



**The Deputy Director General of Forests (C),
Ministry of Environment, Forest and Climate Change,
Integrated Regional Office, (IRO) - Ranchi
2nd floor, Headquarter, Jharkhand State Housing Board Harmu Chowk,
Harmu Housing Colony, Argora, Jharkhand - 834002.**

Ref No. - JMB/ENV/BAC/39/132 /2026
May 25th, 2026

Ref.: Environmental Clearance letter no. - J-11015/29/2012-IA.II(M) dated- April 28, 2017.

SUB: Half Yearly Compliance Status Report of Environment Clearance conditions issued by MoEF&CC, New Delhi to Bhelatand A. Colliery & Bhelatand Coal Washery, Tata Steel Limited, Dhanbad for the period October-25 to March-2026.

Dear Sir,

We are enclosing herewith compliance report for the period **October-25 to March-2026** for the EC granted vide letter no.- J-11015/29/2012-IA.II(M) dated- April 28, 2017 issued by Ministry of Environment, Forest and Climate Change, New Delhi.

We trust the information furnished is in line with your requirement.

Thanking you,

Yours faithfully,


Head (Planning)
Jharia Division, Tata Steel Ltd.

Encl: As above.

Copy to: Member Secretary, CPCB, Eastern Zonal Office, Southend Conclave, 502, 5th Floor
1582, Rajdanga Main Road, Kolkata -700107.

Copy to: Member Secretary, JSPCB, T.A. Division Building (Ground Floor), H.E.C, Dhurwa,
Ranchi - 834004.

Copy to: Regional Officer, JSPCB, HIG -1 Sardar Patel Nagar, Housing Colony, Hirapur,
Dhanbad

TATA STEEL LIMITED

Jharia Collieries Jamadoba 828 112 Dhanbad India

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Tel 91 22 66658282 Fax 91 22 66657724

Corporate Identity Number L27100MH1907PLC000260 Website www.tatasteel.com

Your (Half Yearly Compliance Report) has been Submitted with following details

Proposal No	IA/JH/CMIN/8359/2012
Compliance ID	1228223484
Compliance Number(For Tracking)	EC/M/COMPLIANCE/1228223484/2026
Reporting Year	2026
Reporting Period	01 Jun(01 Oct - 31 Mar)
Submission Date	28-05-2026
RO/SRO Name	Shri Senthil Kumar Sampath
RO/SRO Email	agmu156@ifs.nic.in
State	JHARKHAND
RO/SRO Office Address	Integrated Regional Offices, Ranchi

Note:- SMS and E-Mail has been sent to Shri Senthil Kumar Sampath, JHARKHAND with Notification to Project Proponent.

Half Yearly Compliance Report**2026****01 Jun(01 Oct - 31 Mar)****Acknowledgement**

Proposal Name	Bhelatand Amalgamated Colliery (expansion from 0.38 MTPA to 0.41 MTPA in an ML area of 521.68 ha) & Expansion of Bhelatand Washery (0.96 MTPA to 1.5 MTPA in 8 ha) of M/s Tata Steel Ltd., Dhanbad, Jharkhand		
Name of Entity / Corporate Office	Tata Steel Ltd.		
Village(s)	N/A		
District	DHANBAD		
Proposal No.	IA/JH/CMIN/8359/2012	Category	Coal Mining
Plot / Survey / Khasra No.	N/A	Sub-District	N/A
State	JHARKHAND	Entity's PAN	*****2803M
MoEF File No.	J-11015/29/2012.IA.II(M)	Entity name as per PAN	UTSAV KASHYAP

Compliance Reporting Details

Reporting Year	2026
Remarks (if any)	Half Yearly Compliance Submission for October 2025 to March 2026 (Bhelatand Amalgamated Colliery (expansion from 0.38 MTPA to 0.41 MTPA in an ML area of 521.68 ha) and Expansion of Bhelatand Washery (0.96 MTPA to 1.5 MTPA in 8 ha) of M/s Tata Steel Ltd., Dhanbad, Jharkhand).
Reporting Period	01 Jun(01 Oct - 31 Mar)

Details of Production and Project Area

Name of Entity / Corporate Office Tata Steel Ltd.

	Project Area as per EC Granted	Actual Project Area in Possession
Private	242.74	242.74
Revenue Land	286.94	286.94
Forest	0	0
Others	N/A	N/A
Total	529.6800000000001	529.6800000000001

Others Area						
Sr. no				Other Name	Area Granted	Area Actual
Production Capacity						
Sr. no	Product Name	units	Valid Upto	Capacity	Production last year	Capacity as per CTO
1	Raw Coal	Million Tons per Annum (MTPA)	31/03/2028	0.41	0.227	0.41
2	Raw Coal Feed	Million Tons per Annum (MTPA)	31/03/2028	1.5	1.02	1.5
Conditions						
Specific Conditions						
Sr.No.	Condition Type	Condition Details				
1	Statutory compliance	The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.				
PPs Submission: Complied It is being strictly followed. The EC capacity of Bhelatand A. Colliery is for 0.41 MTPA raw coal production is well within the limit. The EC capacity of Bhelatand Coal Washery is for 1.5 MTPA raw coal throughput which is also being maintained within the limit.					Date: 19/05/2026	
2	Statutory compliance	The washery shall be as per the project report submitted and presented to EAC.				
PPs Submission: Complied It is being strictly complied with.					Date: 19/05/2026	
3	Statutory compliance	The validity of the EC is for the life of mine or as specified in the EIA Notification, 2006, whichever is earlier.				
PPs Submission: Complied The mining lease of Bhelatand A. Colliery is valid for 999 years i.e. 20.01.2903 and life of mine as per approved mining plan is 25 years (Base year is FY13-14). However, the validity of EC for mines as per EIA Notification amendment dt. 14.09.2016 is kept as 30 years. Therefore, the EC is valid till 31.03.2038.					Date: 19/05/2026	
4	AIR QUALITY MONITORING AND PRESERVATION	Transportation of coal should be carried out by covered conveyor belts. Mitigative measures to be undertaken to control dust and other fugitive emission all along the roads by providing sufficient numbers of water sprinklers.				
PPs Submission: Complied The transportation of coal from underground colliery to coal handling plant (CHP) is through covered conveyor belt networks. Dry-fog system has been already installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. Fixed-type water sprinklers are also					Date: 19/05/2026	

		installed on the internal roads of the washery. These are operated effectively at all times to check the fugitive emissions. Fugitive dust emission monitoring is done on half-yearly basis. The values are within the stipulated norms.	
5	Human Health Environment	Continuous monitoring of occupational safety and other health hazards, and the corrective action need to be ensured.	
		<p>PPs Submission: Complied</p> <p>The periodic health checkup of the workers is done regularly by our Occupational Health Department, Tata Central Hospital, Jamadoba. We have a PME (Periodic Medical Examination) centre approved by DGMS where 20 percentage of the workers identified from workforce engaged in active mining operations and washery plant are subjected to full medical checkup every year including hearing impairment checkup, etc. These results are regularly submitted to DGMS as per mines rules.</p>	Date: 19/05/2026
6	MISCELLANEOUS	Modern practices for agriculture to be encouraged with promotion of organic farming through training and demonstration (where ever feasible)	
		<p>PPs Submission: Complied</p> <p>Farmers have been effectively trained in SRI (Systems of root intensification) which helps in more production of quality grains with lesser seed requirements. This helps farmers to produce grains at lesser cost. Matka Khad, etc. promotes organic farming which helps farmers to use less chemicals (pesticides, insecticides etc.). In this programmes farmers received hands on demonstration and training on organic farming.</p>	Date: 19/05/2026
7	MISCELLANEOUS	Special emphasis should be on training and demonstration on conservation of crops and foods and food processing (Wherever feasible)	
		<p>PPs Submission: Complied</p> <p>For the conservation of crops and foods, the following training programs are being through our CSR wing, TSRDS (Tata Steel Rural Development Society)- SRI Second crops (Rabi crops) Dry land farming Fisheries training Pisciculture Mushroom cultivation Vegetable cultivation</p>	Date: 19/05/2026
8	AIR QUALITY MONITORING AND PRESERVATION	There will be no external /internal OB dumps	
		<p>PPs Submission: Complied</p> <p>Since this is an underground mine, it is not applicable.</p>	Date: 19/05/2026
9	WATER QUALITY MONITORING AND PRESERVATION	Wastewater shall be effectively treated and recycled completely either for washery or maintenance of green belt around the plant.	
		<p>PPs Submission: Complied</p> <p>Washery is already operating on a zero-discharge principle. No wastewater is discharged into the drains/ natural water systems. The recycled water is again used for plant operations and green-belt development.</p>	Date: 19/05/2026
10	PUBLIC HEARING	The assurances given during the Public Hearing and as per the Action plan developed by the proponent should be implemented.	
		<p>PPs Submission: Complied</p> <p>The assurances given during the public hearing with respect to environment and CSR are already being executed.</p>	Date: 19/05/2026
11	AIR QUALITY	Hoppers of the coal crushing unit and washer unit shall be fitted	

	MONITORING AND PRESERVATION	with high efficiency bag filters or mist spray water sprinkling system and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of closed belt conveyor systems and from transportation roads.
<p>PPs Submission: Complied</p> <p>Dry-fog system has been installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. Fixed-type water sprinklers are also installed on the internal roads of the washery. The Dust Extraction system (Bag filters) is installed at Coal Handling Plant. Extracted dust is mixed in water and then fed into the Tailing Thickener. These are operated effectively at all times to check the fugitive emissions.</p>		Date: 19/05/2026
12	AIR QUALITY MONITORING AND PRESERVATION	All approach roads shall be black topped and internal roads shall be concreted. The roads shall be regularly cleaned with mechanical sweepers.
<p>PPs Submission: Complied</p> <p>All the internal roads have been concreted while the approach roads are black-topped. There is a facility for parking of trucks within the unit. Mechanical sweepers were mobilized for internal roads.</p>		Date: 19/05/2026
13	AIR QUALITY MONITORING AND PRESERVATION	Records of quantum and ash content of raw coal being washed and clean coal and coal rejects produced from every batch of washing shall be maintained and details thereof be made available to Ministry whenever directed.
<p>PPs Submission: Complied</p> <p>Proper records of quantity and ash content of raw coal being washed, clean/washed coal, and other by-products are being maintained regularly.</p>		Date: 19/05/2026
14	WATER QUALITY MONITORING AND PRESERVATION	No ground water shall be used for the plant operations. Any additional water requirement envisaged shall be obtained by recycle/reuse of treated effluent and from rainwater harvesting measure.
<p>PPs Submission: Complied</p> <p>No ground water is used for washery plant operations. Since, washery is operating on Zero Liquid Discharge Principle; all processed water is recycled back and reused for operations. The make-up water requirement is met by mine water from adjoining Bhelatand Colliery and Katri river. There are total 8 ponds (Capacity- 20622 m3) for tailing management which also act as surface runoff and rainwater storage ponds. In addition to that, Rooftop rainwater harvesting structure has been constructed in office premises of Bhelatand washery.</p>		Date: 19/05/2026
15	Corporate Environmental Responsibility	Socio – economic and welfare measures for the local communities for the adjoining villages shall be implemented under CSR. Activities to be undertaken for the adjoining villages shall be identified in consultation with the local authorities, the details of status of implementation of CSR and expenditure thereon which should be annually updated on the company website.
<p>PPs Submission: Complied</p> <p>CSR activities are being carried out through our CSR wing, TSRDS/TSF, which is managed by a team of experts who are full time involved in providing benefits and improving standard of living in over 30 villages. The list of activities are developed in consultation with the village representatives and implemented in a time-bound manner. The annual expenditure on CSR is updated in Integrated Report of Tata Steel every year which is uploaded in company website.</p>		Date: 19/05/2026
16	MISCELLANEOUS	Heavy metal content in raw coal, and washed coal shall be analysed once in a year and records maintained thereof.

<p>PPs Submission: Complied Heavy metal content analysis in raw coal and washed coal is being done from a NABL approved lab and the data are being maintained.</p>		<p>Date: 19/05/2026</p>
17	GREENBELT	<p>This is an underground mine. Afforestation /green belt development takes place every year on the open surface within leasehold areas. Massive plantation shall be carried out in open spaces in and around the mine and a 3-tier avenue plantation along the main approach road to the mine.</p>
<p>PPs Submission: Complied Tree plantation activities are carried out every year on the barren/ degraded areas, areas along roadside, infrastructure, etc of the colliery leasehold. Apart from these, fruit plants are distributed to employees and also to villagers, schools, institutions, etc. Avenue plantation is done in residential colony and along the roadside every year. Green belt development report has been attached as Annexure-1.</p>		<p>Date: 19/05/2026</p>
18	MISCELLANEOUS	<p>CCTV cameras to be installed at washery gate to check compliance of covering of trucks.</p>
<p>PPs Submission: Complied CCTV cameras at washery entrance gate and near weigh bridge gate have been provided. It is to be mentioned here that no truck is allowed into the premises which are not covered by tarpaulin sheets. Refer Annexure-V.</p>		<p>Date: 19/05/2026</p>
<p>General Conditions</p>		
Sr.No.	Condition Type	Condition Details
1	MISCELLANEOUS	<p>No change in mining technology and scope of work shall be made without prior approval of the Ministry of Environment Forest and climate Change. No change in the calendar plan including excavation, quantum of coal and waste should be made.</p>
<p>PPs Submission: Complied It is being strictly followed and complied with.</p>		<p>Date: 19/05/2026</p>
2	Statutory compliance	<p>Mining shall be carried out as per the approved mining plan, and also abiding by the relevant laws related to coal mining and the circulars issued by Directorate General Mines Safety (DGMS) An approved progressive Mine Closure Plan shall strictly be complied with and submitted.</p>
<p>PPs Submission: Complied It is being strictly followed. Mining is being carried out as per the approved mining plan in accordance with other mining rules, DGMS permissions etc. The mine closure plan was also approved along with mining plan by Ministry of Coal, Govt of India. The provisions of mine closure plan are being complied with. As per progressive closure activities, plantation for green cover in and around leasehold area is being done.</p>		<p>Date: 19/05/2026</p>
3	LAND RECLAMATION	<p>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, Forest and Climate Change its Regional Office.</p>
<p>PPs Submission: Complied It has been complied. The LULC study has been done in 2025 by Natural Resources Division, Tata Steel Limited, Jamshedpur, Jharkhand-831001 (A QCI-NABET Accredited Agency). Report is</p>		<p>Date: 19/05/2026</p>

attached as Annexure -III.		
4	LAND RECLAMATION	Final mine void depth should not be more than 40m. The void area should be converted into water body. The remaining area should be back filled up to ground level and covered with thick top soil. The land after mining should be restored for agriculture or forestry purpose.
PPs Submission: Complied It is not applicable as this is an underground mine.		Date: 19/05/2026
5	LAND RECLAMATION	The top soil, if any, shall temporarily be stored at earmarked site (s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The overburden dumps should be vegetated with suitable native species to prevent erosion and surface run off. The entire excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self – sustaining Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.
PPs Submission: Complied There is no generation of top soil due to mining activities as this is an underground mine. Mining is being done by Board and Pillar method with sand stowing. The rehabilitation is also not applicable in this case as there is no change in land use pattern due to underground mining operation.		Date: 19/05/2026
6	GREENBELT	Greenbelt shall be developed all along the mine lease area in a phased manner. The width of the green belt along forest area should not be less than 7.5 m, and the total area covered by 3 tier green belt shall not be less than 100 ha. A 3-tier green belt comprising of a mix of native species shall be developed all along the major approach roads.
PPs Submission: Complied Greenery has been developed in many areas around the colliery and washery premises. There is no forest land in core and buffer zone. However, green belt is being developed in the leasehold area. 3-Tier plantation along the roads with native species is done on available vacant areas.		Date: 19/05/2026
7	AIR QUALITY MONITORING AND PRESERVATION	Transportation of coal by road should be carried out by covered trucks only. Effective measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM 2.5 such as haul road, loading and unloading point and transfer points. Fugitive dust emission from all the sources shall be controlled regularly it shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board in this regard.
PPs Submission: Complied Transportation of raw coal from Bhelatand A. Colliery to washery is done through underground belt conveyors. The washed coal from washery is sent via rail network. The sand used for stowing is transported through Tarpaulin sheet covered trucks only. Dry-fog system has been already installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. Fixed-type water sprinklers are also installed on the internal roads of the washery. In addition to these, movable water sprinkler ply on regular intervals for dust suppression. The ambient air quality report is submitted to SPCB every quarter.		Date: 19/05/2026
8	AIR QUALITY MONITORING AND PRESERVATION	Vehicular emission shall be kept under control and regularly. Project should obtain 'PUC' certificate for all the vehicles from authorized pollution testing centres.

<p>PPs Submission: Complied</p> <p>Raw coal transportation is done through underground belt network. Only the vehicles having valid PUC certificates are being allowed to operate for sand transportation.</p>		<p>Date: 19/05/2026</p>
9	<p>AIR QUALITY MONITORING AND PRESERVATION</p>	<p>Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10 PM2.5 SO2 and NOX. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive in consultation with the state pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.</p>
<p>PPs Submission: Complied</p> <p>Based on meteorological data, total four ambient air quality stations are established in core zone and buffer zone. Monitoring and analysis of PM10, PM2.5, SO2, NO2 are done on monthly basis. The Air quality monitoring stations are: (i) Bhelatand Office Area (Core Zone) (ii) Russi Vihar Colony, Sijua (Buffer Zone) (iii) Malkera Colony (Buffer Zone) (iv) Bhelatand Colony (Buffer Zone) Monitoring of heavy metals in ambient air is being performed by an independent laboratory (recognized by NABL/MoEFCC) once in six months. The results are enclosed as Annexure-II.</p>		<p>Date: 26/05/2026</p>
10	<p>AIR QUALITY MONITORING AND PRESERVATION</p>	<p>Crusher / feeder and breaker material transfer points should invariably be provided with dust suppression system. Belt – Conveyors should be fully covered to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.</p>
<p>PPs Submission: Complied</p> <p>The following measures have been implemented: i) Dry-fog system at all transfers points of CHP. ii) Dust extraction system (Bag filters) in CHP ii) Enclosures around crushers. iii) Belts have been covered on top and both sides. These arrangements will protect the coal mass moving on belt from blowing wind. In this way, the dust getting air borne is being minimized. iv) Fixed water sprinklers on the haulage roads. v) In addition, movable water sprinklers are also being deployed on the roads for dust suppression.</p>		<p>Date: 19/05/2026</p>
11	<p>WATER QUALITY MONITORING AND PRESERVATION</p>	<p>The project proponent shall not alter the major channels around the site. Appropriate embankment should be provided along the side of the river/nallah flowing near or adjacent to the mine. The embankment constructed along the river/nallah boundary should be of suitable dimensions and critical patches should be strengthened by stone pitching on the river front side and stabilised with plantation so as to withstand the peak water flow and prevent mine inundation.</p>
<p>PPs Submission: Complied</p> <p>During the course of action, there is no proposed diversion or rechanneling of the water course is involved. The prominent stream in the region is Katri Nadi, a tributary of Damodar river. Appropriate embankment along the Katri river is already provided. Stone pitching has been provided on the embankment. The dense vegetation already exists between the river channel and lease which shall be strengthened further to check the peak water flow and prevent mine inundation.</p>		<p>Date: 19/05/2026</p>
12	<p>WATER QUALITY MONITORING AND PRESERVATION</p>	<p>Rainwater harvesting shall be implemented for conservation and augmentation of ground water resource in the area in consultation with Central Ground Water Board.</p>
<p>PPs Submission: Complied</p> <p>Every year Tata Steel through its CSR wing constructed as well as renovate the old pond by removal of silts in and around Bhelatand lease area for conservation and augmentation of ground water. These ponds act as surface reservoir for rainwater. In addition to that, Rooftop rainwater harvesting structure has been constructed in office premises of Bhelatand washery .</p>		<p>Date: 19/05/2026</p>
13	<p>WATER QUALITY</p>	<p>Catch drain and siltation ponds of appropriate size shall be</p>

	MONITORING AND PRESERVATION	constructed around the mine working coal heaps and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area. Roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper setting of silt material. Dimension of the retaining wall to be constructed at the toe of the dump and OB benches within the mine to check run – off and siltation should be based on the rainfall.
<p>PPs Submission: Complied</p> <p>There are no soil or OB dumps in the colliery and washery premises. Only the by-products are stored in the stockyards located in the washery premises which are sold off within 10-15 days. Garland drains of adequate size and gradient already exist around the washery area to channelize the surface runoff. The runoff is diverted to the tailing ponds and clear water after settle is re-utilized in the washery.</p>		Date: 19/05/2026
14	WATER QUALITY MONITORING AND PRESERVATION	Industrial waste water (CHP, workshop and waste water from the mine) should be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.
<p>PPs Submission: Complied</p> <p>No waste-water is discharged outside the washery premises. 100 percentage water is re-circulated back for re-use in the washery. There is a central workshop and garage in Jamadoba where Effluent Treatment Plant having oil and grease trap facility has been provided. Some of the mine water is sent back into underground during stowing and remaining water is used for dust suppression, washery make-up water, greenbelt development and drinking water supply to colonies and stakeholders. We have also commissioned an STP for canteen wastewater in Colliery premises. Treated water of STP is used in horticulture and greenbelt development.</p>		Date: 19/05/2026
15	Noise Monitoring & Prevention	Adequate measure shall be taken for control of noise levels below 85dBA in the work environment Workers engaged in blasting in drilling operation of HEMM, etc shall be provided with plugs/muffs.
<p>PPs Submission: Complied</p> <p>Regular noise survey is being conducted in the underground work environment. Workers are provided with ear-plugs/ muffs in high noise areas. Since this is an underground mine where no HEMM is used. Coal preparation is done by drilling and solid blasting. The noise levels report is provided as Annexure II.</p>		Date: 26/05/2026
16	Noise Monitoring & Prevention	Controlled blasting techniques should be practiced with use of delay detonators to mitigate ground vibrations and fly rocks.
<p>PPs Submission: Complied</p> <p>Not applicable as it is an underground mine. However, due to implementation of various mitigation measures, and use of delay detonators due to blasting in underground vibration does not cause damage to any structure on the surface.</p>		Date: 19/05/2026
17	Human Health Environment	Besides carrying out regular periodic health check – up of their workers, 20% of the workers identified from workforce engaged in active mining operation shall be subjected to health check – up for occupational diseases and hearing impairment ,if any, through an specialised agency / institution within the District/ State and the results reported to this Ministry and to DGMS.
<p>PPs Submission: Complied</p>		Date:

<p>The periodic health check-up of the workers is done regularly by our Occupational Health Department, Tata Central Hospital, Jamadoba. We have a PME (Periodic Medical Examination) center approved by DGMS where 20 percentage of the workers identified from workforce engaged in active mining operations are subjected to full medical check-up every year including hearing impairment check-up, etc. These results are regularly submitted to DGMS as per mines rules.</p>		19/05/2026
18	Human Health Environment	<p>Personal working in dusty area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Supervisory staff shall be held responsible for ensuring compulsory wearing of dust mask.</p>
<p>PPs Submission: Complied Persons working in dusty area have been provided with dust masks and have been given awareness training on safety and health aspects. Regular PME (Periodic Medical Examinations) are also being done.</p>		<p>Date: 19/05/2026</p>
19	Human Health Environment	<p>In case of outsourcing of work through MDO, the project proponent shall ensure the strict enforcement of above condition.</p>
<p>PPs Submission: Complied Not applicable</p>		<p>Date: 19/05/2026</p>
20	MISCELLANEOUS	<p>The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the state Forest and Wildlife Department. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.</p>
<p>PPs Submission: Complied Tata Steel has engaged a global organization viz. IUCN (International Union for Conservation of Nature) which work in the field of faunal and floral conservation. We have prepared a Biodiversity Management Plan (BMP) and thereafter prepared BMP action plan (BAP) in association with IUCN for enhancement of biodiversity. We have already started to implement the BAP in our area for conservation and enhancement of flora and fauna. Some key initiatives for biodiversity enhancement are medicinal garden development, Native species plantation and Butterfly park development, artificial niche nesting etc.</p>		<p>Date: 19/05/2026</p>
21	PUBLIC HEARING	<p>Implementation of Action Plan on the issues raised during the Public Hearing shall be ensured. The Project proponent shall complete all the tasks as per Action plan submitted with budgetary provisions during the public Hearing. Land oustees should be compensated as per the norms laid out R&R Policy of the Company or the National R&R Policy of the State Government, whichever is higher.</p>
<p>PPs Submission: Complied The implementation of action plan on the issues raised during public hearing has already been complied. Some CSR activities are in progress. R and R is not applicable for this project.</p>		<p>Date: 26/05/2026</p>
22	PUBLIC HEARING	<p>The Board of every company, shall ensure that the company spends in every financial year, at least two per cent. of the average net profits of the company made during the three immediately preceding financial year, in pursuance of its corporate Social Responsibility policy under Section 135 of the Companies Act,2013, for the socio economic development of the neighbourhood.</p>

<p>PPs Submission: Complied All the CSR measures are carried out by the CSR wing of the company under the banner of Tata Steel Foundation. During FY Oct-2025 to March-2026, the company has spent around Rs. 9.67 Crore on the strengthening of social welfare infrastructure of the Jharia region.</p>		<p>Date: 26/05/2026</p>
23	Corporate Environmental Responsibility	The Company should have a well laid down Environment Policy approved by the Board of Directors.
<p>PPs Submission: Complied The Company already has an Environment Policy approved by the Managing Director. Attached as Annexure IV.</p>		<p>Date: 19/05/2026</p>
24	Corporate Environmental Responsibility	To have proper checks and balances, the Company should a well laid down system of reporting of non – compliances / violations of environmental norms to the Board of Directors of the Company and / or shareholders or stakeholders at large.
<p>PPs Submission: Complied The status of adherence to the policy and compliance to Environmental laws and regulations is regularly discussed at higher levels. Any non-compliance noticed is corrected at divisional level. If any issue is beyond our control, it is brought to the notice of higher management.</p>		<p>Date: 19/05/2026</p>
25	Corporate Environmental Responsibility	A separate environment 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
<p>PPs Submission: Complied We have a separate Environmental Management Cell with qualified personnel. The reporting of Environmental Cell is directly to General Manager of the Division.</p>		<p>Date: 19/05/2026</p>
26	Corporate Environmental Responsibility	The funds earmarked for environment protection measures should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office.
<p>PPs Submission: Complied The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements. The year-wise expenditure is being already submitted to JSPCB as Environment Statement in Form-V. The total annual environmental expenditure for the financial year 2024-25 is Rs. 360.47 lakhs.</p>		<p>Date: 19/05/2026</p>
27	Statutory compliance	Environment clearance is granted subject to final outcome of Hon'ble Supreme Court of India, High Court, NGT and any other Court of Law, if any, as may be applicable to the project.
<p>PPs Submission: Complied It shall be strictly followed.</p>		<p>Date: 19/05/2026</p>
28	Statutory compliance	This Environmental Clearance is subject to obtaining requisite NBWL Clearance from the Standing Committee of National Board for Wildlife , if any , applicable to the project
<p>PPs Submission: Complied Not applicable.</p>		<p>Date: 19/05/2026</p>
29	Statutory compliance	The project proponent shall obtain Consent to Establish and Consent to Operate from the concerned State Pollution Control Board prior to increase in capacity of washery and effectively implement all the conditions stipulated therein.

