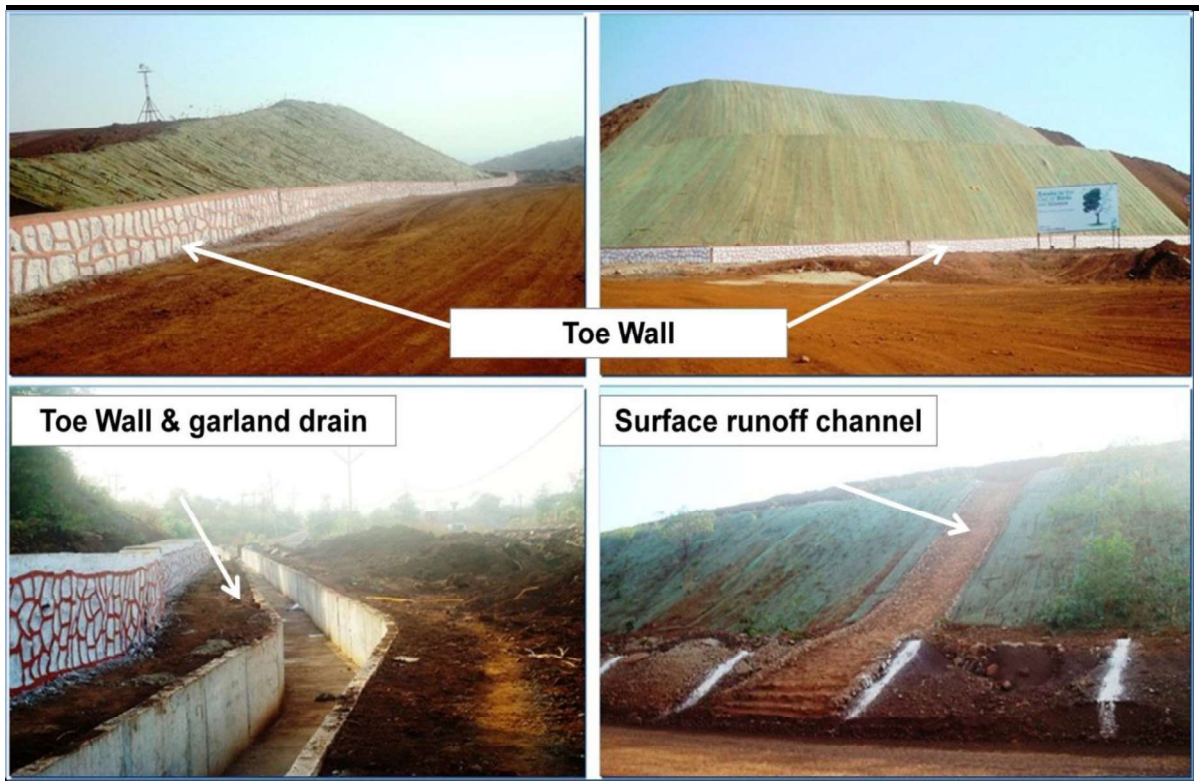


**RAIN WATER HARVESTING STRUCTURE:**





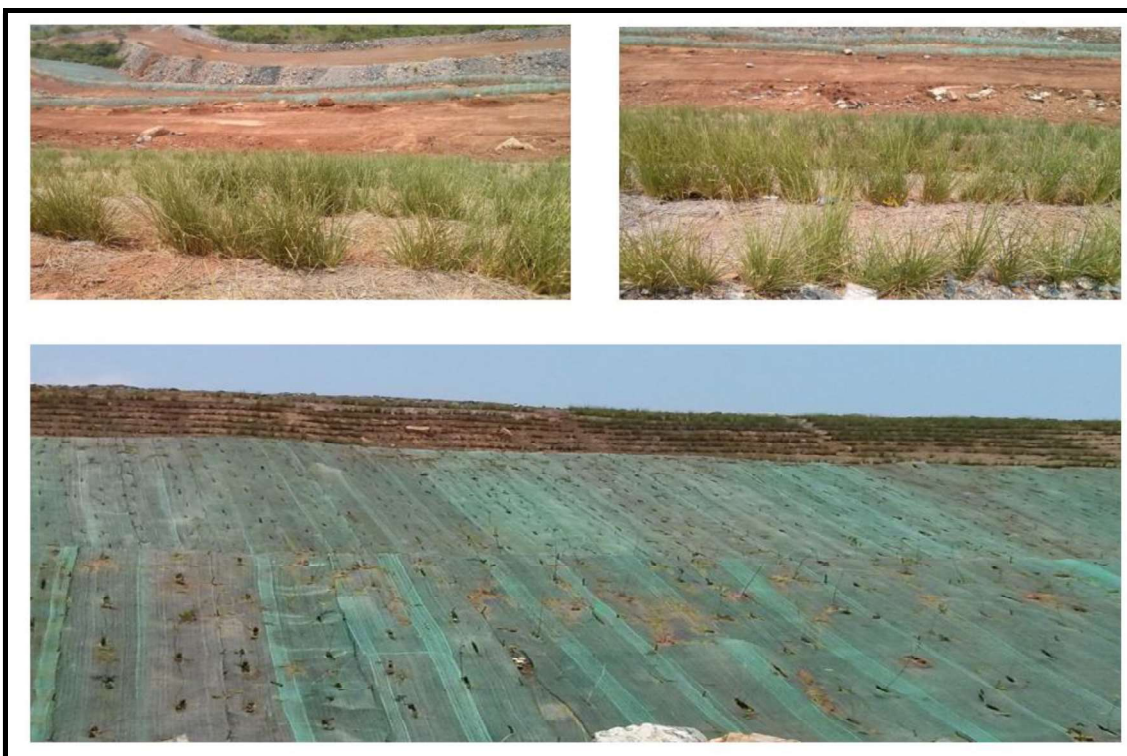
**Toe wall, Garland Drain and Surface Runoff Channel**



**VERTIBER PLANTATION & GEONET APPROACH-DUMP SLOPE:**







**EFFLUENT TREATMENT PLANT:**



### OIL-WATER SEPARATION PIT



### SEDIMENTATION PIT



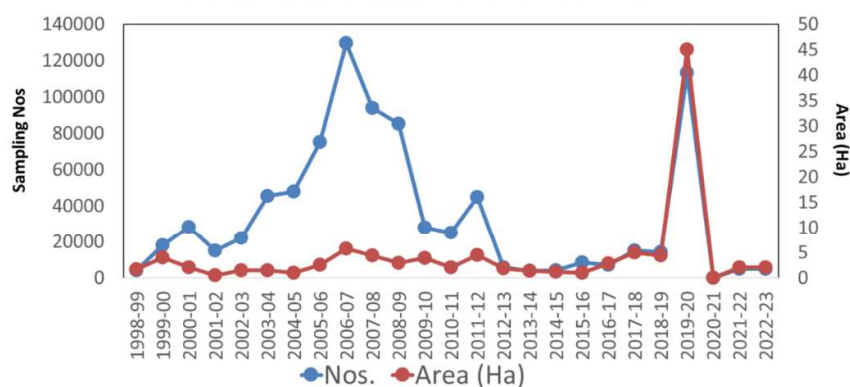


## ANNEXURE-IV Plantation Details (within and outside lease) Saplings distributed, Works on Biodiversity management and Socio-economic development)

### Detail Plantation of Sukinda Chromite Mines

Details of Afforestation/ Greenbelt Plantation Carried Out				
Year	Inside Mining lease (Within 406 ha.)		Outside Mining Lease (Within 100 ha)	
	Numbers	Area (ha)	Numbers	Area (ha)
1998-99	4000	1.7		Additional Area (100ha) obtained
1999-00	18000	4		
2000-01	28342	2		
2001-02	15000	0.5		
2002-03	22000	1.5		
2003-04	45500	1.5		
2004-05	48000	1		
2005-06	75000	2.5		
2006-07	129500	5.75		
2007-08	94000	4.42		
2008-09	85250	2.94	36750	1.76
2009-10	28000	3.9	56000	5.6
2010-11	25000	2	60000	6.5
2011-12	45000	4.5	35000	3.5
2012-13	5700	1.83	40000	6.5
2013-14	3700	1.32	54326	5.6
2014-15	4050	1.2	50100	5.1
2015-16	8500	1	64357	8
2016-17	7000	2.8	26000	6.7
2017-18	15000	5	44000	6
2018-19	14233	4.4	47577	8.07
2019-20	113320	45.03	13650	0
2020-21	0	0	0	0
2021-22	5011	2	0	0
2022-23	5015	2	0	0
2023-24	5030	2	0	0
TOTAL	849205	106.79	527760	63.33

Detailed Plantation at Sukinda Chromite Mines



SL No	Year of Plantation	No of Saplings	GP	Village
1	2023-2024	1600	Kansa	Kansa
		400	Maruabil	Kharkhari
		100	Maruabil	Kharkhari
		900	Maruabil	Baldiapal
		200	Kankadapal	Kankadapal
2	2022-2023	800	Kansa	Kansa
		80	Kharkhari	Gudisahi
3	2021-2022	240	Ransol	Kakudia
		1000	Ransol	Kalaragi
		400	Maruabil	Kharkhari
		500	Kansa	Kansa
		1500	Kansa	Saruabil



### Samplings distributed to local community to support biodiversity



- Harvested tasar cocoons ( Sukinda Eco Race variety ) – 2700 nos. by 29<sup>th</sup> Nov 2022
- Reelable cocoon ( good quality ) – 1800 nos.
- Spinnable Cocoon ( Flimsy ) – 900 nos.
- Cocoon in reeling stage and yet to harvest – 500 nos.
- Harvesting will complete by 15<sup>th</sup> Dec 2022





## Sukinda Eco Race development and support

### Results of Assessment of Biodiversity in August 2022



Locations of Biodiversity Assessment



Wild Boar mark (Kankudia Dump)



Asian Elephant Footmark (Daitari Forest Range)



White breasted Kingfisher (Buffer Zone)



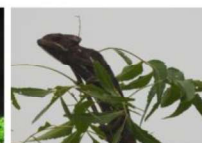
Baronet (Buffer Area)



Great Eggfly (Buffer Area)



Blanford's Rock Agama (Buffer Area)



Indian Chameleon Sighted (Buffer Area)



Scaly-breasted Munia (Buffer Zone)



**40 Nest box installation at Sukinda and some birds spotted**



MARKETING & SALES VO

### Some Notable Biodiversity Initiatives



Back filling of mined out ore body II. It is planned to accumulate ~ 300 lakh cum of overburden which will save 60 Ha of land from degradation



100 ha Kakudia Dump Restoration & Developed as Eco-tourism spot/ Nature walk.



13 Lacs Plantation on Dump



Assessment of Biodiversity Restoration at Kakudia Dump



Sir Dorabhi Butterfly Park (0.653Ha)



Herbal Garden (0.471 Ha)



Nursery in 0.24 ha area



Vetiver Plantation on Dump Slope





## Biodiversity Initiatives (Contd.)



Concrete Road & Green Belt Development at Ferro-Chrome Plants



Go Paper less initiative: Reducing paperwork with SAP modification: Price Approval System has been introduced on SAP for better governance, which will replace paper/email-based system. Besides, meal booking system has also started



Coir Matting on Dump Slope

Dump Slope Plantation



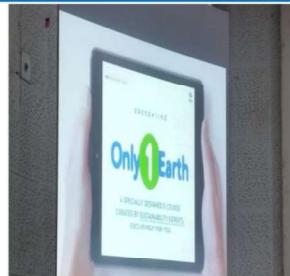
Garland Drains & Toe Walls

**TATA STEEL**  
We Also Make Tomorrow

## Community Awareness & Capacity Building Programs



Awareness Session on Snakes, Coverage 300 Stakeholders



Launch of Sustainability e-course at TSML, 260 participants



**Conservation Days Celebration & Capacity Building Workshops:** World Water Day, World Biodiversity Day, World Environment Day etc.

**Significance:** To impart awareness on biodiversity and ecosystem services to employees, communities and children

**Aligned to SDG 15 – Life on Land**



Awareness Program to Help Conserve Indigenous Tasar Silkworm Breed, Coverage 100

**TATA STEEL**  
We Also Make Tomorrow



## Awareness Programme Organized at different locations



"Jaiba Kala Vividhata" explores the wonders embedded in nature and expresses it in different forms of Arts



Love Sparrow: Artificial nests were distributed to 40 volunteers who came forward for sparrow conservation



## Awareness Programme Organized at different locations



Prajatiya Khadyotsav at Sukinda Chromite Mine to explore indigenous flavours; 1000 stakeholders



Green Therapy: Workshop on Biodiversity and Ethnobotanical Traditions



## BIRS Assessment Workshop at Tata Steel Sukinda Mines



## **Annexure – IX- Environmental Management Cell**

**Environmental Cell  
Kamarda Chromite Block  
M/s. Tata Steel Limited**

Sl. No	Name	Designation	Experience (years)	E-mail	Mobile No.
1	Mr. Sambhu Nath Jha	Chief Mines FAMD	24	jhasn@tatasteel.com	9438887778
2	Mr. Mukesh Kumar Prasad	Head Environment RM	13	mukesh.kr@tatasteel.com	9263636664
3	Mr. Nihar Ranjan Mitra	Mines Manager	22	nihar.mitra@tatasteel.com	9238087107
5.	Mr. Biswaranjan Dhal	Manager, Land & Lease	14	biswaranjan.dhal5@tatasteel. com	8114371713
6.	Debdip Senapati	Sr. Manager, Quality Control	15	debdip.senapati@tatasteel.com	9238087043
5	Mr. Abinash Mishra	Manager, Environment	2	abinash.mishra@tatasteel.com	9153998330

**ANNEXURE-VI :Environment expenditure made during (March' 2024 – Sept' 2024)**

<b>Sl. No.</b>	<b>Expenditure</b>	<b>Amount (In Lakh)</b>
1	ETP operation cost	
	a) Manpower	57.46
	b) ETP Electricity cost	27.42
	c) Chemical & maintenance cost	209.22
2	Water sprinkling cost for haul road management	32.5
3	Display of Board (Env. Management)	0.16
4	Monitoring & Analysis cost of Air, Water & Noise	19.02
5	EQMS Online Analysis	0.885
6	EQMS Online Data Transmission	0.385
	<b>Total</b>	<b>347.05</b>

**ANNEXURE – VII - INTIMATION OF COMMENCEMENT OF MINING OPERATION**

## ANNEXURE - X - INTIMATION OF COMMENCEMENT OF MINING OPERATION



Ref No. TSML/SCM/017/FY21

Date: 01/10/2020

The Regional Controller of Mines  
Indian Bureau of Mines  
Bhubaneswar-751016.

**Sub: Notice for commencement of work at Sukinda Chromite Block of Tata Steel Mining Limited**

Dear Sir,

We are enclosing herewith the notice for commencement of work at Sukinda Chromite Mine of Tata Steel Mining Limited. Sukinda Chromite Block has been awarded to Tata Steel Mining Ltd (Formerly known as T S Alloys Ltd) a 100% subsidiary of Tata Steel Limited, Plot No – N3/24, IRC Village Nayapalli, Bhubaneswar, Odisha-751015 in the e-auction process held on 17<sup>th</sup> March 2020. Tata Steel Mining Limited received Letter of Intent for grant of mining lease for Sukinda Chromite Mine vide letter no. 5543/S&M, Bhubaneswar on 29.06.2020, Vesting order was issued vide vesting order No-5555/SM, dated- 29/06/2020 and Lease was executed vide e-Registration document no 11872000013 dated 23.07.2020.

Thanking you,

Yours faithfully,  
F. M/S Tata Steel Mining Ltd.

AGM & Agent  
Sukinda Chromite Block

Encl: Form-C

### **TATA STEEL MINING LIMITED**

(Formerly known as T S Alloys Limited)

Registered Office Plot No N3/24 IRC Village Nayapalli Bhubaneswar Odisha Pin 751015 Ph +91 674 2551045  
Sukinda Chromite Mine PO Kalarangiatta District Jajpur Odisha Pin 755028  
CIN U27109OR2004PLC009683 Website www.tsalloys.com



Annexure – XI - Environment Clearance Intimation letters Panchayat, Zila Parishad & Paper advertisement



Ref: SCM/ENV/ 61 / 13

Date: 25/09/23

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 Pyrosmelting ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2011-GAII(M), Dated 06.09.2013.

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

Yours Faithfully  
B: Tata Steel Limited

Chief (Mining)  
&  
Manager Cum Agent  
Sukinda Chromite Mine

End: As above

Bhagabati Mohanta  
Chairman  
Sukinda

TATA STEEL LIMITED

Sukinda Chromite Mine, Jajpur District, Odisha  
Proposed for mine lease area: 406 ha  
Mining Office, Sukinda Block, Jajpur District, Odisha  
www.tatasteel.com



Ref: SCM/ENV/ 66 / 13

Date: 25/09/13

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/s Tata Steel Limited for renewal of mine lease, expansion of Chromo Ore Beneficiation plant and Pyrometallurgical ore capacities and change of mining & beneficiation technologies vide its letter no. E-11015/96/2013-IA-II(M), Dated 06/09/2013.

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

Yours Faithfully,  
P: Tata Steel Limited

Chief (Mining)  
&  
Manager Core Agent  
Sukinda Chromite Mine

End: As above

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

**TATA STEEL LIMITED**

Corporate/Training Bldg, P.O. Barampada, Bhubaneswar, Odisha-751005  
Phone no. 067042 33333 Fax : 067042 33333  
Engineering Office, Barampada, P.O. Barampada, Bhubaneswar - 751005  
www.tatasteel.com





Ref: SCM/ENV/ 67 / 13  
Date: 25/09/23

Mrs. Jinita Murda,  
Sarpanch,  
Kaliapuri Grama 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 Pyrocoke ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2013-IA.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

Jinita Murda  
Sarpanch  
KALIAPURI G.P.

Encl: As above

**TATA STEEL LIMITED**

Head Office: Chhatrapati Shivaji Maharaj, Vardol, Jajpur District, Odisha-751005  
Phone No. 06-2796, 2797 Fax: 06-2711, 2712  
Regional Office: Sukinda Mines, P.O. Puri Road, District, Jajpur, Odisha-751005  
www.tatasteel.com



Ref: SCH/ENV/ 70 / 13

Date: 25/04/13

Mrs. Sashama Nayak  
Sarpanch,  
Ransol Grama Panchayat,  
Ransol

**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 Pyrometallurgical capacity and change of mining & beneficiation technologies vide its letter no. J-11015/96/2011-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

  
Sandeep Kumar  
(Mining)  
&  
Manager Core Agent  
Sukinda Chromite Mine

Encl: As above

  
S. Nayak  
Sarpanch  
Ransol Grama Panchayat

**TATA STEEL LIMITED**

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



Ref: SCM/ENV/71 / 13

Date: 25/4/13

Mrs. Reshmi Dehari  
Sarpanch,  
Chingadipal Grama Panchayat,  
Chingadipal


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

Dear Madam,

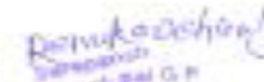
We would like to inform you that Ministry of Environment & Forests (MoEF), Govt. of India has accorded Environmental Clearance in respect of Sukinda Chromite Mine, M/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore Beneficiation plant and Pyrocentric ore captioning and change of 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  
Sukinda Chromite Mine

Encl. As above

  
Reshmi Dehari  
Sarpanch  
Chingadipal G.P.

**TATA STEEL LIMITED**

Sukinda-Chromite Block, P.O. Sukinda, Dist. Jaipur, Rajasthan  
Telephone: 01424 22 2222/2222/2222/2222/2222  
Telex: 222222 TATA STEEL LTD JAIPUR  
E-mail: [info@tatasteel.com](mailto:info@tatasteel.com)





Ref: SCM/ENV/ 71 /13

Date: 25/04/13

Mr. Gobinda Chandra Behari,  
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 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/s Tata Steel Limited for renewal of mine lease, expansion of Chrome Ore, Beneficiation plant and Pyrometallite ore capacities and change of mining & beneficiation technologies vide its letter no. J-11015/96/2011-(A)(M), 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

  
25-04-2013  
SARAPANCH  
KANKADAPAL G.P.

**TATA STEEL LIMITED**

Corporate Office: 100, Park Road, Jamshedpur - 831001, Jharkhand  
Registered Office: 100, Park Road, Jamshedpur - 831001, Jharkhand  
Website: [www.tatasteel.com](http://www.tatasteel.com)

ANEXURE-XXIV

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



Addl. Director(S)  
Ministry of Environment & Forests  
Eastern Regional Office  
A/3, Chandrasekharapur,  
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 (O): Rajarungta, Dist. Jajpur, Orissa-751023  
Phone (at): 01 6726 26676/ Fax : 01 6726 268134  
Registered Office: Marley House 24, Hornby Road, Mumbai - 400 081

ANNEXURE XXIV



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



TSF/ACC/062 /2024-25  
Date: 08-11-2024

### Utilization Report

The Partner	Tata Steel Limited
The Project	TSL Sukinda Unit CSR Project
Financial Year	2024-25
Reporting Period	1 <sup>st</sup> April 2024 to 30 <sup>th</sup> September 2024

### Details of The Project Expenses:

Heads	Amount Rs.
Drinking Water	2,165,452
Public Health	7,018,089
Education	14,759,025
Skill Development	1,694,048
Agriculture	3,004,791
Empowerment	1,282,603
Ethnicity	739,975
Rural Infrastructure	422,684
Sports	156,278
Slum Area Development	197,791
HR Overhead	208,657
Admin Overhead	301,354
<b>Total</b>	<b>31,950,746</b>

This is to certify that Tata Steel Foundation had incurred Expenditure for TSL Sukinda Unit Project as per above mentioned detail.

CSR1 Registration No. - CSR00001142

(R S Ramesh )  
Chief Financial Officer

Chief Financial Officer  
**TATA STEEL FOUNDATION**

### TATA STEEL FOUNDATION

Registered Office: 3<sup>rd</sup> Floor, One Forbes No. 1, Dr. V. B. Gandhi Marg, Fort, Mumbai – 400 001 India  
Tel 91 22 6665 7297 Fax 91 22 66657724  
Corporate Identity Number U85300MH2016NPL284815



STATUS OF STATUTORY IME/PME , CONDUCTED BY UTKAL POLYCLINIC O&H CENTRE, SUKINDA FROM APRIL 2024 TO SEPT. 2024

KAMARDA CHROMITE MINES, TATA STEEL LTD.

Name of the Mines	Name of the Industry	Contractor Name	IME	PME	TOTAL
KAMARDA CHROMITE MINE	TATA STEEL LTD.	NAYAK ENTERPRISES	1	0	1
KAMARDA CHROMITE MINES	TATA STEEL LTD.	DEMAG ENGINEERS	13	0	13
KAMARDA CHROMITE MINES	TATA STEEL LTD.	DEPARTMENT	2	0	2
KAMARDA CHROMITE MINES	TATA STEEL LTD.	SECURITY & INTELLIGENCE SERVICES INDIA LTD.	4	0	4
KAMARDA CHROMITE MINES	TATA STEEL LTD.	WINTech ENGINEER	1	0	1
			21	0	21

SARUABIL CHROMITE MINES, TATA STEEL LTD.

Name of the Mines	Name of the Industry	Contractor Name	IME	PME	TOTAL
SARUABIL CHROMITE MINE	TATA STEEL LTD.	APC DRILLING & CONSTRUCTION PVT. LTD.	13	0	13
SARUABIL CHROMITE MINE	TATA STEEL LTD.	CHROMATIC CONSTRUCTION	10	0	10
SARUABIL CHROMITE MINE	TATA STEEL LTD.	DEPARTMENT	2	0	2
SARUABIL CHROMITE MINE	TATA STEEL LTD.	DHANSAR ENGINEERING CO. PVT. LTD.	1	1	2
SARUABIL CHROMITE MINE	TATA STEEL LTD.	EFFWA INFRA & RESEARCH PVT. LTD.	36	0	36
SARUABIL CHROMITE MINE	TATA STEEL LTD.	NAYAK ENTERPRISES	5	0	5
SARUABIL CHROMITE MINE	TATA STEEL LTD.	POWER ENGINEERING	7	0	7
SARUABIL CHROMITE MINE	TATA STEEL LTD.	RANJAN KUMAR SAHOO	6	0	6
SARUABIL CHROMITE MINE	TATA STEEL LTD.	SECURITY & INTELLIGENCE SERVICES INDIA LTD.	14	0	14
			94	1	95

SUKINDA CHROMITE MINE, TATA STEEL LTD.

Name of the Mines	Name of the Industry	Contractor Name	IME	PME	TOTAL
SUKINDA CHROMITE MINE	TATA STEEL LTD.	A.K. SAMAL & BROTHERS	1	0	1
SUKINDA CHROMITE MINE	TATA STEEL LTD.	ACCESS COMPUTECH PVT. LTD.	1	0	1
SUKINDA CHROMITE MINE	TATA STEEL LTD.	BHUKTA TRANSPORT	2	0	2



SUKINDA CHROMITE MINE	TATA STEEL LTD.	DEPARTMENT	1	0	1
SUKINDA CHROMITE MINE	TATA STEEL LTD.	DHANSAR ENGINEERING CO. PVT. LTD.	0	7	7
SUKINDA CHROMITE MINE	TATA STEEL LTD.	EXIM INFRASTRUCTURE PVT. LTD.	21	0	21
SUKINDA CHROMITE MINE	TATA STEEL LTD.	NARAYANI SONS INDIA PVT. LTD.	17	0	17
SUKINDA CHROMITE MINE	TATA STEEL LTD.	PERINEL TECHNOLOGY PVT. LTD.	7	0	7
SUKINDA CHROMITE MINE	TATA STEEL LTD.	POWER ENGINEERING	3	0	3
SUKINDA CHROMITE MINE	TATA STEEL LTD.	SAIKRUPA ENTERPRISES	2	2	4
SUKINDA CHROMITE MINE	TATA STEEL LTD.	SATYAJIT PATRA	2	0	2
SUKINDA CHROMITE MINE	TATA STEEL LTD.	SECURITY & INTELLIGENCE SERVICES INDIA LTD.	0	4	4
SUKINDA CHROMITE MINE	TATA STEEL LTD.	TATA STEEL UTILITIES & INFRASTRUCTURE SERVICES	13	1	14
SUKINDA CHROMITE MINE	TATA STEEL LTD.	UNITED INFRACORE LTD.	1	0	1
SUKINDA CHROMITE MINES	TATA STEEL LTD.	ATHARV EYE HOSPITAL PVT. LTD.	4	0	4
SUKINDA CHROMITE MINES	TATA STEEL LTD.	SHIVJIVALJI SHEDS PVT. LTD.	18	0	18
			93	14	107





# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-10968

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT AIR QUALITY (CORE ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### AAQMS1- View Point