<p>PPs Submission: Complied The consent to establish has been granted by JSPCB (Ref no.- JSPCB/HO/RNC/CTE-342731/2017/686 dt. 20.11.2017). The Consent to Operate has been granted by JSPCB (Ref no.- JSPCB/HO/RNC/CTO-14751653/2023/369 dt. 23.02.2023) valid till 31.03.2028. The conditions of CTE and CTO are being complied with and submitted to JSPCB.</p>		<p>Date: 19/05/2026</p>
30	Statutory compliance	Project proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) for drawl of water (surface and ground water).
<p>PPs Submission: Complied No Objection Certificate for withdrawal of mine water approved by CGWA, New Delhi vide letter No. CGWA/NOC/MIN/REN/1/2024/10165 and was valid till 02.12.2027.</p>		<p>Date: 26/05/2026</p>
31	Statutory compliance	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 constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year pre – monsoon (April-May) , monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground water Authority and Regional Director , Central Ground Water Board.
<p>PPs Submission: Complied The monitoring of groundwater level and quality is done four times a year. The groundwater quality report and groundwater level are provided in Annexure II.</p>		<p>Date: 26/05/2026</p>
32	Statutory compliance	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, central Pollution Control Board and State Pollution Control Board.
<p>PPs Submission: Complied It is being complied with. We are submitting the six-monthly compliance reports to MoEFCC, its regional office, CPCB and SPCB twice a year. In adherence with the guideline as per notification dt. 26.11.2018, from now onwards, we are sending only soft copy of the compliance status report over mail.</p>		<p>Date: 19/05/2026</p>
33	Statutory compliance	The Regional Office of this Ministry 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.
<p>PPs Submission: Complied It shall be complied with.</p>		<p>Date: 19/05/2026</p>
34	GREENBELT	The activities pertaining to development of green belt/horticulture shall be reported to concern Regional Office of MoEF&CC on six monthly basis from the data of commencement of mining operation.
<p>PPs Submission: Complied In our leasehold area, every year plantation of sapling is being done and saplings are distributed every year outside the leasehold area. In addition to above, maintenance of old saplings (converted into plants) and developing green area of the region is also being done. The greenbelt development plan has been submitted to MoEFCC earlier.</p>		<p>Date: 19/05/2026</p>
35	Statutory compliance	For half yearly monitoring reports. The data should be monitored

		for period of April to September and October to March of the financial years and submitted to the concerned authorities Within 2 months of the completion of periodicity of monitoring.
<p>PPs Submission: Complied The cycle of April to September and October to March of every financial year is being followed for submission of compliance and monitoring reports.</p>		<p>Date: 19/05/2026</p>
36	MISCELLANEOUS	A copy of clearance letter will be marked to concerned panchayat/local NGO, if any, from whom suggestion / representation has been received while processing the proposal.
<p>PPs Submission: Complied The copy of Clearance letter has been sent to District Commissioner, Municipal Commissioner and other government offices on 11th May, 2017.</p>		<p>Date: 19/05/2026</p>
37	MISCELLANEOUS	An electronic copy of the EC letter shall be marked to the concerned State Pollution Control Board, Regional office , District Industry Sector and Collector's Office / Tehsildar Office for information in public domain within 30 days.
<p>PPs Submission: Complied The electronic copy of EC letter has been forwarded to DC office, JSPCB Dhanbad office, JSPCB Ranchi office via mail on 11th May, 2017.</p>		<p>Date: 19/05/2026</p>
38	MISCELLANEOUS	The EC letter shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM10, PM2.5, SO2 and Nox (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.
<p>PPs Submission: Complied The EC letter is already uploaded in company website. The compliance reports shall also be uploaded once in six months in company website with all monitoring reports. The display board at entrance of mine and washery covers all environment quality parameters and applicable statutory requirements as per the guidelines.</p>		<p>Date: 19/05/2026</p>
39	MISCELLANEOUS	The Environmental Statement for each financial year ending 31 March in Form-V is mandated to be submitted by the PP for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the Company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Office of the MoEF&CC by e-mail.
<p>PPs Submission: Complied The environmental statement for financial year 2024-25 has been submitted to JSPCB vide letter no. JMB/ENV/ESSA/05/442/2025 on 30th September 2025 and it is also uploaded on the company website. The soft copy of Environment Statement is also sent to MOEF by email at ro.ranchi-mefgov.in.</p>		<p>Date: 19/05/2026</p>
40	MISCELLANEOUS	The project authorities should advertise at least in two local newspapers widely circulated ,one of which shall be in the vernacular language of the locality concerned , within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available

with the SPCB and also at web site of the Ministry of Environment, Forest and Climate Change at www.environmentclearance.nic.in and a copy of the same should be forwarded to the Regional Office

PPs Submission: Complied
The Notice has been Fisted in two local newspapers viz. Prabhat Khabar (Hindi) and Hindustan (Hindi) on May 05, 2017. Attached as Annexure- VI

Date:
19/05/2026

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
(PERIOD: OCTOBER-2025 TO MARCH-2026)

BHELATAND A. COLLIERY
(EXPANSION FROM 0.38 MTPA TO 0.41 MTPA OF RAW COAL PRODUCTION)

AND

BHELATAND COAL WASHERY
(EXPANSION FROM 0.96 MTPA TO 1.5 MTPA RAW COAL THROUGHPUT)

P.O.: BHELATAND, DIST: DHANBAD, JHARKHAND



TATA STEEL LIMITED, JHARIA DIVISION

**P.O.- JAMADOBA, DIST. – DHANBAD,
STATE- JHARKHAND, PIN CODE – 828112.**

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
Specific Condition		
(i)	The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.	It is being strictly followed. The EC capacity of Bhelatand A. Colliery is for 0.41 MTPA raw coal production is well within the limit. The EC capacity of Bhelatand Coal Washery is for 1.5 MTPA raw coal throughput which is also being maintained within the limit.
(ii)	The washery shall be as per the project report submitted and presented to EAC.	It is being strictly complied with.
(iii)	The validity of the EC is for the life of mine or as specified in the EIA Notification, 2006, whichever is earlier.	The mining lease of Bhelatand A. Colliery is valid for 999 years i.e. 20.01.2903 and life of mine as per approved mining plan is 25 years (Base year is FY13-14). However, the validity of EC for mines as per EIA Notification amendment dt. 14.09.2016 is kept as 30 years. Therefore, the EC is valid till 31.03.2038.
(iv)	Transportation of coal should be carried out by covered conveyor belts. Mitigative measures to be undertaken to control dust and other fugitive emission all along the roads by providing sufficient numbers of water sprinklers.	<ul style="list-style-type: none"> • The transportation of coal from underground colliery to coal handling plant (CHP) is through covered conveyor belt networks. • Dry-fog system has already been installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. • Fixed-type water sprinklers are also installed on the internal roads of the washery. These are operated effectively at all times to check the fugitive emissions. • Fugitive dust emission monitoring is done on half-yearly basis. The values are within the stipulated norms.
(v)	Continuous monitoring of occupational safety and other health hazards, and the corrective action need to be ensured.	The periodic health checkup of the workers is done regularly by our Occupational Health Department, Tata Central Hospital, Jamadoba. We have a PME (Periodic Medical Examination) centre approved by DGMS where 20 % of the workers identified from workforce engaged in active mining operations and washery plant are subjected to full medical checkup every year including hearing impairment checkup, etc. These results are regularly submitted to DGMS as per mines rules.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
(vi)	Modern practices for agriculture to be encouraged with promotion of organic farming through training and demonstration (where ever feasible)	Farmers have been effectively trained in SRI (Systems of root intensification) which helps in more production of quality grains with lesser seed requirements. This helps farmers to produce grains at lesser cost. Matka Khad, etc. promotes organic farming which helps farmers to use less chemicals (pesticides, insecticides etc.). In these programmes farmers received hands on demonstrations and training on organic farming.
(vii)	Special emphasis should be on training and demonstration on conservation of crops and foods and food processing (Wherever feasible)	For the conservation of crops and foods, the following training programs are being conducted through our CSR wing, Tata Steel Foundation (TSF)- <ul style="list-style-type: none"> • SRI • Second crops (Rabi crops) • Dry land farming • Fisheries training Pisciculture • Mushroom cultivation • Vegetable cultivation
(viii)	CCTV cameras to be installed at washery gate to check compliance of covering of trucks.	CCTV cameras have been provided at washery entrance gate and near weigh bridge gate. It is to be mentioned here that no truck is allowed into the premises which are not covered by tarpaulin sheets. Refer Annexure-V .
(ix)	This is an underground mine. Afforestation /green belt development takes place every year on the open surface within leasehold areas. Massive plantation shall be carried out in open spaces in and around the mine and a 3-tier avenue plantation along the main approach road to the mine.	<ul style="list-style-type: none"> • Tree plantation activities are carried out every year on the barren/ degraded areas, areas along road-side, infrastructure, etc of the colliery leasehold. Apart from these, fruit plants are distributed to employees and also to villagers, schools, institutions, etc. • Avenue plantation is done in residential colony and along the roadside every year. Green belt development report has been attached as Annexure-1.
(x)	There will be no external /internal OB dumps	Since this is an underground mine, it is not applicable.
(xi)	Wastewater shall be effectively treated and recycled completely either for washery or maintenance of green belt around the plant.	Washery is already operating on a zero-discharge principle. No wastewater is discharged into the drains/ natural water systems. The recycled water is again used for plant operations and green-belt development.
(xii)	The assurances given during the Public Hearing and as per the Action plan developed by the proponent should be implemented.	The assurances given during the public hearing with respect to environment and CSR are already being executed.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
(xiii)	Hoppers of the coal crushing unit and washer unit shall be fitted with high efficiency bag filters or mist spray water sprinkling system and operated effectively at all times of operation to check fugitive emissions from crushing operations, transfer points of closed belt conveyor systems and from transportation roads.	<ul style="list-style-type: none"> • Dry-fog system has been installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. • Fixed-type water sprinklers are also installed on the internal roads of the washery. • The Dust Extraction system (Bag filters) is installed at Coal Handling Plant. Extracted dust is mixed in water and then fed into the Tailing Thickener. <p>These are operated effectively at all times to check the fugitive emissions.</p>
(xiv)	All approach roads shall be black topped and internal roads shall be concreted. The roads shall be regularly cleaned with mechanical sweepers.	All the internal roads have been concreted while the approach roads are black-topped. There is a facility for parking of trucks within the unit. Mechanical sweepers have been provided for internal roads.
(xv)	Records of quantum and ash content of raw coal being washed and clean coal and coal rejects produced from every batch of washing shall be maintained and details thereof be made available to Ministry whenever directed.	Proper records of quantity and ash content of raw coal being washed, clean/washed coal, and other by-products are being maintained regularly.
(xvi)	No ground water shall be used for the plant operations. Any additional water requirement envisaged shall be obtained by recycle/reuse of treated effluent and from rainwater harvesting measure.	No ground water is used for washery plant operations. Since, washery is operating on Zero Liquid Discharge Principle; all processed water is recycled back and reused for operations. The make-up water requirement is met by mine water from adjoining Bhelatand Colliery and Katri river. There are total 8 ponds (Capacity- 20622 m ³) for tailing management which also act as surface runoff and rainwater storage ponds. In addition to that, Rooftop rainwater harvesting structure has been constructed in office premises of Bhelatand washery.
(xvii)	Socio – economic and welfare measures for the local communities for the adjoining villages shall be implemented under CSR. Activities to be undertaken for the adjoining villages shall be identified in consultation with the local authorities, the details of status of implementation of CSR and expenditure thereon	CSR activities are being carried out through our CSR wing, TSF, which is managed by a team of experts who are full time involved in providing benefits and improving standard of living in over 30 villages. The list of activities are developed in consultation with the village representatives and implemented in a time-bound manner. The annual expenditure on CSR is updated in Integrated Report

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
	which should be annually updated on the company website.	of Tata Steel every year which is uploaded in company's website.
(xviii)	Heavy metal content in raw coal, and washed coal shall be analysed once in a year and records maintained thereof.	Heavy metal content analysis in raw coal and washed coal is being done from a NABL approved lab & the data is being maintained.
General Conditions:		
A. Mining		
(i)	No change in mining technology and scope of work shall be made without prior approval of the Ministry of Environment Forest and climate Change. No change in the calendar plan including excavation, quantum of coal and waste should be made.	It is being strictly followed and complied with.
(ii)	Mining shall be carried out as per the approved mining plan, and also abiding by the relevant laws related to coal mining and the circulars issued by Directorate General Mines Safety (DGMS) An approved progressive Mine Closure Plan shall strictly be complied with and submitted.	It is being strictly followed. Mining is being carried out as per the approved mining plan in accordance with other mining rules, DGMS permissions etc. The mine closure plan was also approved along with mining plan by Ministry of Coal, Govt of India. The provisions of mine closure plan are being complied with. As per progressive closure activities, plantation for green cover in and around leasehold area is being done.
B. Land Reclamation		
(i)	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, Forest and Climate Change its Regional Office.	It has been complied. The LULC study has been done in 2025 by Natural Resources Division, Tata Steel Limited, Jamshedpur, Jharkhand-831001 (A QCI-NABET Accredited Agency). Report is attached as Annexure –III .
(ii)	Final mine void depth should not be more than 40m. The void area should be converted into water body. The remaining area should be back filled up to ground level and covered with thick top soil. The land after mining should be restored for agriculture or forestry purpose.	It is not applicable as this is an underground mine.
(iii)	The top soil, if any, shall temporarily be stored at earmarked site (s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The overburden dumps should be	There is no generation of top soil due to mining activities as this is an underground mine. Mining is being done by Board and Pillar method with sand stowing. The rehabilitation is also not applicable in this case as there is no change in land use pattern due to underground mining operation.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
	<p>vegetated with suitable native species to prevent erosion and surface run off. The entire excavated area shall be backfilled and afforested in line with the approved Mine Closure Plan. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self – sustaining Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.</p>	
(iv)	<p>Greenbelt shall be developed all along the mine lease area in a phased manner. The width of the green belt along forest area should not be less than 7.5 m, and the total area covered by 3 tier green belt shall not be less than 100 ha. A 3-tier green belt comprising of a mix of native species shall be developed all along the major approach roads.</p>	<ul style="list-style-type: none"> • Greenery has been developed in many areas around the colliery and washery premises. There is no forest land in core and buffer zone. However, green belt is being developed in the leasehold area. • 3-Tier plantation along the roads with native species is done on available vacant areas.
C. Emissions, Effluents, and waste Disposal		
(i)	<p>Transportation of coal by road should be carried out by covered trucks only. Effective measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM10 and PM 2.5 such as haul road, loading and unloading point and transfer points. Fugitive dust emission from all the sources shall be controlled regularly it shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central/State Pollution Control Board in this regard.</p>	<ul style="list-style-type: none"> • Transportation of raw coal from Bhelatand A. Colliery to washery is done through underground belt conveyors. The washed coal from washery is sent via rail network. The sand used for stowing is transported through Tarpaulin sheet covered trucks only. • Dry-fog system has already been installed to suppress the dust generated at CHP and transfer points of belt conveyor systems. Fixed-type water sprinklers are also installed on the internal roads of the washery. In addition to these, movable water sprinkler ply on regular intervals for dust suppression. The ambient air quality report is submitted to SPCB every quarter.
(ii)	<p>Vehicular emission shall be kept under control and regularly. Project should obtain ‘PUC’ certificate for all the vehicles from authorized pollution testing centres.</p>	<p>Raw coal transportation is done through underground belt network. Only the vehicles having valid PUC certificates are being allowed to operate for sand transportation.</p>

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
(iii)	Adequate ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for monitoring of pollutants, namely PM10 PM2.5 SO2 and NOX. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive in consultation with the state pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.	Based on meteorological data, total four ambient air quality stations are established in core zone and buffer zone. Monitoring and analysis of PM10, PM2.5, SO2, NO2 are done on monthly basis. The Air quality monitoring stations are: (i) Bhelatand Office Area (Core Zone) (ii) Russi Vihar Colony, Sijua (Buffer Zone) (iii) Malkera Colony (Buffer Zone) (iv) Bhelatand Colony (Buffer Zone) Monitoring of heavy metals in ambient air is being performed by an independent laboratory (recognized by NABL/MoEFCC) once in six months. The results are enclosed as Annexure-II.
(iv)	Crusher / feeder and breaker material transfer points should invariably be provided with dust suppression system. Belt – Conveyors should be fully covered to avoid air borne dust. Drills shall be wet operated or fitted with dust extractors.	The following measures have been implemented: i) Dry-fog system at all transfers points of CHP. ii) Dust extraction system (Bag filters) in CHP ii) Enclosures around crushers. iii) Belts have been covered on top and both sides. These arrangements will protect the coal mass moving on belt from blowing wind. In this way, the dust getting air borne is being minimized. iv) Fixed water sprinklers on the haulage roads. v) In addition, movable water sprinklers are also being deployed on the roads for dust suppression.
(v)	The project proponent shall not alter the major channels around the site. Appropriate embankment should be provided along the side of the river/nallah flowing near or adjacent to the mine. The embankment constructed along the river/nallah boundary should be of suitable dimensions and critical patches should be strengthened by stone pitching on the river front side and stabilised with plantation so as to withstand the peak water flow and prevent mine inundation.	During the course of action, there is no proposed diversion or rechanneling of the water course is involved. The prominent stream in the region is Katri Nadi, a tributary of Damodar river. Appropriate embankment along the Katri river is already provided. Stone pitching has been provided on the embankment. The dense vegetation already exists between the river channel and lease which shall be strengthened further to check the peak water flow and prevent mine inundation.
(vi)	Rainwater harvesting shall be implemented for conservation and augmentation of ground water resource in the area in consultation with Central Ground Water Board.	Every year Tata Steel through its CSR wing constructed as well as renovate the old pond by removal of silts in and around Bhelatand lease area for conservation and augmentation of ground water. These ponds act as surface reservoir for rainwater. In addition to that, Rooftop rainwater

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
		harvesting structure has been constructed in office premises of Bhelatand washery.
(vii)	Catch drain and siltation ponds of appropriate size shall be constructed around the mine working coal heaps and OB dumps to prevent run off of water and flow of sediments directly into the river and other water bodies. The water so collected should be utilized for watering the mine area. Roads, green belt development etc. The drains shall be regularly desilted particularly after monsoon and maintained properly. Sump capacity should provide adequate retention period to allow proper setting of silt material. Dimension of the retaining wall to be constructed at the toe of the dump and OB benches within the mine to check run – off and siltation should be based on the rainfall.	<ul style="list-style-type: none"> • There are no soil or OB dumps in the colliery and washery premises. Only the by-products are stored in the stockyards located in the washery premises which are sold off within 10-15 days. • Garland drains of adequate size and gradient already exist around the washery area to channelize the surface runoff. The runoff is diverted to the tailing ponds and clear water after settling is re-utilized in the washery.
(viii)	Industrial waste water (CHP, workshop and waste water from the mine) should be properly collected and treated so as to conform to the standards prescribed under the Environment (Protection) Act, 1986 and the Rules made there under, and as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	No waste-water is discharged outside the washery premises. 100% water is re-circulated back for re-use in the washery. There is a central workshop and garage in Jamadoba where Effluent Treatment Plant having oil and grease trap facility has been provided. Some of the mine water is sent back into underground during stowing and remaining water is used for dust suppression, washery make-up water, greenbelt development and drinking water supply to colonies and stakeholders. We have also commissioned an STP for canteen wastewater in Colliery premises. Treated water of STP is used in horticulture and greenbelt development.
D. Noise & Vibration Control		
(i)	Adequate measure shall be taken for control of noise levels below 85dBA in the work environment Workers engaged in blasting in drilling operation of HEMM, etc shall be provided with plugs/muffs.	Regular noise survey is being conducted in the underground work environment. Workers are provided with ear-plugs/ muffs in high noise areas. Since this is an underground mine where no HEMM is used. Coal preparation is done by drilling & solid blasting. The noise levels report is provided as Annexure II .
(ii)	Controlled blasting techniques should be practiced with use of delay	Not applicable as it is an underground mine. However, due to implementation of various mitigation measures, and use of delay detonators

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
	detonators to mitigate ground vibrations and fly rocks.	due to blasting in underground, vibration does not cause damage to any structure on the surface.
E. Occupational Health & Safety		
(i)	Besides carrying out regular periodic health check – up of their workers, 20% of the workers identified from workforce engaged in active mining operation shall be subjected to health check – up for occupational diseases and hearing impairment ,if any, through an specialised agency / institution within the District/ State and the results reported to this Ministry and to DGMS.	The periodic health check-up of the workers is done regularly by our Occupational Health Department, Tata Central Hospital, Jamadoba. We have a PME (Periodic Medical Examination) center approved by DGMS where 20 % of the workers identified from workforce engaged in active mining operations are subjected to full medical check-up every year including hearing impairment check-up, etc. These results are regularly submitted to DGMS as per mines rules.
(ii)	Personal working in dusty area should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Supervisory staff shall be held responsible for ensuring compulsory wearing of dust mask.	Persons working in dusty area have been provided with dust masks & have been given awareness training on safety & health aspects. Regular PME (Periodic Medical Examinations) are also being done.
(iii)	In case of outsourcing of work through MDO, the project proponent shall ensure the strict enforcement of above condition.	Not applicable
F. Biodiversity		
(i)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the state Forest and Wildlife Department. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.	Tata Steel has engaged a global organization viz. IUCN (International Union for Conservation of Nature) which work in the field of faunal and floral conservation. We have prepared a Biodiversity Management Plan (BMP) and thereafter prepared BMP action plan (BAP) in association with IUCN for enhancement of biodiversity. We have already started to implement the BAP in our area for conservation and enhancement of flora and fauna. Some key initiatives for biodiversity enhancement are medicinal garden development, Native species plantation and Butterfly park development, artificial niche nesting etc.
G. Implementation of Action Plan as per public Hearing and CSR Activities		
(i)	Implementation of Action Plan on the issues raised during the Public Hearing shall be ensured. The Project proponent shall complete all the tasks	The implementation of action plan on the issues raised during public hearing has already been complied. Some CSR activities are in progress. R&R is not applicable for this project.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
	as per Action plan submitted with budgetary provisions during the public Hearing. Land oustees should be compensated as per the norms laid out R&R Policy of the Company or the National R&R Policy of the State Government, whichever is higher.	
(ii)	The Board of every company, shall ensure that the company spends in every financial year, at least two per cent. of the average net profits of the company made during the three immediately preceding financial year, in pursuance of its corporate Social Responsibility policy under Section 135 of the Companies Act,2013, for the socio-economic development of the neighborhood.	All the CSR measures are carried out by the CSR wing of the company under the banner of Tata Steel Foundation. During FY Oct'2025 to March'2026, the company has spent around Rs. 9.67 Crore on the strengthening of social welfare infrastructure of the Jharia region.
H. Corporate Environment Responsibility		
(i)	The Company should have a well laid down Environment Policy approved by the Board of Directors.	The Company already has an Environment Policy approved by the Managing Director. Attached as Annexure IV.
(ii)	To have proper checks and balances, the Company should a well laid down system of reporting of non – compliances / violations of environmental norms to the Board of Directors of the Company and / or shareholders or stakeholders at large.	The status of adherence to the policy and compliance to Environmental laws and regulations is regularly discussed at higher levels. Any non-compliance noticed is corrected at divisional level. If any issue is beyond our control, it is brought to the notice of higher management.
(iii)	A separate environment 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	We have a separate Environmental Management Cell with qualified personnel. The reporting of Environmental Cell is directly to General Manager of the Division.
(iv)	The funds earmarked for environment protection measures should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office.	The Environment Cell has a separate fund for Environmental protection measures and for complying with legal requirements. The year-wise expenditure is being already submitted to JSPCB as Environment Statement in Form-V. The total annual environmental expenditure for the financial year 2024-25 is Rs. 360.47 lakhs.
I. Statutory Obligations		
(i)	Environment clearance is granted subject to final outcome of Hon'ble	It shall be strictly followed.