Monthly Average	PM <sub>10</sub> µg/m <sup>3</sup>	PM <sub>2.5</sub> µg/m <sup>3</sup>	SO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>x</sub> µg/m <sup>3</sup>	CO mg/m <sup>3</sup>	O <sub>3</sub> µg/m <sup>3</sup>	NH <sub>3</sub> µg/m <sup>3</sup>	C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	Benzo(a) Pyrene ng/m <sup>3</sup>	Pb Lead µg/m <sup>3</sup>	As Arsenic ng/m <sup>3</sup>	Ni Nickel ng/m <sup>3</sup>
APRIL-24	62.0	32.9	9.8	15.9	0.52	7.8	BDL	BDL	BDL	BDL	BDL	BDL
MAY-24	61.2	32.1	9.8	15.7	0.51	7.6	BDL	BDL	BDL	BDL	BDL	BDL
JUNE-24	57.8	30.0	9.6	15.0	0.50	7.2	BDL	BDL	BDL	BDL	BDL	BDL
JULY-24	48.6	46.5	8.6	13.5	0.44	7.0	BDL	BDL	BDL	BDL	BDL	BDL
AUG-24	49.2	26.7	8.7	13.5	0.45	6.9	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	47.5	25.8	8.5	13.4	0.48	7.4	BDL	BDL	BDL	BDL	BDL	BDL
AVERAGE	54.4	32.3	9.2	14.5	0.48	7.3	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, PART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART- 10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

  
Reviewed By



  
Approved By:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-10969

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### AMBIENT AIR QUALITY (CORE ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

#### AAQMS2- Paradeep Gate

Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
APRIL-24	64.7	34.2	10.3	17.1	0.54	9.8	BDL	BDL	BDL	BDL	BDL	BDL
MAY-24	63.5	33.6	10.3	16.8	0.52	9.9	BDL	BDL	BDL	BDL	BDL	BDL
JUNE-24	60.1	30.3	9.7	16.8	0.50	9.4	BDL	BDL	BDL	BDL	BDL	BDL
JULY-24	49.0	27.0	9.0	15.6	0.46	8.7	BDL	BDL	BDL	BDL	BDL	BDL
AUG-24	51.2	27.0	9.1	16.1	0.49	8.9	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	51.8	28.9	9.2	16.6	0.50	8.7	BDL	BDL	BDL	BDL	BDL	BDL
AVERAGE	56.7	30.2	9.6	16.5	0.50	9.2	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, PART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART- 10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

  
Reviewed By:



  
Approved By:





Report. No: Envlab/24-25/TR-10970

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT AIR QUALITY (CORE ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### AAQMS3- COB Plant

Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
APRIL-24	65.8	35.4	10.6	16.9	0.62	10.4	BDL	BDL	BDL	BDL	BDL	BDL
MAY-24	65.0	34.5	10.4	16.8	0.60	10.3	BDL	BDL	BDL	BDL	BDL	BDL
JUNE-24	62.1	31.2	9.9	16.3	0.57	10.0	BDL	BDL	BDL	BDL	BDL	BDL
JULY-24	51.1	26.1	9.1	15.3	0.50	9.4	BDL	BDL	BDL	BDL	BDL	BDL
AUG-24	53.4	28.0	9.2	15.1	0.52	9.7	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	54.8	29.4	8.9	15.3	0.54	9.9	BDL	BDL	BDL	BDL	BDL	BDL
AVERAGE	58.7	30.8	9.7	16.0	0.56	10.0	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, PART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART- 10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

Reviewed By:



Approved By:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-10971

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### AMBIENT AIR QUALITY (CORE ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

#### AAQMS4- Laboratory Top

Monthly Average	PM10 µg/m <sup>3</sup>	PM2.5 µg/m <sup>3</sup>	SO <sub>2</sub> µg/m <sup>3</sup>	NO <sub>x</sub> µg/m <sup>3</sup>	CO mg/m <sup>3</sup>	O <sub>3</sub> µg/m <sup>3</sup>	NH <sub>3</sub> µg/m <sup>3</sup>	C <sub>6</sub> H <sub>6</sub> µg/m <sup>3</sup>	Benzo(a) Pyrene ng/m <sup>3</sup>	Pb Lead µg/m <sup>3</sup>	As Arsenic ng/m <sup>3</sup>	Ni Nickel ng/m <sup>3</sup>
APRIL-24	56.4	30.3	11.0	19.6	0.50	11.1	BDL	BDL	BDL	BDL	BDL	BDL
MAY-24	54.8	29.6	10.8	19.2	0.50	9.8	BDL	BDL	BDL	BDL	BDL	BDL
JUNE-24	53.9	28.6	10.7	18.9	0.47	9.4	BDL	BDL	BDL	BDL	BDL	BDL
JULY-24	42.3	21.8	9.4	15.5	0.42	8.9	BDL	BDL	BDL	BDL	BDL	BDL
AUG-24	43.6	24.8	9.6	15.5	0.43	9.1	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	46.4	25.0	9.6	14.9	0.44	9.0	BDL	BDL	BDL	BDL	BDL	BDL
AVERAGE	49.6	26.7	10.2	17.3	0.46	9.6	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, PART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART- 10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

*P. Patil*

Reviewed By:



*P. Patil*

Approved By:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-10972

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT AIR QUALITY (CORE ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### AAQMS5- Nickel Guest House

Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
APRIL-24	55.0	29.4	10.1	14.9	0.5	7.8	21.1	BDL	BDL	BDL	BDL	BDL
MAY-24	53.7	28.7	9.9	14.4	0.5	7.8	20.8	BDL	BDL	BDL	BDL	BDL
JUNE-24	51.9	27.4	9.7	14.1	0.5	7.7	20.7	BDL	BDL	BDL	BDL	BDL
JULY-24	43.3	22.2	8.8	12.9	0.44	7.3	18.1	BDL	BDL	BDL	BDL	BDL
AUG-24	44.8	23.7	9.1	13.0	0.44	7.3	18.8	BDL	BDL	BDL	BDL	BDL
SEPT-24	45.9	24.4	8.8	12.9	0.45	7.4	19.1	BDL	BDL	BDL	BDL	BDL
AVERAGE	49.1	26.0	9.4	13.7	0.47	7.6	19.8	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, PART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART- 10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

  
Reviewed By:



  
Approved By:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-10973

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT AIR QUALITY (CORE ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### AAQMS6- Stack Yard

Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
APRIL-24	64.6	34.6	12.6	20.4	0.51	8.8	BDL	BDL	BDL	BDL	BDL	BDL
MAY-24	62.4	32.6	12.3	20.2	0.51	8.8	BDL	BDL	BDL	BDL	BDL	BDL
JUNE-24	61.2	31.6	12.1	20.2	0.49	8.6	BDL	BDL	BDL	BDL	BDL	BDL
JULY-24	51.9	26.9	11.0	17.6	0.42	8.1	BDL	BDL	BDL	BDL	BDL	BDL
AUG-24	52.1	27.7	11.1	18.2	0.45	8.2	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	55.5	29.5	11.0	18.1	0.44	8.7	BDL	BDL	BDL	BDL	BDL	BDL
AVERAGE	58.0	30.5	11.7	19.1	0.47	8.5	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, PART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART- 10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

*B. B. B.*  
Reviewed By:



*P. Patu*  
Approved By:





Report. No: Envlab/24-25/TR-10974

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT AIR QUALITY (BUFFER ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### AAQBZ-1: Birasal

Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	51.4	26.8	6.0	13.8	0.30	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	50.5	26.9	6.2	14.2	0.27	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	57.0	29.9	10.0	17.7	0.42	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual )	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual )
Method of Testing	IS: 5182, PART- 4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART- 10	CPCB Guideli nes	IS: 5182, PART-22	CPCB Guideli nes	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART- 22

### AAQBZ-2: Maruabil

Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	50.9	27.2	6.4	14.3	0.28	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	48.9	27.5	6.8	14.5	0.30	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	56.7	30.1	10.2	17.9	0.42	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART -4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART- 10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

Reviewed By:



Approved By:

Report. No: Envlab/24-25/TR-10975

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT AIR QUALITY (BUFFER ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

AAQBZ-3: Sendheswar												
Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	52.1	27.8	5.9	14.1	0.31	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	51.1	27.1	6.5	15.4	0.29	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	57.2	30.1	10.1	18.0	0.42	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART-10	CPCB Guidelines	IS: 5182, PART-22	CPCB Guidelines	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

AAQBZ-4: Kanheipal												
Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	49.8	26.8	6.0	14.9	0.31	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	52.2	28.1	6.3	15.1	0.31	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	57.0	30.1	10.1	18.1	0.43	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART-10	CPCB Guidelines	IS: 5182, PART-22	CPCB Guidelines	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

*P. Patil*

Reviewed By:



*P. Patil*

Approved By:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified


Report. No: Envlab/24-25/TR-10976

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT AIR QUALITY (BUFFER ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

AAQBZ-5: Laxmidharpur												
Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	50.6	26.1	5.7	14.6	0.35	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	53.7	28.6	5.9	14.6	0.33	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	57.4	30.1	9.9	17.9	0.44	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART-10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22
AAQBZ-6: Kakudia												
Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	54.2	28.5	5.7	14.1	0.33	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	50.9	26.9	5.8	14.1	0.24	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	57.5	30.2	9.9	17.8	0.42	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART-10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

Reviewed By:   


Approved By:   




Report. No: Envlab/24-25/TR-10977

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT AIR QUALITY (BUFFER ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

AAQBZ-7: Sukrangi												
Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	52.5	27.4	6.2	14.2	0.29	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	50.6	27.5	6.4	14.3	0.28	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	57.2	30.1	10.1	17.8	0.42	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART-10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22
AAQBZ-8: Kaliapani												
Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	51.6	27.2	6.1	13.8	0.30	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	51.7	28.1	6.1	12.9	0.26	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	57.2	30.2	10.0	17.5	0.42	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual)
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART-10	CPCB Guidelin es	IS: 5182, PART-22	CPCB Guidelin es	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

  
Reviewed By:



  
Approved By:





Report. No: Envlab/24-25/TR-10978

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT AIR QUALITY (BUFFER ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

AAQBZ-9: Kalarangi												
Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	53.1	28.1	5.9	13.9	0.31	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	52.3	27.3	6.0	13.2	0.31	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	57.6	30.2	10.0	17.6	0.43	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual )
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART-10	CPCB Guidelines	IS: 5182, PART-22	CPCB Guidelines	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22
AAQBZ-10: Kharkhari												
Monthly Average	PM10 µg/m3	PM2.5 µg/m3	SO2 µg/m3	NOx µg/m3	CO mg/m3	O3 µg/m3	NH3 µg/m3	C6H6 µg/m3	Benzo(a) Pyrene ng/m3	Pb Lead µg/m3	As Arsenic ng/m3	Ni Nickel ng/m3
JUNE-24	51.6	27.6	6.0	14.2	0.32	BDL	BDL	BDL	BDL	BDL	BDL	BDL
SEPT-24	49.8	27.2	6.3	14.4	0.23	BDL	BDL	BDL	BDL	BDL	BDL	BDL
Average	56.9	30.1	10.1	17.8	0.41	BDL	BDL	BDL	BDL	BDL	BDL	BDL
NAAQ Standard	100.00 (24 hours)	60.00 (24 hours)	80.00 (1hours)	80.00 (1 hour)	4.0 (1hour)	180 (1hour)	400 (24 hours)	5 (Annual)	1 (Annual)	1 (24 hours)	6 (Annual)	20 (Annual )
Method of Testing	IS: 5182, PART-4, 23	IS: 5182, P ART-4, 23	IS: 5182, PART-2	IS: 5182, PART-6	IS: 5182, PART-10	CPCB Guidelines	IS: 5182, PART-22	CPCB Guidelines	IS: 5182, PART-12	IS: 5182, PART-12	IS: 5182, PART-22	IS: 5182, PART-22

Reviewed By:   


Approved By:   




Report. No: Envlab/24-25/TR-10979

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) STACK EMISSION MONITORING REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### Stack-1: 500 KVA DG

Parameters	CPCB Standard for DG $\geq$ 800KW ( $\geq$ 1000KVA)	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
Stack Temp °C	--	187	186	184	176	178	175	181
Stack Velocity m/sec	--	16.2	16	15.7	14.2	14.6	14.2	15.15
Particulate Matter (PM), mg/Nm <sup>3</sup>	75 mg/Nm <sup>3</sup>	63	64	63	60	62	65	62.8
Oxides of Nitrogen (NO <sub>x</sub> ), ppm	710 ppm	60	60	62	58	60	61	60.2
Sulphur Dioxide (SO <sub>2</sub> ), ppm	--	20.3	20.1	19.5	18.1	17.8	16.9	18.78
Carbon Monoxide, mg/Nm <sup>3</sup>	150 mg/Nm <sup>3</sup>	70	70	69	63	58	65	65.8
Non Methyl Hydro Carbon as C, mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>	28.9	28.6	28.2	26.8	26.2	27.6	27.72

### Stack-2: 500 KVA DG

Parameters	CPCB Standard for DG $\geq$ 800KW ( $\geq$ 1000KVA)	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
Stack Temp °C	--	189	187	186	174	176	173	181
Stack Velocity m/sec	--	16.1	15.9	16.0	14.6	14.5	14.4	15.25
Particulate Matter (PM), mg/Nm <sup>3</sup>	75 mg/Nm <sup>3</sup>	65	63	61	61	61	62	62.2
Oxides of Nitrogen (NO <sub>x</sub> ), ppm	710 ppm	62	61	61	60	58	60	60.3
Sulphur Dioxide (SO <sub>2</sub> ), ppm	--	20.8	20.5	20.3	17.8	17.6	17.1	19.02
Carbon Monoxide, mg/Nm <sup>3</sup>	150 mg/Nm <sup>3</sup>	71	72	70	61	60	62	66.0
Non Methyl Hydro Carbon as C, mg/Nm <sup>3</sup>	100 mg/Nm <sup>3</sup>	29.3	29.1	28.6	27.1	26.8	26.2	27.85

Reviewed By:



Approved By:



Report. No: Envlab/24-25/TR-10980

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) GROUND WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### GW1: Tube well Water in front of Main Gate

Sl. No	Parameter	Unit of Measurement	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 25 degree C	--	7.23	7.22	7.19	7.21	7.25	7.28	7.23
2	Turbidity	NTU	<1.0	<1.0	<1.0	1.2	1.2	1.2	1.2
3	Total Hardness	mg/l	172	178	180	188	182	162	177.0
4	Alkalinity	mg/l	90	89	88	90	94	98	91.5
5	Total Dissolved Solids	mg/l	288	282	284	290	285	282	285.2
6	Chloride as Cl	mg/l	32.3	31.9	32.2	32.9	31.9	30.6	32.0
7	Residual free Chlorine	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Dissolve Oxygen	mg/l	4.2	4.4	4.6	4.8	5.0	4.6	4.60
9	Calcium as Ca	mg/l	32.6	32.2	31.6	31.5	32.6	33.2	32.28
10	Magnesium as Mg	mg/l	22.0	23.7	24.6	26.6	24.4	19.2	23.42
11	Sulphate as SO <sub>4</sub>	mg/l	8.9	8.6	8.5	8.7	7.6	8.0	8.38
12	Fluoride as F	mg/l	0.11	0.11	0.12	0.13	0.15	0.15	0.13
13	Nitrate	mg/l	1.21	1.23	1.21	1.24	1.26	1.31	1.24
14	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
15	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
17	Iron as Fe	mg/l	0.23	0.24	0.22	0.24	0.23	0.24	0.23
18	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
20	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Manganese (as Mn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Cadmium (as Cd)	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
24	Boron (as B)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Mineral Oil	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Reviewed By:



Approved By:





# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-10981

Date: 26.10.2024

## GW2: Tube well Near Market Complex

Sl. No	Parameter	Unit of Measurement	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 25 degree C	--	7.27	7.26	7.22	7.24	7.28	7.33	7.27
2	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3	Total Hardness	mg/l	158	160	168	172	176	157	165.2
4	Alkalinity	mg/l	102	104	112	108	102	100	104.7
5	Total Dissolved Solids	mg/l	264	260	263	274	272	291	270.7
6	Chloride as Cl	mg/l	30.9	30.7	30.9	31.5	30.8	31.2	31.0
7	Residual free Chlorine	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Dissolve Oxygen	mg/l	4.0	4.2	4.4	4.6	4.4	4.2	4.30
9	Calcium as Ca	mg/l	31.9	31.8	30.8	31.1	31.8	31.9	31.55
10	Magnesium as Mg	mg/l	19.0	19.6	22.1	22.9	23.5	18.8	20.98
11	Sulphate as SO <sub>4</sub>	mg/l	9.5	9.2	9.0	9.1	8.2	7.6	8.77
12	Fluoride as F	mg/l	0.1	0.1	0.13	0.15	0.14	0.14	0.13
13	Nitrate	mg/l	1.32	1.3	1.28	1.30	1.32	1.35	1.31
14	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
15	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
17	Iron as Fe	mg/l	0.27	0.26	0.24	0.25	0.27	0.26	0.26
18	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
20	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Manganese (as Mn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Cadmium (as Cd)	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
24	Boron (as B)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Mineral Oil	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

*B. Bal*

Reviewed By:



*P. Patil*

Approved By:





Report. No: Envlab/24-25/TR-10982

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) SURFACE WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### SW1: Damsala Nallah Upstream Water

Sl. No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAG E
1	Colour (max)	Hazen	<15	<15	<15	<20	<20	<20	<20
2	pH Value	--	7.35	7.30	7.32	7.29	7.31	7.23	7.30
3	Suspended solids	mg/l	92	94	92	98	96	92	94.0
4	Dissolved Oxygen (minimum)	mg/l	4.4	4.6	4.4	4.6	4.8	5.2	4.7
5	Turbidity	NTU	12.1	12.5	11.6	13.5	14.1	15.5	13.2
6	Chloride (max)	mg/l	30.2	31.5	31.2	32.3	31.8	30.6	31.3
7	Total Dissolved Solids	mg/l	230	228	230	242	246	267	240.5
8	BOD (3) days at 270C (max)	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9	Arsenic as As	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
10	Lead as Pb(max)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
11	Cadmium as Cd (max)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
12	Hexa Chromium as Cr +6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
13	Copper as Cu (max)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
14	Zinc as Zn(max)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
15	Selenium as Se (max)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
16	Cyanide as CN (max)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
17	Fluoride as F (max)	mg/l	0.15	0.17	0.19	0.21	0.20	0.23	0.19
18	Sulphates (SO4) (max)	mg/l	0.42	0.41	0.39	0.40	0.44	0.46	0.42
19	Phenolic Compounds as C6H5OH (max)	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
20	Iron as Fe (max)	mg/l	0.21	0.23	0.22	0.23	0.25	0.26	0.23
21	Nitrate as NO3, (max)	mg/l	2.5	2.3	2.2	2.4	2.6	2.4	2.40
22	Anionic Detergents (max)	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
23	Total Coli form	MPN/ 100 ml	660	640	660	680	640	620	650

Reviewed By



Approved By:





# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-10983

Date: 26.10.2024

## SW2: Damsala Nallah Downstream Water

Sl. No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	Colour (max)	Hazen	<10	<10	<10	<15	<15	<15	<15
2	pH Value	--	7.28	7.27	7.26	7.24	7.26	7.31	7.27
3	Suspended solids	mg/l	96	96	94	102	110	114	102.0
4	Dissolved Oxygen (minimum)	mg/l	7.2	7.4	6.8	6.2	6.0	6.0	6.6
5	Turbidity	NTU	13.8	13.6	13.1	15.2	16.7	18.7	15.2
6	Chloride (max)	mg/l	33.6	34.2	33.5	33.9	32.5	31.8	33.3
7	Total Dissolved Solids	mg/l	258	254	246	251	289	291	264.8
8	BOD (3) days at 270C (max)	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9	Arsenic as As	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
10	Lead as Pb(max)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
11	Cadmium as Cd (max)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
12	Hexa Chromium as Cr +6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
13	Copper as Cu (max)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
14	Zinc as Zn(max)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
15	Selenium as Se (max)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
16	Cyanide as CN (max)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
17	Fluoride as F (max)	mg/l	0.21	0.22	0.23	0.24	0.23	0.27	0.23
18	Sulphates (SO4) (max)	mg/l	0.5	0.53	0.51	0.53	0.56	0.52	0.53
19	Phenolic Compounds as C6H5OH (max)	mg/l	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
20	Iron as Fe (max)	mg/l	0.28	0.27	0.26	0.25	0.27	0.28	0.27
21	Nitrate as NO3, (max)	mg/l	3.1	2.9	2.6	2.9	3.0	3.2	2.95
22	Anionic Detergents (max)	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
23	Total Coli form	MPN/100 ml	720	720	740	740	720	740	730

*[Signature]*

Reviewed By:



*[Signature]*

Approved By:



Report. No: Envlab/24-25/TR- 10984

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### DRINKING WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

#### DW1-Water Before Treatment at WTP

Sl. No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 250C	--	7.20	7.21	7.15	7.19	7.21	7.17	7.19
2	Colour	Hazen	<5	<5	<5	<5	<5	<5	<5
3	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Total Hardness	mg/l	182.0	188.0	185.0	186.0	178.0	182.0	183.5
5	Turbidity	NTU	1.5	1.4	1.3	1.2	1.1	1.3	1.3
6	Total Dissolved Solids	mg/l	320	326	322	341	348	356	335.5
7	Chloride as Cl	mg/l	32.6	31.8	31.3	31.7	32.1	31.6	31.9
8	Dissolve Oxygen	mg/l	5.0	5.1	5.0	5.2	5.4	5.2	5.2
9	Calcium as Ca	mg/l	32.8	32.2	32.6	32.3	32.8	32.9	32.60
10	Magnesium as Mg	mg/l	24.32	26.15	25.17	25.60	23.35	24.26	24.81
11	Sulphate as SO4	mg/l	6.2	6.0	5.8	5.8	5.3	4.6	5.62
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Iron as Fe	mg/l	0.24	0.24	0.23	0.25	0.24	0.25	0.24
14	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Pesticide	mg/l	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Total Coli form	MPN/100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Nickel (as Ni)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Total alkalinity as CaCO3	mg/l	92	94	96	98	94	96	95
21	Manganese as Mn	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Free Residual Chlorine	mg/l	ND	ND	ND	ND	ND	ND	ND
23	Anionic Detergents	mg/l	ND	ND	ND	ND	ND	ND	ND
24	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Aluminium (as Al)	mg/l	<0.02	<0.02	<0.03	<0.03	<0.03	<0.03	<0.03
26	Taste	mg/l	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Reviewed By:



Approved By:



Report. No: Envlab/24-25/TR-10985

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### DRINKING WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

#### DW2- Water After Treatment at WTP

Sl. No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAG E
1	pH at 250C	--	7.24	7.25	7.22	7.23	7.18	7.23	7.23
2	Colour	Hazen	<5	<5	<5	<5	<5	<5	<5
3	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Total Hardness	mg/l	193.0	194.0	190.0	190.0	192.0	198.0	192.8
5	Turbidity	NTU	1.4	1.3	1.1	1.0	1.0	1.5	1.2
6	Total Dissolved Solids	mg/l	308	310	308	320	325	330	316.8
7	Chloride as Cl	mg/l	30.8	30.6	30.8	30.9	30.8	30.5	30.7
8	Dissolve Oxygen	mg/l	5.4	5.3	5.2	4.9	4.6	4.8	5.0
9	Calcium as Ca	mg/l	30.9	30.8	31.9	34.9	30.9	31.5	31.82
10	Magnesium as Mg	mg/l	28.15	28.45	26.81	24.99	27.91	29.00	27.55
11	Sulphate as SO4	mg/l	5.8	5.7	5.3	5.3	5.0	5.0	5.35
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Iron as Fe	mg/l	0.21	0.21	0.22	0.21	0.21	0.20	0.21
14	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Pesticide	mg/l	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Total Coli form	MPN/100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Nickel (as Ni)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Total alkalinity as CaCO3	mg/l	90	90	92	90	88	82	89
21	Manganese as Mn	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Free Residual Chlorine	mg/l	ND	ND	ND	ND	ND	ND	ND
23	Anionic Detergents	mg/l	ND	ND	ND	ND	ND	ND	ND
24	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Aluminium (as Al)	mg/l	<0.02	<0.02	<0.03	<0.03	<0.03	<0.03	<0.03
26	Taste	mg/l	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Reviewed By:



Approved By:







Report. No: Envlab/24-25/TR-10986

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### DRINKING WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

#### DW3- Water near Jagannath Temple

Sl. No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAG E
1	pH at 250C	--	7.19	7.20	7.14	7.16	7.20	7.21	7.18
2	Colour	Hazen	<5	<5	<5	<5	<5	<5	<5
3	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Total Hardness	mg/l	187.0	190.0	193.0	176.0	175.0	177.0	183.0
5	Turbidity	NTU	1.5	1.5	1.2	1.3	1.2	1.1	1.3
6	Total Dissolved Solids	mg/l	324	322	317	318	320	318	319.8
7	Chloride as Cl	mg/l	31.5	32.4	31.9	32.4	32.5	33.5	32.4
8	Dissolve Oxygen	mg/l	5.0	5.1	4.8	5	5.2	5.0	5.0
9	Calcium as Ca	mg/l	31.2	31.6	33.5	30.5	31.6	33	31.90
10	Magnesium as Mg	mg/l	26.51	27.00	26.57	24.26	23.35	22.99	25.11
11	Sulphate as SO4	mg/l	6.0	6.1	6.2	6.0	5.6	5.2	5.85
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Iron as Fe	mg/l	0.25	0.23	0.21	0.26	0.25	0.23	0.24
14	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Pesticide	mg/l	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Total Coli form	MPN/100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Nickel (as Ni)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Total alkalinity as CaCO3	mg/l	89	92	94	93	92	90	92
21	Manganese as Mn	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Free Residual Chlorine	mg/l	ND	ND	ND	ND	ND	ND	ND
23	Anionic Detergents	mg/l	ND	ND	ND	ND	ND	ND	ND
24	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Aluminium (as Al)	mg/l	<0.02	<0.02	<0.03	<0.03	<0.03	<0.03	<0.03
26	Taste	mg/l	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Reviewed By:



Approved By:





Report. No: Envlab/24-25/TR-10987

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### DRINKING WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

#### DW4-Water near Stack Yard

Sl. No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAG E
1	pH at 250C	--	7.22	7.21	7.23	7.25	7.29	7.30	7.25
2	Colour	Hazen	<5	<5	<5	<5	<5	<5	<5
3	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Total Hardness	mg/l	182.0	187.0	186.0	190.0	196.0	182.0	187.2
5	Turbidity	NTU	1.8	1.7	1.4	1.2	1.1	1.3	1.4
6	Total Dissolved Solids	mg/l	318	315	313	323	316	324	318.2
7	Chloride as Cl	mg/l	30.6	30.8	31.4	30.6	31.2	31.7	31.1
8	Dissolve Oxygen	mg/l	5.4	4.9	4.6	5.0	5.0	5.3	5.0
9	Calcium as Ca	mg/l	32.4	32.4	32.1	31.6	33.5	31.7	32.28
10	Magnesium as Mg	mg/l	24.57	25.78	25.72	27.00	27.30	24.99	25.89
11	Sulphate as SO4	mg/l	5.9	5.6	5.9	5.8	4.9	4.4	5.42
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Iron as Fe	mg/l	0.24	0.22	0.23	0.24	0.22	0.21	0.23
14	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Pesticide	mg/l	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Total Coli form	MPN/100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Nickel (as Ni)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Total alkalinity as CaCO3	mg/l	84	88	90	91	94	96	91
21	Manganese as Mn	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Free Residual Chlorine	mg/l	ND	ND	ND	ND	ND	ND	ND
23	Anionic Detergents	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
24	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Aluminium (as Al)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
26	Taste	mg/l	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Reviewed By:



Approved By:



Report. No: Envlab/24-25/TR-10988

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) DRINKING WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### DW5- Water near COB Plant