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
	Supreme Court of India, High Court, NGT and any other Court of Law, if any, as may be applicable to the project.	
(ii)	This Environmental Clearance is subject to obtaining requisite NBWL Clearance from the Standing Committee of National Board for Wildlife , if any , applicable to the project	Not applicable.
(iii)	The project proponent shall obtain Consent to Establish and Consent to Operate from the concerned State Pollution Control Board prior to increase in capacity of washery and effectively implement all the conditions stipulated therein.	The consent to establish has been granted by JSPCB (Ref no.- JSPCB/HO/RNC/CTE-342731/2017/686 dt. 20.11.2017). The Consent to Operate has been granted by JSPCB (Ref no.- JSPCB/HO/RNC/CTO-14751653/2023/369 dt. 23.02.2023) valid till 31.03.2028. The conditions of CTE and CTO are being complied with and submitted to JSPCB.
(iv)	Project proponent shall obtain the necessary prior permission from the Central Ground Water Authority (CGWA) for drawl of water (surface and ground water).	No Objection Certificate for withdrawal of mine water approved by CGWA, New Delhi vide letter No. CGWA/NOC/MIN/REN/1/2024/10165 and was valid till 02.12.2027.
J. Monitoring of Project		
(i)	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 constructing new piezometers during the mining operation. The monitoring shall be carried out four times in a year pre – monsoon (April-May) , monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground water Authority and Regional Director , Central Ground Water Board.	The monitoring of groundwater level and quality is done four times a year. The groundwater quality report & groundwater level are provided in Annexure II.
(ii)	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the	Six-monthly compliance reports are being submitted twice a year to MoEF&CC, its Regional Office, CPCB, and SPCB. In accordance with the guidelines issued vide notification dated

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
	Ministry of Environment, Forest and Climate Change, its Regional Office, central Pollution Control Board and State Pollution Control Board.	26.11.2018, the compliance status reports are now being submitted only in soft copy through email.
(iii)	The Regional Office of this Ministry 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.	It shall be complied with.
(iv)	The activities pertaining to development of green belt/horticulture shall be reported to concern Regional Office of MoEF&CC on six monthly basis from the data of commencement of mining operation.	In our leasehold area, every year plantation of sapling is being done and saplings are distributed every year outside the leasehold area. In addition to above, maintenance of old saplings (converted into plants) and developing green area of the region is also being done. The greenbelt development plan has been submitted to MoEF&CC earlier.
(v)	For half yearly monitoring reports. The data should be monitored for period of April to September and October to March of the financial years and submitted to the concerned authorities Within 2 months of the completion of periodicity of monitoring.	The cycle of April to September and October to March of every financial year is being followed for submission of compliance and monitoring reports.
K. Miscellaneous		
(i)	A copy of clearance letter will be marked to concerned panchayat/local NGO, if any, from whom suggestion / representation has been received while processing the proposal.	The copy of Clearance letter was sent to District Commissioner, Municipal Commissioner and other government offices on 11 th May, 2017.
(ii)	An electronic copy of the EC letter shall be marked to the concerned State Pollution Control Board, Regional office , District Industry Sector and Collector's Office / Tehsildar Office for information in public domain within 30 days.	The electronic copy of EC letter has been forwarded to DC office, JSPCB Dhanbad office, JSPCB Ranchi office via mail on 11 th May, 2017.
(iii)	The EC letter shall be uploaded on the company's website. The compliance status of the stipulated EC conditions shall also be uploaded by the project authorities on their website and	The EC letter has already uploaded in company's website. The compliance reports shall also be uploaded once in six months on the company's website with all monitoring reports. The display board at entrance of mine and washery covers all

Compliance status of Environmental Clearance of Expansion of Bhelatand A. Colliery (0.38 MTPA to 0.41 MTPA of raw coal production) and Bhelatand Coal Washery (Expansion from 0.96 MTPA to 1.5 MTPA raw coal throughput) of M/s Tata Steel Ltd., District- Dhanbad, Jharkhand vide MoEFCC Letter no J-11015/29/2012-IA.II (M) dated April 28, 2017

S. No.	Condition	Compliance Status
	updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM10, PM2.5, SO2 and Nox (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	environment quality parameters and applicable statutory requirements as per the guidelines.
(iv)	The project authorities should advertise at least in two local newspapers widely circulated ,one of which shall be in the vernacular language of the locality concerned , within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the SPCB and also at web site of the Ministry of Environment, Forest and Climate Change at www.environmentclearance.nic.in and a copy of the same should be forwarded to the Regional Office	The Notice was listed in two local newspapers viz. Prabhat Khabar (Hindi) and Hindustan (Hindi) on May 05, 2017. Attached as Annexure- VI
(v)	The Environmental Statement for each financial year ending 31 March in Form-V is mandated to be submitted by the PP for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the Company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Office of the MoEF&CC by e-mail.	The environmental statement for financial year 2024-25 has been submitted to JSPCB vide letter no. JMB/ENV/ESSA/05/442/2025 on 30 th September 2025 and it is also uploaded on the company website. The soft copy of Environment Statement is also sent to MOEF by email at ro.ranchi-mef@gov.in .

Statement showing measures taken for increasing tree and forest cover

Plantation activities are carried out in the barren land of the colliery leasehold area to increase the green cover as well as in the washery premises. Care is taken to plant only the native species so that native ecosystem is preserved. Following are the details of mass plantation in our leasehold area of Jharia Division for greenery development.

Year	No. of trees planted
FY14	10195
FY15	15800
FY16	10000
FY17	10900
FY18	8500
FY19	10000
FY20	50235
FY21	3000
FY22	10005
FY23	25117
FY24	12452
FY25	12313
FY26	7818

Glimpses of plantation activities for FY26:





Before

After



Before

After



Before



After



Before



After



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Mobile: 09471358482, 09431512608

Ref. No.: - ARDS/25-26/AAQ/1

Date: 27/11/2025

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 19/11/2025 to 20/11/2025
- Date of Testing : 21/11/2025 to 24/11/2025
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – RUSSI VIHAR COLONY				
	Avg. Ambient Temperature	23 °C	Avg. Humidity	32 %
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	89.78	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	56.82	60 µg/m ³	
3.	SO ₂ , µg/m ³	11.73	80 µg/m ³	
4.	NO ₂ , µg/m ³	18.14	80 µg/m ³	
5.	Ozone, µg/m ³	14.21	180 µg/m ³	
6.	NH ₃ , µg/m ³	14.67	400 µg/m ³	
7.	CO, mg/m ³	0.62	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6 ng/m ³	
10.	Ni, ng/m ³	BDL	20 ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³	

Remarks: The ambient air quality is within the prescribed National Ambient Air quality Standard.

NOTE: BDL - Below Detection Limit

Mehulish Kumar
Sr. Chemist
Aditi R&D Services



[Signature]
Quality Manager
Aditi R&D Services, Sindri

Statements :

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Ref. No.: - ARDS/25-26/AAQ/2

Date: 27/11/2025

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 20/11/2025 to 21/11/2025
- Date of Testing : 22/11/2025 to 25/11/2025
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – SIJUA COLLIERY, 15 PIT			
	Avg. Ambient Temperature	23 ⁰ C	Avg. Humidity
SI No.	Particulars	Value	32%
1.	Particulate Matter (PM ₁₀), µg/m ³	90.85	100 µg/m ³
2.	Particulate Matter (PM _{2.5}), µg/m ³	53.7	60 µg/m ³
3.	SO ₂ , µg/m ³	6.71	80 µg/m ³
4.	NO ₂ , µg/m ³	4.75	80 µg/m ³
5.	Ozone, µg/m ³	13.76	180 µg/m ³
6.	NH ₃ , µg/m ³	13.99	400 µg/m ³
7.	CO, mg/m ³	0.59	4 mg/m ³
8.	Pb, µg/m ³	BDL	1 µg/m ³
9.	As, ng/m ³	BDL	6 ng/m ³
10.	Ni, ng/m ³	BDL	20 ng/m ³
11.	Benzene, µg/m ³	BDL	5 µg/m ³
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³

Remarks: The ambient air quality is within the prescribed National Ambient Air quality Standard.

NOTE: BDL - Below Detection Limit


Sr. Chemist
Aditi R&D Services




Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/25-26/ AAQ/3

Date: 27/11/2025

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 20/11/2025 to 21/11/2025
- Date of Testing : 22/11/2025 to 25/11/2025
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – SIJUA GROUP OFFICE				
	Avg. Ambient Temperature	23 ⁰ C	Avg. Humidity	32%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	95.8	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	55.2	60 µg/m ³	
3.	SO ₂ , µg/m ³	5.37	80 µg/m ³	
4.	NO ₂ , µg/m ³	19.91	80 µg/m ³	
5.	Ozone, µg/m ³	13.96	180 µg/m ³	
6.	NH ₃ , µg/m ³	14.22	400 µg/m ³	
7.	CO, mg/m ³	0.72	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6 ng/m ³	
10.	Ni, ng/m ³	BDL	20 ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³	

Remarks: The ambient air quality is within the prescribed National Ambient Air quality Standard.

NOTE: BDL - Below Detection Limit

Devi Lakshmi Kumar
Sr. Chemist
Aditi R&D Services



[Signature]
Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/25-26/ AAQ/4

Date: 27/11/2025

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 19/11/2025 to 20/11/2025
- Date of Testing : 21/11/2025 to 24/11/2025
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – W.T.P. MALKERA				
	Avg. Ambient Temperature	23 ⁰ C	Avg. Humidity	32%
Sl No.	Particulars	Value	CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	76.59	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	51.68	60 µg/m ³	
3.	SO ₂ , µg/m ³	8.88	80 µg/m ³	
4.	NO ₂ , µg/m ³	25.65	80 µg/m ³	
5.	Ozone, µg/m ³	14.76	180 µg/m ³	
6.	NH ₃ , µg/m ³	13.93	400 µg/m ³	
7.	CO, mg/m ³	0.72	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6 ng/m ³	
10.	Ni, ng/m ³	BDL	20 ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyrene ng/m ³	BDL	1 ng/m ³	

Remarks: The ambient air quality is within the prescribed National Ambient Air quality Standard.

NOTE: BDL - Below Detection Limit

Dhriti Kumar
Sr. Chemist
Aditi R&D Services



[Signature]
Quality Manager
Aditi R&D Services, Sindri

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TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING

Ref. No. & Date	NAME AND ADDRESS OF THE CLIENT			
ARDS/25-26/NOISE/1 Date: 27/11/2025	TATA STEEL JHARIA DIVISION TATA STEEL COLLIERY (SIJUA GROUP) DIST. - DHANBAD (JHARKHAND)			
Date of Monitoring				
19/11/2025 to 22/11/2025	Avg. Ambient Temperature (°C)	Average Humidity (%)	Weather Condition	Status of the plant
Work Order 4700126557/932 Date:- 29/05/2024	23	32	Clear	Running

MONITORING RESULTS

Sl. No	Place of Monitoring	Day Time (6 AM to 10 PM) Avg. dB(A)			Night Time (10 PM to 6 AM) Avg. dB(A)			Noise level (Ambient standard) for Industrial Area as per CPCB Noise Pollution (Regulation and Control) (Amendment) Rules , 2000 notified vide S.O. 1046(E) Dt. 22.11.2020 Limit in dB(A) Leq	
		MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
	LOCATION							Industrial Area	Industrial Area
	SIJUA GROUP								
1.	Sijua Group Office	68.7	57.2	65.99	59.3	54.2	57.46	75	70
2.	Sijua Colliery 15 Pit	71.4	68.6	70.22	60.3	52.6	57.97		
								Residential Area	Residential Area
3.	Russi Vihar Colony	57.8	52.8	52.8	48.2	41.2	45.98	65	55
4.	WTP Malkera	59.3	57.4	57.4	46.8	40.2	44.65		

Remarks: Noise level is well within the standard specified limit for Industrial Area.

Dr. Vishal Kumar
Sr. Chemist
 Aditi R&D Services



[Signature]
Quality Manager
 Aditi R&D Services, Sindri

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Mobile: 09471358482, 09431512608

Ref. No.: - ARDS/25-26/MINER./1

Date: 27/11/2025

TEST REPORT OF MINERALOGICAL COMPOSITION OF PARTICULATE MATTER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 19/11/2025 and 20/11/2025
- Date of Testing : 21/11/2025 – 23/11/2025
- Test Procedure : As per IS

TEST RESULTS

Sl No.	Particulars	Mineralogical Composition (%)			
		SiO ₂	FeO	Al ₂ O ₃	CaO
1.	Sijua Group Office.	1.82	0.120	1.40	2.96
2.	WTP Malkera	1.84	0.128	1.26	2.73

Dhriti Kumar
Sr. Chemist
Aditi R&D Services



[Signature]
Quality Manager
Aditi R&D Services, Sindri

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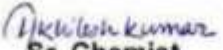
Date: 27/11/2025

TEST REPORT OF SURFACE WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. Katri River (Up Stream)
2. Katri River (Down Stream)
- Date of Sample Collection: 20/11/2025
- Date of Testing : 21/11/2025 To 25/11/2025
- Test : pH, TDS, Turbidity, DO, BOD, Cl, F, SO₄

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Katri River (Up Stream)	Katri River (Down Stream)		
1.	pH,	8.12	7.81	6.5 - 8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	550.4	560.7	1500(Max.)	IS-3025 (P-16): 1984
3.	Turbidity, NTU	1.2	1.6	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	6.3	6.5	4 (Min.)	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	1.4	1.2	3	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	40.7	46.5	600(Max)	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.3	0.4	1.5 (Max.)	IS-3025 (P-60):2008
8.	Sulphate as SO ₄ , mg/l	48	44	400 (Max.)	IS-3025 (P-24):1986


Sr. Chemist
Aditi R&D Services




Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/25-26/MWD/1

Date: 27/11/2025

TEST REPORT OF MINE WATER DISCHARGE

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. 2 Pit Sijua Colliery
2. 8 Pit Sijua Colliery
3. 15 Pit Sijua Colliery
4. B.C.P.P. (Final Setting Pond)
5. Bhelatand A Colliery
- Date of Sample Collection: 21/11/2025 To 22/11/2025
- Date of Testing : 23/11/2025 To 27/11/2025
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE					Limit as per IS-2296 Class B (For Bathing)	Test Method
		2 Pit Sijua Colliery	8 Pit Sijua Colliery	15 Pit Sijua Colliery	B.C.P.P . Final Setting Pond	Bhelatnd A Colliery		
1.	pH,	8.23	8.31	7.70	8.12	8.15	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	588	880	868	564	608	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	13	16	18	19	18	-	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	2.1	2.2	2.8	2.4	2.2	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	40	48	88	72	32	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	2.4	2.8	3.2	2.6	2.8	-	IS-3025 (P-39):2021

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Ref. No.: - ARDS/25-26/STP/1

Date: 27/11/2025

TEST REPORT OF SEWAGE

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. STP Outlet - Aadarsh Nagari
2. STP Outlet - Bhelatand Officers Colony
- Date of Sample Collection: 22/11/2025
- Date of Testing : 23/11/2025 to 27/11/2025
- Test : pH, TDS, TSS, B.O.D., CO.D. , Oil & Grease
Fecal Coliform, Total Nitrogen and Total Phosphorous.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		As per MoEF&CC Notification for Sewage Treatment Plant	Test Method
		STP Outlet - Aadarsh Nagari	STP Outlet - Bhelatand Officers Colony		
1.	pH,	7.6	7.9	5.5 - 9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	672	629	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	20	18	20	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	3.2	6.2	10	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	48	104	50	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	3.9	3.6	-	IS-3025 (P-39):2021
7.	Fecal Coliform (FC) (MPN/100ml)	140/100	142/100	Desirable 100 & Permissible 230	IS - 1622
8.	Total Nitrogen as N, mg/l	7.4	7.6	10	IS - 3025 (P-34):1988
9.	Total Phosphorus as P, mg/l	0.6	0.8	1.0	IS - 3025 (P-31):1988

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Ref. No.: - ARDS/25-26/DW/1

Date: 27/11/2025

TEST REPORT OF DRINKING WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. Canteen-Bhelatand Colliery
2. Canteen- Sijua Colliery
- Date of Sample Collection: 21/11/2025
- Date of Testing : 22/11/2025 To 26/11/2025
- Test : Olour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Total Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		Canteen Bhelatand Colliery	Canteen Sijua Colliery	Desirable	Permissible	
1.	Colour, (Hazen Unit)	1	1	5.00	15.0	IS 3025 (P-4):2021
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
3.	Taste,	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
4.	Turbidity, NTU	0.8	0.4	1.0	5.0	IS 3025 (P-10):1984
5.	pH	7.6	8.4	6.5-8.5	No. Relax.	IS-3025(P-11): 1983
6.	Total Hardness as CaCO ₃ , mg/l	432	436	200	600	IS 3025 (P-21):2009
7.	Chloride as Cl, mg/l	72	70	250	1000	IS 3025 (P-32):1988
8.	Res. Free chlorine as Cl ₂ mg/l	N.T.	N.T.	0.20	1.0	IS 3025 (P-26):2021
9.	Total Dissolved Solids, mg/l	410	515	500	2000	IS 3025 (P-16):1984
10.	Calcium as Ca, mg/l	78	70	75	200	IS 3025 (P-40):1991
11.	Copper as Cu, mg/l	0.094	0.072	0.05	1.5	IS 3025 (P-42):1992

Continued on Page 2

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Sl. No.	PARAMETERS OF TEST	VALUE		IS as per IS 10500:1991		Test Method
		Canteen Bhelatand Colliery	Canteen Sijua Colliery	Desirable	Permissible	
12.	Manganese as Mn, mg/l	0.241	0.21	0.10	0.30	IS 3025 (P-59):2006
13.	Sulphate as SO ₄ , mg/l	78	72	200	400	IS 3025 (P-24):1986
14.	Nitrate as NO ₃ , mg/l	6.7	6.4	45	No. Relax	IS 3025 (P-34):1988
15.	Fluoride as F, mg/l	0.6	0.5	1.0	1.5	IS 3025 (P-60):2008
16.	Phenolic Compound as (C ₆ H ₅ OH) mg/l	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
17.	Mercury as Hg, mg/l	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
18.	Cadmium as Cd, mg/l	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
19.	Arsenic as As, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
20.	Cyanide as CN, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
21.	Lead as Pb, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
22.	Zinc as Zn, mg/l,	2.4	2.6	5	15	IS 3025 (P-42):1992
23.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
24.	Total Chromium as Cr, mg/l	0.02	0.02	0.05	No. Relax	IS 3025 (P-52):2003
25.	Mineral Oil, mg/l	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
26.	Alkalinity as CaCO ₃ , mg/l,	454.4	482.8	200	600	IS 3025 (P-23):1983
27.	Aluminium as Al, mg/l	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boran as B, mg/l	BDL	BDL	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

Dhritesh Kumar
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Ref. No.: - ARDS/25-26/GW/1

Date: 27/11/2025

TEST REPORT OF GROUND WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. Ruddi Basti
2. Rampur Basti
3. Sijua 6 No
4. Bansh Kapuria
5. Pasitand Basti
- Date of Sample Collection: 19/11/2025 To 22/11/2025
- Date of Testing : 23/11/2025 To 27/11/2025
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Total Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE					IS as per IS 10500:1991		Test Method
		Ruddi Basti	Rampur Basti	Sijua 6 No	Bansh Kapuria	Pasitand Basti	Desirable	Permissible	
1.	Colour, (Hazen Unit)	2	1	1	1	1	5	15	IS 3025 (P-4):2021
2.	Temperature °C	24.1	23.2	23.3	24.2	23.7	-	-	-
3.	Electrical Conductivity, µmhos/cm	890	420	1110	1240	1980	-	-	-
4.	Total Dissolved Solids, mg/l	560	268	710	772	1210	500	2000	IS 3025(P-6):1984
5.	pH	7.5	7.3	7.4	7.7	7.4	6.5-8.5	No Relax	IS-3025(P-11):1983
6.	Total Hardness as CaCO ₃ , mg/l	420	308	716	528	1172	300	600	IS 3025(P-1):2009
7.	Calcium as Ca, mg/l	95	80	115	131	137	75	200	IS 3025(P-0):1991
8.	Magnesium as Mg, mg/l	28	25.92	68.64	48	58.62	30	100	IS 3025(P-6):1994
9.	Chloride as Cl, mg/l	13.1	23.2	64	23.6	27	250	1000	IS 3025(P-2):1988
10.	Fluoride as F, mg/l	0.4	0.3	0.2	0.3	0.3	1.0	1.5	IS 3025(P-0):2008

Continued on Page-2

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Sl. No	PARAMETERS OF TEST	VALUE					IS as per IS 10500:1991		Test Method
		Ruddi Basti	Rampur Basti	Sijua 6 No	Bansh Kapuria	Pasitand Basti	Desir - able	Permissible	
11	Sulphate as SO ₄ , mg/l	96.2	64.6	142.9	69.2	160.3	200	400	IS 3025(P-24):1986
12	Nitrate as NO ₃ , mg/l	5.5	6.2	6.8	5.9	6.1	45	No. Relax	IS 3025(P-34):1988
13	Alkalinity as CaCO ₃ , mg/l,	471.4	269	553.8	536.7	593	200	600	IS 3025(P-23):1983
14	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
15	Zinc as Zn, mg/l,	2.4	2.6	2.8	2.4	2.6	5	15	IS 3025(P-42):1992
16	Iron a Fe, mg/l	0.03	0.158	0.130	0.115	0.051	1.0	No. Relax	IS 3025(P-53):2003
17	Copper as Cu, mg/l	0.042	0.026	0.048	0.058	0.061	0.05	1.5	IS3025 (P-42):1992
18	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
19	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
20	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
21	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
22	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
23	Total Chromium as Cr, mg/l	BDL	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit

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Ref. No.: - ARDS/25-26/STP/2

Date: 27/11/2025

TEST REPORT OF STP OUTLET

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. STP Outlet - Sijua Canteen
2. STP Outlet - Bhelatand Canteen
- Date of Sample Collection : 20/11/2025
- Date of Testing : 21/11/2025 To 25/11/2025
- Test : pH, TDS, TSS, B.O.D., CO.D. , Oil & Grease
Fecal Coliform, Total Nitrogen and Total Phosphorous

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		As per MoEF&CC Notification for Sewage Treatment Plant	Test Method
		STP Outlet Sijua Canteen	STP Outlet Bhelatand Canteen		
1.	pH,	7.13	7.82	5.5-9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	705	541	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	17	16	20	IS-3025(P-17) : 1984
4.	Bio chemical Oxygen Demand, mg/l	2.6	2.1	10	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	48	32	50	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	4.2	3.6	-	IS-3025 (P-39):2021
7.	Fecal Coliform (FC) (MPN/100ml)	132/100	138/100	Desirable 100 & Permissible 230	IS - 1622
8.	Total Nitrogen as N, mg/l	8.1	7.7	10	IS - 3025 (P-34):1988
9.	Total Phosphorus as P, mg/l	0.6	0.5	1.0	IS - 3025 (P-31):1988

Note : BDL - Below Detection Limit

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Ref. No.: - ARDS/25-26/AAQ/1

Date: 25/03/2026

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 20/03/2026 – 21/03/2026
- Date of Testing : 23/03/2026 – 25/03/2026
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – SIJUA GROUP OFFICE				
Environmental Conditions During Testing and Analysis	Ambient Temperature	27°C ± 2 °C	Relative Humidity	50%±10%
Sl No.	Particulars	Value	NAAQ - CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	89.16	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	59.78	60 µg/m ³	
3.	SO ₂ , µg/m ³	29.35	80 µg/m ³	
4.	NO ₂ , µg/m ³	67.22	80 µg/m ³	
5.	Ozone, µg/m ³	50.25	180 µg/m ³	
6.	NH ₃ , µg/m ³	31.90	400 µg/m ³	
7.	CO, mg/m ³	0.88	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6ng/m ³	
10.	Ni, ng/m ³	BDL	20ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyrene ng/m ³	BDL	1ng/m ³	

Remarks: The ambient air quality is within the prescribed National Ambient Air quality Standard.