Sl. No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAG E
1	pH at 250C	--	7.17	7.19	7.16	7.18	7.21	7.23	7.19
2	Colour	Hazen	<5	<5	<5	<5	<5	<5	<5
3	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Total Hardness	mg/l	190.0	193.0	190.0	184.0	190.0	168.0	190
5	Turbidity	NTU	1.9	1.6	1.3	1.1	1.3	1.4	1.9
6	Total Dissolved Solids	mg/l	326	323	320	336	337	340	326
7	Chloride as Cl	mg/l	32.3	31.4	32.3	33.2	30.9	30.3	32.3
8	Dissolve Oxygen	mg/l	5.6	5.4	5.2	4.8	4.8	5.1	5.6
9	Calcium as Ca	mg/l	30.6	31.3	31.6	32.3	31.7	32.6	30.6
10	Magnesium as Mg	mg/l	27.60	27.91	27.00	25.11	26.94	21.04	27.6
11	Sulphate as SO4	mg/l	5.7	5.8	5.4	5.6	5.7	5.1	5.7
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Iron as Fe	mg/l	0.21	0.24	0.20	0.22	0.23	0.22	0.22
14	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Pesticide	mg/l	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Total Coli form	MPN/100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Nickel (as Ni)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Total alkalinity as CaCO3	mg/l	90	92	88	89	90	94	91
21	Manganese as Mn	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Free Residual Chlorine	mg/l	ND	ND	ND	ND	ND	ND	ND
23	Anionic Detergents	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
24	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Aluminium (as Al)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
26	Taste	mg/l	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Reviewed By:



Approved By:





Report. No: Envlab/24-25/TR-10989

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### DRINKING WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,

M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

#### DW6- Water from TSL Canteen

Sl. No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAG E
1	pH at 250C	--	7.20	7.22	7.24	7.20	7.23	7.20	7.22
2	Colour	Hazen	<5	<5	<5	<5	<5	<5	<5
3	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Total Hardness	mg/l	168.0	170.0	186.0	182.0	188.0	172.0	177.7
5	Turbidity	NTU	1.8	1.5	1.1	1.4	1.2	1.2	1.4
6	Total Dissolved Solids	mg/l	314	312	310	318	324	326	317.3
7	Chloride as Cl	mg/l	31.9	32.3	31.8	32.1	29.8	30.6	31.4
8	Dissolve Oxygen	mg/l	5.4	5.2	4.8	4.6	5.0	5.3	5.1
9	Calcium as Ca	mg/l	32.4	31.8	31.6	31.8	32.5	34.2	32.38
10	Magnesium as Mg	mg/l	21.16	22.01	26.02	24.93	25.96	21.04	23.52
11	Sulphate as SO4	mg/l	5.8	5.4	5.1	5.5	5.2	5.0	5.33
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Iron as Fe	mg/l	0.25	0.25	0.22	0.24	0.25	0.23	0.24
14	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
17	Pesticide	mg/l	Absent	Absent	Absent	Absent	Absent	Absent	Absent
18	Total Coli form	MPN/100 ml	Absent	Absent	Absent	Absent	Absent	Absent	Absent
19	Nickel (as Ni)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Total alkalinity as CaCO3	mg/l	88	86	90	92	96	98	92
21	Manganese as Mn	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Free Residual Chlorine	mg/l	ND	ND	ND	ND	ND	ND	ND
23	Anionic Detergents	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
24	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Aluminium (as Al)	mg/l	<0.03	<0.03	<0.03	7.20	<0.03	<0.03	<0.03
26	Taste	mg/l	Agreeable	Agreeable	Agreeable	<5	Agreeable	Agreeable	Agreeable

Reviewed By:



Approved By:







Report. No: Envlab/24-25/TR-10990

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### WASTE WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

WW-1: ETP Inlet									
Sl No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 25.0C	-	7.18	7.16	7.18	7.17	7.37	7.15	7.20
2	Colour	Hazen	<15	<15	<15	<15	<15	<15	<15
3	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Temperature	°C	28.5	27.5	27.9	26.5	25.6	24.9	26.8
5	Suspended Solids	mg/l	40.28	38.61	38.21	38.74	38.65	39.59	39.0
6	Total Residual Chlorine	mg/l	0.23	0.22	0.21	0.2	0.21	0.23	0.22
7	Oil & Grease	mg/l	3.6	3.8	3.7	3.8	3.6	3.8	3.7
8	Biochemical Oxygen Demand as BOD at 270C for 3 days	mg/l	24.0	26.0	24.0	26.0	28.0	26.0	25.7
9	Chemical Oxygen Demand as COD	mg/l	96.0	98.0	96.0	102.0	110.0	108.0	101.7
10	Amm. Nitrogen (as N)	mg/l	2.3	2.2	2.24	2.19	2.18	2.23	2.22
11	Total Kjeldhal Nitrogen	mg/l	5.4	5.6	5.4	5.5	5.6	5.8	5.55
12	Free Ammonia	mg/l	0.026	0.024	0.022	0.026	0.025	0.023	0.024
13	Nitrate as NO3	mg/l	1.22	1.23	1.22	1.25	1.24	1.26	1.24
14	Diss. Phosphate (as P)	mg/l	0.64	0.66	0.64	0.61	0.58	0.49	0.60
15	Fluoride (as F)	mg/l	0.35	0.37	0.36	0.38	0.35	0.31	0.35
16	Sulphide (as S2-)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Phenolic Compound	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Hexavalent Chromium as Cr +6	mg/l	2.81	2.66	2.53	2.35	0.23	2.27	2.14
20	Mercury (as Hg)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
21	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
22	Lead (as Pb)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Total Chromium (as Cr)	mg/l	3.46	3.38	3.31	3.08	3.13	3.09	3.24
25	Copper (as Cu)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
27	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
28	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Manganese (as Mn)	mg/l	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
30	Iron (as Fe)	mg/l	0.31	0.33	0.32	0.35	0.31	0.32	0.32
31	Vanadium (as V)	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
32	Bio-assay Test	%	92%	93%	92%	91%	90%	91%	92%
33	Particle Size of Suspended Solids	µ	< 850	< 850	< 850	< 850	< 850	< 850	< 850
34	Pesticide	mg/l	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Reviewed By:



Approved By:





# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-10991

Date: 26.10.2024

## WW-2: ETP Outlet

Sl No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 25.0C	-	7.3	7.34	7.30	7.37	7.87	7.77	7.49
2	Colour	Hazen	<5	<5	<5	<5	<5	<5	<15
3	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Temperature	°C	29.4	28.1	28.5	27.1	26.1	26.5	27.6
5	Suspended Solids	mg/l	1.60	1.59	1.55	1.28	1.64	1.54	1.53
6	Total Residual Chlorine	mg/l	0.20	0.23	0.24	0.22	0.24	0.24	0.23
7	Oil & Grease	mg/l	2.8	2.6	2.5	2.6	2.8	3.2	2.8
8	Biochemical Oxygen Demand as BOD at 270C for 3 days	mg/l	<1	<1	<1	<1	<1	<1	<1
9	Chemical Oxygen Demand as COD	mg/l	<4	<4	<4	<4	<4	<4	<4
10	Amm. Nitrogen (as N)	mg/l	0.54	0.52	0.51	0.53	0.51	0.54	0.53
11	Total Kjeldhal Nitrogen	mg/l	3.2	3.4	3.2	3.1	3.0	3.1	3.2
12	Free Ammonia	mg/l	0.031	0.030	0.028	0.022	0.021	0.022	0.026
13	Nitrate as NO3	mg/l	1.26	1.27	1.26	1.23	0.22	0.23	0.91
14	Diss. Phosphate (as P)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Fluoride (as F)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
16	Sulphide(as S2-)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Phenolic Compound	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
20	Mercury (as Hg)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
21	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
22	Lead (as Pb)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
25	Copper (as Cu)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
27	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
28	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Manganese (as Mn)	mg/l	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
30	Iron (as Fe)	mg/l	0.26	0.26	0.24	0.29	0.28	0.27	0.27
31	Vanadium( as V)	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
32	Bio-assay Test	%	91%	91%	90%	92%	93%	93%	92%
33	Particle Size of Suspended Solids	µ	< 850	< 850	< 850	< 850	< 850	< 850	< 850
34	Pesticide	mg/l	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Reviewed By:



Approved By:





Report. No: Envlab/24-25/TR-10992

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### WASTE WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,

M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

#### WW3-Oil Separation Pit Inlet

Sl. No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAG E
1	pH at 25.0C	-	7.18	7.20	7.22	7.20	7.25	7.31	7.23
2	Colour	Hazen	<20	<20	<20	<20	<20	<20	<15
3	Odour	--	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Temperature	°C	26.8	27.3	27.2	25.9	25.1	25.12	26.2
5	Suspended Solids	mg/l	160	167	162	160	162	168	163
6	Total Residual Chlorine	mg/l	0.24	0.21	0.22	0.22	0.24	0.22	0.23
7	Oil & Grease	mg/l	6.8	7.0	6.8	6.6	6.4	6.2	6.6
8	Biochemical Oxygen Demand as BOD at 270C for 3 days	mg/l	22.0	24.0	26.0	24.0	26.0	24.0	24.33
9	Chemical Oxygen Demand as COD	mg/l	84.0	82.0	102.0	98.0	108.0	120.0	99.0
10	Amm. Nitrogen (as N)	mg/l	1.39	1.36	1.33	1.29	1.32	1.23	1.320
11	Total Kjeldhal Nitrogen	mg/l	4.3	4.2	4.4	4.3	4.5	4.1	4.30
12	Free Ammonia	mg/l	0.024	0.025	0.024	0.023	0.024	0.023	0.024
13	Nitrate as NO3	mg/l	1.16	1.18	1.17	1.15	1.20	1.19	1.18
14	Diss. Phosphate (as P)	mg/l	0.51	0.53	0.51	0.53	0.56	0.52	0.53
15	Fluoride (as F)	mg/l	0.31	0.32	0.31	0.3	0.32	0.29	0.31
16	Sulphide(as S2-)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Phenolic Compound	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Hexavalent Chromium as Cr +6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
20	Mercury (as Hg)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
21	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
22	Lead (as Pb)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Total Chromium (as Cr)	mg/l	0.24	0.22	0.20	0.23	0.24	0.25	0.23
25	Copper (as Cu)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
27	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
28	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Manganese (as Mn)	mg/l	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
30	Iron (as Fe)	mg/l	0.31	0.31	0.30	0.28	0.29	0.28	0.30
31	Vanadium( as V)	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
32	Bio-assay Test	%	91%	90%	90%	92%	92%	90%	91%
33	Particle Size of Suspended Solids	μ	<850	<850	<850	<850	<850	<850	< 850
34	Pesticide	mg/l	Absent	Absent	Absent	Absent	Absent	Absent	Absent

Reviewed By:




Approved By:



Report. No: Envlab/24-25/TR-10993

Date: 26.10.2024

WW4-Oil Separation Pit Outlet									
Sl No	Parameter	Unit	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 25.0C	Unit	7.25	7.26	7.27	7.25	7.31	7.26	7.27
2	Colour	-	<5	<5	<5	<5	<5	<5	<15
3	Odour	Hazen	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Temperature	--	28.7	28.4	28.8	27.6	25.9	26.1	27.6
5	Suspended Solids	°C	32.1	33.2	32.8	31.6	32.4	30.9	32
6	Total Residual Chlorine	mg/l	ND	ND	ND	ND	ND	ND	ND
7	Oil & Grease	mg/l	1.4	1.2	1.3	1.4	1.8	2.2	1.55
8	Biochemical Oxygen Demand as BOD at 270C for 3 days	mg/l	<1	<1	<1	<1	<1	<1	<1
9	Chemical Oxygen Demand as COD	mg/l	<4	<4	<4	<4	<4	<4	<4
10	Amm. Nitrogen (as N)	mg/l	0.41	0.40	0.42	0.44	0.46	0.48	0.44
11	Total Kjeldhal Nitrogen	mg/l	2.2	2.0	2.1	2.5	2.8	2.5	2.35
12	Free Ammonia	mg/l	0.021	0.022	0.021	0.02	0.022	0.019	0.021
13	Nitrate as NO3	mg/l	0.33	0.32	0.33	0.32	0.31	0.30	0.32
14	Diss. Phosphate (as P)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
15	Fluoride (as F)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
16	Sulphide (as S2-)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Phenolic Compound	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
20	Mercury (as Hg)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
21	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
22	Lead (as Pb)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
25	Copper (as Cu)	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
27	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
28	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Manganese (as Mn)	mg/l	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
30	Iron (as Fe)	mg/l	0.32	0.29	0.27	0.25	0.22	0.24	0.27
31	Vanadium (as V)	mg/l	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
32	Bio-assay Test	mg/l	90%	91%	92%	91%	90%	92%	91%
33	Particle Size of Suspended Solids	%	<850	<850	<850	<850	<850	<850	< 850
34	Pesticide	μ	Absent	Absent	Absent	Absent	Absent	Absent	Absent

  
Reviewed By



  
Approved By:





Report. No: Envlab/24-25/TR-10994

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) WASTE WATER QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

### WW-5 : STP Inlet

Sl. No	Parameter	Unit of Measurement	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 250C		7.20	7.21	7.23	7.20	7.18	7.21	7.21
2	Suspended Solids	-	48	46	44	48	46	52	47.33
3	Oil & Grease	mg/l	5.2	5.4	5.6	5.8	5.6	5.8	5.57
4	Biochemical Oxygen Demand as BOD at 270C For 3 days	mg/l	14.0	16.0	18.0	20.0	22.0	26.0	19.33
5	Chemical Oxygen Demand as COD	mg/l	54.0	62.0	75.0	82.0	86.0	88.0	74.50
6	Hexavalent Chromium as Cr +6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
7	Total Chromium (as Cr)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Fecal Coliform	MPN/100 ml	240	220	220	240	260	240	236

### WW-6 : STP Outlet

Sl. No	Parameter	Unit of Measurement	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 250C		7.24	7.25	7.25	7.25	7.25	7.25	7.25
2	Suspended Solids	-	1.51	1.53	1.51	1.46	1.51	1.56	1.51
3	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND	ND
4	Biochemical Oxygen Demand as BOD at 270C For 3 days	mg/l	3.6	3.8	4.0	4.4	4.6	5.0	4.2
5	Chemical Oxygen Demand as COD	mg/l	15.0	16.0	18.0	18.0	20.0	21.0	18.0
6	Hexavalent Chromium as Cr +6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
7	Total Chromium (as Cr)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Fecal Coliform	MPN/100 ml	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8	<1.8

Reviewed By:



Approved By:



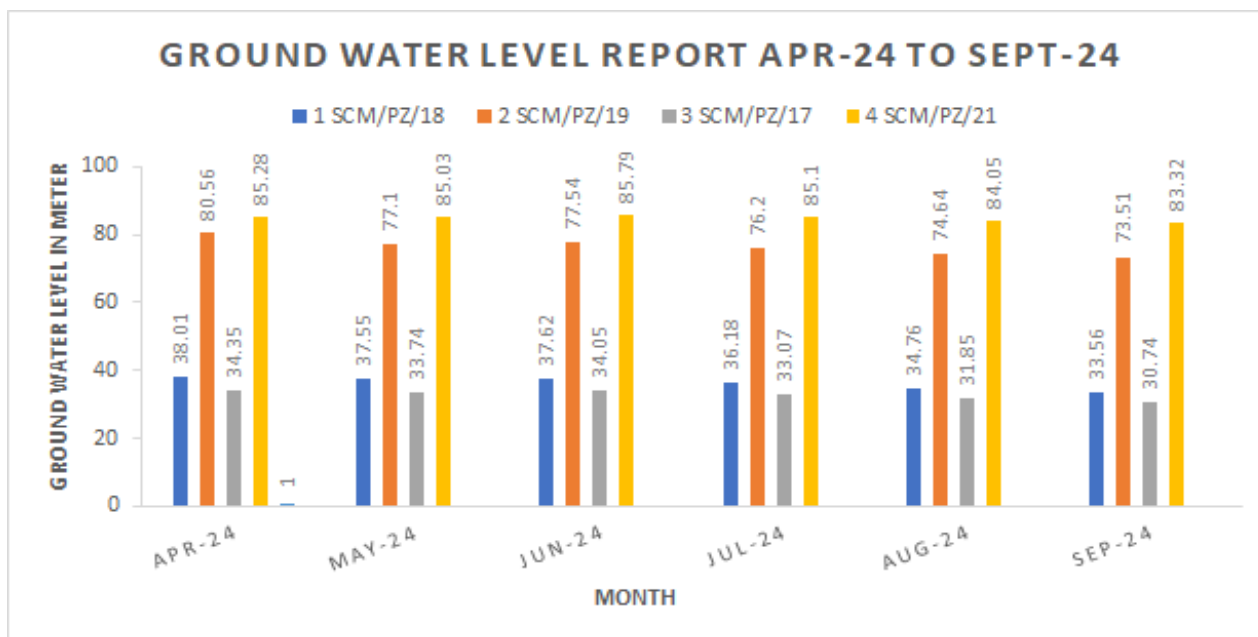
Report. No: Envlab/24-25/TR-10995

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) GROUND WATER LEVEL MONITORING REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

Sl. No	Parameter	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	Average
1	SCM/PZ/18	38.01	37.55	37.62	36.18	34.76	33.56	36.28
3	SCM/PZ/19	80.56	77.10	77.54	76.20	74.64	73.51	76.59
4	SCM/PZ/17	34.35	33.74	34.05	33.07	31.85	30.74	32.97
5	SCM/PZ/21	85.28	85.03	85.79	85.10	84.05	83.32	84.8



Reviewed By: 



Approved By: 



Report. No: Envlab/24-25/TR-10996


Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) PERSONAL DUST LEVEL MONITORING

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

Personal Respirable Dust (mg/m <sup>3</sup> )								
Sl. No	Monitoring Location	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	Average
1	SATYABRATA RAY	0.50	0.51	0.49	0.44	0.43	0.45	0.47
2	TRINATH DHIR	0.48	0.49	0.47	0.42	0.44	0.41	0.45
3	BIDYADHAR DHIR	0.45	0.44	0.45	0.39	0.40	0.39	0.42
4	BIJAYA BEHERA	0.49	0.48	0.46	0.41	0.39	0.42	0.44
5	SAMIR LENKA	0.47	0.45	0.43	0.40	0.42	0.43	0.43

Respirable free Silica (%)								
Sl. No	Monitoring Location	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	Average
1	SATYABRATA RAY	2.6	2.8	2.6	2.3	2.2	2.5	2.50
2	TRINATH DHIR	2.4	2.3	2.5	2.0	1.9	2.0	2.18
3	BIDYADHAR DHIR	2.6	2.7	2.7	2.4	2.3	2.1	2.47
4	BIJAYA BEHERA	2.9	2.8	2.6	2.2	2.4	2.6	2.58
5	SAMIR LENKA	2.5	2.4	2.4	2.1	2.2	2.4	2.33



Reviewed By:



  
Approved By:



Report. No: Envlab/24-25/TR-10997

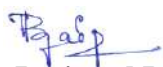
Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) PERSONAL NOISE LEVEL MONITORING

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha


### Day Time (6.00am to 10.00pm) Noise Level in dB(A)

Sl. No	Monitoring Location	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	Average
1	SATYABRATA RAY	62.9	61.2	58.6	56.2	55.4	54.2	58.1
2	TRINATH DHIR	63.4	60.5	60.1	61.5	60.9	58.3	60.8
3	BIDYADHAR DHIR	62.9	60.3	57.9	55.8	53.8	56.2	57.8
4	BIJAYA BEHERA	55.1	55.8	55.6	57.4	55.7	54.7	55.7
5	SAMIR LENKA	56.3	56.1	55.1	53.9	53.6	54.1	54.9



Reviewed By:





Approved By:





Report. No: Envlab/24-25/TR-10998

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### AMBIENT NOISE MONITORING REPORT

Name & Address of the Client : Sukinda Chromite Block,

M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

Noise Level in dB(A), Day Time								
COLONY AREA								
Sl. No	Location	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	Average
1	Main Gate	59.6	60.2	57.2	56.1	55.3	56.3	57.5
2	Market Complex	54.1	58.4	55.6	54.6	54.8	53.7	55.2
3	Security Control Room	45.4	43.2	46.2	45.3	44.7	45.4	45.0
4	Post office	41.8	40.4	40.3	39.2	40.4	41.2	40.6
5	Study Center	38.7	41.3	37.9	36.5	35.5	34.8	37.5
6	WTP	42.2	43.6	41.6	40.4	41.5	39.8	41.52
7	STP	43.4	44.1	44.2	42.6	44.8	42.6	43.62
8	Shishu Mandir	37.4	36.5	36.8	34.1	35.1	36.2	36.02
9	Children Park	40.6	39.4	41.5	37.8	38.7	37.1	39.18
10	3 RSF Quarters	38.4	37.5	39.7	38.2	37.6	37.5	38.2

Noise Level in dB(A), Night Time								
COLONY AREA								
Sl. No	Location	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	Average
1	Main Gate	56.4	56.8	55.4	53.3	52.5	52.5	54.5
2	Market Complex	50.6	53.5	52.1	51.2	50.2	50.8	51.4
3	Security Control Room	41.8	40.6	42.8	41.4	41.4	42.6	41.8
4	Post office	38.1	37.2	36.6	35.8	37.4	38.9	37.3
5	Study Center	34.3	38.1	34.3	32.6	32.4	31.6	33.9
6	WTP	38.3	38.6	38.5	37.5	38.6	37.5	38.2
7	STP	39.4	39.9	40.7	39.1	40.8	39.7	39.9
8	Shishu Mandir	32.1	32.6	33.2	31.2	32.2	33.1	32.4
9	Children Park	35.9	36.2	38.4	33.4	34.5	35.2	35.6
10	3 RSF Quarters	36.1	34.1	36.6	35.2	34.7	34.5	35.2

Reviewed By:



Approved By:





Report. No: Envlab/24-25/TR-10999

Date: 26.10.2024

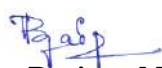
## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### AMBIENT NOISE MONITORING REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s Tata Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

Noise Level in dB(A), Day Time								
MINING AREA								
Sl. No	Location	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	Average
1	COB Plant Gate	63.1	64.3	62.8	60.7	61.4	62.6	62.5
2	Canteen	58.7	60.1	59.2	58.2	55.7	56.8	58.1
3	Work shop	67.2	68.2	68.5	66.4	65.4	66.7	67.1
4	Stack Yard Office	61.1	62.3	58.2	54.8	52.9	54.2	57.3
5	DG Shed	66.5	65.4	67.5	63.5	65.2	64.8	65.5
6	Mining Gate	62.4	63.6	63.7	61.2	62.5	63.5	62.8
7	View Point	61.2	60.1	60.4	58.4	59.8	60.7	60.1
8	Paradeep Gate	63.6	62.4	62.6	60.6	62.1	61.5	62.1
9	Near ETP	59.9	58.7	56.8	54.7	53.7	55.5	56.6
10	DECO Parking Area	63.8	62.4	64.3	61.2	62.5	61.8	62.7

Noise Level in dB(A), Night Time								
MINING AREA								
Sl. No	Location	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	Average
1	COB Plant Gate	58.7	59.6	59.3	56.4	58.6	59.1	58.6
2	Canteen	55.2	56.2	56.6	55.8	52.2	53.4	54.9
3	Work shop	64.4	64.1	65.1	62.1	62.5	62.7	63.5
4	Stack Yard Office	58.2	57.8	55.4	51.3	48.7	51.6	53.8
5	DG Shed	62.1	62.1	64.7	60.2	62.4	60.8	62.1
6	Mining Gate	57.8	59.4	60.2	58.5	58.7	59.7	59.1
7	View Point	57.3	56.2	56.9	53.9	55.5	57.1	56.2
8	Paradeep Gate	59.2	58.4	59.3	55.8	59.3	58.3	58.4
9	Near ETP	55.7	55.2	52.5	50.2	50.1	51.4	52.5
10	DECO Parking Area	58.8	58.5	61.7	56.4	59.4	58.1	58.8



Reviewed By:





Approved By:



Report. No: Envlab/24-25/TR-11000

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) AMBIENT NOISE MONITORING REPORT (BUFFER ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

Location	Noise Level in dB(A)		
	Day Time		
	JUNE-24	SEPT-24	Average
Kakudia Village	36.2	37.1	36.7
Kalarangi Village	42.5	43.3	42.9
Kharkhari Village	37.8	36.5	37.2
Kaliapani Village	44.3	42.2	43.3
Sukrangi Village	44.5	43.5	44.0
Laxmidharpur Village	34.9	35.8	35.4
Maruabil Village	39.5	38.7	39.1
Sendheswar Village	46.7	47.1	46.9
Birasal Village	47.1	46.3	46.7
Kanheipal Village	45.3	43.4	44.4

Location	Noise Level in dB(A)		
	Night Time		
	JUNE-24	SEPT-24	Average
Kakudia Village	33.4	34.2	33.8
Kalarangi Village	39.7	40.5	40.1
Kharkhari Village	34.5	32.8	33.7
Kaliapani Village	40.8	38.7	39.8
Sukrangi Village	41.6	40.1	40.9
Laxmidharpur Village	31.2	31.7	31.5
Maruabil Village	36.7	34.8	35.8
Sendheswar Village	42.6	43.1	42.9
Birasal Village	44.4	42.0	43.2
Kanheipal Village	41.2	40.1	40.7

  
Reviewed By:



  
Approved By:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11001

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) FUGITIVE EMISSION MONITORING REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s TATA Steel Limited, Kalarangiatta, Dist. Jajpur, Odisha

Sampling Location	Parameter						
	SPM ( $\mu\text{g}/\text{m}^3$ )						
	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
F1: VIEW POINT	518	524	496	448	462	489	490
F2: STACK YARD	530	539	511	461	490	516	508
F3: COB PLANT	504	517	502	457	478	502	493
MoEF & CC Notification 03 <sup>rd</sup> Feb, 2006	1200 $\mu\text{g}/\text{m}^3$						
Testing Method	Gravimetric Method						

*B. B. B.*

Reviewed By:



*P. Patil*  
Approved by:





# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11002

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### GROUND WATER LEVEL MONITORING REPORT (BUFFER ZONE)

Name & Address of the Client

: Sukinda Chromite Block,  
M/s. TATA Steel Ltd, Kalarangiatta, Dist. Jajpur, Odisha

Sample Type

: Ground Water Level

Monitoring Location	Degree Direction	JUNE-24	SEPT-24	AVERAGE
KAKUDIA	21° 00' 24.5'' N 85° 46' 17.9'' E	7.92	1.28	4.60
KALARANGI	21° 0' 53.89'' N 85° 43' 43.56'' E	6.21	0.65	3.43
KHARKHARI	21° 2' 53.825'' N 85° 43' 36.166'' E	7.62	1.98	4.80
KALIAPANI	21° 2' 37.7'' N 85° 46' 24.5'' E	7.41	1.16	4.29
SUKURANGI	21° 03' 22.1'' N 85° 47' 47.2'' E	3.82	0.34	2.08
LAXMIDHARPUR	20° 59' 15.8'' N 85° 45' 38.3'' E	3.9	0.45	2.18
MARUABIL	21° 02' 59.6'' N 85° 42' 38.9'' E	5.97	1.28	3.63
SANDHESWAR	21° 1' 23.4'' N 85° 40' 53.7'' E	7.55	0.48	4.02
BIRASAL	20° 59' 60.5'' N 85° 40' 04.3'' E	5.69	0.45	3.07
KANHEIPAL	20° 57' 4.0'' N 85° 43' 09.1'' E	4.02	1.90	2.96