NOTE: BDL - Below Detection Limit

Devlash Kumar
Sr. Chemist
Aditi R&D Services



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Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/25-26/AAQ/2

Date: 25/03/2026

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 20/03/2026 – 21/03/2026
- Date of Testing : 23/03/2026 – 25/03/2026
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – WTP MALKERA			
Environmental Conditions During Testing and Analysis	Ambient Temperature	27°C ± 2°C	Relative Humidity
			50% ± 10%
Sl No.	Particulars	Value	NAAQ - CPCB STANDARD
1.	Particulate Matter (PM ₁₀), µg/m ³	81.38	100 µg/m ³
2.	Particulate Matter (PM _{2.5}), µg/m ³	48.13	60 µg/m ³
3.	SO ₂ , µg/m ³	24.21	80 µg/m ³
4.	NO ₂ , µg/m ³	33.40	80 µg/m ³
5.	Ozone, µg/m ³	15.07	180 µg/m ³
6.	NH ₃ , µg/m ³	36.86	400 µg/m ³
7.	CO, mg/m ³	0.89	4 mg/m ³
8.	Pb, µg/m ³	BDL	1 µg/m ³
9.	As, ng/m ³	BDL	6ng/m ³
10.	Ni, ng/m ³	BDL	20ng/m ³
11.	Benzene, µg/m ³	BDL	5 µg/m ³
12.	Benzoapyreneng/m ³	BDL	1ng/m ³

Remarks: The ambient air quality is within the prescribed National Ambient Air quality Standard.
NOTE: BDL - Below Detection Limit

Akshay Kumar
Sr. Chemist
Aditi R&D Services



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Quality Manager
Aditi R&D Services, Sindri

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Ref. No.: - ARDS/25-26/ AAQ/3

Date: 27/03/2026

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 23/03/2026 to 24/03/2026
- Date of Testing : 25/03/2026 – 27/03/2026
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – SIJUA COLLIERY, 15 PIT				
Environmental Conditions During Testing and Analysis →	Ambient Temperature	27°C ± 2 °C	Relative Humidity	50%±10%
Sl No.	Particulars	Value	NAAQ - CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	76.91	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	56.66	60 µg/m ³	
3.	SO ₂ , µg/m ³	48.49	80 µg/m ³	
4.	NO ₂ , µg/m ³	61.20	80 µg/m ³	
5.	Ozone, µg/m ³	12.58	180 µg/m ³	
6.	NH ₃ , µg/m ³	27.51	400 µg/m ³	
7.	CO, mg/m ³	0.96	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6ng/m ³	
10.	Ni, ng/m ³	BDL	20ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyreneng/m ³	BDL	1ng/m ³	

Remarks: The ambient air quality is within the prescribed National Ambient Air quality Standard.
NOTE: BDL - Below Detection Limit

Akshay Kumar
Sr. Chemist
Aditi R&D Services



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Quality Manager
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Ref. No.: - ARDS/25-26/ AAQ/4

Date: 27/03/2026

TEST REPORT OF AMBIENT AIR QUALITY

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 23/03/2026 to 24/03/2026
- Date of Testing : 25/03/2026 – 27/03/2026
- Test Procedure : As per IS-5182

TEST RESULTS

LOCATION – RUSSI VIHAR COLONY				
Environmental Conditions During Testing and Analysis →	Ambient Temperature	27°C ± 2 °C	Relative Humidity	50% ± 10%
Sl No.	Particulars	Value	NAAQ - CPCB STANDARD	
1.	Particulate Matter (PM ₁₀), µg/m ³	87.65	100 µg/m ³	
2.	Particulate Matter (PM _{2.5}), µg/m ³	56.18	60 µg/m ³	
3.	SO ₂ , µg/m ³	22.88	80 µg/m ³	
4.	NO ₂ , µg/m ³	32.68	80 µg/m ³	
5.	Ozone, µg/m ³	16.39	180 µg/m ³	
6.	NH ₃ , µg/m ³	28.78	400 µg/m ³	
7.	CO, mg/m ³	0.78	4 mg/m ³	
8.	Pb, µg/m ³	BDL	1 µg/m ³	
9.	As, ng/m ³	BDL	6ng/m ³	
10.	Ni, ng/m ³	BDL	20ng/m ³	
11.	Benzene, µg/m ³	BDL	5 µg/m ³	
12.	Benzoapyreneng/m ³	BDL	1ng/m ³	

Remarks: The ambient air quality is within the prescribed National Ambient Air quality Standard.

NOTE: BDL - Below Detection Limit

Akshay Kumar
Sr. Chemist
Aditi R&D Services



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Quality Manager
Aditi R&D Services, Sindri

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TEST REPORT OF NOISE (AMBIENT) LEVEL MONITORING

Ref. No. & Date	NAME AND ADDRESS OF THE CLIENT			
ARDS/25-26/NOISE/1 Date: 23/03/2026	TATA STEEL JHARIA DIVISION TATA STEEL COLLIERY (SIJUA GROUP) DIST. - DHANBAD (JHARKHAND)			
Date of Monitoring				
20/03/2026 to 21/03/2026	Ambient Temperature	Relative Humidity	Weather Condition	Status of the plant
Work Order 4700126557/932 Date:- 29/05/2024	27°C± 2 °C	50%±10%	Clear	Running

MONITORING RESULTS

Sl. No	Place of Monitoring	Day Time (6 AM to 10 PM) Avg. dB(A)			Night Time (10 PM to 6 AM) Avg. dB(A)			Noise level (Ambient standard) for Industrial Area as per CPCB Noise Pollution (Regulation and Control) (Amendment) Rules, 2000 notified vide S.O. 1046(E) Dt. 22.11.2020 Limit in dB(A) Leq	
		MAX	MIN	AVG. dB(A) Leq	MAX	MIN	AVERAGE dB(A) Leq	Day Time	Night Time
	LOCATION							Industrial Area	Industrial Area
	SIJUA GROUP								
1.	Sijua Group Office	73.2	59.4	70.37	57.9	52.4	55.97	75	70
2.	Sijua Colliery 15 Pit	74.6	72.6	73.71	62.2	54.6	59.89		
								Residential Area	Residential Area
3.	RussiVihar Colony	61.5	58.2	60.16	49.6	47.62	48.72	65	55
4.	WTP Malkera	62.3	59.7	61.19	48.4	42.36	46.35		

Remarks: Noise level is well within the standard specified limit for Industrial Area.

Akhilash Kumar
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Ref. No.: - ARDS/25-26/MINER./1

Date: 26/03/2026

TEST REPORT OF MINERALOGICAL COMPOSITION
OF PARTICULATE MATTER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Date of Sample Collection : 23/03/2026
- Date of Testing : 24/03/2026 – 26/03/2026
- Test Procedure : As per IS

TEST RESULTS

Sl No.	Particulars	Mineralogical Composition (%)			
		SiO ₂	FeO	Al ₂ O ₃	CaO
1.	Sijua Colliery, 15 Pit	1.73	0.118	1.38	2.69
2.	Russi Vihar Colony	1.69	0.114	1.19	2.64

Akshay Kumar
Sr. Chemist
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Quality Manager
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Ref. No.: - ARDS/25-26/SW/1

Date: 26/03/2026

TEST REPORT OF SURFACE WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. Katri River (Up Stream)
: 2. Katri River (Down Stream)
- Date of Sample Collection: 20/03/2026
- Date of Testing : 23/03/2026 – 26/03/2026
- Test : pH, TDS, Turbidity, DO, BOD, Cl, F, SO₄

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE		Limit as per IS 2296 Class - C	Test Method
		Katri River (Up Stream)	Katri River (Down Stream)		
1.	pH,	7.35	7.58	6.5 - 8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	940	952	1500(Max.)	IS-3025 (P-16): 1984
3.	Turbidity, NTU	0.2	0.4	-	IS-3025 (P-10):1984
4.	Dissolved Oxygen, mg/l	5.68	5.36	4 (Min.)	IS-3025 (P-38):1989
5.	Bio chemical Oxygen Demand, mg/l	1.2	1.2	3	IS-3025 (P-44):1994
6.	Chloride as Cl, mg/l	54.30	56.24	600(Max)	IS-3025 (P-32):1988
7.	Fluoride as F, mg/l	0.10	0.10	1.5 (Max.)	IS-3025 (P-60):2008
8.	Sulphate as SO ₄ , mg/l	101.31	50.91	400 (Max.)	IS-3025 (P-24):1986

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Ref. No.: - ARDS/25-26/MWD/1

Date: 26/03/2026

TEST REPORT OF MINE WATER DISCHARGE

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. Bhelatand A. Colliery
2. 15 Pit Sijua Colliery
3. 8 Pit Sijua Colliery
4. 2 pit Sijua Colliery
5. BCPP (Final Settling Pond)
- Date of Sample Collection: 20/03/2026 - 21/03/2026
- Date of Testing : 23/03/2026 – 26/03/2026
- Test : pH, TDS, TSS, BOD, COD, OIL & GREASE.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE					Limit as per IS-2296 Class B (For Bathing)	Test Method
		Bhelatand A. Colliery	15 Pit Sijua Colliery	8 Pit Sijua Colliery	2 pit Sijua Colliery	BCPP (Final Settling Pond)		
1.	pH,	7.65	8.02	7.78	7.98	7.93	6.5-8.5	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	563	821	906	612	584	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	15	20	22	18	26	-	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	2.8	3.0	2.9	2.9	3.0	3	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	38	63	52	37	42	-	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	3.2	2.9	2.6	2.3	2.1	-	IS-3025 (P-39):2021

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Ref. No.: - ARDS/25-26/STP/1

Date: 27/03/2026

TEST REPORT OF SEWAGE

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. STP Outlet – Sijua Canteen
2. STP Outlet- Bltd. Canteen
3. STP Outlet- Aadarsh Nagari
4. STP Outlet- Bhelatand officers Colony
- Date of Sample Collection: 20/03/2026 – 21/03/2026
- Date of Testing : 23/03/2026 – 27/03/2026
- Test : pH, TDS, TSS, B.O.D., CO.D. , Oil & Grease
Fecal Coliform, Total Nitrogen and Total Phosphorous.

TEST RESULT

Sl. No.	PARAMETERS OF TEST	VALUE				As per MoEF&CC Notification for Sewage Treatment Plant	Test Method
		STP Outlet – Sijua Canteen	STP Outlet- Bltd. Canteen	STP Outlet- Aadarsh Nagari	STP Outlet- Bhelatand officers Colony		
1.	pH,	7.67	7.38	7.38	7.55	5.5 - 9.0	IS-3025 (P-11): 1983
2.	Total Dissolved Solids, mg/l	490	506	536	550	-	IS-3025 (P-16): 1984
3.	Total Suspended Solids, mg/l	20.0	20	18.6	15.0	20	IS-3025 (P-17): 1984
4.	Bio chemical Oxygen Demand, mg/l	1.3	3.0	3.2	1.2	10	IS-3025 (P-44):1994
5.	Chemical Oxygen Demand, mg/l	12.8	24.0	28.0	11.2	50	IS-3025 (P-58):2006
6.	Oil & Grease, mg/l	0.8	1.2	0.8	1.2	-	IS-3025 (P-39):2021
7.	Fecal Coliform (FC) (MPN/100ml)	80/100	70/100	60/100	40/100	Desirable 100 & Permissible 230	IS - 1622
8.	Total Nitrogen as N, mg/l	2.8	2.6	2.2	2.4	10	IS – 3025 (P-34):1988
9.	Total Phosphorus as P, mg/l	0.64	0.68	0.56	0.66	1.0	IS – 3025 (P-31):1988

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Quality Manager
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Ref. No.: - ARDS/25-26/DW/1

Date: 28/03/2026

TEST REPORT OF DRINKING WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO.: : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. Canteen-Bhelatand Colliery
2. Canteen- Sijua Colliery
- Date of Sample Collection: 23/03/2026
- Date of Testing : 24/03/2026 – 28/03/2026
- Test : Flour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Total Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

TEST RESULT

Sl. No	PARAMETERS OF TEST	VALUE		IS as per IS 10500:2012		Test Method
		Canteen – Bhelatand Colliery	Canteen- Sijua Colliery	Desirable	Permissible	
01.	Turbidity, NTU	0.1	0.1	1.0	5.0	IS 3025 (P-10):1984
02.	pH	7.97	7.97	6.5-8.5	No. Relax.	IS-3025 (P-11):1983
03.	Total Hardness as CaCO ₃ , mg/l	252	308	200	600	IS 3025 (P-21):2009
04.	Chloride as Cl, mg/l	69.82	71.76	250	1000	IS 3025 (P-32):1988
05.	Total Dissolved Solids, mg/l	597	601	500	2000	IS 3025 (P-16):1984
06.	Calcium as Ca, mg/l	28.8	36.8	75	200	IS 3025 (P-40):1991
07.	Copper as Cu, mg/l	0.021	0.019	0.05	1.5	IS 3025 (P-42):1992
08.	Sulphate as SO ₄ , mg/l	75.34	81.61	200	400	IS 3025 (P-24):1986
09.	Nitrate as NO ₃ , mg/l	8.21	7.96	45	No. Relax	IS 3025 (P-34):1988
10.	Fluoride as F, mg/l	0.05	0.08	1.0	1.5	IS 3025 (P-60):2008
11.	Total Chromium as Cr, mg/l	0.021	0.024	0.05	No. Relax	IS 3025 (P-52):2003
12.	Alkalinity as CaCO ₃ , mg/l,	312	344	200	600	IS 3025 (P-23):1983

Continued on Page 2

Statements :

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ADITI R&D SERVICES
Testing Laboratory
NABL ACCREDITED & REGISTERED BY JSPCB RANCHI
(A Constituent Board of Quality Council of India)
ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified

Plot No. - I-B-17 (P)
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Jharkhand - 828107
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Phone: 0326-2952377 (O),
Fax: 0326-2952377
Mobile: 09471358492, 09431512608

- 2 -

Sl. No	PARAMETERS OF TEST	VALUE		IS as per IS 10500:2012		Test Method
		Canteen – Bhelatand Colliery	Canteen- Sijua Colliery	Desirable	Permissible	
13.	Colour, (Hazen Unit)	1	1	5.00	15.0	IS 3025 (P-4):2021
14.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-5):2018
15.	Taste	Agreeable	Agreeable	Agreeable	Agreeable	IS 3025 (P-7):2017
16.	Res. Free chlorine as Cl ₂ mg/l	N.T.	N.T.	0.20	1.0	IS 3025 (P-26):2021
17.	Manganese as Mn, mg/l	0.034	0.040	0.10	0.30	IS 3025 (P-59):2006
18.	Phenolic Compound as (C ₆ H ₅ OH) mg/l	BDL	BDL	0.001	0.002	IS 3025 (P-43):1992
19.	Mercury as Hg, mg/l	BDL	BDL	0.001	No. Relax	IS 3025 (P-48):1994
20.	Cadmium as Cd, mg/l	BDL	BDL	0.003	No. Relax	IS 3025 (P-41):1992
21.	Arsenic as As, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-37):1988
22.	Cyanide as CN, mg/l	BDL	BDL	0.05	No. Relax	IS 3025 (P-27):1986
23.	Lead as Pb, mg/l	BDL	BDL	0.01	No. Relax	IS 3025 (P-47):1994
24.	Zinc as Zn, mg/l,	2.6	2.8	5	15	IS 3025 (P-42):1992
25.	Total Coliform, No./100ml	Absent	Absent	Absent	Absent	IS 3025 (P-49):1994
26.	Mineral Oil, mg/l	BDL	BDL	0.5	No. Relax	IS 3025 (P-39):1989
27.	Aluminium as Al, mg/l	BDL	BDL	0.03	0.2	IS 3025 (P-55):2003
28.	Boron as B, mg/l	0.012	0.015	0.5	1.0	IS 3025 (P-57):2005

NOTE: BDL - Below Detection Limit

Akash Kumar
Sr. Chemist
Aditi R&D Services



[Signature]
Quality Manager
Aditi R&D Services, Sindri

Statements :

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	<h2 style="margin:0;">ADITI R&D SERVICES</h2> <h3 style="margin:0;">Testing Laboratory</h3> <p style="margin:0;">NABL ACCREDITED & REGISTERED BY JSPCB RANCHI</p> <p style="margin:0;">(A Constituent Board of Quality Council of India)</p> <p style="margin:0;">ISO/IEC 17025:2017, ISO 9001:2015, ISO (OHSAS) 45001:2018 Certified</p>	Plot No. - I-B-17 (P) Sindri, Industrial Area, P.O. - Domgarh, Dist. - Dhanbad Jharkhand - 828107 Email ID: sindriaditi@gmail.com Website: aditimdservices.com Phone: 0326-2952377 (O), Fax: 0326-2952377 Mobile: 09471358492, 09431512608
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Ref. No.: - ARDS/25-26/GW/1

Date: 27/03/2026

TEST REPORT OF GROUND WATER

- Name of the industry : TATA STEEL JHARIA DIVISION
TATA STEEL COLLIERY (SIJUA GROUP)
DIST. - DHANBAD (JHARKHAND)
- Work Order Ref. NO. : 4700126557/932 Date:- 29/05/2024
- Sample Code : 1. Bhelatand Basti (Near 500 Quarters)
2. Sijua 12 No
3. Rampur Basti (Road Side)
4. Malkera Trigunait Basti
- Date of Sample Collection : 21/03/2026
- Date of Testing : 23/03/2026 – 27/03/2026
- Test : Colour, Odour, Taste, Turbidity, pH, Total Hardness, Iron, Chloride, Res. Free chlorine, Total Dissolved Solids, Calcium, Copper, Manganese, Sulphate, Nitrate, Fluoride, Phenolic Compound, Mercury, Cadmium, Arsenic, Cyanide, Lead, Zinc, Total Coliform, Total Chromium, Mineral Oil, Alkalinity, Aluminium & Boron.

TEST RESULT

SI. No	PARAMETERS OF TEST	VALUE				IS as per IS 10500:2012		Test Method
		Bhelatand Basti (Near 500 Quarters)	Sijua 12 No	Rampur Basti (Road Side)	MalkeraTrigunait Basti	Desir-able	Permi-ssible	
01.	Depth (In Meter)	6.2	5.8	7.1	6.7	-	-	
02.	Temperature °C	24.3	25.3	24.4	25.3	-	-	-
03.	Electrical Conductivity, µmhos/cm	920	1620	940	1710	-	-	-
04.	Total Dissolved Solids, mg/l	560	1055	610	1124	500	2000	IS 3025(P-16):1984
05.	pH	8.01	7.76	8.06	7.00	6.5-8.5	No Relax	IS-3025(P-11):1983
06.	Total Hardness as CaCO ₃ , mg/l	256	896	272	752	200	600	IS 3025(P-21):2009
07.	Calcium as Ca, mg/l	25.6	120.4	32	150.4	75	200	IS 3025(P-40):1991
08.	Magnesium as Mg, mg/l	46.65	98.94	46.66	91.37	30	100	IS 3025(P-46):1994
09.	Chloride as Cl, mg/l	73.70	75.64	75.65	215.27	250	1000	IS 3025(P-32):1988
10.	Fluoride as F, mg/l	0.15	0.10	0.08	0.05	1.0	1.5	IS 3025(P-60):2008
11.	Sulphate as SO ₄ , mg/l	75.25	127.28	77.23	91.33	200	400	IS 3025(P-24):1986
12.	Nitrate as NO ₃ , mg/l	7.65	7.88	8.11	8.20	45	No. Relax	IS 3025(P-34):1988
13.	Alkalinity as CaCO ₃ , mg/l,	344	420	332	520	200	600	IS 3025(P-23):1983

Continued on Page-2

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ADITI R&D SERVICES

Testing Laboratory

NABL ACCREDITED & REGISTERED BY JSPCB RANCHI

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- 2 -

Sl. No	PARAMETERS OF TEST	VALUE				IS as per IS 10500:2012		Test Method
		Bhelatand Basti (Near 500 Quarters)	Sijua 12 No	Rampur Basti (Road Side)	Malkera TrigunaitBast	Desir - able	Permi- ssible	
14.	Colour, (Hazen Unit)	1	1	1	1	5	15	IS 3025 (P-4):2021
15.	Lead as Pb, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-47):1994
16.	Zinc as Zn, mg/l,	2.8	2.6	2.6	2.7	5	15	IS 3025(P-42):1992
17.	Iron a Fe, mg/l	1.4	0.96	9.8	0.86	1.0	No. Relax	IS 3025(P-53):2003
18.	Copper as Cu, mg/l	0.018	0.016	0.021	0.020	0.05	1.5	IS3025 (P-42):1992
19.	Mercury as Hg, mg/l	BDL	BDL	BDL	BDL	0.001	No. Relax	IS 3025(P-48):1994
20.	Cadmium as Cd, mg/l	BDL	BDL	BDL	BDL	0.003	No. Relax	IS 3025(P-41):1992
21.	Nickel as Ni, mg/l	BDL	BDL	BDL	BDL	0.02	No. Relax	IS 3025(P-37):1992
22.	Arsenic as As, mg/l	BDL	BDL	BDL	BDL	0.01	No. Relax	IS 3025(P-37):1988
23.	Cyanide as CN, mg/l	BDL	BDL	BDL	BDL	0.05	No. Relax	IS 3025(P-27):1986
24.	Total Chromium as Cr, mg/l	0.022	0.018	0.019	0.020	0.05	No. Relax	IS 3025(P-52):2003

NOTE: BDL - Below Detection Limit

Akash Kumar
Sr. Chemist
Aditi R&D Services



[Signature]
Quality Manager
Aditi R&D Services, Sindri

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TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery
Head, Bhelatand A. Colliery

Ref: JMB/ ENV/ LAB/ 02 / 481 / 25

Date: 31 / 10 / 2025

Re: AIR QUALITY REPORT

We wish to inform you that Air Quality Monitoring was carried out in **SIJUA GROUP** in the month of **OCTOBER' 2025**. The results are as given below:

Core zone (as per Ambient Air quality standards for coal mines notified vide notification G.S.R. 742(E) dated-25.09.2000

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	SPM 24 Hourly Limit-700 µg/m ³	RSPM 24 Hourly Limit-300 µg/m ³	SO ₂ 24 Hourly Limit-120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	06.10.25	Clear	210.6	84.1	18.5	21.6
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	06.10.25	Clear	205.3	82.7	16.7	18.2

Buffer zone (as per NAAQS 2009 for Ambient Air quality standards)

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ 24 Hourly Limit-100 µg/m ³	PM _{2.5} 24 Hourly Limit-60 µg/m ³	SO ₂ 24 Hourly Limit-80 µg/m ³	NO _x 24Hourly Limit-80 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	06.10.25	Clear	84.1	42.6	18.5	20.6
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	06.10.25	Clear	82.7	40.5	16.7	18.2
3	Sijua Russi Vihar Colony	23°46'45" N/ 86°20'18" E	07.10.25	Clear	68.3	28.6	19.3	21.4
4	Malkera Colony	23°47'10" N/ 86°17'39" E	07.10.25	Clear	70.1	30.4	17.0	19.3
5	Bhelatand Colony	23°46'10.7" N/ 86°18'49"E	07.10.25	Clear	72.8	33.5	15.2	17.1

Note: PM₁₀ - Less than 10 micron Particulate Matter
PM_{2.5} - Less than 2.5-micron Particulate Matter -
µg - Microgram

This is for your information and necessary action please.


Lab. Assistant (Environment)


Sr. Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery
Head, Bhelatand A. Colliery

Ref: JMB/ ENV/ LAB/ 02 / 524 / 25

Date: 12 / 12 / 2025

Re: AIR QUALITY REPORT

We wish to inform you that Air Quality Monitoring was carried out in **SIJUA GROUP** in the month of **NOVEMBER' 2025**. The results are as given below:

Core zone (as per Ambient Air quality standards for coal mines notified vide notification G.S.R. 742(E) dated-25.09.2000

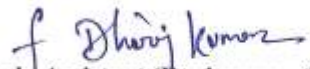
S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	SPM 24 Hourly Limit-700 µg/m ³	RSPM 24 Hourly Limit-300 µg/m ³	SO ₂ 24 Hourly Limit-120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	03.11.25	Clear	220.6	88.5	20.5	22.3
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	03.11.25	Clear	212.9	85.6	18.3	20.1

Buffer zone (as per NAAQS 2009 for Ambient Air quality standards)

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ 24 Hourly Limit-100 µg/m ³	PM _{2.5} 24 Hourly Limit-60 µg/m ³	SO ₂ 24 Hourly Limit-80 µg/m ³	NO _x 24 Hourly Limit-80 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	03.11.25	Clear	88.5	47.4	20.5	22.3
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	03.11.25	Clear	85.6	44.1	18.3	20.1
3	Sijua Russi Vihar Colony	23°46'45" N/ 86°20'18" E	05.11.25	Clear	72.5	31.9	16.8	18.2
4	Malkera Colony	23°47'10" N/ 86°17'39" E	05.11.25	Clear	74.6	33.2	15.2	17.9
5	Bhelatand Colony	23°46'10.7" N/ 86°18'49" E	05.11.25	Clear	70.9	30.7	17.0	19.6

Note: PM₁₀ - Less than 10 micron Particulate Matter
PM_{2.5} - Less than 2.5-micron Particulate Matter
µg - Microgram

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Lab Assistant (Environment)


Sr. Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery
Head, Bhelatand A. Colliery

Ref: JMB/ ENV/ LAB/ 02 / 543 / 25

Date: 31 / 12 / 2025

Re: AIR QUALITY REPORT

We wish to inform you that Air Quality Monitoring was carried out in **SIJUA GROUP** in the month of **DECEMBER 2025**. The results are as given below:

Core zone (as per Ambient Air quality standards for coal mines notified vide notification G.S.R. 742(E) dated-25.09.2000

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	SPM 24 Hourly Limit-700 µg/m ³	RSPM 24 Hourly Limit-300 µg/m ³	SO ₂ 24 Hourly Limit-120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	12.12.25	Clear	248.9	94.1	19.9	21.6
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	12.12.25	Clear	239.0	90.6	17.2	19.4

Buffer zone (as per NAAQS 2009 for Ambient Air quality standards)

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ 24 Hourly Limit-100 µg/m ³	PM _{2.5} 24 Hourly Limit-60 µg/m ³	SO ₂ 24 Hourly Limit-80 µg/m ³	NO _x 24Hourly Limit-80 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	12.12.25	Clear	94.1	50.6	19.9	21.6
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	12.12.25	Clear	90.6	48.9	17.2	19.4
3	Sijua Russi Vihar Colony	23°46'45" N/ 86°20'18" E	15.12.25	Clear	88.2	46.7	15.6	17.9
4	Malkera Colony	23°47'10" N/ 86°17'39" E	15.12.25	Clear	77.4	39.5	18.3	20.1
5	Bhelatand Colony	23°46'10.7" N/ 86°18'49" E	15.12.25	Clear	80.7	41.9	16.8	18.2

Note: PM₁₀ - Less than 10 micron Particulate Matter
PM_{2.5} - Less than 2.5-micron Particulate Matter
µg - Microgram

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Lab. Assistant (Environment)



Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery
Head, Bhelatand A. Colliery

Ref: JMB/ ENV/ LAB/ 02 / 17 / 26

Date: 28 / 01 / 2026

Re: AIR QUALITY REPORT

We wish to inform you that Air Quality Monitoring was carried out in **SIJUA GROUP** in the month of **JANUARY 2026**. The results are as given below:

Core zone (as per Ambient Air quality standards for coal mines notified vide notification G.S.R. 742(E) dated-25.09.2000

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	SPM 24 Hourly Limit-700 µg/m ³	RSPM 24 Hourly Limit-300 µg/m ³	SO ₂ 24 Hourly Limit-120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	13.01.26	Clear	251.3	102.9	20.6	22.8
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	13.01.26	Clear	246.7	116.4	18.6	20.1

Buffer zone (as per NAAQS 2009 for Ambient Air quality standards)

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ 24 Hourly Limit-100 µg/m ³	PM _{2.5} 24 Hourly Limit-60 µg/m ³	SO ₂ 24 Hourly Limit-80 µg/m ³	NO _x 24 Hourly Limit-80 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	13.01.26	Clear	102.9	55.4	20.6	22.8
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	13.01.26	Clear	116.4	58.6	18.6	20.1
3	Sijua Russi Vihar Colony	23°46'45" N/ 86°20'18" E	14.01.26	Clear	86.7	45.9	16.8	19.5
4	Malkera Colony	23°47'10" N/ 86°17'39" E	14.01.26	Clear	82.4	43.1	17.6	19.2
5	Bhelatand Colony	23°46'10.7" N/ 86°18'49" E	14.01.26	Clear	96.2	51.4	18.2	20.4

Note: PM₁₀ - Less than 10 micron Particulate Matter
PM_{2.5} - Less than 2.5-micron Particulate Matter
µg - Microgram

This is for your information and necessary action please.


Lab. Assistant (Environment)


Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery
Head, Bhelatand A. Colliery

Ref: JMB/ ENV/ LAB/ 02 / 43 / 26

Date: 02 / 03 / 2026

Re: AIR QUALITY REPORT

We wish to inform you that Air Quality Monitoring was carried out in **SIJUA GROUP** in the month of **FEBRUARY 2026**. The results are as given below:

Core zone (as per Ambient Air quality standards for coal mines notified vide notification G.S.R. 742(E) dated-25.09.2000

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	SPM 24 Hourly Limit-700 µg/m ³	RSPM 24 Hourly Limit-300 µg/m ³	SO ₂ 24 Hourly Limit-120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	02.02.26	Clear	239.5	96.4	19.7	21.5
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	02.02.26	Clear	228.7	94.2	21.3	22.6

Buffer zone (as per NAAQS 2009 for Ambient Air quality standards)

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	PM ₁₀ 24 Hourly Limit-100 µg/m ³	PM _{2.5} 24 Hourly Limit-60 µg/m ³	SO ₂ 24 Hourly Limit-80 µg/m ³	NO _x 24 Hourly Limit-80 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	02.02.26	Clear	96.4	53.1	19.7	21.5
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	02.02.26	Clear	94.2	50.4	21.3	22.6
3	Sijua Russi Vihar Colony	23°46'45" N/ 86°20'18" E	04.02.26	Clear	88.5	47.3	18.1	20.4
4	Malkera Colony	23°47'10" N/ 86°17'39" E	04.02.26	Clear	78.3	39.5	16.4	18.7
5	Bhelatand Colony	23°46'10.7" N/ 86°18'49" E	04.02.26	Clear	90.1	48.3	17.2	19.1

Note: PM₁₀ - Less than 10 micron Particulate Matter
PM_{2.5} - Less than 2.5-micron Particulate Matter
µg - Microgram

This is for your information and necessary action please.


Lab. Assistant (Environment)


Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery
Head, Bhelatand A. Colliery

Ref: JMB/ ENV/ LAB/ 02/ 75 / 26

Date: 06 / 04 / 2026

Re: AIR QUALITY REPORT

We wish to inform you that Air Quality Monitoring was carried out in **SIJUA GROUP** in the month of **MARCH' 2026**. The results are as given below:

Core zone (as per Ambient Air quality standards for coal mines notified vide notification G.S.R. 742(E) dated-25.09.2000

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	SPM 24 Hourly Limit-700 µg/m ³	RSPM 24 Hourly Limit-300 µg/m ³	SO ₂ 24 Hourly Limit-120 µg/m ³	NO _x 24 Hourly Limit-120 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	03.03.26	Clear	248.7	88.2	17.5	19.2
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	03.03.26	Clear	231.3	90.7	18.6	20.1

Buffer zone (as per NAAQS 2009 for Ambient Air quality standards)

S. No	Location	Latitude/ Longitude	Date of Sampling	Weather Condition	PM 10 24 Hourly Limit-100 µg/m ³	PM 2.5 24 Hourly Limit-60 µg/m ³	SO ₂ 24 Hourly Limit-80 µg/m ³	NO _x 24Hourly Limit-80 µg/m ³
1	Bhelatand Office Area	23°46' 11" N/ 86°18'51" E	03.03.26	Clear	88.2	42.6	17.5	19.2
2	Sijua Mine Office Area	23°46'33" N/ 86°19'51" E	03.03.26	Clear	90.7	46.5	18.6	20.1
3	Sijua Russi Vihar Colony	23°46'45" N/ 86°20'18" E	05.03.26	Clear	82.5	39.5	16.7	18.3
4	Malkera Colony	23°47'10" N/ 86°17'39" E	05.03.26	Clear	80.3	37.2	19.3	21.4
5	Bhelatand Colony	23°46'10.7" N/ 86°18'49"E	05.03.26	Clear	92.6	49.0	18.9	20.6

Note: PM₁₀ - Less than 10 micron Particulate Matter
PM_{2.5} - Less than 2.5-micron Particulate Matter
µg - Microgram

This is for your information and necessary action please.



Lab. Assistant (Environment)



Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head
Bhelatand Coal Washery

Ref. No. - JMB/ ENV/ LAB/ 09/ 469/25

Date: 31/10/2025

SUB: FUGITIVE EMISSION ANALYSIS REPORT.

We wish to inform you that Fugitive Emission Analysis was carried out in **Bhelatand Coal Washery** from 21.10.2025 to 22.10.2025. The results are as given below:

Weather Condition : Clear
Prominent Wind Direction : East to West

Sl. No.	Location	SPM $\mu\text{g}/\text{m}^3$	Fugitive Emission (Sl. No.2 – Sl. No.1) $\mu\text{g}/\text{m}^3$
1.	Near 114 Belt Conveyor 30 mts Geological Lab Park. (in leeward direction of wind)	283.02	73.56
2.	Near 114 Belt Conveyor 25 mts. MCC-3. (in downward direction of wind)	356.58	

Note: SPM - Suspended Particulate Matter.
 μg - Microgram

Remarks: The value of fugitive emissions was found to be $73.56 \mu\text{g}/\text{m}^3$ which is within the permissible limit of $100 \mu\text{g}/\text{m}^3$. You are requested to maintain the same.

This is for your information please.


Lab.Assistant (Environment)


Sr. Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head
Bhelatand Coal Washery

Ref. No. - JMB/ ENV/ LAB/ 09/ **553** /25

Date: **31 / 12 / 2025**

SUB: FUGITIVE EMISSION ANALYSIS REPORT.

We wish to inform you that Fugitive Emission Analysis was carried out in **Bhelatand Coal Washery** from 24.12.2025 to 25.12.2025. The results are as given below:

Weather Condition : Clear
Prominent Wind Direction : East to West

Sl. No.	Location	SPM $\mu\text{g}/\text{m}^3$	Fugitive Emission (Sl. No.2 – Sl. No.1) $\mu\text{g}/\text{m}^3$
1.	Near 114 Belt Conveyor 30 mts Geological Lab Park. (in leeward direction of wind)	359.98	80.31
2.	Near 114 Belt Conveyor 25 mts. MCC-3. (in downward direction of wind)	440.29	

Note: SPM - Suspended Particulate Matter.
 μg - Microgram

Remarks: The value of fugitive emissions was found to be $80.31 \mu\text{g}/\text{m}^3$ which is within the permissible limit of $100 \mu\text{g}/\text{m}^3$. You are requested to maintain the same.

This is for your information please.

Lab.Assistant (Environment)

Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head
Bhelatand Coal Washery

Ref. No. - JMB/ ENV/ LAB/ 09/ 58 /26
Date: 02 /03/ 2026

SUB: FUGITIVE EMISSION ANALYSIS REPORT.

We wish to inform you that Fugitive Emission Analysis was carried out in **Bhelatand Coal Washery** from 23.02.2026 to 24.02.2026. The results are as given below:

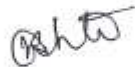
Weather Condition : Clear
Prominent Wind Direction : East to West

Sl. No.	Location	SPM $\mu\text{g}/\text{m}^3$	Fugitive Emission (Sl. No.2 - Sl. No.1) $\mu\text{g}/\text{m}^3$
1.	Near 114 Belt Conveyor 30 mts Geological Lab Park. (in leeward direction of wind)	285.81	81.17
2.	Near 114 Belt Conveyor 25 mts. MCC-3. (in downward direction of wind)	366.98	

Note: SPM - Suspended Particulate Matter.
 μg - Microgram

Remarks: The value of fugitive emissions was found to be $81.17 \mu\text{g}/\text{m}^3$ which is within the permissible limit of $100 \mu\text{g}/\text{m}^3$. You are requested to maintain the same.

This is for your information please.


Lab.Assistant (Environment)


Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery.
Head, Bhelatand A.Colliery.
Head, Bhelatand Coal Washery.

Ref : JMB/ ENV/ LAB/ 05 / 471 /25
Dated: 31/10/2025

Re: Ambient Noise Level Report

We wish to inform you that Ambient Noise Level Monitoring was carried out in **SIJUA GROUP** in the month of **OCTOBER*2025**. The results are as given below :

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 55			CPCB Standard- 45		
	Residential Area (Buffer Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Bhelatand Officers Colony	27.10.25	43.2	45.5	44.4	35.4	37.7	36.6
2	Russi Vihar Colony, Sijua	27.10.25	42.5	44.7	43.6	34.2	36.5	35.4
3	Malkera Colony	27.10.25	42.3	44.6	43.5	34.1	36.3	35.2
4	Adarsh Nagari Colony, Bhelatand	27.10.25	44.5	46.8	45.7	36.5	38.8	37.7

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 75			CPCB Standard- 70		
	Industrial Area (Core Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Chief Office, Bhelatand	27.10.25	47.3	49.5	48.4	39.5	41.7	40.6
2	Weigh Bridge, Bhelatand	27.10.25	50.6	53.9	52.3	42.4	45.6	44.0
3	Sub Station, Bhelatand	27.10.25	50.2	52.4	51.3	42.6	44.8	43.7
4	Canteen Complex, Bhelatand	27.10.25	56.5	59.7	58.1	48.3	50.6	49.5
5	Security gate, Sijua	27.10.25	51.1	54.3	52.7	43.5	46.8	45.2
6	15 Pit Top, Sijua	27.10.25	54.4	57.6	56.0	46.2	49.5	47.9
7	2 Pit Top, Sijua	27.10.25	52.6	55.9	54.3	44.1	47.3	45.7
8	NRD office, BCPP	27.10.25	57.2	60.5	58.9	49.3	52.6	51.0
9	Loading Yard Complex, BCPP	27.10.25	50.3	53.7	52.0	42.4	45.7	44.1
10	DG Set Complex, BCPP	27.10.25	52.5	54.8	53.7	44.6	46.9	45.8

Analysis: All the values are within permissible limit

This is for your information please



Lab. Assistant (Environment)



Sr. Manager (Environment)

Copy to: Specialist (OH). TCH

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery.
Head, Bhelatand A.Colliery.
Head, Bhelatand Coal Washery.

Ref : JMB/ ENV/ LAB/ 05 / 522-125
Dated: 12 / 12 / 2025

Re: Ambient Noise Level Report

We wish to inform you that Ambient Noise Level Monitoring was carried out in **SIJUA GROUP** in the month of **NOVEMBER'2025**. The results are as given below:

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 55			CPCB Standard- 45		
	Residential Area (Buffer Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Bhelatand Officers Colony	12.11.25	44.5	46.7	45.6	36.3	38.5	37.4
2	Russi Vihar Colony, Sijua	12.11.25	43.3	45.6	44.5	35.6	37.8	36.7
3	Malkera Colony	12.11.25	41.6	43.8	42.7	33.4	35.6	34.5
4	Adarsh Nagari Colony, Bhelatand	12.11.25	42.4	44.5	43.5	34.5	36.7	35.6

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 75			CPCB Standard- 70		
	Industrial Area (Core Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Chief Office, Bhelatand	12.11.25	46.1	48.3	47.2	38.3	40.5	39.4
2	Weigh Bridge, Bhelatand	12.11.25	50.4	53.7	52.1	42.6	45.9	44.3
3	Sub Station, Bhelatand	12.11.25	48.7	50.9	49.8	40.2	42.5	41.4
4	Canteen Complex, Bhelatand	12.11.25	54.2	57.5	55.9	46.4	49.7	48.1
5	Security gate, Sijua	12.11.25	52.4	55.7	54.1	44.5	47.6	46.1
6	15 Pit Top, Sijua	12.11.25	54.6	57.9	56.3	46.3	49.5	47.9
7	2 Pit Top, Sijua	12.11.25	53.5	56.8	55.2	45.6	48.8	47.2
8	NRD office, BCPP	12.11.25	56.7	59.6	58.2	48.4	51.7	50.1
9	Loading Yard Complex, BCPP	12.11.25	52.1	55.4	53.8	44.3	47.5	45.9
10	DG Set Complex, BCPP	12.11.25	50.3	52.5	51.4	42.5	44.6	43.6

Analysis: All the values are within permissible limit

This is for your information please


Lab. Assistant (Environment)


Sr. Manager (Environment)

Copy to: Specialist (OH), TCH

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery.
Head, Bhelatand A.Colliery.
Head, Bhelatand Coal Washery.

Ref : JMB/ ENV/ LAB/ 05 / 552 /25
Dated: 31 /12/ 2025

Re: Ambient Noise Level Report

We wish to inform you that Ambient Noise Level Monitoring was carried out in **SIJUA GROUP** in the month of **DECEMBER'2025**. The results are as given below :

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 55			CPCB Standard- 45		
	Residential Area (Buffer Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Bhelatand Officers Colony	25.12.25	43.2	45.4	44.3	35.3	37.6	36.5
2	Russi Vihar Colony, Sijua	25.12.25	45.4	47.6	46.5	37.6	39.8	38.7
3	Malkera Colony	25.12.25	42.3	44.6	43.5	34.5	36.7	35.6
4	Adarsh Nagari Colony, Bhelatand	25.12.25	42.6	44.7	43.7	34.4	36.5	35.5

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 75			CPCB Standard- 70		
	Industrial Area (Core Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Chief Office, Bhelatand	25.12.25	45.4	47.6	46.5	37.2	39.5	38.4
2	Weigh Bridge, Bhelatand	25.12.25	51.3	54.5	52.9	43.5	46.7	45.1
3	Sub Station, Bhelatand	25.12.25	49.5	52.8	51.2	41.4	44.5	43.0
4	Canteen Complex, Bhelatand	25.12.25	52.7	55.6	54.2	44.5	47.8	46.2
5	Security gate, Sijua	25.12.25	51.2	54.4	52.8	43.3	46.6	45.0
6	15 Pit Top, Sijua	25.12.25	55.4	58.7	57.1	47.6	50.9	49.3
7	2 Pit Top, Sijua	25.12.25	53.6	56.9	55.3	45.2	48.4	46.8
8	NRD office, BCPP	25.12.25	57.3	60.2	58.8	49.5	52.3	50.9
9	Loading Yard Complex, BCPP	25.12.25	52.5	55.7	54.1	44.4	47.5	46.0
10	.DG Set Complex, BCPP	25.12.25	50.7	53.6	52.2	42.6	45.8	44.2

Analysis: All the values are within permissible limit

This is for your information please


Lab. Assistant (Environment)


Manager (Environment)

Copy to: Specialist (OH). TCH

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery.
Head, Bhelatand A. Colliery.
Head, Bhelatand Coal Washery.

Ref : JMB/ ENV/ LAB/ 05 / 29 /26
Dated: 28/01 /2026

Re: Ambient Noise Level Report

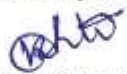
We wish to inform you that Ambient Noise Level Monitoring was carried out in **SIJUA GROUP** in the month of **JANUARY'2026**. The results are as given below :

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 55			CPCB Standard- 45		
	Residential Area (Buffer Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Bhelatand Officers Colony	22.01.26	44.3	46.5	45.4	36.5	38.7	37.6
2	Russi Vihar Colony, Sijua	22.01.26	46.5	48.7	47.6	38.4	40.7	39.6
3	Malkera Colony	22.01.26	42.2	44.5	43.4	34.5	36.4	35.5
4	Adarsh Nagari Colony, Bhelatand	22.01.26	45.4	47.8	46.6	37.2	39.5	38.4

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 75			CPCB Standard- 70		
	Industrial Area (Core Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Chief Office, Bhelatand	22.01.26	46.5	49.7	48.1	38.3	41.6	40.0
2	Weigh Bridge, Bhelatand	22.01.26	54.3	57.5	55.9	46.4	49.5	48.0
3	Sub Station, Bhelatand	22.01.26	49.6	52.8	51.2	41.1	44.3	42.7
4	Canteen Complex, Bhelatand	22.01.26	56.1	59.4	57.8	48.3	51.5	49.9
5	Security gate, Sijua	22.01.26	51.4	54.6	53.0	43.6	46.8	45.2
6	15 Pit Top, Sijua	22.01.26	54.2	57.4	55.8	46.4	49.6	48.0
7	2 Pit Top, Sijua	22.01.26	52.5	55.7	54.1	44.3	47.4	45.9
8	NRD office, BCPP	22.01.26	56.3	59.4	57.9	48.5	51.7	50.1
9	Loading Yard Complex, BCPP	22.01.26	49.5	51.8	50.7	41.7	43.9	42.8
10	DG Set Complex, BCPP	22.01.26	51.2	54.4	52.8	43.4	46.7	45.1

Analysis: All the values are within permissible limit

This is for your information please


Lab. Assistant (Environment)


Manager (Environment)

Copy to: Specialist (OH). TCH

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery.
Head, Bhelatand A.Colliery.
Head, Bhelatand Coal Washery.

Ref : JMB/ ENV/ LAB/ 05/ **57** /26
Dated: **02 / 03 / 2026**

Re: Ambient Noise Level Report

We wish to inform you that Ambient Noise Level Monitoring was carried out in **SIJUA GROUP** in the month of **FEBRUARY'2026**. The results are as given below :

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 55			CPCB Standard- 45		
	Residential Area (Buffer Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Bhelatand Officers Colony	17.02.26	45.1	47.3	46.2	37.3	39.5	38.4
2	Russi Vihar Colony, Sijua	17.02.26	46.7	48.9	47.8	38.5	40.7	39.6
3	Malkera Colony	17.02.26	43.4	45.6	44.5	35.2	37.4	36.3
4	Adarsh Nagari Colony, Bhelatand	17.02.26	44.6	46.8	45.7	36.4	38.6	37.5

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 75			CPCB Standard- 70		
	Industrial Area (Core Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Chief Office, Bhelatand	17.02.26	45.7	48.6	47.2	37.5	40.7	39.1
2	Weigh Bridge, Bhelatand	17.02.26	54.5	57.8	56.2	46.3	49.5	47.9
3	Sub Station, Bhelatand	17.02.26	50.3	53.5	51.9	42.4	45.7	44.1
4	Canteen Complex, Bhelatand	17.02.26	56.6	59.8	58.2	48.2	51.4	49.8
5	Security gate, Sijua	17.02.26	52.2	55.4	53.8	44.5	47.8	46.2
6	15 Pit Top, Sijua	17.02.26	54.5	57.8	56.2	46.3	49.6	48.0
7	2 Pit Top, Sijua	17.02.26	52.1	55.3	53.7	44.3	47.5	45.9
8	NRD office, BCPP	17.02.26	57.4	60.6	59.0	49.6	52.8	51.2
9	Loading Yard Complex, BCPP	17.02.26	49.3	51.5	50.4	41.1	43.4	42.3
10	DG Set Complex, BCPP	17.02.26	51.6	54.7	53.2	43.4	46.6	45.0

Analysis: All the values are within permissible limit

This is for your information please


Lab. Assistant (Environment)


Manager (Environment)

Copy to: Specialist (OH), TCH

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery.
Head, Bhelatand A.Colliery.
Head, Bhelatand Coal Washery.

Ref : JMB/ ENV/ LAB/ 05/ 86 /26
Dated: 06/04/2026

Re: Ambient Noise Level Report

We wish to inform you that Ambient Noise Level Monitoring was carried out in **SIJUA GROUP** in the month of **MARCH'2026**. The results are as given below :

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 55			CPCB Standard- 45		
	Residential Area (Buffer Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Bhelatand Officers Colony	16.03.26	44.3	46.5	45.4	36.5	38.7	37.6
2	Russi Vihar Colony, Sijua	16.03.26	47.5	49.7	48.6	39.4	41.7	40.6
3	Malkera Colony	16.03.26	42.2	44.4	43.3	34.1	36.3	35.2
4	Adarsh Nagari Colony, Bhelatand	16.03.26	45.4	47.6	46.5	37.3	39.5	38.4

S.No	Monitoring Station	Date	Day (06.00 – 22.00 Hrs.)			Night (22.00 - 06.00 Hrs.)		
			CPCB Standard- 75			CPCB Standard- 70		
	Industrial Area (Core Zone)		Min.	Max.	Avg.	Min.	Max.	Avg.
1	Chief Office, Bhelatand	16.03.26	46.5	49.7	48.1	38.6	41.8	40.2
2	Weigh Bridge, Bhelatand	16.03.26	57.3	60.5	58.9	49.2	52.4	50.8
3	Sub Station, Bhelatand	16.03.26	52.6	55.8	54.2	44.5	47.7	46.1
4	Canteen Complex, Bhelatand	16.03.26	58.4	61.6	60.0	50.6	53.9	52.3
5	Security gate, Sijua	16.03.26	52.5	55.9	54.2	44.3	47.6	46.0
6	15 Pit Top, Sijua	16.03.26	53.7	56.6	55.2	45.5	48.8	47.2
7	2 Pit Top, Sijua	16.03.26	54.4	57.8	56.1	46.2	49.5	47.9
8	NRD office, BCPP	16.03.26	56.2	59.5	57.9	48.4	51.7	50.1
9	Loading Yard Complex, BCPP	16.03.26	50.5	52.7	51.6	42.3	44.5	43.4
10	DG Set Complex, BCPP	16.03.26	52.4	55.6	54.0	44.6	47.8	46.2

Analysis: All the values are within permissible limit

This is for your information please



Lab. Assistant (Environment)



Manager (Environment)

Copy to: Specialist (OH), TCH

TATA STEEL LIMITED
JHARIA DIVISION

Head,
Bhelatand Coal Washery.

Ref. No. - JMB / ENV / LAB / 03 / 480 / 2025

Dated - 31 / 10 / 2025

Sub: EFFLUENT WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **OCTOBER'2025**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Final Settling Pond Bhelatand Coal Washery	27.10.25	11:40 AM	29	7.8	39	912	3.6	96	2.9

All the parameters are within the limit, and you are requested to maintain the same.

This is for your information and necessary action please.


Lab. Assistant (Environment)


Sr. Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 478 / 2025

Dated - 31 / 10 / 2025

Sub: MINE WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **OCTOBER'2025**.
The results are as given below:

S.No	Location: Final Discharge Point (Mine's Water)	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Bhelatand A. Colliery	27.10.25	11:20 AM	31	7.8	20	802	2.5	54	1.7
2	15 Pit Sijua Colliery	27.10.25	11:30 AM	32	7.5	19	705	4.7	84	1.4
3	8 Pit Sijua Colliery	27.10.25	10:20 AM	No Discharge						
4	2 Pit Sijua Colliery	27.10.25	09:55 AM	31	7.9	31	897	3.2	52	1.2

All the parameters are within the limit, and you are requested to maintain the same.
This is for your information and necessary action please.

P. Mahato

Lab. Assistant (Environment)

Umesh

Sr. Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 479 / 2025

Dated - 31 / 10 / 2025

Sub: STP WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **OCTOBER'2025**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	6.5-8.5	≤ 10 mg/L	-	≤ 10 mg/L	≤ 50 mg/L	-
1	STP, Bld.Canteen- Inlet	27.10.25	12:05 PM	27	8.1	121	814	36.2	298	3.5
2	STP, Bld.Canteen- Outlet	27.10.25	12:10 PM	26	7.9	16	726	5.6	84	1.2
3	STP, Sijua Canteen- Inlet	27.10.25	10:45 AM	27	8.0	145	906	33.9	310	3.2
4	STP, Sijua Canteen- Outlet	27.10.25	10:50 AM	26	7.7	24	873	4.8	76	0.9
5	STP, Aadarsh Nagari- Inlet	27.10.25	12:30 PM	28	7.9	162	745	30.8	284	3.7
6	STP, Aadarsh Nagari- Outlet	27.10.25	12:35 PM	27	7.6	15	698	6.4	104	1.6
7	STP,Bhelatand Officers Colony- Inlet	27.10.25	01:10 PM	28	8.2	135	812	34.2	316	2.5
8	STP,Bhelatand Officers Colony- Outlet	27.10.25	01:15 PM	27	7.9	31	756	7.2	48	1.4

All the parameters are within the limit and you are requested to maintain the same.

This is for your information and necessary action please.


Lab. Assistant (Environment)


Sr. Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 504 / 2025

Dated - 12 / 12 / 2025

Sub: MINE WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **NOVEMBER'2025**.
The results are as given below:

S.No	Location: Final Discharge Point (Mine's Water)	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Bhelatand A. Colliery	12.11.25	11:25 AM	30	7.6	23	712	3.1	64	1.3
2	15 Pit Sijua Colliery	12.11.25	11:35 AM	30	7.5	19	847	2.8	76	0.9
3	8 Pit Sijua Colliery	12.11.25	10:25 AM	30	7.4	14	917	3.7	81	1.5
4	2 Pit Sijua Colliery	12.11.25	10:20 AM	32	7.7	16	632	5.1	98	1.1

All the parameters are within the limit, and you are requested to maintain the same.
This is for your information and necessary action please.


Lab. Assistant (Environment)


Sr. Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB/ENV/LAB/03/504/2025

Dated - 12/12/2025

Sub: STP WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **NOVEMBER'2025**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	6.5-8.5	≤ 10 mg/L	-	≤ 10 mg/L	≤ 50 mg/L	-
1	STP, Bldt.Canteen- Inlet	12.11.25	12:10 PM	27	8.0	116	905	33.6	264	4.1
2	STP, Bldt.Canteen- Outlet	12.11.25	12:15 PM	26	7.7	19	865	6.1	69	1.7
3	STP, Sijua Canteen- Inlet	12.11.25	10:50 AM	26	7.9	106	816	31.5	284	2.9
4	STP, Sijua Canteen- Outlet	12.11.25	10:55 AM	25	7.6	26	728	6.4	116	1.5
5	STP, Aadarsh Nagari- Inlet	12.11.25	12:35 PM	26	8.1	98	724	37.4	305	4.2
6	STP, Aadarsh Nagari- Outlet	12.11.25	12:40 PM	25	7.9	18	674	5.9	99	1.1
7	STP,Bhelatand Officers Colony- Inlet	12.11.25	01:15 PM	27	8.0	110	851	32.8	326	3.4
8	STP,Bhelatand Officers Colony- Outlet	12.11.25	01:20 PM	26	7.7	27	741	6.5	74	1.0

All the parameters are within the limit and you are requested to maintain the same.

This is for your information and necessary action please.



Lab. Assistant (Environment)



Sr. Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head,
Bhelatand Coal Washery.

Ref. No. - JMB / ENV / LAB / 03 / 504 / 2025

Dated - 12 / 12 / 2025

Sub: EFFLUENT WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **NOVEMBER'2025**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Final Settling Pond Bhelatand Coal Washery	12.11.25	11:45 AM	29	7.9	29	897	3.1	112	2.4

All the parameters are within the limit, and you are requested to maintain the same.

This is for your information and necessary action please.


Lab. Assistant (Environment)


Sr. Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Well Water Quality Report of Sijua Group for the month of NOVEMBER'2025

SIJUA GROUP

S.No	Date	Location	Time	Depth in meter	pH	Electrical Conductivity μ S/m
1	20.11.25	Ruddi Basti	11:00 AM	2.81	7.3	822
2	20.11.25	Rampur Basti	12:50 PM	3.24	7.1	604
3	20.11.25	Malkera Trigunait Basti	12:05 PM	3.05	7.4	1186
4	20.11.25	Sijua 6 No	01:10 PM	1.98	7.3	1072
5	20.11.25	Sijua 12 No	01:30 PM	2.07	7.5	854
6	20.11.25	Rampur Basti, (Road Side)	12:35 PM	6.62	7.2	1127
7	20.11.25	Bansh Kapuria	02:25 PM	4.38	7.4	961
8	20.11.25	Pasitand Basti	12:20 PM	2.58	7.3	1022
9	20.11.25	Bhelatand 500 Qtr. (Back Side)	02:05 PM	1.02	7.4	1345
10	20.11.25	Dhobani Shiv Mandir	09:30 AM	2.70	7.3	1269
11	20.11.25	Moonidih Bazar	09:55 AM	2.82	7.2	1142
12	20.11.25	Karitand Manjhadih	10:30 AM	2.25	7.6	1387
13	20.11.25	Sawardih	11:35 AM	1.97	7.5	936
14	20.11.25	Kasiyatand	01:45 PM	2.06	7.3	1024

f. Dhirkumar

Lab Assistant (Environment)

Umesh

Sr.Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head,
Bhelatand Coal Washery.

Ref. No. - JMB / ENV / LAB / 03 / 550 / 2025

Dated - 31 / 12 / 2025

Sub: EFFLUENT WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **DECEMBER'2025**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Final Settling Pond Bhelatand Coal Washery	25.12.25	12:35 PM	28	8.0	22	754	2.9	72	2.6

All the parameters are within the limit, and you are requested to maintain the same.

This is for your information and necessary action please.


Lab. Assistant (Environment)


Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 548 / 2025

Dated - 31 / 12 / 2025

Sub: MINE WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **DECEMBER'2025**.
The results are as given below:

S.No	Location: Final Discharge Point (Mine's Water)	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Bhelatand A. Colliery	25.12.25	11:40 AM	32	7.9	17	724	2.3	32	2.7
2	15 Pit Sijua Colliery	25.12.25	10:50 AM	30	7.7	18	868	2.7	88	1.9
3	8 Pit Sijua Colliery	25.12.25	10:30 AM	30	7.8	16	880	2.2	48	2.5
4	2 Pit Sijua Colliery	25.12.25	10:15 AM	32	8.0	14	697	2.1	40	2.4

All the parameters are within the limit, and you are requested to maintain the same.
This is for your information and necessary action please.


Lab. Assistant (Environment)


Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 549 / 2025

Dated - 31 / 12 / 2025

Sub: STP WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **DECEMBER'2025**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	6.5- 8.5	≤ 10 mg/L	-	≤ 10 mg/L	≤ 50 mg/L	-
1	STP, Bld.Canteen- Inlet	25.12.25	12:05 PM	25	8.0	134	713	34.5	296	4.3
2	STP, Bld.Canteen- Outlet	25.12.25	12:10 PM	24	7.8	15	612	4.8	54	2.1
3	STP, Sijua Canteen- Inlet	25.12.25	11:00 AM	26	7.5	118	789	32.6	312	2.4
4	STP, Sijua Canteen- Outlet	25.12.25	11:05 AM	25	7.2	17	705	5.4	96	1.8
5	STP, Aadarsh Nagari- Inlet	25.12.25	12:55 PM	25	7.8	109	736	36.1	324	4.6
6	STP, Aadarsh Nagari- Outlet	25.12.25	01:00 PM	24	7.5	20	682	3.6	72	1.7
7	STP,Bhelatand Officers Colony- Inlet	25.12.25	01:15 PM	25	8.0	147	721	35.9	268	3.1
8	STP,Bhelatand Officers Colony- Outlet	25.12.25	01:20 PM	24	7.8	18	629	6.2	104	2.2

All the parameters are within the limit and you are requested to maintain the same.

This is for your information and necessary action please.

Lab. Assistant (Environment)

Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head,
Bhelatand Coal Washery.

Ref. No. - JMB / ENV / LAB / 03 / 24 / 2026

Dated - 28/ 01 / 2026

Sub: EFFLUENT WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **JANUARY'2026**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Final Settling Pond Bhelatand Coal Washery	22.01.26	11:10 AM	29	7.8	33	836	3.9	87	2.5

All the parameters are within the limit, and you are requested to maintain the same.

This is for your information and necessary action please.

Lab. Assistant (Environment)

Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 22 / 2026

Dated - 28 / 01 / 2026

Sub: MINE WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **JANUARY'2026**.
The results are as given below:

S.No	Location: Final Discharge Point (Mine's Water)	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Bhelatand A. Colliery	22.01.26	11:25 AM	30	7.8	22	815	3.5	52	1.9
2	15 Pit Sijua Colliery	22.01.26	12:30 PM	30	7.2	10	972	3.1	64	1.3
3	8 Pit Sijua Colliery	22.01.26	12:10 PM	No Discharge						
4	2 Pit Sijua Colliery	22.01.26	11:55 AM	32	7.8	19	702	3.9	48	0.9

All the parameters are within the limit, and you are requested to maintain the same.
This is for your information and necessary action please.

P. Mahabo

Lab. Assistant (Environment)

B. Shal

Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 23 / 2026

Dated - 28 / 01 / 2026

Sub: STP WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **JANUARY'2026**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	6.5-8.5	≤ 10 mg/L	-	≤ 10 mg/L	≤ 50 mg/L	-
1	STP, Bldd.Canteen- Inlet	22.01.26	10:40 AM	26	8.1	98	660	35.9	308	3.9
2	STP, Bldd.Canteen- Outlet	22.01.26	10:45 AM	25	7.9	12	618	5.2	72	2.4
3	STP, Sijua Canteen- Inlet	22.01.26	12:55 PM	26	7.8	154	762	34.1	268	3.1
4	STP, Sijua Canteen- Outlet	22.01.26	01:00 PM	25	7.5	19	658	4.6	48	1.0
5	STP, Aadarsh Nagari- Inlet	22.01.26	10:20 AM	26	7.6	119	789	33.7	310	4.7
6	STP, Aadarsh Nagari- Outlet	22.01.26	10:25 AM	25	7.4	16	702	4.4	64	1.5
7	STP, Bhelatand Officers Colony- Inlet	22.01.26	10:05 AM	26	7.8	103	736	30.1	272	4.2
8	STP, Bhelatand Officers Colony- Outlet	22.01.26	10:10 AM	25	7.6	14	671	5.8	42	1.1

All the parameters are within the limit and you are requested to maintain the same.

This is for your information and necessary action please.


Lab. Assistant (Environment)


Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head,
Bhelatand Coal Washery.

Ref. No. - JMB / ENV / LAB / 03 / 50 / 2026

Dated - 02 / 03 / 2026

Sub: EFFLUENT WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **FEBRUARY'2026**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Final Settling Pond Bhelatand Coal Washery	17.02.26	11:15 AM	28	7.9	29	872	4.1	102	2.1

All the parameters are within the limit, and you are requested to maintain the same.

This is for your information and necessary action please.

Lab. Assistant (Environment)

Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 48 / 2026

Dated - 02 / 03 / 2026

Sub: MINE WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **FEBRUARY'2026**.
The results are as given below:

S.No	Location: Final Discharge Point (Mine's Water)	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Bhelatand A. Colliery	17.02.26	11:30 AM	32	7.7	16	744	2.6	68	1.3
2	15 Pit Sijua Colliery	17.02.26	12:35 PM	31	7.6	22	698	3.4	52	0.8
3	8 Pit Sijua Colliery	17.02.26	12:15 PM	No Discharge						
4	2 Pit Sijua Colliery	17.02.26	12:00 PM	30	7.5	20	806	3.5	48	1.5

All the parameters are within the limit, and you are requested to maintain the same.
This is for your information and necessary action please.

Lab. Assistant (Environment)

Manager (Environment)

Ambient Air Quality, Ambient Noise Quality, Effluent Water and Groundwater Quality Report
(Period- **October-25 to March-26**)

Annexure- II

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 49 / 2026

Dated - 02 / 03 / 2026

Sub: STP WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **FEBRUARY** 2026.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	6.5-8.5	≤ 10 mg/L	-	≤ 10 mg/L	≤ 50 mg/L	-
1	STP, Bldd.Canteen- Inlet	17.02.26	10:45 AM	27	7.9	102	687	32.1	272	5.2
2	STP, Bldd.Canteen- Outlet	17.02.26	10:50 AM	26	7.8	18	624	6.3	48	1.9
3	STP, Sijua Canteen- Inlet	17.02.26	01:00 PM	26	8.0	119	698	30.6	276	3.8
4	STP, Sijua Canteen- Outlet	17.02.26	01:05 PM	25	7.8	22	647	3.2	110	1.7
5	STP, Aadarsh Nagari- Inlet	17.02.26	10:25 AM	27	7.7	125	695	31.2	318	4.1
6	STP, Aadarsh Nagari- Outlet	17.02.26	10:30 AM	26	7.6	14	639	5.2	87	1.6
7	STP, Bhelatand Officers Colony- Inlet	17.02.26	10:10 AM	26	7.9	92	812	34.7	306	4.6
8	STP, Bhelatand Officers Colony- Outlet	17.02.26	10:15 AM	25	7.7	17	784	6.3	84	1.8

All the parameters are within the limit and you are requested to maintain the same.

This is for your information and necessary action please.

Lab. Assistant (Environment)

Manager (Environment)

TATA STEEL LIMITED
JHARIA DIVISION

Head,

Bhelatand Coal Washery.

Ref. No. - JMB / ENV / LAB / 03 / 82 / 2026

Dated - 06 / 04 / 2026

Sub: EFFLUENT WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **MARCH'2026**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Final Settling Pond Bhelatand Coal Washery	16.03.26	10:50 AM	28	8.0	36	906	4.6	118	2.4

All the parameters are within the limit, and you are requested to maintain the same.

This is for your information and necessary action please.

P. Saha

Lab. Assistant (Environment)

B. Saha

Manager (Environment)

Ambient Air Quality, Ambient Noise Quality, Effluent Water and Groundwater Quality Report
(Period- **October-25 to March-26**)

Annexure- II

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery

Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 81 / 2026

Dated - 06 / 04 / 2026

Sub: STP WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **MARCH'2026**.
The results are as given below:

S. No	Location: Final Discharge Point	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	6.5-8.5	≤ 10 mg/L	-	≤ 10 mg/L	≤ 50 mg/L	-
1	STP, Bldd.Canteen- Inlet	16.03.26	10:20 AM	28	8.0	139	726	36.2	312	4.9
2	STP, Bldd.Canteen- Outlet	16.03.26	10:25 AM	27	7.9	21	697	6.1	62	1.4
3	STP, Sijua Canteen- Inlet	16.03.26	12:15 PM	28	7.9	114	684	33.7	336	3.6
4	STP, Sijua Canteen- Outlet	16.03.26	12:20 PM	27	7.7	20	652	3.9	94	1.9
5	STP, Andarsh Nagari- Inlet	16.03.26	10:05 AM	28	7.8	132	736	34.8	298	3.5
6	STP, Andarsh Nagari- Outlet	16.03.26	10:10 AM	27	7.6	17	705	4.3	74	1.0
7	STP, Bhelatand Officers Colony- Inlet	16.03.26	09:50 AM	27	8.0	142	863	30.2	314	3.2
8	STP, Bhelatand Officers Colony- Outlet	16.03.26	09:55 AM	26	7.9	26	812	5.2	62	1.4

All the parameters are within the limit and you are requested to maintain the same.

This is for your information and necessary action please.



Lab. Assistant (Environment)



Manager (Environment)

Ambient Air Quality, Ambient Noise Quality, Effluent Water and Groundwater Quality Report
(Period- **October-25 to March-26**)

Annexure- II

TATA STEEL LIMITED
JHARIA DIVISION

Head, Sijua Colliery
Head, Bhelatand A. Colliery

Ref. No. - JMB / ENV / LAB / 03 / 80 / 2026

Dated - 06 / 04 / 2026

Sub: MINE WATER ANALYSIS REPORT.

We wish to inform you that Trade Effluent Sampling was carried out in **SIJUA GROUP** in the month of **MARCH'2026**.
The results are as given below:

S.No	Location: Final Discharge Point (Mine's Water)	Sampling Date	Sampling Time	Temp	pH	TSS	TDS	BOD	COD	Oil & Grease
				< 40°C	5.5 - 9.0	100 mg/l	2100 mg/l	30 mg/l	250 mg/l	10 mg/l
1	Bhelatand A. Colliery	16.03.26	11:15 AM	32	7.6	18	752	3.2	48	1.1
2	15 Pit Sijua Colliery	16.03.26	12:30 PM	30	7.7	16	715	3.6	68	1.2
3	8 Pit Sijua Colliery	16.03.26	11:55 AM	30	7.8	12	872	3.5	72	1.9
4	2 Pit Sijua Colliery	16.03.26	11:40 AM	32	7.6	27	831	2.9	68	1.4

All the parameters are within the limit, and you are requested to maintain the same.
This is for your information and necessary action please.

Lab. Assistant (Environment)

Manager (Environment)

Land Use & Land Cover Study of Bhelatand Amalgamated Colliery



Applicant:

**Tata Steel
Jharia Division**



Prepared by:

**Manish Kamal
Project Coordinator – MPPA
Natural Resources Division
Tata Steel Limited
Jamshedpur, Jharkhand – 831001
(A QCI-NABET Accredited Agency)
Certificate No: NABET/APA-MPPA/RA/011**

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1. Introduction:

1.1 Location

Bhelatand Amalgamated Colliery is located in the Central-West portion of Jharia coalfield. It is situated 18 kms west of Dhanbad railway station. The total leasehold area is 529.68 Ha. It has common boundaries with collieries of Bharat Coking Coal Limited (BCCL) and own Sijua Collieries. Bhelatand Amalgamated Colliery lease area falls under Survey of India Toposheet no.73-I/5.

1.2 Objective of the study

The purpose of this study to understand and predict, Land Use and Land Cover (LULC) change using remote sensing and GIS techniques in core zone of Sijua Group of collieries (Combined lease area of Bhelatand Amalgamated Colliery and Sijua Colliery: 768.34 ha) and buffer zone (10 km from the mining lease boundary). There are two units in Sijua Group, namely -

- i) Bhelatand Amalgamated Colliery and Washery and
- ii) Sijua Colliery

Both of the collieries are adjacent to each other for which separate LULC map shall be submitted.

Total lease area is spread over an area of 529.68 Ha. Of this 291.68 Ha comes under Bhelatand Section and balance 238.0 Ha is covered under Malkera section. The two sections are separate & not connected as per orders DGMS.

1.3 Physiography and Drainage

General slope of the ground is from NW to SW with gently undulating profile. Maximum elevation of 195.87 m above Mean Sea Level (MSL) is observed on the east side and minimum elevation of 174.30 m is observed on the southwest side of the mine. Water drains through natural slope of the terrain to Sendra, Katri, Bagdighi & Khudia Jores that ultimately discharge into Damodar River. Tata Steel has endeavoured to course the precipitation & utility water, within the lease area water through few pucca and kutchha drains.

There are four water channels/ jores in the leasehold area. The Khudia nadi and Baghdighi Jore is on the eastern boundary. The Khudia nadi and Sendra jore flow at the western and eastern boundary. The Katrai Jore flows from north to south with a right-angled meander in Bhelatand portion.

1.4 Climate, Temperature and Rainfall

The climate of Jharia coalfield is typical monsoon type with maximum precipitation in the month of June to September. Annual rainfall varied from 772 mm to 1704 mm during 1992 -2010. Average annual rainfall during this period is ~ 1200 mm. The lowest recorded temperature is 5° – 7° during winter (December-January) and the highest temperature is 46° – 48° during peak summer (May-June). Predominant wind direction is Westerly and North-westerly, other than monsoon season.

2. Remote Sensing Concepts and Methodology:

2.1 Remote sensing

Remote sensing is the science and art of obtaining information about an object or area through the analysis of data acquired by a device that is not in physical contact with the object or area under investigation. The term remote sensing is commonly restricted to methods that employ electro-magnetic energy (such as light, heat and radio waves) as the means of detecting and measuring object characteristics. All physical objects on the earth surface continuously emit electromagnetic radiation because of the oscillations of their atomic particles. Remote sensing is largely concerned with the measurement of electro-magnetic energy from the SUN, which is reflected, scattered, or emitted by the objects on the surface of the earth.

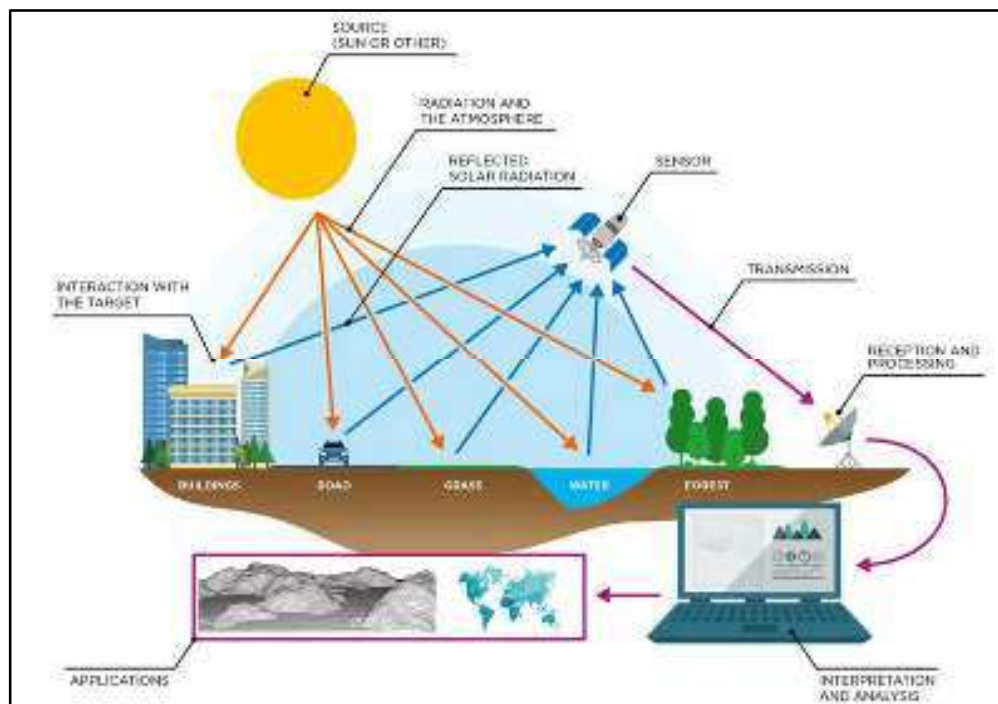


Figure 2.1: Radiation System

2.2 Electromagnetic Spectrum

The electromagnetic (EM) spectrum is the continuum of energy that ranges from meters to nanometres in wavelength and travels at the speed of light. Different objects on the earth surface reflect different amounts of energy in various wavelengths of the EM spectrum. The EM spectrum ranges from the very short wavelengths of the gamma-ray region to the long wavelengths of the radio region. The visible region (0.4-0.7 μm wavelengths) occupies only a small portion of the entire EM spectrum. Energy reflected from the objects on the surface of the earth is recorded as a function of wavelength. During daytime, the maximum amount of energy is reflected at 0.5 μm wavelengths, which corresponds to the green band of the visible region and is called the reflected energy peak (Figure 2.2). The earth also radiates energy both day and night, with the maximum energy 9.7 μm wavelength. This radiant energy peak occurs in the thermal band of the IR region.

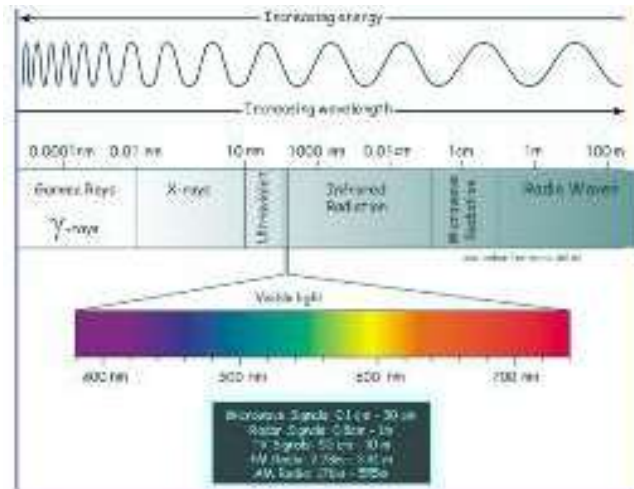


Figure 2.2: Electromagnetic spectrum

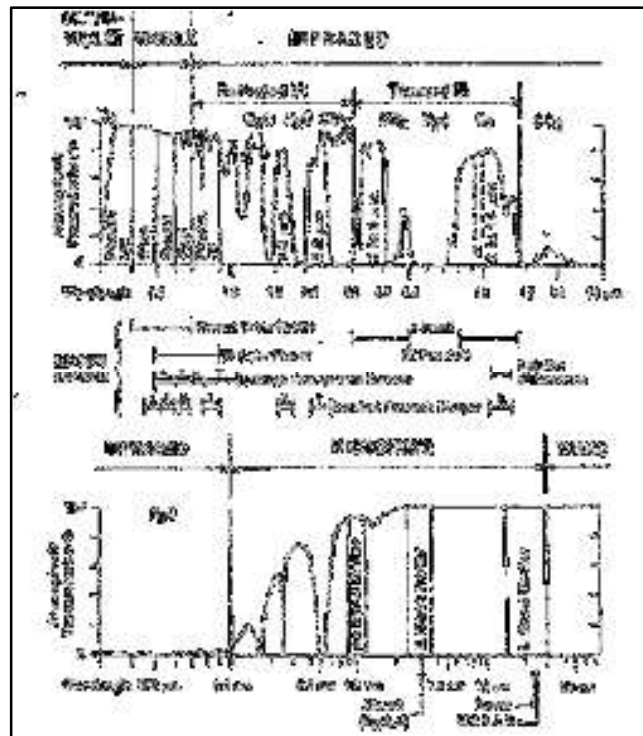


Figure 2.3: Expanded diagram of the visible and infrared regions (upper) and the microwave regions (lower) showing atmospheric windows. Wavelength bands commonly used remote sensing system are indicated. Gases responsible for atmospheric absorption are shown.

Table 2. 1 Electromagnetic Spectral Regions

Region	Wavelength	Remarks
Gamma ray	<math>< 0.03\text{ nm}</math>	Incoming radiation is completely absorbed by the upper atmosphere and is not available for remote sensing.

Region	Wavelength	Remarks
X-ray	0.03 to 3.00 nm	Completely absorbed by atmosphere. Not employed in remote sensing.
Ultraviolet	0.03 to 0.40 μ m	Incoming wavelengths less than 0.3mm are completely absorbed by Ozone in the upper atmosphere.
Photographic UV band	0.30 to 0.40 μ m	Transmitted through atmosphere. Detectable with film and photo detectors, but atmospheric scattering is severe.
Visible	0.40 to 0.70 μ m	Imaged with film and photo detectors. Includes reflected energy peak of earth at 0.5mm.
Infrared	0.70 to 100.00 μ m	Interaction with matter varies with wavelength. Absorption bands separate atmospheric transmission windows.
Reflected IR band	0.70 to 3.00 μ m	Reflected solar radiation that contains no information about thermal properties of materials. The band from 0.7-0.9 mm is detectable with film and is called the photographic IR band.
Thermal IR band	3.00 to 5.00 μ m 8.00 to 14.00 μ m	Principal atmospheric windows in the thermal region. Images at these wavelengths are acquired by optical-mechanical scanners and special Videocon systems but not by film.
Microwave	0.10 to 30.00 cm	Longer wavelengths can penetrate clouds, fog, and rain. Images may be acquired in the active or passive mode.
Radar	0.10 to 30.00 cm	Active form of microwave remote sensing
Radio	>30.00 cm	Longest wavelength portion of electromagnetic spectrum. Some classified radar with very long wavelength operate in this region.

The earth's atmosphere absorbs energy in the gamma-ray, X-ray and most of the ultraviolet (UV) region; therefore, these regions are not used for remote sensing. Wavelength regions with high transmission are called atmospheric windows and are used to acquire remote sensing data. Detection and measurement of the recorded energy enables identification of surface objects (by their characteristic wavelength patterns or spectral signatures), both from air-borne and space-borne platforms.

2.3 Scanning System

The sensing device in a remotely placed platform (aircraft/satellite) records EM radiation using a scanning system. In scanning system, a sensor, with a narrow field of view is employed; this sweeps across the terrain to produce an image. The sensor receives electromagnetic energy radiated or reflected from the terrain and converts them into signal that is recorded as numerical data. In a remote sensing satellite, multiple arrays of linear sensors are used, with each array recording simultaneously a separate band of EM energy. The array of sensors employs a spectrometer to disperse the incoming energy into a spectrum. Sensors (or detectors) are positioned to record specific wavelength bands of energy. The information received by the sensor is suitably manipulated and transported back to the ground receiving station. The data are reconstructed on ground into digital images. The digital image data on

magnetic/optical media consist of picture elements arranged in regular rows and columns. The position of any picture element, pixel, is determined on a x-y co-ordinate system. Each pixel has a numeric value, called digital number (DN) that records the intensity of electromagnetic energy measured for the ground resolution cell represented by that pixel. The range of digital numbers in an image data is controlled by the radiometric resolution of the satellite's sensor system. The digital image data are further processed to produce master images of the study area. By analysing the digital data/imagery, digitally/visually, it is possible to detect, identify and classify various objects and phenomenon on the earth surface.

Remote sensing technique (airborne/satellite) in conjunction with traditional techniques harbours in an efficient, speedy, and cost-effective method for natural re-source management due to its inherited capabilities of being multispectral, repetitive, and synoptic areal coverage. Generation of environmental 'Data Base' on land use, soil, forest, surface and subsurface water, topography and terrain characteristics, settlement, and transport network, etc., and their monitoring in near real - time is very useful for environmental management planning; this is possible only with remote sensing data.

2.4 Data Source

- **Primary Data**

Remote Sensing Satellite data viz. Resourcesat-2A of February,2025 having 5.0 m. spatial resolution was used in the present study.

- **Secondary Data**

Secondary (ancillary) and ground data constitute important baseline information in remote sensing, as they improve the interpretation accuracy and reliability of remotely sensed data by enabling verification of the interpreted details and by supplementing it with the information that cannot be obtained directly from the remotely sensed data. For Bhelatand colliery, Survey of India toposheet no. 73I/5 (F45C5), 73I/6 (F45C6), 73I/9 (F45C9) & 73I/10 (F45C10) have been utilised for lease as well as Buffer zone of 10 km.

2.5 Characteristics of Satellite/Sensor

The basic properties of a satellite's sensor system can be summarised as:

- (a) Spectral coverage/resolution, i.e., band locations/width;
- (b) spectral dimensionality: number of bands;
- (c) radiometric resolution: quantisation;
- (d) spatial resolution/instantaneous field of view or IFOV; and
- (e) temporal resolution.

Table 2.2 illustrates the basic properties of Resourcesat-2A satellite sensor that was used in the present study.

Platform	Sensor	Spectral Bands in μm	Radiometric Resolution	Spatial Resolution	Temporal Resolution	Country
Re-source-sat-2	LISS-IV	B2 0.52 - 0.59 Green	16-bit	5.0 m	24 days	India
		B3 0.62 - 0.68 Red				
		B4 0.77 - 0.86 NIR				

NIR: Near Infra-Red

2.6 Data Processing

The details of data processing carried out in the present study are shown in Figure 2.4. The processing methodology involves the following major steps:

- a) Geometric correction, rectification and geo-referencing
- b) Image enhancement
- c) Training set selection
- d) Signature generation and classification
- e) Creation/overlay of vector database
- f) Validation of classified image
- g) Final thematic map preparation

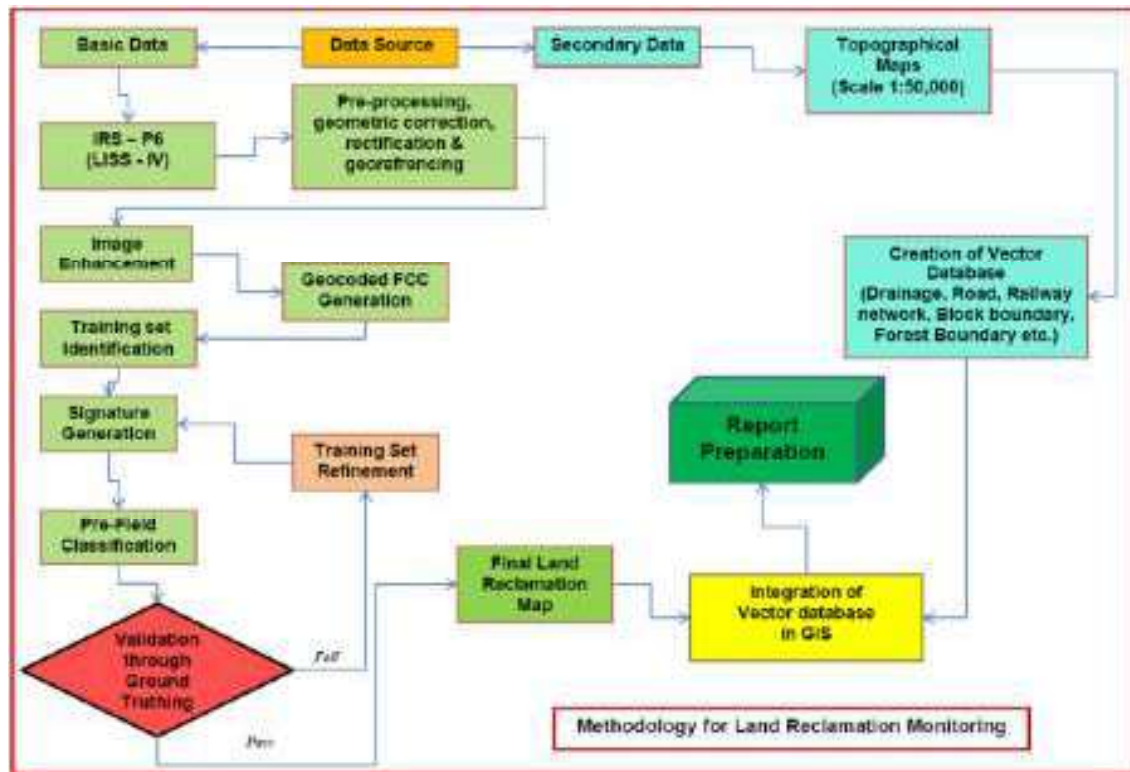


Figure 2.4: Data processing flowchart

2.6.1 Geometric correction, rectification, and geo-referencing

Inaccuracies in digital imagery may occur due to ‘systematic errors’ attributed to earth curvature and rotation as well as ‘non-systematic errors’ attributed to intermittent sensor malfunctions, etc. Systematic errors are corrected at the satellite receiving station itself while non-systematic errors/ random errors are corrected in pre-processing stage. In spite of ‘System / Bulk correction’ carried out at supplier end; some residual errors in respect of attitude attributes still remains even after correction. Therefore, fine tuning is required for correcting the image geometrically using ground control points (GCP).

Raw digital images contain geometric distortions, which make them unusable as maps. A map is defined as a flat representation of part of the earth’s spheroidal surface that should conform to an internationally accepted type of cartographic projection, so that any measurements made on the map will be accurate with those made on the ground. Any map has two basic characteristics: (a) scale and (b) projection. While scale is the ratio between reduced depiction of geographical features on a map and the geographical features in the real world, projection is the method of transforming map information from a sphere (round Earth) to a flat (map) sheet. Therefore, it is essential to transform the digital image data from a generic co-ordinate system (i.e., from line and pixel co-ordinates) to a projected co-ordinate system. In the present study georeferencing was done with the help of Survey of India (SoI) topo-sheets so that information from various sources can be compared and integrated on a GIS platform, if required. An understanding of the basics of projection system is required before selecting any transformation model. While maps are flat surfaces, Earth however is an irregular sphere, slightly flattened at the poles and bulging at the Equator. Map projections are systemic methods for “flattening the orange peel” in measurable ways. When transferring the Earth and its irregularities onto the plane surface of a map, the following three factors are involved: (a) geoid (b) ellipsoid and (c) projection. Figure 2.5 illustrates the relationship between these three factors. The geoid is the rendition of the irregular spheroidal shape of the Earth; here the variations in gravity are considered. The observation made on the geoid is then transferred to a regular geometric reference surface, the ellipsoid. Finally, the geographical relationships of the ellipsoid (in 3-D form) are transformed into the 2-D plane of a map by a transformation process called map projection. As shown in the Figure 2.5 most projections are based upon cones, cylinders and planes.

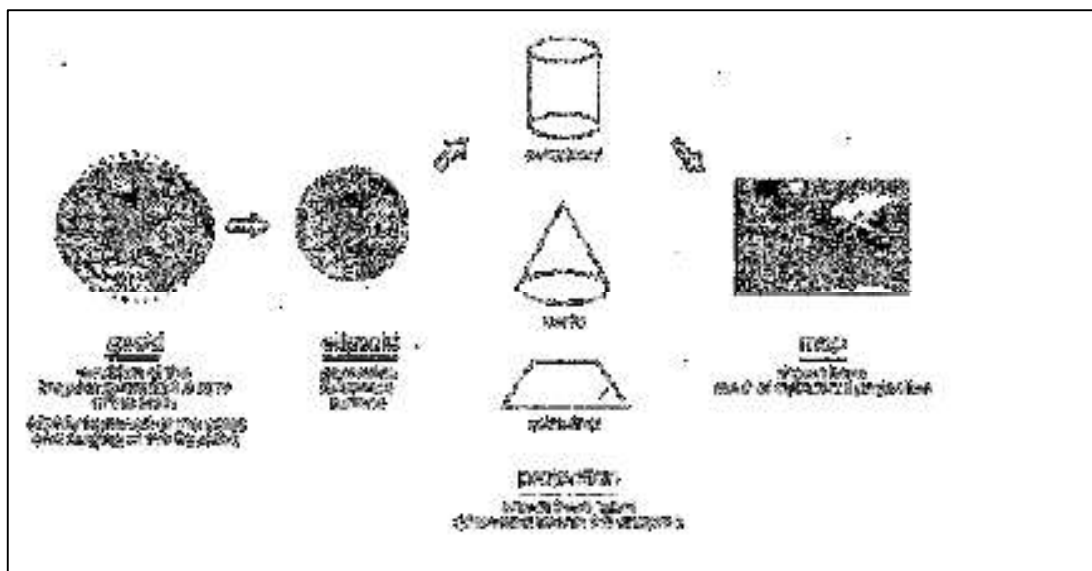


Figure 2.5: Geoid – Ellipsoid – Projection Relationship

In the present study, *UTM projection along with WGS 1984 Coordinate system* was used to prepare the map compatible with the SoI topo-sheets. Maps prepared using these projections are a compromise of many properties; it is neither conformal perspective nor equal area. Distances, areas, and shapes are true only along central meridian. Distortion increases away from central meridian. Image transformation from generic co-ordinate system to a projected co-ordinate system was carried out using IMAGINE v.2022 digital image processing system.

2.6.2 Image enhancement

To improve the interpretability of the raw data, image enhancement is necessary. Most of the digital image enhancement techniques are categorised as either point or local operations. Point operations modify the value of each pixel in the image data independently. However, local operations modify the value of each pixel based on brightness value of neighbouring pixels. Contrast manipulations/ stretching technique based on local operation was applied on the image data using IMAGINE s/w.

Training set selection

The image data were analysed based on the interpretation keys. These keys are evolved from certain fundamental image-elements such as tone/colour, size, shape, texture, pattern, location, association and shadow. Based on the image-elements and other geo-technical elements like landform, drainage pattern and physiography; training sets were selected/identified for each land use/cover class. Field survey was carried out by taking selective traverses to collect the ground information (or reference data) so that training sets are selected accurately in the image. This was intended to serve as an aid for classification. Based on the variability of land use/cover condition and terrain characteristics and accessibility, nearly 150 points were selected to generate the training sets.

2.6.3 Signature generation and classification

Image classification was carried out using the maximum likelihood algorithm. The classification proceeds through the following steps:

- Calculation of statistics i.e., signature generation for the identified training areas, and
- The decision boundary of maximum probability based on the mean vector, variance, covariance and correlation matrix of the pixels.

After evaluating the statistical parameters of the training sets, reliability test of training sets was conducted by measuring the statistical separation between the classes that resulted from computing divergence matrix. The overall accuracy of the classification was finally assessed with reference to ground truth data. The aerial extent of each land use class in the coalfield was determined using ERDAS IMAGINE s/w. The Land use / Land Cover map of core zone and buffer zone of Bhelatand Colliery for the year 2025 for are shown in Figure no. 3.1 and 3.5 respectively.

2.6.4 Creation/overlay of vector database

Plan showing coal block boundary are superimposed on the image as vector layer in the Arc GIS database. Road network, rail network and drainage network are also digitised on Arc GIS database and superimposed on the classified image.

2.6.5 Final land use/land cover map preparation

Final land use/land cover map of core zone and buffer zone of Bhelatand Colliery was printed using HP Design jet 4500 Colour Plotter. The maps are prepared on 1:5000 scale but plotted on scale “Fit to A3 Size”.

3. Detailed Land Use and Land Cover estimation of Bhelatand Collieries:

3.1 Introduction:

It is expected that by understanding the spatial phenomenon of Land Use-Land Cover (LULC) and developing and applying techniques to detect and predict changes in LULC using remote sensing and GIS, it will be possible to reduce the misallocation of resources and mismanagement of land use in the study area. It is anticipated that this study will be great assistance in formulation of policies that will help in improving land use planning and land resources management in study area. It is being carried out reveal how much of a region is covered by forests, wetlands, impervious surfaces, agriculture, and other land and water types. As explained above, Land use and land cover map of Bhelatand Colliery comprises of Bhelatand mining lease area including Bhelatand Coal washery of Tata Steel Limited in Jharkhand state. The detailed objectives of this study area are as follows:

- 1) Preparation of land use land cover classification report with likely land uses such as-
 - Agriculture;
 - Forest;
 - Mining/ Built-up area:
 - Wasteland with and without vegetation,
 - Waterlogged (inland wetland));
 - Habitation (Urban area delineation with approx. buffer zone) and water body (including rivers and streams), roads and other distinctly visible feature classes if any.
- 2) To detect and determine land use-land cover change dynamics using remote sensing techniques by preparation of time series land use map.
- 3) To analyze the spatial dimension of LULC change dynamics associated with demographic pressure, economic and physical environment.
- 4) Generation of shape files of all units for submission.
- 5) To comply specific condition no. 26 of EC that states “For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1:5000) of the core zone and buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MoEF and its concerned Regional office.

The broad classification alongwith the description is given in Table 3.1, as per the of framework of Land Use Land Cover by NRSC/ ISRO. The areas under each of these classes shall be estimated on the basis of the pixel grid cell process in Erdas Imagine software following the rules of NRSC/ISRO Land Use and Cover Monitoring.

Table 3.1: Descriptions of land use and land cover classes (Source- NRSC/ISRO)

Sr. No.	Heads	Sub-category	details
1	Built-up area	Urban	Residential, mixed built up, Public / Semi Public, Communication, Public utilities /facility, Commercial, Transportation, Reclaimed land, Vegetated Area, Recreational, Industrial, Industrial / Mine dump, Ash/ Cooling pond.
		Rural	Rural
		Mining	Mine / Quarry, Abandoned Mine Pit, Land fill area
2	Agriculture land	Crop land	Kharif, Rabi, Zaid, Two cropped, More than two cropped
		Plantation	Plantation-Agricultural, Horticultural, Agro Horticultural.
		Fallow	Current and Long Fallow
		Current Shifting Cultivation	Current Shifting cultivation.
3	Forest Land	Evergreen/Semi evergreen	Dense / Closed and Open category of Evergreen / Semi evergreen.
		Deciduous	Dense / Closed and Open category of Deciduous and Tree Clad Area.
		Forest Plantation	Forest Plantation
		Scrub Forest	Scrub Forest, Forest Blank, Current & Abandoned Shifting Cultivation.
		Swamp/Mangroves	Dense / Closed & Open Mangrove
4	Grass/ grazing	Grass/ grazing	Grassland: Alpine / Sub-Alpine, Temperate / Sub tropical, Tropical / Desertic
5	Barren/ uncultivable/ Waste land	Salt affected land	Slight, Moderate & Strong Salt Affected Land
		Scrub land	Dense. Closed and Open category of scrub land
		Sandy area	Desertic, Coastal, Riverine sandy area.
		Barren rocky	Barren rocky
		Rann	Rann
6	Wetlands/ Water bodies	Inland wetland	Inland Natural and Inland Manmade wetland
		Coastal wetland	Coastal Natural and Coastal Manmade wetland
		River / Stream / canals	Perennial & Dry River/stream and line & unlined canal/ drain
		Water bodies	Perennial, Dry, Kharif, Rabi & Zaid extent of lake/pond and reservoir and tanks

Definitions of all the major classes are mentioned below:

- **Built-up land:**

It is an area of human habitation developed due to non-agricultural use and that has a cover of buildings, transport and communication, utilities in association with water, vegetation and vacant land. LULC map consists of 3 classes under built-up viz., urban, rural and mining.

- **Agricultural land:**

These are the lands primarily used for farming and for production of food, fiber, and other commercial and horticultural crops. Agricultural Land may be defined broadly as land used primarily for production

of food and fiber. These are the areas with standing crop as on the date of Satellite overpass. Cropped areas appear in bright red to red in colour with varying shape and size in a contiguous to non-contiguous pattern. They are widely distributed indifferent terrains; prominently appear in the irrigated are as irrespective of the source of irrigation. It includes Kharif, Rabi and Zaid croplands along with areas under double or triple crops.

- **Forest:**

The term forest is used to refer to land with a tree canopy cover of more than 10 percent and area of more than 0.5 ha. Forests are determined by both the presence of trees and the absence of other predominant land uses. The trees should be able to reach a minimum height of 5 m. The two categories i.e. open forest and dense forest is predominant in Bhelatand Colliery.

- **Wetland:**

Wetlands are those areas where the water table is at, near, or above the land surface for a significant part of most years. The hydrologic regime is such that aquatic or hydrophyte vegetation usually is established, although alluvial and tidal flats may be no vegetated. Wastelands frequently are associated and topographic lows, even in mountainous regions.

- **Water body:**

This category comprises areas with surface water in the form of ponds, river, lakes, tanks and reservoirs. Rivers/streams are natural course of water flowing on the land surface along a definite channel/slope regularly or intermittently towards a sea in most cases or into a lake or an inland basin in desert areas or a marsh or another river. Canals are artificial watercourse constructed for irrigation, navigation or to drain out excess water from agricultural lands.

3.2 Land use and Land cover mapping of Bhelatand Colliery:

Land use and land cover mapping for the year 2025 -

The Bhelatand colliery (529.68 ha) was classified for land use and land cover mapping by using supervised classification technique. Six classes are identified over the study area namely built-up (176.048 ha), mining (1.278 ha), grazing/scrub land (10.941 ha), agricultural land (259.657 ha), water body (6.128 ha) and barren land/waste land (75.628 ha) shown in Figure 3.1 below.

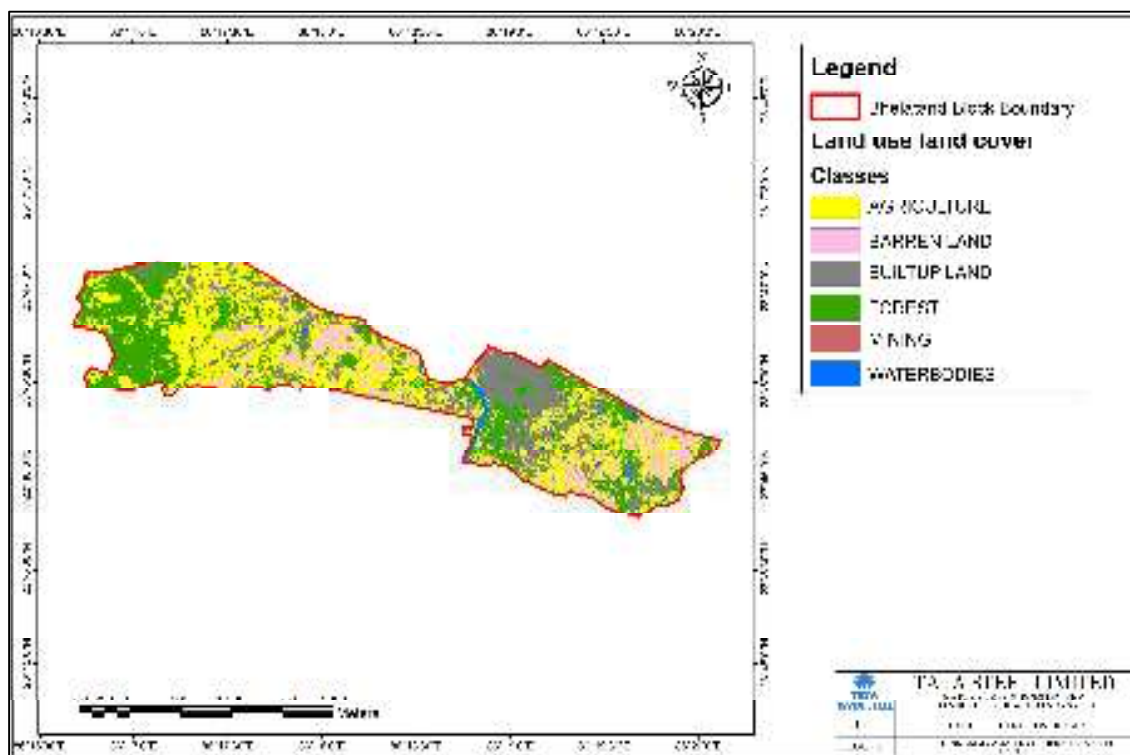


Figure 3.1: LULC map of Bhelatand colliery in year 2025

Table 3.2: Assessment of Land use/Land cover of Bhelatand colliery on yearly basis

Sl. no.	Description	Year – 2018*	Year – 2021*	Year - 2025
1	Built-up land	172.608	175.083	176.048
2	Built-up Mining land	18.216	0.000	1.278
3	Dense forest	0.000	0.000	0.000
4	Grazing/Scrub land	0.000	4.354	10.941
5	Agriculture land	253.417	257.455	259.657
6	Agricultural Fallow land	0.000	0.000	0.000
7	Water Body/ River	4.076	4.076	6.128
8	Barren land/waste land	81.364	88.712	75.628
Total		529.68	529.68	529.68

*Study report prepared by Indian Institute of Technology - ISM in March'2021

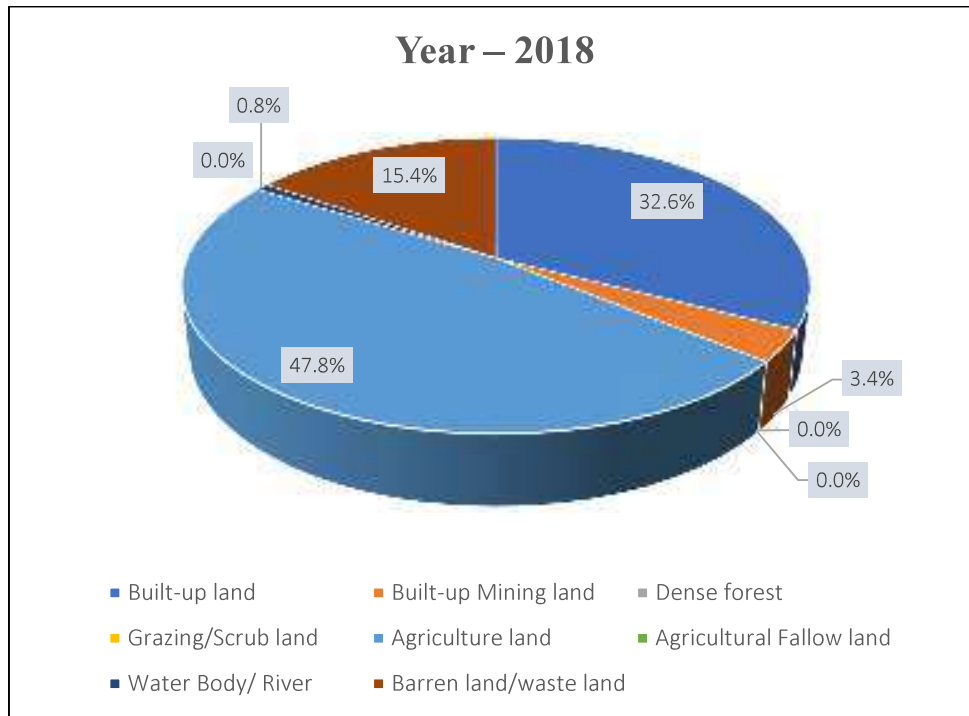


Figure 3.2: LULC distribution of Bhelatand colliery (Year 2018)

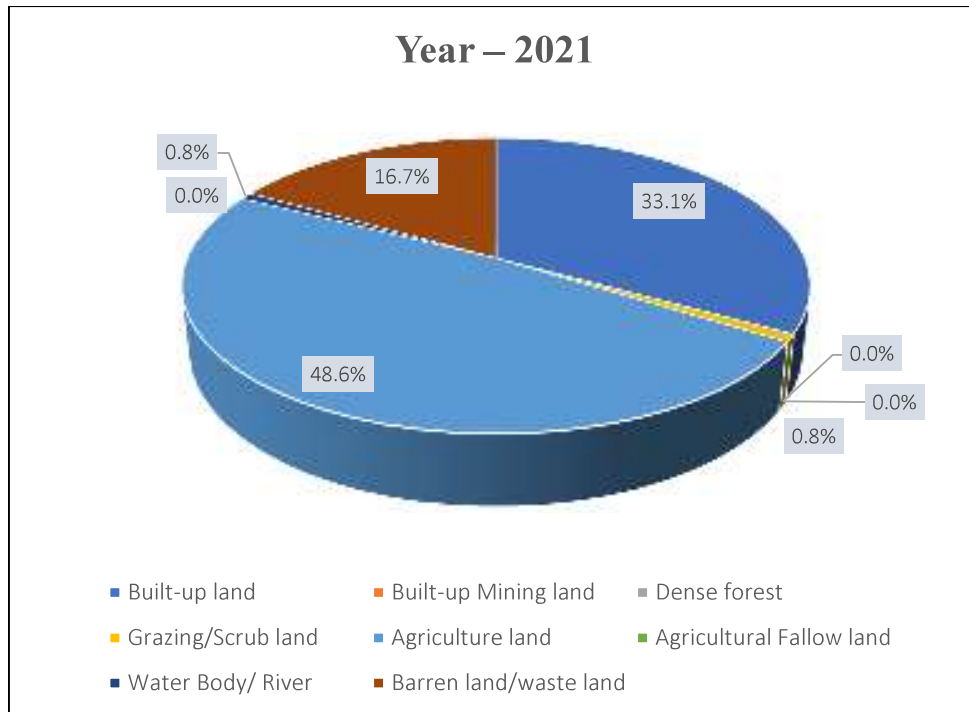


Figure 3.3: LULC distribution of Bhelatand colliery (Year 2021)

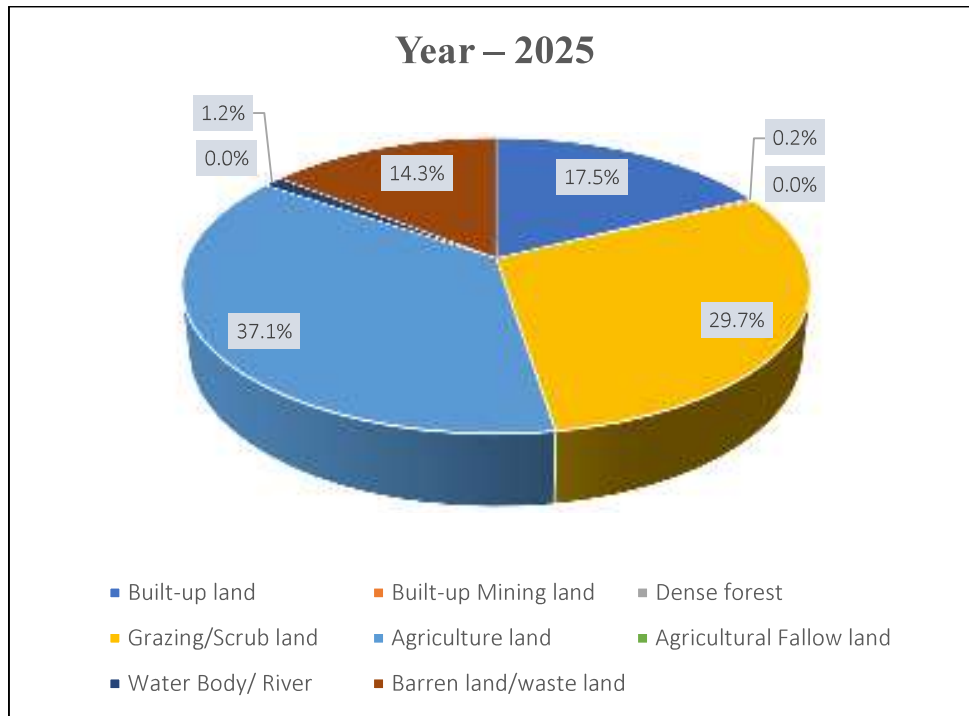


Figure 3.4: LULC distribution of Bhelatand colliery (Year 2025)

3.3 Land use and Land cover mapping of Bhelatand colliery with 10 km buffer zone:

Land use and land cover map for the year 2025 –

The Bhelatand colliery with 10 km buffer zone (45546.17 ha) was classified for land use and land cover mapping by using supervised classification technique. Nine classes are identified over the study area namely built-up (6756.82 ha), mining (3588.61 ha), dense forest (4089.54 ha), open forest (2480.67 ha), grazing/scrub land (1963.21 ha), agricultural land (16469.64 ha), agricultural fallow land (4421.54 ha), water body (644.44 ha) and barren land/waste land (5131.67 ha). The land use/ land cover map of Bhelatand colliery with 10KM buffer zone is shown in Figure: 3.5.

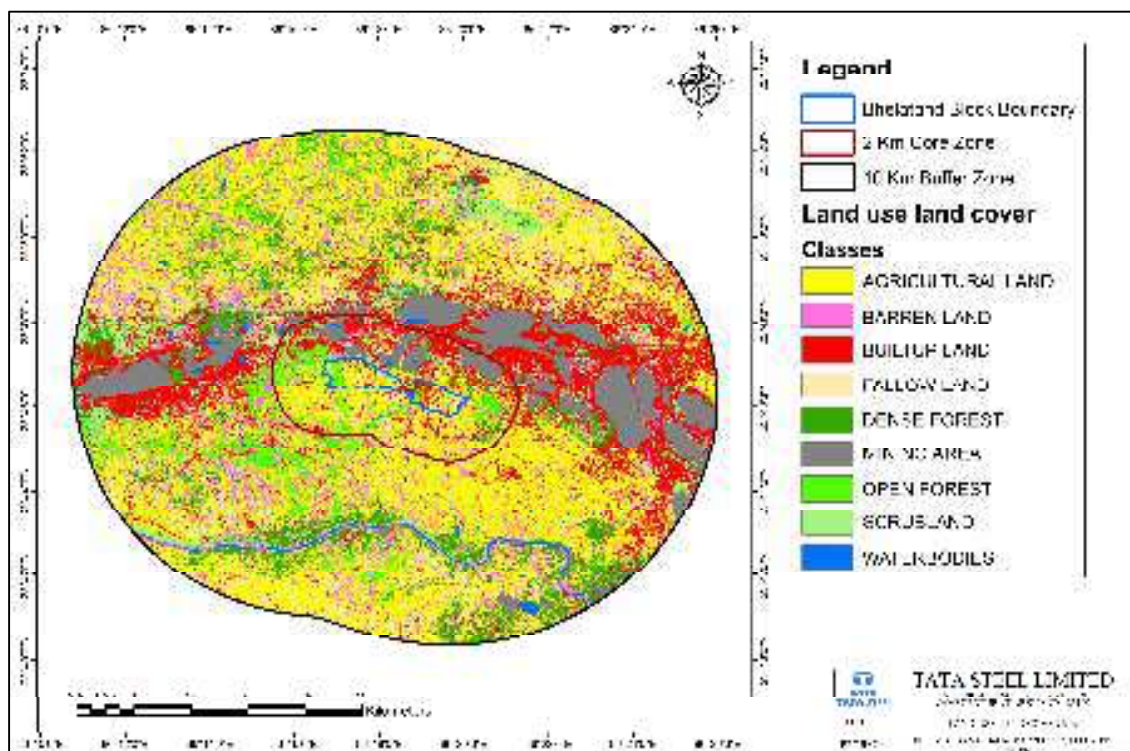


Figure 3.5: LULC map of Bhelatand Amalgamated colliery including Sijua Washery with 10km buffer zone in year 2025

Table 3.3: Assessment of Land use/Land cover of Bhelatand colliery on yearly basis –

Sl. no.	Description	Year – 2018*	Year – 2021*	Year - 2025
1	Built-up land	9787.619	9852.976	6,756.825
2	Built-up Mining land	4792.582	4660.747	3,588.610
3	Dense forest	1120.478	934.162	4,089.545
4	Open forest	319.902	965.693	2,480.678
5	Grazing/Scrub land	37.743	44.767	1,963.213
6	Agriculture land	20009.955	20545.188	16,469.640
7	Agricultural fallow land	1706.103	1843.182	4,421.545
8	Water Body/ River	699.853	758.884	644.445
9	Barren land/waste land	6696.572	6121.899	5,131.673
Total		45170.807	45727.498	45546.173

*Study report prepared by Indian Institute of Technology - ISM in March'2021

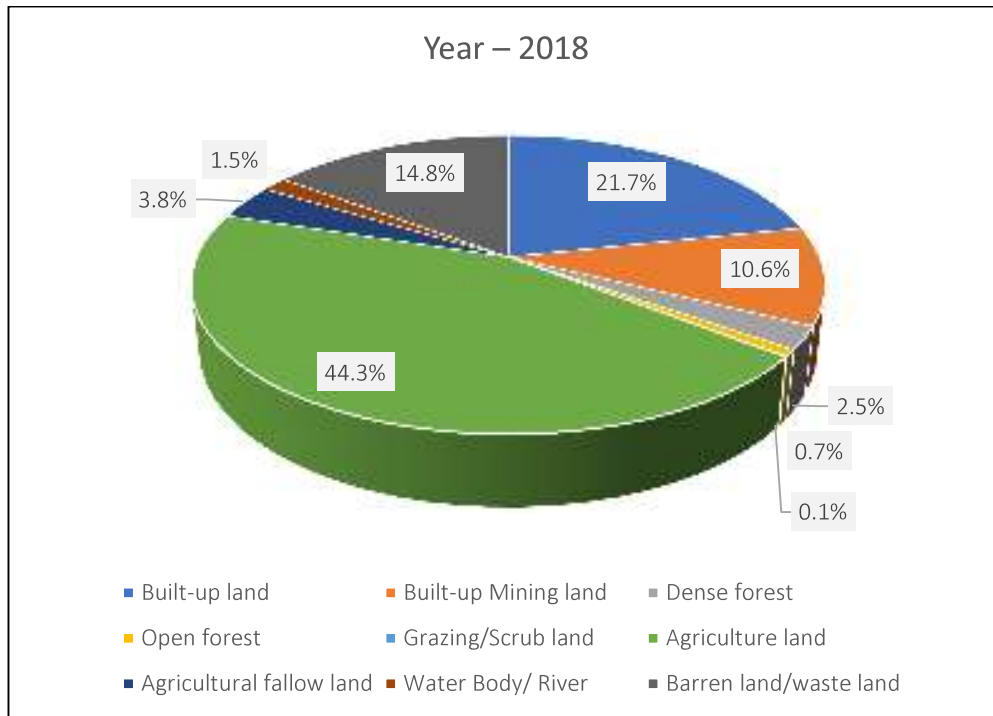


Figure Error! Reference source not found.: LULC distribution of Buffer Zone of Bhelatand colliery (Year 2018)

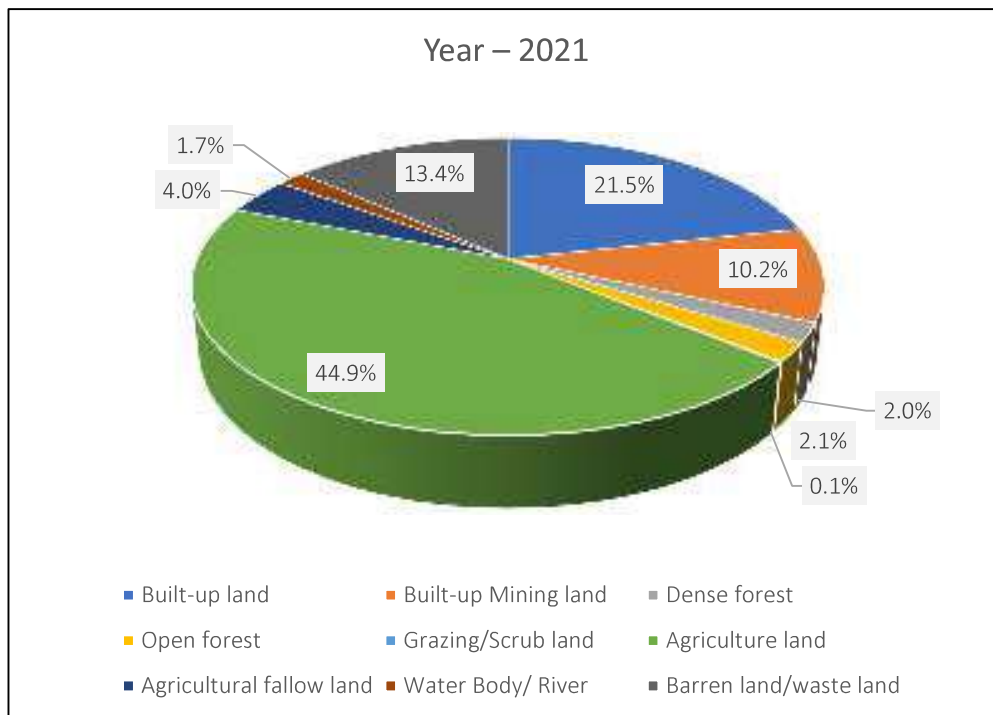


Figure Error! Reference source not found.: LULC distribution of Buffer Zone of Bhelatand colliery (Year 2021)

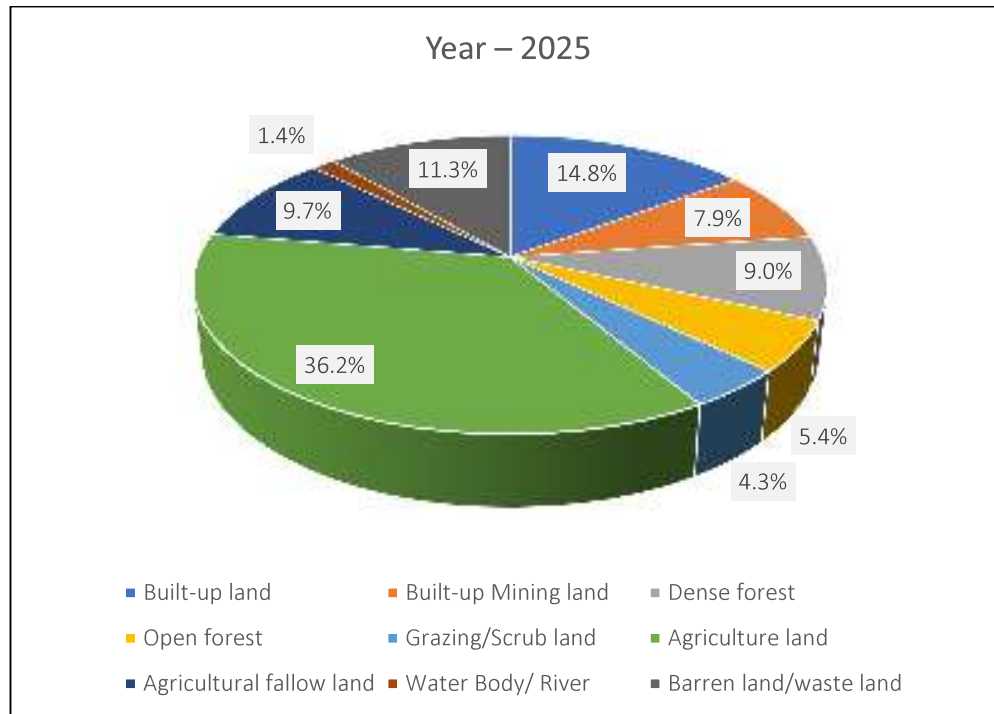


Figure Error! Reference source not found.: LULC distribution of Buffer Zone of Bhelatand colliery (Year 2025)

3.4 Change Detection:

In the core zone of Bhelatand collieries overall built-up area is increased from 175.083 Ha to 176.048 Ha. Little enhancement of Built-up area of Mining land is observed from 0.00 Ha to 1.278 Ha. Grazing land has been increased from 4.354 Ha to 10.941 Ha. Agricultural land is observed to be increased from 257.455 Ha to 259.657 Ha. Reduction in Barren/ Waste land is also observed from 88.712 Ha to 75.628 Ha.

In the buffer zone of Bhelatand collieries Built-up land is observed to be reduced from 9852.97 Ha to 6756.82 Ha; Mining built-up area has been reduced from 4660.74 Ha to 3588.61 Ha; Dense forest has been increased from 934.16 Ha to 4089.54 Ha; Open forest also has been increased significantly from 965.69 Ha to 2480.67 Ha; Grazing/ Scrub land increased from 44.76 Ha to 1963.21 Ha; Agricultural land has been reduced from 20545.18 Ha to 19469.64 Ha; Reduction over water-bodies is observed from 758.88 Ha to 644.44 Ha and Reduction over barren land is observed from 6121.89 Ha to 5131.67 Ha.

4. Conclusions:

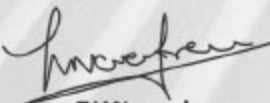
- In the present study, land use/ vegetation cover mapping has been carried out based on Resourcesat 2A satellite sensor data of February'2025 in order to monitor the impact of coal mining on land environment which may help in formulating the mitigation measures required, if any.
- Technical limitation of the analysis process lies with the resolution of the Satellite image which is usually available at 5m resolution. Therefore, sometimes it is difficult to assess the land classification remotely in case of Agricultural land with low vegetation Scrub land or Barren land through False Colour Composite (FCC) of remote sensing.

ENVIRONMENTAL POLICY

Tata Steel's environmental responsibilities are driven by our commitment to preserve the environment and are integral to the way we do business.

1. We are committed to deal proactively with Climate Change issue by efficient use of natural resources & energy; reducing and preventing pollution; promoting waste avoidance and recycling measures; and product stewardship.
 - We shall identify, assess and manage our environment impact.
 - We shall regularly monitor, review and report publicly our environmental performance.
 - We shall develop & rehabilitate abandoned sites through afforestation and landscaping and shall protect and preserve the biodiversity in the areas of our operations.
 - We shall enhance awareness, skill and competence of our employees and contractors so as to enable them to demonstrate their involvement, responsibility and accountability for sound environmental performance.
2. We are committed to continual improvement in our environmental performance.
 - We shall set objective-targets, develop, implement and maintain management standards and systems, and go beyond compliance of the relevant industry standards, legal and other requirements.
3. We will truly succeed when we sustain our environmental achievement and are valued by the communities in which we work.

Date : November 1, 2017



TV Narendran
CEO & Managing Director



Annexure-V ----Installation of high resolution revolving cameras at BCPP