*P. Patil*

Reviewed By:



Approved by:

*P. Patil*



Report. No: Envlab/24-25/TR-11003

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### MINERALOGICAL COMPOSITION REPORT

Name & Address of the Client : M/s. Sukinda Chromite Block,

Tata Steel Kalarangiatta, Dist. Jajpur, Odisha

Sample Type : Mineralogical Composition

Sl. No.	Test Results in %	View Point		
		JUNE-24	SEPT-24	AVERAGE
1	Cr <sub>2</sub> O <sub>3</sub>	20.8	22.5	21.65
2	Fe <sub>2</sub> O <sub>3</sub>	11.1	10.9	11.00
3	MnO <sub>2</sub>	3.5	3.8	3.65
4	SiO <sub>2</sub>	25.9	26.4	26.15
5	Al <sub>2</sub> O <sub>3</sub>	11.9	12.2	12.05
6	MgO	13.2	13.9	13.55
7	CaO	3.9	4.0	3.95

Sl. No.	Test Results in %	COB Plant		
		JUNE-24	SEPT-24	AVERAGE
1	Cr <sub>2</sub> O <sub>3</sub>	19.6	20.6	20.10
2	Fe <sub>2</sub> O <sub>3</sub>	10.5	11.4	10.95
3	MnO <sub>2</sub>	3.1	3.2	3.15
4	SiO <sub>2</sub>	25.2	26.8	26.00
5	Al <sub>2</sub> O <sub>3</sub>	11.7	11.5	11.60
6	MgO	14.1	15.2	14.65
7	CaO	4.0	3.2	3.60

Sl. No.	Test Results in %	Paradeep Gate		
		JUNE-24	SEPT-24	AVERAGE
1	Cr <sub>2</sub> O <sub>3</sub>	20.1	26.5	23.30
2	Fe <sub>2</sub> O <sub>3</sub>	10.9	10.2	10.55
3	MnO <sub>2</sub>	3.3	2.9	3.10
4	SiO <sub>2</sub>	26.4	22.3	24.35
5	Al <sub>2</sub> O <sub>3</sub>	12.5	11.9	12.20
6	MgO	15.2	14.6	14.90
7	CaO	3.8	4.0	3.90

Sl. No.	Test Results in %	Stack Yard		
		JUNE-24	SEPT-24	AVERAGE
1	Cr <sub>2</sub> O <sub>3</sub>	21.2	21.9	21.55
2	Fe <sub>2</sub> O <sub>3</sub>	10.4	10.8	10.60
3	MnO <sub>2</sub>	3.8	4.1	3.95
4	SiO <sub>2</sub>	26.1	25.6	25.85
5	Al <sub>2</sub> O <sub>3</sub>	12.3	12.7	12.50
6	MgO	14.5	14.2	14.35
7	CaO	4.2	4.3	4.25



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Sl. No.	Test Results in %	Nickel Gate		
		JUNE-24	SEPT-24	AVERAGE
1	Cr <sub>2</sub> O <sub>3</sub>	20.3	25.3	22.80
2	Fe <sub>2</sub> O <sub>3</sub>	11.2	11.1	11.15
3	MnO <sub>2</sub>	3.4	3.7	3.55
4	SiO <sub>2</sub>	27.2	21.7	24.45
5	Al <sub>2</sub> O <sub>3</sub>	12.4	13.1	12.75
6	MgO	15.3	14.6	14.95
7	CaO	3.8	4.0	3.90

Sl. No.	Test Results in %	Laboratory Top		
		JUNE-24	SEPT-24	AVERAGE
1	Cr <sub>2</sub> O <sub>3</sub>	19.5	21.6	20.55
2	Fe <sub>2</sub> O <sub>3</sub>	11.4	10.7	11.05
3	MnO <sub>2</sub>	3.5	3.3	3.40
4	SiO <sub>2</sub>	27.5	28.4	27.95
5	Al <sub>2</sub> O <sub>3</sub>	12.4	12.9	12.65
6	MgO	15.3	16.2	15.75
7	CaO	3.8	3.3	3.55

*Bab*

Reviewed By:



*P. Patu*

Approved by:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11004

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### EQUPTMENT NOISE LEVEL MONITORING REPORT

Name & Address of the Client : M/s. Sukinda Chromite Block,  
Tata Steel Kalarangiatta, Dist. Jajpur, Odisha

JUNE-2024						
SL. NO.	Mines Div No.	Equipment	Noise level in dB(A)			
			Idle Speed		Maximum	
			Door Open	Door Closed	Door Open	Door Closed
1	DPH-24	Haulpak	82.4	78.6	90.3	87.5
2	DPV-201	VOLVO	76.3	73.1	95.6	91.7
3	DPH-20	Haulpak	80.7	77.2	89.9	85.3
4	DPH-07	Haulpak	85.4	82.5	94.3	91.6
5	DPV-231	VOLVO	78.7	75.6	88.6	85.2
6	GD-08	Grader	83.5	80.2	92.8	89.4
7	TE-87	Excavator	70.2	68.4	96.4	92.4
8	DPV-225	VOLVO	80.4	77.6	94.8	90.6
9	DPV-293	VOLVO	77.9	73.5	91.6	88.4
10	DPH-18	Haulpak	84.2	80.9	95.5	91.8
11	5	JCB	72.7	70.2	84.5	81.6
12	BD-21	DROZER	85.4	81.3	96.7	93.2
13	DPH-05	Haulpak	80.8	76.6	91.4	88.3
14	DPV-246	VOLVO	79.3	76.1	89.6	86.5
15	DPH-03	Haulpak	81.6	78.5	92.3	88.7

Reviewed By:



Approved by:





# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11005

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) GROUND WATER LEVEL ANALYSIS REPORT (PIEZOMETER)

Name & Address of the Client : Sukinda Chromite Block,  
M/s Tata Steel Ltd., Kalarangiatta, Dist. Jajpur, Odisha

GW1: SCM/PZ/18									
Sl. No	Parameter	Unit of Measurement	APRIL-2024	MAY-2024	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 250C	--	7.22	7.21	7.16	7.18	7.16	7.19	7.19
2	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	1.3	1.3
3	Total Hardness	mg/l	169	162	168	172	168	128	161
4	Alkalinity	mg/l	108	105	104	102	104	108	105
5	Total Dissolved Solids	mg/l	272	268	263	275	268	270	269
6	Chloride as Cl	mg/l	31.8	31.6	31.9	32.1	31.5	33.5	32.1
7	Residual free Chlorine	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Dissolve Oxygen	mg/l	4.8	4.8	5.0	4.8	4.6	4.4	4.7
9	Calcium as Ca	mg/l	31.2	30.8	31.3	32.3	32.5	33.5	31.9
10	Magnesium as Mg	mg/l	22.1	20.7	21.8	22.2	21.1	10.8	19.8
11	Sulphate as SO <sub>4</sub>	mg/l	10.5	10.1	10.3	10.8	10.3	9.4	10.2
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Nitrate as NO <sub>3</sub>	mg/l	1.25	1.26	1.23	1.27	1.25	1.22	1.25
14	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
15	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
17	Iron as Fe	mg/l	0.29	0.28	0.27	0.29	0.27	0.25	0.28
18	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
20	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Manganese (as Mn)	mg/l	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
22	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Cadmium (as Cd)	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
24	Boron (as B)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Mineral Oil	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Reviewed By:   


Approved by:   


Report. No: Envlab/24-25/TR-11006

Date: 26.10.2024

GW2: SCMP/Z/19									
Sl. No	Parameter	Unit of Measurement	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 25°C	--	7.28	7.25	7.23	7.22	7.20	7.24	7.24
2	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	1.1	1.1
3	Total Hardness	mg/l	158	156	159	160	172	132	156
4	Alkalinity	mg/l	112	110	116	114	98	96	108
5	Total Dissolved Solids	mg/l	284	280	275	281	272	263	276
6	Chloride as Cl	mg/l	33.6	32.8	32.5	30.9	33.2	31.4	32.4
7	Residual free Chlorine	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Dissolve Oxygen	mg/l	4.2	4.4	4.6	4.4	4.8	4.1	4.4
9	Calcium as Ca	mg/l	32.4	31.6	32.6	33.6	31.9	32.1	32.4
10	Magnesium as Mg	mg/l	18.7	18.7	18.9	18.5	22.4	12.6	18.3
11	Sulphate as SO <sub>4</sub>	mg/l	9.3	9.0	9.2	9.6	8.6	8.2	9.0
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Nitrate as NO <sub>3</sub>	mg/l	1.22	1.24	1.21	1.23	1.21	1.29	1.23
14	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
15	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
17	Iron as Fe	mg/l	0.31	0.30	0.31	0.32	0.30	0.31	0.31
18	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
20	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Manganese (as Mn)	mg/l	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
22	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Cadmium (as Cd)	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
24	Boron (as B)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Mineral Oil	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

*B. B. B.*

Reviewed By:



Approved by:

*P. Patil*

Report. No: Envlab/24-25/TR-11007

Date: 26.10.2024

GW3: SCM/PZ/17									
Sl. No	Parameter	Unit of Measure ment	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 250C	--	7.24	7.26	7.22	7.24	7.27	7.29	7.25
2	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3	Total Hardness	mg/l	162	160	154	154	158	110	150
4	Alkalinity	mg/l	94	98	99	96	92	102	97
5	Total Dissolved Solids	mg/l	260	263	259	263	260	264	262
6	Chloride as Cl	mg/l	32.5	31.9	30.9	31.8	31.9	32.9	32.0
7	Residual free Chlorine	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Dissolve Oxygen	mg/l	4.4	4.6	4.8	4.6	4.4	4.4	4.5
9	Calcium as Ca	mg/l	30.9	30.7	30.9	31.8	33.6	30.9	31.5
10	Magnesium as Mg	mg/l	20.6	20.3	18.7	18.1	18.0	8.0	17.3
11	Sulphate as SO4	mg/l	9.1	9.6	9.8	10.1	9.2	7.9	9.3
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Nitrate as NO3	mg/l	1.27	1.29	1.26	1.30	1.29	1.31	1.29
14	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
15	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
17	Iron as Fe	mg/l	0.30	0.29	0.26	0.27	0.25	0.29	0.28
18	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
20	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Manganese (as Mn)	mg/l	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
22	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Cadmium (as Cd)	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
24	Boron (as B)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Mineral Oil	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Reviewed By: 



Approved by: 



Report. No: Envlab/24-25/TR- 11008

Date: 26.10.2024

GW4: SCM/PZ/21									
Sl. No	Parameter	Unit of Measure ment	APRIL-24	MAY-24	JUNE-24	JULY-24	AUG-24	SEPT-24	AVERAGE
1	pH at 25°C	--	7.21	7.23	7.12	7.17	7.19	7.16	7.18
2	Turbidity	NTU	<1.0	<1.0	<1.0	<1.0	<1.0	1.2	1.2
3	Total Hardness	mg/l	167	164	160	166	160	118	156
4	Alkalinity	mg/l	113	110	108	108	100	110	108
5	Total Dissolved Solids	mg/l	259	57	254	268	258	257	226
6	Chloride as Cl	mg/l	34.2	33.4	32.4	32.2	31.9	32.7	32.8
7	Residual free Chlorine	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Dissolve Oxygen	mg/l	4.6	4.8	4.4	4.8	4.6	4.5	4.6
9	Calcium as Ca	mg/l	32.5	32.3	31.5	32.1	32.3	31.4	32.0
10	Magnesium as Mg	mg/l	20.9	20.3	19.8	20.9	19.3	9.6	18.5
11	Sulphate as SO <sub>4</sub>	mg/l	10.8	10.4	10.2	10.5	9.8	9.0	10.1
12	Fluoride as F	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Nitrate as NO <sub>3</sub>	mg/l	1.29	1.25	1.24	1.25	1.30	1.27	1.27
14	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
15	Cyanide (as CN)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
16	Arsenic (as As)	mg/l	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004
17	Iron as Fe	mg/l	0.32	0.31	0.28	0.29	0.28	0.25	0.29
18	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
19	Zinc (as Zn)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
20	Copper (as Cu)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Manganese (as Mn)	mg/l	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
22	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Cadmium (as Cd)	mg/l	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003	<0.003
24	Boron (as B)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
25	Selenium (as Se)	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
26	Mineral Oil	mg/l	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Reviewed By: 



Approved by: 







# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11009

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024) GROUND WATER QUALITY ANALYSIS REPORT (BUFFER ZONE)

Name & Address of the Client : Sukinda Chromite Block,  
M/s Tata Steel Ltd., Kalarangiatta, Dist. Jajpur, Odisha

GW1: Kaliapani Village					
Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	1.1	1.0
05	Total Dissolved Solids as TDS	mg/l	130	133	132
06	pH at 250C	--	7.28	7.24	7.26
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	28.6	33.2	30.9
13	Chloride as Cl	mg/l	21.2	21.6	21.4
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.22	0.18	0.20
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.24	0.21	0.23
18	Magnesium as Mg	mg/l	12.9	11.68	12.3
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	3.3	2.9	3.1
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	6.4	7.46	6.93
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	70	74	72
28	Total Hardness	mg/l	106	102	104
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.01	<0.05	<0.05
32	Lead as Pb	mg/l	<0.02	<0.02	<0.02
33	Mercury as Hg	mg/l	<0.004	<0.004	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

Reviewed By



Approved by





# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11010

Date: 26.10.2024

## GW2: Sukurangi Village

Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	1.4	1.4
05	Total Dissolved Solids as TDS	mg/l	118	116	117
06	pH at 250C	--	7.32	7.19	7.26
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	29.6	28.6	29.1
13	Chloride as Cl	mg/l	23.5	23.8	23.6
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.21	0.23	0.22
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.22	0.23	0.22
18	Magnesium as Mg	mg/l	10.53	9.86	10.0
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	3.6	3.3	3.45
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	6.9	6.53	6.7
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	70	72	71
28	Total Hardness	mg/l	102	100	101
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.05	<0.05	<0.05
32	Lead as Pb	mg/l	<0.02	<0.02	<0.02
33	Mercury as Hg	mg/l	<0.004	<0.004	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

Reviewed By:



Approved by:





# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11011

Date: 26.10.2024

## GW3: Kharkhari Village

Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	1.3	1.3
05	Total Dissolved Solids as TDS	mg/l	119	124	122
06	pH at 250C	--	7.31	7.35	7.33
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	29.4	27.6	28.5
13	Chloride as Cl	mg/l	21.4	22.5	22.0
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.22	0.21	0.20
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.21	0.20	0.21
18	Magnesium as Mg	mg/l	15.7	9.7	12.7
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	3.8	3.6	3.7
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	7.4	7.63	7.52
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	72	69	70.5
28	Total Hardness	mg/l	118	96	107
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.05	<0.05	<0.05
32	Lead as Pb	mg/l	<0.02	<0.02	<0.02
33	Mercury as Hg	mg/l	<0.004	<0.004	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

Reviewed By:



Approved by:



Report. No: Envlab/24-25/TR-11012

Date: 26.10.2024

GW4: Kalarangi Village					
Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	<1	<1.0
05	Total Dissolved Solids as TDS	mg/l	120	126	123
06	pH at 250C	--	7.26	7.22	7.24
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	30.5	31.6	31.0
13	Chloride as Cl	mg/l	20.8	21.8	21.3
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.15	0.16	0.16
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.19	0.16	0.18
18	Magnesium as Mg	mg/l	11.2	14.2	12.7
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	3.2	3.0	3.1
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	6.6	6.44	6.52
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	62	80	71.0
28	Total Hardness	mg/l	98	113	105.5
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.01	<0.01	<0.05
32	Lead as Pb	mg/l	<0.02	<0.02	<0.02
33	Mercury as Hg	mg/l	<0.004	<0.004	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

Reviewed By:   


Approved by:   




Report. No: Envlab/24-25/TR-11013

Date: 26.10.2024

GW5: Kakudia Village					
Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	1.2	1.2
05	Total Dissolved Solids as TDS	mg/l	124	131	128
06	pH at 250C	--	7.33	7.31	7.32
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	28.6	30.8	29.7
13	Chloride as Cl	mg/l	22.6	23.4	23.0
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.19	0.20	0.20
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.22	0.24	0.23
18	Magnesium as Mg	mg/l	13.5	12.0	12.7
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	3.4	3.5	3.45
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	7.0	7.52	7.26
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	66	78	72.0
28	Total Hardness	mg/l	112	108	110.0
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.01	<0.01	<0.05
32	Lead as Pb	mg/l	<0.02	<0.02	<0.02
33	Mercury as Hg	mg/l	<0.004	<0.004	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

*P. Patil*

Reviewed By:



*P. Patil*  
Approved by:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11014

Date: 26.10.2024

GW6: Maruabil Village					
Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	1.5	1.5
05	Total Dissolved Solids as TDS	mg/l	122	128	125.0
06	pH at 250C	--	7.22	7.18	7.20
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	31.4	30.6	31.0
13	Chloride as Cl	mg/l	21.3	22.9	22.1
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.22	0.21	0.22
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.23	0.21	0.22
18	Magnesium as Mg	mg/l	10.4	8.9	9.65
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	3.6	3.0	3.30
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	7.6	7.35	7.48
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	66	68	97.0
28	Total Hardness	mg/l	96	94	95.0
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.05	<0.05	<0.05
32	Lead as Pb	mg/l	<0.004	<0.004	<0.02
33	Mercury as Hg	mg/l	<0.002	<0.002	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

*B. P. Patra*

Reviewed By:



*P. Patra*

Approved by:

Report. No: Envlab/24-25/TR- 11015

Date: 26.10.2024

## GW7: Sendheswar Village

Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	<1	<1
05	Total Dissolved Solids as TDS	mg/l	132	130	131.0
06	pH at 250C	--	7.3	7.35	7.33
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	28.9	29.6	29.25
13	Chloride as Cl	mg/l	22.3	24.1	23.20
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.21	0.20	0.21
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.21	0.20	0.21
18	Magnesium as Mg	mg/l	15.6	10.2	12.9
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	4.0	3.4	3.7
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	6.8	6.94	6.87
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	64	73	68.5
28	Total Hardness	mg/l	120	102	111.0
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.05	<0.05	<0.05
32	Lead as Pb	mg/l	<0.004	<0.004	<0.02
33	Mercury as Hg	mg/l	<0.002	<0.002	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

Reviewed By:



Approved by:



Report. No: Envlab/24-25/TR- 11016

Date: 26.10.2024

GW8: Birasal Village					
Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	1.3	1.3
05	Total Dissolved Solids as TDS	mg/l	125	134	129.5
06	pH at 250C	--	7.26	7.31	7.29
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	30.8	32.4	31.6
13	Chloride as Cl	mg/l	20.8	22.8	21.8
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.23	0.18	0.21
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.22	0.23	0.23
18	Magnesium as Mg	mg/l	16.1	13.9	15.0
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	3.6	3.3	3.45
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	7.2	6.85	7.03
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	63	78	70.5
28	Total Hardness	mg/l	118	114	116
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.01	<0.01	<0.05
32	Lead as Pb	mg/l	<0.02	<0.02	<0.02
33	Mercury as Hg	mg/l	<0.004	<0.004	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

*[Signature]*

Reviewed By:



*[Signature]*

Approved by:



Report. No: Envlab/24-25/TR- 11017

Date: 26.10.2024

GW9: Kanheipal Village					
Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	<1	<1
05	Total Dissolved Solids as TDS	mg/l	130	126	128
06	pH at 250C	--	7.28	7.29	7.29
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	28.6	30.1	29.3
13	Chloride as Cl	mg/l	21.2	23.7	22.4
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.22	0.23	0.23
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.24	0.22	0.23
18	Magnesium as Mg	mg/l	12.9	10.4	11.6
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	3.3	3.1	3.2
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	6.4	6.13	6.3
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	70	72	71.0
28	Total Hardness	mg/l	106	102	104.0
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.01	<0.01	<0.05
32	Lead as Pb	mg/l	<0.02	<0.02	<0.02
33	Mercury as Hg	mg/l	<0.004	<0.004	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

*[Signature]*

Reviewed By:



*[Signature]*  
Approved by:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11018

Date: 26.10.2024

## GW10: Laxmidharpur Village

Sl. No	Parameter	Unit of Measurement	JUNE-24	SEPT-24	AVERAGE
01	Colour	Hazen	CL	CL	CL
02	Odour	--	Agreeable	Agreeable	Agreeable
03	Taste	mg/l	Agreeable	Agreeable	Agreeable
04	Turbidity	NTU	<1	1.2	1.2
05	Total Dissolved Solids as TDS	mg/l	124	122	123
06	pH at 250C	--	7.28	7.25	7.27
07	Aluminium (as Al)	mg/l	<0.1	<0.1	<0.1
08	Ammonia (as total ammonia-N)	mg/l	<0.1	<0.1	<0.1
09	Anionic Detergents	mg/l	<0.2	<0.2	<0.2
10	Barium as Ba	mg/l	<0.05	<0.05	<0.05
11	Boron as B	mg/l	<0.1	<0.1	<0.1
12	Calcium as Ca	mg/l	30.5	33.1	31.8
13	Chloride as Cl	mg/l	24.1	24.2	24.2
14	Copper as Cu	mg/l	<0.02	<0.02	<0.02
15	Fluoride as F	mg/l	0.16	0.18	0.17
16	Free Residual Chlorine	mg/l	ND	ND	ND
17	Iron as Fe	mg/l	0.2	0.18	19.0
18	Magnesium as Mg	mg/l	14.8	11.8	13.3
19	Manganese as Mn	mg/l	<0.025	<0.025	<0.025
20	Mineral Oil	mg/l	<0.5	<0.5	<0.5
21	Nitrate as NO3	mg/l	3.4	3.1	3.25
22	Phenolic Compound	mg/l	<0.05	<0.05	<0.05
23	Selenium as Se	mg/l	<0.001	<0.001	<0.001
24	Silver as Ag	mg/l	<0.1	<0.1	<0.1
25	Sulphate as SO4	mg/l	7.1	7.18	7.14
26	Sulphide	mg/l	<0.05	<0.05	<0.05
27	Total alkalinity as CaCO3	mg/l	69	66	67.5
28	Total Hardness	mg/l	121	109	115
29	Zinc as Zn	mg/l	<0.03	<0.03	<0.03
30	Cadmium as Cd	mg/l	<0.01	<0.01	<0.01
31	Cyanide as CN	mg/l	<0.05	<0.05	<0.05
32	Lead as Pb	mg/l	<0.02	<0.02	<0.02
33	Mercury as Hg	mg/l	<0.004	<0.004	<0.004
34	Molybdenum as Mo	mg/l	<0.05	<0.05	<0.05
35	Nickel (as Ni)	mg/l	<0.1	<0.1	<0.1
36	Pesticide	mg/l	Absent	Absent	Absent
37	Poly aromatic Hydrocarbon as PAH	mg/l	<0.0001	<0.0001	<0.0001
38	Arsenic as As	mg/l	<0.004	<0.004	<0.004
39	Total Chromium as Cr	mg/l	<0.05	<0.05	<0.05
40	Hexavalent Chromium as Cr+6	mg/l	<0.01	<0.01	<0.01
41	Total Coliform	MPN /100 ml	<1.8	<1.8	<1.8

*B. P. Patra*

Reviewed By:



*P. Patra*

Approved by:



# Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 (OH&S), ISO/IEC 17025:2017 Certified

Report. No: Envlab/24-25/TR-11019

Date: 26.10.2024

## SIX MONTHLY COMPLIANCE REPORT (APRIL-2024 TO SEPT-2024)

### SOIL QUALITY ANALYSIS REPORT

Name & Address of the Client : Sukinda Chromite Block,  
M/s Tata Steel Ltd., Kalarangiatta, Dist. Jajpur, Odisha

#### S-1: Dump No-3 (Lease inside)

Sl.No	Parameters	Unit	Analysis Results		
			AUGUST-24	SEPTEMBER-24	AVERAGE
1	pH at 250 C	--	6.81	7.05	6.93
2	Texture	--	Sandy Clay	Sandy Clay	Sandy Clay
	Sand	%	59.8	57.2	58.5
	Silt	%	2.0	2.5	2.25
	Clay	%	38.2	40.3	39.25
3	Bulk Density	gm/cc	1.23	1.31	1.27
4	Water Holding Capacity	%	40.1	35.6	37.8
5	Electrical Conductivity	µs/cm	78.6	85.9	82.2
6	Available Nitrogen	mg/kg	21.9	23.6	22.7
7	Available Potassium as K	mg/kg	16.2	15.1	15.6
8	Available Phosphorous as p	mg/kg	11.1	10.8	10.95
9	Chloride as Cl	mg/kg	15.2	14.9	15.0
10	Iron as Fe	mg/kg	30.6	32.6	31.6
11	Copper as Cu	mg/kg	11.4	16.5	13.9
12	Nickel as Ni	mg/kg	18.2	20.1	19.2
13	Manganese as Mn	mg/kg	28.1	30.3	29.2
14	Zinc as Zn	mg/kg	31.9	34.6	33.2
15	Cobalt as Co	mg/kg	4.5	4.9	4.7
16	Lead as Pb	mg/kg	<1.0	<1.0	<1.0
17	Cadmium as Cd	mg/kg	8.7	9.1	8.9
18	Mercury as Hg	mg/kg	<1.0	<1.0	<1.0
19	Chromium as Cr	mg/kg	40.2	42.1	41.1
20	Arsenic as As	mg/kg	<1.0	<1.0	<1.0
21	Hexavalent Chromium as Cr+6	mg/kg	19.6	20.4	20.0

Reviewed By:



Approved by:



S-2: Durga Puja field (Lease Outside)					
Sl.No	Parameters	Unit	Analysis Results		
			AUGUST-24	SEPTEMBER-24	AVERAGE
1	pH at 250 C	--	7.15	7.23	7.19
2	Texture	--	Sandy Clay	Sandy Clay	Sandy Clay
	Sand	%	55.6	59.1	57.35
	Silt	%	1.8	1.9	1.85
	Clay	%	42.6	39.0	40.8
3	Bulk Density	gm/cc	1.28	1.25	1.265
4	Water Holding Capacity	%	39.5	33.4	36.45
5	Electrical Conductivity	µs/cm	80.1	91.3	85.7
6	Available Nitrogen	mg/kg	20.5	22.8	21.65
7	Available Potassium as K	mg/kg	15.7	16.7	16.2
8	Available Phosphorous as p	mg/kg	10.9	9.3	10.1
9	Chloride as Cl	mg/kg	14.4	13.8	14.1
10	Iron as Fe	mg/kg	41.8	43.4	42.6
11	Copper as Cu	mg/kg	20.2	21.1	20.65
12	Nickel as Ni	mg/kg	38.1	36.4	37.25
13	Manganese as Mn	mg/kg	25.3	27.2	26.25
14	Zinc as Zn	mg/kg	30.8	38.1	34.45
15	Cobalt as Co	mg/kg	4.1	4.0	4.05
16	Lead as Pb	mg/kg	<1.0	<1.0	<1.0
17	Cadmium as Cd	mg/kg	9.3	8.9	9.1
18	Mercury as Hg	mg/kg	<1.0	<1.0	<1.0
19	Chromium as Cr	mg/kg	43.3	46.5	44.9
20	Arsenic as As	mg/kg	<1.0	<1.0	<1.0
21	Hexavalent Chromium as Cr+6	mg/kg	20.4	24.6	22.5

*P. Patil*

Reviewed By:



*P. Patil*  
Approved by: