TATA

O/C

TSM-CPP/MoEF&CC/TS-01/2025-04/204
November 20, 2025

The Director(s)
Ministry of Environment, Forest & Climate Change,
Integrated Regional Office,
A/3, Chandrasekharpur,
Bhubaneswar-751023

Subject: Submission of half yearly EC compliance reports for expansion of existing 300MW TPP by installation of 185MW coal based TPP at M/s. Tata Steel Limited-TSM-CPP(formerly known as Angul Energy Limited), Odisha for the period from April' 2025 to September' 2025.

Reference: EC vide letter No. J-13012/78/2011-IA-II(T); dated: 12.02.2015 & its amendment dated: 25.09.2020.

Dear Sir,

With reference to the captioned subject and cited reference, we are herewith submitting six monthly compliance reports for the conditions stipulated in the Environmental Clearance for expansion of existing (2x150) 300MW TPP by installation of 185MW coal based TPP at M/s. Tata Steel Limited – TSM-CPP (formerly known as Angul Energy Limited), Odisha for the period from **April' 2025 to September' 2025** along with monitoring reports for your kind perusal.

The soft copies of the aforesaid compliance report are also being sent through mail to roez.bsr-mef@nic.in for your kind information and necessary record please. Also copy of EC compliance is being uploaded on MoEF&CC web site on portal http://environmentalclearance.nic.in.

We trust that the above submissions are in line with the statutory requirements. Kindly acknowledge receipt.

Thanking you

Yours faithfully,

For TSM-CPP

Rajesh Kumar Agarwal
(Factory Manager, TSM-CPP)

GOVT. OF INDIA
MoEF & CC Integrated R.O.
Bhubaneswar-751023
29 NOV 2025
RECEIVED

Encl: As above

Copy to:
1. The Zonal Officer, Central Pollution Control Board, Southern Conclave Block, 502, 5th & 6th Floors, 1582 Rajdanga Main Road, Kolkata – 700107.
2. The Member Secretary, SPCB, Parivesh Bhawan, A/118, Nilakantha Nagar, Unit-VIII, Odisha, Bhubaneswar-751012
3. The Regional Officer, State Pollution Control Board, Angul, Odisha.

TATA STEEL LIMITED
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SPECIFIC CONDITION

SL	STIPULATED CONDITIONS	COMPLIANCE STATUS
i	Vision document specifying prospective plan for the site shall be formulated and submitted to the RO of the Ministry within six months.	• Vision, Mission and Environment Policy statements have submitted to the Regional Offices, MoEF&CC, BBSR along with the compliance report.
ii	Harnessing solar power within the premises of the plant particularly at available roof tops shall be carried out and status of implementation including actual generation of solar power shall be submitted along with half yearly monitoring report.	• 50 KW On Grid Solar Roof Top for Harnessing of Solar Power is installed at roof tops for utilization of Renewable Energy source and to reduce Carbon footprint & reduce the Auxiliary consumption
iii	Sulphur and ash contents in the imported coal to be used in the project shall not exceed 0.3% and 6% respectively at any given time. In case of variation of coal quality at any point of time, fresh reference shall be made to the Ministry for suitable amendments to environment clearance condition wherever necessary.	• Amendment in Environmental Clearance was obtained from MoEF&CC for change in coal source from imported to Indian coal on 25.09.2020. Presently domestic coal being used having sulphur content less than 0.5 %.
iv	A long term study of radioactivity and heavy metals contents in coal to be used shall be carried out through a reputed institute and results thereof analyzed every two years and reported along with monitoring reports. Thereafter mechanism for an in-built continuous monitoring for radioactivity and heavy metals in coal and fly ash (including bottom ash) shall be put in place.	• Heavy metal contents in coal have been analyzed at CSIR-IMMT Bhubaneswar. Coal analysis report is attached as **Annexure-I** for reference. • Radioactive metal analysis was carried out through reputed institute and results thereof analyzed every two years and reported along with monitoring reports.
v	A stack of 220 m height shall be provided with continuous online monitoring equipments for SO_x, NO_x, PM_{10} and $PM_{2.5}$. Exit velocity of flue gases shall not be less than 22 m/sec. Mercury emissions from stack shall also be monitored on periodic basis.	• A stack with a height of 220 meters has been constructed, equipped with continuous online monitoring systems for sulfur oxides (SOx), nitrogen oxides (NOx), and particulate matter (PM10 and PM2.5). The exit velocity of the flue gases is maintained at no less than 22 meters per second. • An online mercury analyzer has been installed at one stack attached to 165 MW to monitor Mercury content in Flue gas.

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		Manual monitoring of mercury emissions is also conducted periodically, with the analysis report attached as Manual monitoring of mercury emissions is also conducted periodically, with the analysis report attached as **Annexure – II**.
vi	High efficiency ESPs shall be installed to ensure that particulate emission does not exceed 50 mg/Nm3. Adequate dust extraction system such as cyclones/bag filters and water spraying system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.	• Electrostatic Precipitators (ESPs) have been installed for each boiler to ensure emissions are below 50 mg/Nm³. • Dust extraction systems and dust suppression measures are actively implemented at ash silos and coal handling areas. • Wheel washing systems is in operation to prevent fugitive dust emissions during the movement of fly ash vehicles.
vii	Adequate dust extraction system such as cyclones / bag filters and water spraying system in dusty areas such as in coal handling and ash handling points, transfer areas and other vulnerable dusty areas shall be provided.	• Dust Extraction Systems: Installation of a dust extraction system at both the Intermediate and Main ash silos. • Dust Suppression Systems: Implementation of an effective dry fog dust suppression system and the installation of rain guns at junction houses across the entire coal handling route.
viii	COC of at least 5.0 shall be adopted	• The plant is being operated with COC more than 5.
ix	Monitoring of surface water quantity and quality shall also be regularly conducted, and records maintained. The monitoring data shall be submitted to the Ministry regularly. Further, monitoring points shall be located between the plant and drainage in the direction of the flow of ground water and records maintained. Monitoring for heavy metals in ground water shall also be undertaken and results/findings submitted along with half yearly monitoring report.	• Monitoring of influent, effluent, surface, and ground water quality is regularly conducted in our in-house NABL accredited environment laboratory at TSM, as well as through a third-party NABL accredited laboratory. • The summarized data of water quality analysis for the period from April'25 to Sept'25 is enclosed as **Annexure - III**.
x	A well-designed rainwater harvesting system shall be put in place within six months, which shall comprise of rainwater collection from the built up and open area in the plant premises and detailed records kept of the quantity of water harvested every year and its use.	• A rainwater harvesting structure with a capacity of 650,000 m³ has been constructed to collect surface runoff water from the plant premises. The harvested water is being utilized for various plant applications.

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xi	No water bodies including natural drainage system in the area shall be disturbed due to activities associated with the setting up / operation of the power plant.	No natural water bodies/drainage system was disturbed due to setting up this project.
xii	Hydrogeology of the area shall be reviewed annually from an institute/organization of repute to assess impact of surface water and ground regime (especially around ash dyke). In case any deterioration is observed, specific mitigation measures shall be undertaken and report/data of water quality monitored regularly and maintained shall be submitted to the Regional Office of the Ministry.	There is no deterioration of groundwater level, and the quality has been observed from the last hydrogeology study. Hydrogeology studies are being carried out on a quarterly basis internally and thorough CSIR-IMMT. Last six-month ground water quality and water level report is attached as **Annexure-IV.**
xiii	Wastewater generated from the plant shall be treated before discharge to comply limits prescribed by the SPCB/CPCB.	Wastewater generated from the plant is treated in ETP#1, and the treated water is reused for DRI shell cooling, dust suppression, and green area development.
xiv	Additional soil for leveling of the proposed site shall be generated within the site (to the extent possible) so that natural drainage system of the area is protected and improved.	No additional soil required for leveling the site as project activity has been completed.
xv	Prior approval of the Ministry shall be obtained for Mine Void and abandoned stone quarry filling of fly ash based on the outcome of the pilot study for which permission was accorded to the existing units by the Ministry on 05.09.2013 subject to Hon'ble NGT's Order.	• Presently fly ash is not used for coal mine void filling. • Fly ash is also being supplied to ○ Nearby fly ash brick manufacturing units, free of cost at door delivery model, for maximum utilization of ash. ○ Cement plants through bulker. ○ Construction of national highways (NH-55 & NH 149). • Balance ash if any is being utilized in reclamation of abandoned stone quarries as per guidelines of CPCB/ OSPCB after grant of necessary consents. • Details of Fly Ash Generation and Utilization report is attached as **Annexure - IX**
xvi	Fly ash shall be collected in dry form and storage facility (silos) shall be provided. Unutilized fly ash shall be disposed off in the ash pond in the form of slurry. Mercury	• Ash is being collected in dry form and stored in the silos. • An interim ash pond is currently in operation to store and manage ash in case

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	and other heavy metals (As, Cr, Pb etc) will be monitored in the bottom ash as also in the effluents emanating from the existing ash pond. No ash shall be disposed off in low lying areas.	of emergencies to ensure proper handling until final disposal can be arranged. • No effluent arising out of ash pond, however Mercury and other heavy metals (As, Cr, Pb etc) being monitored in the ash (fly & bottomLeachate characteristics of ash are carried out at regular intervals. The latest analysis report is enclosed as **Annexure -V**. • No ash will be disposed off in low lying area
xvii	Fugitive emission of fly ash (dry or wet) shall be controlled such that no agricultural or non-agricultural land is affected. Damage to any land shall be mitigated and suitable compensation provided in consultation with the local panchayat.	• Fly ash is being stored in ash silo and supplied to actual user by maintaining minimum 15 % moisture content. Fly Ash is transported using covered trucks/ bulker/ to avoid any fugitive emission due to transportation.
xviii	Ash pond shall be lined up with HDPE/LDPE lining or any other suitable material impermeable media such that no leachate takes place at any point of time. Adequate safety measures shall also be implemented to protect the ash dyke from getting breached.	• An interim ash pond is currently functioning to store fly ash for emergency scenarios. To prevent leaching, the pond has been lined with bentonite material. Additionally, adequate safety measures are already in place to protect the ash dyke from breaches.
xix	Green belt consisting of three tires of plantation of native species around plant and at least 50 m width shall be raised. Wherever 50 m width is not feasible a 20 m width shall be raised, and adequate justification shall be submitted to the Ministry. Tree density shall not be less than 2500 trees per ha with survival rate not less than 80%. Only native species shall be planted and the green belt development shall be expedited.	• Green belt development work is ensured through plantation along the plant, internal roads as well as all the vacant spaces inside the plant premises. • Plantation of saplings is done regularly based on availability of vacant areas. • Wherever feasible 50 m width to 20 m width plantation done. • Tree density is not less than 2500 trees per ha with survival rate more less than 80%. Only native species is planted and maintain as per feasibility.
xx	CSR schemes identified based on Public Hearing issues and need based assessment shall be implemented in consultation with the village panchayat and the District administration starting from the development of the project itself. As part of CSR, prior identification of local employable youth and eventual	• The peripheral development is being carried out based on socio-economic survey of the area on need based assessment. • Various socio-economic development programs covering education (Green school project in collaboration with TERI) Roads in the nearby villages, safe drinking

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	employment in the project after imparting relevant training shall be also undertaken. Company shall provide separate budget for community development activities and income generating program.	water, sanitation, sports and health care etc. are undertaken in nearby villages as per the suggestions made in public hearing. The above includes social engineering as well as infrastructure projects.
xxi	As committed, a minimum amount of Rs. 40.00 crore shall be earmarked for CSR activities for next five years. For proper and periodic monitoring of CSR activities, a CSR committee or a social audit committee or a suitable credible external agency shall be appointed. CSR activities shall also be evaluated by an independent external agency. This evaluation shall be both concurrent and final.	• Various CSR activities have been undertaken since the inception of the plant by providing facilities of sanitation, drinking water, education, health care, road and communication etc. Following the acquisition of the industry by Tata Steel Limited, there has been a significant increase in both the variety and expenditure related to CSR activities. • Details of the CSR initiatives over the last six months is enclosed as **Annexure-VI**
xxii	For proper and periodic monitoring of CSR activities, a CSR committee or a social audit committee or a suitable credible external agency shall be appointed. CSR activities shall also be evaluated by an independent external agency. This evaluation shall be both concurrent and final.	• As per the revised companies Act, 2013 and its amendment, CSR committee has been formed. Evaluation of each specific CSR intervention/activities is monitored & evaluated by the CSR Committee. • The peripheral development is being carried out based on socio economic survey and need based assessment. Based on this, we have provided the facilities for sanitation, drinking water, education, health care, road and communication facilities etc. to the surrounding villages.
xxiii	An Environmental Cell comprising of at least one expert in environment science/ engineering, ecology, occupational health and social science, shall be created preferably at the project site itself and shall be headed by an officer of appropriate superiority and qualification. It shall be ensured that the Head of the Cell shall directly report to the Head of the Plant who would be accountable for implementation of environmental regulations and social impact improvement / mitigation measures.	• The Environment Management Department has been established to ensure effective implementation of environmental safeguards and control measures for pollution. It is led by qualified and experienced officers who are dedicated to adhering to the stipulated regulations. Key details regarding these measures have already been submitted to the Ministry of Environment, Forest and Climate Change (MoEF&CC). • The Chief of the Environment department functionally reports to the Head of Plant who is accountable for implementation of

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		environmental regulations and social impact improvement / mitigation measures.

A	**General Conditions:**	
i	Space for FGD shall be provided for future installation as may be required.	• CFBC (Circulating Fluidized Bed Combustion) coal-fired boiler has been installed, and to control SO_2 emissions, lime is being fed along with the coal. Adequate space has been provided for the installation of a lime injection system, and a lime sizing plant is currently under construction to supply sized lime for the effective reduction of SO_2 emissions. • In accordance with the Ministry of Environment, Forest and Climate Change (MoEF&CC) Notification No. G.S.R. 465(E) dated 11 July 2025, TSM-CPP has submitted a letter to the Odisha State Pollution Control Board (OSPCB) vide Letter No. TSL/SPCB/TS-03/2025-22/601, seeking categorization of TSM-CPP under Category 'C'.
ii	The treated effluents conforming to the prescribed standards only shall be re-circulated and re-used within the plant. Arrangements shall be made that effluents and storm water do not get mixed	• Wastewater is treated in ETP-1 and the treated effluents conforming to the prescribed limits are recycled and reused in dust suppression and green area irrigation. • Rainwater collected from the plant area is being channelized through drains into a series of storage ponds (3 Nos. of lagoons are in operation).
iii	A sewage treatment plant shall be provided (as applicable) and the treated sewage shall be used for raising greenbelt /plantation.	• A Sewage treatment plant of capacity 3000 KLD is in operation to treat domestic sewage, and treated water is being reused for ash conditioning.
iv	Adequate safety measures shall be provided in the plant area to check/minimize spontaneous fire in coal yard especially during summer season. Copy of these measures with full details along with location on plant layout shall be submitted to the Ministry as well as to the Regional Office of the Ministry.	• 19 numbers of fire hydrants have been provided in the coal yard-1, 2 and coal shed to check / minimize spontaneous fire. • 09 numbers of gun sprinklers have also been installed in the yards to keep the surface moist. • The coal piles are leveled by scraping and compacted by rolling.

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		• In coal silos / bins, First in First out (FIFO) principle is applied to avoid spontaneous burning. • Fire tenders are ready to put into service in case of emergency.
v	Storage facility for auxiliary liquid fuel such as LDO/HFO/LSHS shall be made in the plant area in consultation with the Department of Explosives, Nagpur. Sulphur content in the liquid fuel will not exceed 0.5%. Disaster Management Plan shall be prepared to meet any eventuality in case of an accident taking place due to storage of oil.	• LDO/HSD is stored in the plant area where the risk is minimum. There is a dyke around the storage tanks to contain LDO/HSD in case of any leakage. • Onsite emergency plan has prepared to meet any eventuality in case of an accident taking place. • As per specification of the supplier, the sulfur content in the fuel is less than 0.5 % by mass.
vi	First aid and sanitation arrangements shall be made for the drivers and other contract workers during construction phase.	• Adequate First aid and sanitation arrangements were made during the construction phase of the plant. • Similar facilities are being maintained during operational phase for the workers and employees.
vii	Noise level emanating from turbines shall be so controlled such that the noise in the work zone shall be limited to 85 dB(A) from the source. For people working in the high noised areas, requisite PPEs like ear plugs/ear muffs etc shall be provided. Workers engaged in noisy areas such as turbine area, air compressors etc shall be periodically examined to maintain audiometric records and for treatment for any hearing loss including shifting to non-noisy/less noisy areas.	• Enclosures and silencers have been provided for primary air and secondary air fans of all four boilers. • Necessary PPEs are being provided to all the workers working in noise prone areas and periodic examination is being conducted for the workers engaged in noise prone areas. • Noise monitoring is carried out regularly at six locations in the work zone areas. • The summary of noise monitoring report for the period from April'25 to Sept'25 is enclosed as **Annexure – VII.**
viii	Regular monitoring of ambient air ground level concentration of SO_2, NO_x, $PM_{2.5}$, PM_{10} and Hg shall be carried out in the impact zone and records maintained. If at any stage levels are found to exceed the prescribe limits, necessary control measures shall be provided immediately. The locations of the monitoring stations and frequency of monitoring shall be decided in	• 5 Nos. of ambient air quality monitoring stations have set up in nearby villages for measuring the monthly ground level concentrations of PM_{10}, SO_2 and NOx in consultation with SPCB, Odisha. • Additionally, a baseline study was conducted by a third party for the period March 2025 to May 2025. The study includes mean results of metal analysis in

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	consultation with SPCB. Periodic reports shall be submitted to the regional office of the Ministry. The data shall also be put on the website of the Company.	ambient air, covering parameters such as iron, zinc, mercury, and others. The detailed report is attached as **Annexure – VIII A** • The summary of ambient air quality monitoring report for the period from April'25 to Sept'25 is enclosed as **Annexure – VIII**.
ix	Utilization of 100 % fly ash generated shall be made from 4th year of operation. Status of implementation shall be reported to the Regional Office of the Ministry from time to time.	• Presently 100 % utilization of fly ash is being achieved by supplying cement manufacturing units and supplying to bricks manufacturing units on a transport subsidy basis. Balance ash if any is being used in filling abandoned stone quarries, low lying areas, • The annual implementation report on fly ash generation and utilization is being submitted regularly to the Regional Office of the Ministry and SPCB Odisha. The last report was submitted vide letter no. TSM-CPP/SPCB/TS-06/2025-01/186 dated 29.04.2025 and the copy is enclosed as **Annexure-IX.**
x	Provision shall be made for the housing of contractor workers (as applicable) within the site with all necessary infrastructure facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc.	Adequate arrangements for housing of construction workers were made during the construction phase of the plant.
xi	The project proponent shall advertise in at least two local newspapers widely circulated in the region around the project, one of which shall be in the vernacular language of the locality concerned within seven days from the date of this clearance letter, informing that the project has been accorded environment clearance and copies of the clearance letters are available with the SPCB/Committee and may also be seen at website of the Ministry of Environment and Forests at http://envfor.nic.in	• Advertisements were circulated in The Telegraph (English daily) dated 15.02.2015 and the Samaya (Oriya daily) dated 15.02.2015. • A copy of the same was submitted to MoEF&CC vide letter no. BSL/MoEF/BS-02/2015-09 dated 21.02.2015.

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xii	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad / Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the Company by the Proponent.	Copy of the environment clearance was submitted to the concerned village panchayat, Zila Parishad, District Industry Centre etc.
xiii	The proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of measured data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the MoEF, the respective zonal office of CPCB and the SPCB. The criteria pollutant levels namely SPM, RSPM (PM_{10} and $PM_{2.5}$) SO_2, NO_x (ambient as well as stack emission) shall be displayed at a convenient location near the main gate of the Company in the public domain.	• Status of compliance with the stipulated environment clearance conditions are uploaded and sent to the MoEF&CC, CPCB and SPCB. • Results of online air quality monitoring are being displayed near the main gate.
xiv	The environment statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned SPCB as prescribed under the Environment (Protection) Rules 1986, as amended subsequently, shall also be put on the website of the Company along with the status of compliance of environment clearance conditions and shall also be sent to the respective Regional Office of the Ministry by e-mail.	• The environment statement for each financial year ending 31st March in Form-V is submitted regularly to the Regional Office of MoEF&CC, CPCB and SPCB, Odisha. • The last Environment Statement was submitted in Form – V vide letter no. TSM-CPP/SPCB/TS-03/2025-02/198 dated 27.08.2025.
xv	The project proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of environment and Forests, its Regional Office, CPCB and SPCB. The project proponent shall upload the status of compliance of the environmental clearance conditions on their website and update the same periodically and simultaneously send	• Six monthly reports on the status of the implementation of the stipulated environmental safeguards are being submitted to the MoEF&CC, Regional Office, CPCB and SPCB, Odisha. • Last compliance report has been submitted vide letter no. TSM-CPP/MoEF&CC/TS-01/2025-02/188 dated 19.05.2025

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	the same by e-mail to the Regional office of MoEF.	
xvi	Regional office of the MoEF will monitor the implementation of the stipulated conditions. A complete set of documents including Environment Impact Assessment report and Environment Management Plan along with the additional information submitted from time to time shall be forwarded to the Regional Office for their use during monitoring. Project proponent will upload the compliance status in their website and update the same from time to time at least six monthly basis. Criteria pollutants levels including NOx (from stack and ambient air) shall be displayed at the main gate of the power plant.	• All the required documents have already been submitted to the Regional Office and will be made available during inspection. • Compliance status is uploaded on the website and updated every six months.
xvii	Separate funds shall be allocated for implementation of environmental protection measures along with item-wise break-up. These shall be included as part of the project cost. The funds earmarked for the environment protection measures shall not be diverted for other purposes and year-wise expenditure should be reported to the Ministry.	• Funds earmarked for pollution control measures are not diverted for any other activity. • Year-wise expenditure is submitted along with the annual environmental statement to the Ministry.
xviii	The project authorities shall inform the Regional Office as well as the Ministry regarding the date of financial closure and final approval of the project by the project authorities and the dates of land development work and commissioning of plant.	165 MW TG was commissioned on 23rd September 2015.
xix	Full cooperation shall be extended to the Scientists / Officers from the Ministry / Regional Office / CPCB / SPCB who would be monitoring the compliance on environmental status.	• Full cooperation is being extended to the Scientists/Officers from the Ministry / Regional Office / CPCB / SPCB who would be monitoring the compliance on environmental status.

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Amendment Environment clearance of 185 MW power plant File no.: J-13012/78/2011-IA.II(T) dated 25.09.2020		
SN	**Additional Condition**	**Compliance**
i	Increase in ash generation due to change in coal source from imported to domestic coal shall be utilised 100% as per the targets provided in the Fly ash Notification. Ash generation, utilisation, disposal along with the target achieved (percentage utilisation) annually shall be submitted in the compliance report. Mercury in the coal to be analysed and submitted.	• 100% fly ash utilization is ensured as per fly ash notification of MoEF&CC, Govt. of India. • Annual implementation report w.r.t. fly ash generation and utilization are being submitted periodically. The last report was submitted vide letter no. TSM-CPP/SPCB/TS-06/2025-01/186 dated 29.04.2025 and acknowledgement copy is enclosed as **Annexure-IX**. • Trace element analysis of coal sample is enclosed as **Annexure-I.**
ii	The ash pond of 5 acres of ash pond was already constructed for disposing unutilised ash. No additional land is permitted for ash pond owing to increase in ash generation. PP should take proper implementation measures for control of fugitive dust during storage, handling, and transport fly ash.	• Fly ash has been stored in ash silo and is being supplied to actual users through covered trucks/bulker/rake to avoid any fugitive emission due to transportation. • Fly ash is being supplied to o Nearby fly ash brick manufacturing units, free of cost on door delivery model, for maximum utilization of ash. o Cement plants through rake & bulker. o Construction of national highways. o Balance ash if any is being used for reclamation of low-lying areas & abandoned stone quarries as per guidelines of CPCB/OSPCB after grant of necessary Consents. • An interim ash pond is currently in operation to Store and manage ash in case of emergencies to ensure proper handling until final disposal can be arranged.

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iii	The emissions from the flue gases and chimney shall meet the standard of PM: 50 mg/Nm3, SO2: 600 mg/Nm3, NOx: 300 mg/Nm3, Hg: 0.03 mg/Nm3 as per the Ministry's Notification dated 07.12.2015. Emission reporting shall be submitted in the compliance report.	• Emissions from flue gases and the chimney are well within the norms as per the Ministry's Notification dated 07.12.2015, except for SO2 emissions. CFBC coal-fired boilers have been commissioned to control NOx emissions. progress. Lime is being fed along with coal to reduce SO2 emissions. A separate bunker for mixing fluxes (lime along with coal) has been provided to control SO2 emissions. To further improve the lime conveying and dosing system and enhance desulphurization ability, a separate lime injection system is currently being commissioned. • An online mercury analyzer has been installed at CEMS-3, attached to Boiler No. 5 and 6. • A report on NOx and SO2 emissions is enclosed as **Annexure-X**.
iv	The coal transportation shall be carried out by rail as far as possible. In case, the rail/conveyor belt infrastructure is not available, road transportation may be done with tarpaulin covered trucks. The coal transportation and the ash content in the coal are governed by the Ministry's Notification dated 21.05.2020.	Coal transportation is being carried out by both rail and road with covered rakes and trucks.

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LIST OF ENCLOSURES

Sl. No.	Enclosure	Details
1.	Annexure - I	Heavy Metal Analysis Coal Report
2.	Annexure - II	Manual Monitoring of Mercury Emissions
3.	Annexure - III	Water Quality Analysis Report
4.	Annexure - IV	Ground Water Analysis Report
5.	Annexure - V	Ash Leachate Characteristics
6.	Annexure - VI	CSR Initiatives
7.	Annexure - VII	Noise Monitoring Report
8.	Annexure - VIII	Ambient Air Quality Monitoring Report
9.	Annexure - IX	Annual Implementation Report Fly Ash
10.	Annexure - X	NOx and SO_2 Emission Report

सीएसआईआर - खनिज एवं पदार्थ प्रौद्योगिकी संस्थान
(वैज्ञानिक तथा औद्योगिक अनुसंधान परिषद)
भुवनेश्वर-751013, ओडिशा, भारत
CSIR - INSTITUTE OF MINERALS & MATERIALS TECHNOLOGY
Council of Scientific & Industrial Research
Bhubaneswar - 751013, Odisha, INDIA
Diamond Jubilee 1964-2024
आज़ादी का अमृत महोत्सव
सीएसआईआर CSIR भारत का नवाचार इंजन The Innovation Engine of India

TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Name & Address of the Party:	Tata Steel Ltd. At-Narendrapur, P.O.-Kusupanga Via-Meramandali, Dist-Dhenkanal Pin-759121, Odisha.
Your Ref. No.:	Work Order No.: 3000156889/A06, Date: 26.10.2023
Sample Details:	1. Indian Coal (01 No.) 2. Imported Coal (01 No.) 3. Iron Ore (01 No.) 4. Lime stone (01 No.)
Date of Receiving:	12.02.2025
Date(s) of Conducting Test:	03.03.2025
Date of Completion of Test:	28.04.2025

Method Adopted:

1. Proximate analysis of coal samples by classical methods.
2. Major and trace element analysis of Coal, Iron ore, lime stone and Dolomite samples through wet chemical route by gravimetric, AAS and ICP-OES techniques.
3. Coal samples were leached with distilled water at a solid: liquid ratio of 1:20 for Fluoride analysis using ISE.

Detail Report: Following data tables are enclosed:

Table-1. Proximate analysis of coal samples.
Table-2. Chemical composition analysis of coal samples.
Table-3. Trace element analysis of coal samples.
Table-4. Chemical composition analysis of Iron ore, Lime stone and Dolomite samples.
Table-5. Trace element analysis of Iron ore, Lime stone and Dolomite samples.

16/05/2025
(J. Das)
Pr. Technical Officer
MMC Dept.

16/05/25
(Dr. B. Nayak)
Chief Scientist
PL & Head, MMCD

N.B.: The samples are not drawn by CSIR-IMMT. Liability, if any, for the institute arising in connection with the testing shall be subject to ceiling of amount received by the institute from the client. The report should not be interpreted in part.

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TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Table-1. Proximate analysis of coal samples.

Sample ID	Moisture (%)	Volatile Matter (%)	Ash (%)	Fixed Carbon (%)
Indian coal	1.97	25.46	45.16	27.41
Imported coal	2.30	24.06	11.48	62.16

Table-2. Chemical composition analysis of coal samples.

Sl. No.	Component	Concentration in Test Samples, %	
		Indian Coal	Imported Coal
1	SiO_2	24.56	5.24
2	Al_2O_3	14.49	3.46
3	Fe_2O_3	1.24	0.31
4	TiO_2	0.93	0.18
5	MnO	0.008	0.01
6	CaO	0.24	0.61
7	MgO	0.06	0.07
8	Na_2O	0.88	0.4
9	K_2O	0.63	0.14
10	P_2O_5	0.10	0.10
11	S/SO_3	0.48/1.2	0.72/1.8
12	LOI	54.24	87.16

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TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Table-3. Trace element analysis of coal samples

Sl. No.	Parameters	Trace element concentrations in test samples		
		Unit	Indian coal	Imported coal
1	Pb	mg/kg	22.95	2.94
2	Cd	mg/kg	BDL	BDL
3	Cu	mg/kg	49.0	16.7
4	Ni	mg/kg	52.83	23.87
5	Co	mg/kg	12.23	5.06
6	Cr	mg/kg	57.52	21.49
7	Zn	mg/kg	83.6	19.07
8	Ag	mg/kg	1.23	0.48
9	Sb	mg/kg	6.45	1.67
10	Mo	mg/kg	2.92	0.31
11	V	mg/kg	56.55	19.82
12	Se	mg/kg	1.77	0.28
13	Ba	mg/kg	180.74	23.5
14	As	mg/kg	139.5	37.2
15	Hg	mg/kg	0.91	0.62
16	B	%	0.35	0.13
17	F^- in water leaching (1:20) solutions.	mg/L	0.38	0.13

16/05/25

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TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Table-4. Chemical composition analysis of Iron ore and Lime stone samples.

Sl. No.	Component	Concentration in Test Samples, %	
		Iron Ore	Lime Stone
1	SiO_2	1.08	3.36
2	Al_2O_3	5.07	0.98
3	Fe_2O_3	86.14	0.14
4	TiO_2	0.43	0.03
5	MnO	0.016	0.023
6	CaO	0.09	43.35
7	MgO	0.01	9.54
8	Na_2O	1.26	0.86
9	K_2O	0.12	0.27
10	P_2O_5	0.25	0.012
11	S/SO_3	0.052/0.13	0.064/0.16
12	LOI	4.35	40.15

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TEST REPORT

Ref. No. JD/MMC/05/25 **Date: 16.05.2025**

Table-5. Trace element analysis of Iron ore and Lime stone samples.

Sl. No.	Parameters	Trace element concentrations in test samples		
		Unit	Iron Ore	Lime Stone
1	Pb	mg/kg	0.26	0.05
2	Cd	mg/kg	BDL	BDL
3	Cu	mg/kg	13.54	4.97
4	Ni	mg/kg	1.15	6.62
5	Co	mg/kg	5.75	4.07
6	Cr	mg/kg	93.1	12.25
7	Zn	mg/kg	31.94	15.76
8	Ag	mg/kg	0.42	0.80
9	Sb	mg/kg	0.18	0.07
10	Mo	mg/kg	BDL	BDL
11	V	mg/kg	69.5	3.83
12	Se	mg/kg	BDL	0.12
13	Ba	mg/kg	70.26	16.48
14	As	mg/kg	0.76	23.6
15	Hg	mg/kg	0.53	0.38
16	B	%	0.67	0.51

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Mitra S.K.Private Limited

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Dist. Thane- 421302.
Tel. : 0252 2672352.
Email: mumbailab@mitrask.com
Web : www.mitrask.com

TEST REPORT

Name & Address of the Customer:
Tata Steel Ltd.
NH-55, Narendrapur, Meramandli,
Dhenkanal,Odisha-759129, India

Report No. :C/2025/300
Date :06.06.25
Sample No. :MSK/BBSR/2025/400

We hereby certify that the following sample drawn by us from the customer has been analyzed with the following results:

1	Group	: Atmospheric Pollution
2	Description of sample *(As declared by customer)*	: Stack Emission
3	Sample Mark *(if any, given by the customer)*	: Stack Emission
4	Date of sampling	: 06.05.25 at 03:59 pm to 04:22 pm
5	Place of sampling	: TSM CPP-3 Boiler-6
6	Environmental conditions during sampling	: Cold Chain Maintained
7	Sampling Drawn By	: Mr. Chinmaya Biswal
8	Sampling Plan & Procedures used	: USEPA
9	Location of performance of laboratory activities	: Laboratory Permanent Facility
10	Additions to, Deviation from the method (if any)	: No

A: GENERAL INFORMATION ABOUT STACK:		
1	Stack connected to	TSM CPP Boiler-2
2	Emission due to	Process Emission
3	Material of construction of Stack	MS
4	Shape of Stack	Rectangular
5	Whether Stack is provided with permanent platform	Yes
6	Capacity	NA
B: PHYSICAL CHARACTERISTICS OF STACK:		
1	Height of Stack from ground level	120 m
2	Diameter of Stack at sampling point	2.5 m x 2.5 m
3	Height of the sampling point from ground level	10 m
4	Area of Stack	6.28 m2
C: ANALYSIS/CHARACTERSTIC OF STACK:		
1	Fuel used : NA	2. Fuel consumption: NA

ANALYSIS RESULT

D: RESULTS FOR SAMPLING & ANALYSIS OF GASEOUS EMISSION:	Unit	Result	Method
Mercury	mg/Nm3	BDL(DL:0.008)	USEPA Part-29

Reviewed By:

Signature : Ananta Kr Rath
Name : Mr. Ananta Kumar Rath
Designation : Operation Manager

MITRA S.K. PRIVATE LIMITED BBSR

Authorized Signatory
For **Mitra S.K. Private Limited**

Signature Ananta Kr Rath
Name : Mr. Ananta Kumar Rath
Designation : Operation Manager

Annexure-III

Summary of Surface Water Quality Analysis

(Period: From April 2025 to September 2025)

S. N	Parameter	Unit	Kishinda Nala		Lingara Nala		Brahamani River	
			U/S	D/S	U/S	D/S	U/S	D/S
1	pH Value	-	7.81-8.39	7.57-8.52	7.75-8.31	7.64-8.12	7.63-8.21	7.42-8.02
2	Colour	Hazen	7.00-8.00	6.00-9.00	3-9	4-7	12-28	6-36
3	Temperature	Deg C	25.2-28.3	25-28.1	25.2-30	25.2-32	25-28.4	25.2-28
4	Total Suspended Solids	mg/l	5.6-18	12-33	2.1-14	2.1-11.5	2-70.3	1-76
5	Arsenic as As	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
6	BOD, 3days at 27°C	mg/l	4.1-4.3	4.6-5.3	5.0-5.4	5.1-5.2	2.2-2.8	2.6-2.9
7	Boron as B	mg/l	BDL(DL:0.2)	BDL(DL:0.2)	BDL(DL:0.2)	BDL(DL:0.2)	BDL(DL:0.2)	BDL(DL:0.2)
8	Cadmium as Cd	mg/l	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)	BDL(DL:0.003)
9	Calcium as Ca	mg/l	33-34.56	26-33.8	36.2-38.7	37-41.5	8.8-13	9-9.4
10	Chlorides as Cl	mg/l	39-45.26	41-45.26	76-116.92	116.92-131	10-13.2	11.31-12
11	COD	mg/l	14.5-14.5	18.4-22.1	38-38	36-36	8.6-16	8.1-18
12	Copper (as Cu)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
13	Cyanide as CN	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
14	Fluoride as F-	mg/l	0.82-1.4	0.8-2	0.68-1.9	1.4-1.5	0.16-1.8	0.22-1.6
15	Hexa Chromium as Cr +6	mg/l	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)	BDL(DL:0.03)
16	Iron as Fe	mg/l	0.25-0.25	0.14-0.14	0.27-0.27	0.16-0.16	BDL(DL:0.05)	0.2-0.2

Annexure-III

S. N	Parameter	Unit	Kishinda Nala		Lingara Nala		Brahamani River	
			U/S	D/S	U/S	D/S	U/S	D/S
17	Lead (as Pb)	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
18	Manganese (as Mn)	mg/l	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)	BDL(DL:0.02)
19	Mercury (as Hg)	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
20	Nickel (as Ni)	mg/l	BDL(DL:5.00)	BDL(DL:5.00)	BDL(DL:5.00)	BDL(DL:5.00)	BDL(DL:5.00)	BDL(DL:5.00)
21	O&G	mg/l	BDL (DL: 0.1)	BDL (DL: 0.1)	BDL (DL: 0.1)	BDL (DL: 0.1)	BDL (DL: 0.1)	BDL (DL: 0.1)
22	Phenolic Comp	mg/l	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)	BDL(DL:0.001)
23	Phosphate as P	mg/l	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)
24	RFC	mg/l	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)	BDL(DL:0.1)
25	Selenium (as Se)	mg/l	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)	BDL(DL:0.005)
26	TKN	mg/l	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)
27	Zinc (as Zn)	mg/l	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)	BDL(DL:0.3)

Annexure - IV

Ground Water Quality Analysis Report of surrounding villages

July 2025

S. No	LOCATIONS	UOM	Motanga	Galpada	Kharagprasad	Kochilamada	Charadagadia	Khaliberana	Ganthigadia	Narendrapur
	PARAMETER		VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE
1.	Colour	Hazen	3	2	2	3	3	2	2	3
2.	pH	-	7.34	6.95	7.02	6.85	7.34	7.14	7.18	6.83
3.	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4.	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
5.	Turbidity	NTU	1.33	0.7	0.22	0.39	1.33	0.27	0.25	0.72
6.	Total Dissolved Solids (TDS)	mg/L	1754	986	1048	1820	1754	1045	966	1280
7.	Alkalinity as CaCO3	mg/L	820	303	492	371	820	383	488	440
8.	Total Hardness (as CaCO3)	mg/L	646	313	423	921	646	474	431	748
9.	Sulphide (as H2S)	mg/L	BDL (DL:0.04)	BDL (DL:0.04)	BDL (DL:0.04)	BDL (DL:0.04)	BDL (DL:0.04)	BDL (DL:0.04)	BDL (DL:0.04)	BDL (DL:0.04)
10.	Sulphate (as SO4-2)	mg/L	186	278	170	273	186	166	114	60.4
11.	Chloride as Cl	mg/L	240	127	160	519	240	199	239	479
12.	Fluoride as F	mg/L	0.982	0.14	0.486	0.542	0.982	1.02	0.824	0.662
13.	Nitrate as NO3	mg/L	47.3	45.1	15.9	47.8	47.3	46.1	18.5	8.8
14.	Calcium as Ca	mg/L	202	83.2	111	212	202	124	108	188
15.	Ammonia (as NH3)	mg/L	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
16.	Magnesium as Mg	mg/L	56	34	42.8	86	56	40	39.1	67.5
17.	Iron (as Fe)	mg/L	0.103	0.092	0.103	0.108	0.103	0.099	0.099	0.103
18.	Aluminium (as Al)	mg/L	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)	BDL (DL:0.02)
19.	Anionic Surface-Active Agents as (MBAS)	mg/L	BDL (DL:0.025)	BDL (DL:0.025)	BDL (DL:0.025)	BDL (DL:0.025)	BDL (DL:0.025)	BDL (DL:0.025)	BDL(DL:0.025)	BDL (DL:0.025)
20.	Barium (as Ba)	mg/L	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
21.	Boron (as B)	mg/L	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)	BDL (DL:0.2)

Annexure - IV

S. No	LOCATIONS	UOM	Motanga	Galpada	Kharagprasad	Kochilamada	Charadagadia	Khaliberana	Ganthigadia	Narendrapur
	PARAMETER		VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE	VALUE
22.	Copper (as Cu)	mg/L	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)
23.	Free Residual Chlorine	mg/L	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
24.	Manganese (as Mn)	mg/L	0.096	BDL (DL:0.05)	BDL (DL:0.05)	0.094	0.096	BDL (DL:0.05)	BDL (DL:0.05)	0.404
25.	Phenolic Compounds (as C6H5OH)	mg/L	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL(DL:0.001)	BDL (DL:0.001)
26.	Selenium (as Se)	mg/L	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
27.	Silver (as Ag)	mg/L	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
28.	Zinc (as Zn)	mg/L	BDL (DL:0.01)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)	BDL (DL:0.1)
29.	Cadmium (as Cd)	mg/L	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)	BDL (DL:0.003)	BDL(DL:0.003)	BDL (DL:0.003)
30.	Cyanide (as CN)	mg/L	BDL (DL:0.012)	BDL (DL:0.012)	BDL (DL:0.012)	BDL (DL:0.012)	BDL (DL:0.012)	BDL (DL:0.012)	BDL(DL:0.012)	BDL (DL:0.012)
31.	Lead (as Pb)	mg/L	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
32.	Mercury (as Hg)	mg/L	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL (DL:0.001)	BDL(DL:0.001)	BDL (DL:0.001)
33.	Nickel (as Ni)	mg/L	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)	BDL (DL:0.01)
34.	Total Arsenic (as As)	mg/L	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL (DL:0.005)	BDL(DL:0.005)	BDL (DL:0.005)
35.	Molybdenum (as Mo)	µg/L	BDL (DL: 5.00)	BDL (DL: 5.00)	BDL (DL: 5.00)	BDL (DL: 5.00)	BDL (DL: 5.00)	BDL (DL: 5.00)	BDL (DL: 5.00)	BDL (DL: 5.00)
36.	Mineral Oil	mg/L	BDL (DL: 0.01)	BDL (DL: 0.01)	BDL (DL: 0.01)	BDL (DL: 0.01)	BDL (DL: 0.01)	BDL (DL: 0.01)	BDL (DL: 0.01)	BDL (DL: 0.01)
37.	Chloramines (as Cl2)	mg/L	BDL (DL: 1.0)	BDL (DL: 1.0)	BDL (DL: 1.0)	BDL (DL: 1.0)	BDL (DL: 1.0)	BDL (DL: 1.0)	BDL (DL: 1.0)	BDL (DL: 1.0)
38.	Total Chromium (as Cr)	mg/L	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)	BDL (DL:0.03)
39.	Total Coliform	-	Not Detected	Detected	Detected	Detected	Not Detected	Detected	Detected	Detected
40.	E. coli	-	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected

Note: BDL: Below Detectable Limit; DL: Detectable Limit, U/S: Upstream D/S: Downstream
Source: Monitoring/ Analysis report of S.K. Mitra Private Limited and Environment Laboratory of TSM.

Visiontek Consultancy Services Pvt. Ltd.

(Committed For Better Environment)

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

Ref. no: Envlab/24-25/TR-12306 **Date: 18.11.2024**

ASH ANALYSIS REPORT

1. Name of the Indus : **M/s TATA Steel Limited Meramandali, Dhenkanal**
2. Sampling Location : **S-1**: Fly Ash collected from BFPP-1
   : **S-2:** Bed Ash collected from BFPP-1
   :S-3: Fly ash collected from AEL-165
   :S-4: Bed ash collected from ASL-165
3. Date of Sampling : 11.11.2024
4. Date of Analysis : 12.11.2024 to 18.11.2024
5. Sample Collected by : VCSPL Representative

Sl. No.	Name of the Parameters	Unit	Govt. of India, MoEF & CC Schedule-II based on leachable concentration limits (TCLP) orSoluble Threshold limit Concentration (STLC), Class A2016	Analysis Results			
				S-1	S-2	S-3	S-4
01	Arsenic as As	mg/l	5.0 mg/l	0.004	0.002	0.003	0.002
02	Barium as Ba	mg/l	100.0 mg/l	BDL	BDL	BDL	BDL
03	Cadmium as cd	mg/l	1.0 mg/l	BDL	BDL	BDL	BDL
04	Chromium as Cr	mg/l	5.0 mg/l	BDL	BDL	BDL	BDL
05	Lead as Pb	mg/l	5.0 mg/l	BDL	BDL	BDL	BDL
06	Mercury as Hg	mg/l	0.2 mg/l	BDL	BDL	BDL	BDL
07	Selenium as Se	mg/l	1.0 mg/l	0.003	0.003	0.003	0.003
08	Iron as Fe	mg/l	--	0.81	0.41	0.69	0.36
09	Nickel as Ni	mg/l	20.0 mg/l	0.22	0.16	0.24	0.17
10	Zinc as Zn	mg/l	250.0 mg/l	0.48	0.35	0.49	0.33
11	Manganese as Mn	mg/l	10.0 mg/l	0.41	0.28	0.50	0.32
12	Cobalt as Co	mg/l	80.0 mg/l	BDL	BDL	BDL	BDL
13	Copper as Cu	mg/l	25.0 mg/l	0.37	0.28	0.39	0.26
14	Vanadium as V	mg/l	24.0 mg/l	BDL	BDL	BDL	BDL
15	Aluminium as Al	mg/l	--	4.7	4.3	5.3	4.8
16	Fluoride as F	mg/l	180.0 mg/l	1.79	1.31	1.89	1.36

Reviewed By: **Approved By**

Annexure-VI

CSR Expenditure and Activities

Around Tata Steel Ltd, Meramandali & TSM-CPP(AEL)

Period: From April'25 to September'25

PROGRAM HEAD	Expenditure in Lakh	MAJOR INTERVENTIONS/REMARKS
Agriculture	9.20	
Drinking Water	80.81	
Education	335.00	Including the 1000 school program and Axis Dil se Project
Gender & Community Enterprise	30.31	
Public Health	42.33	
Rural Infrastructure	127.00	
Sports	2.13	
Ethnicity	5.96	
TOTAL	**632.74**	

Annexure-VII

Environment Laboratory
TATA Steel Meramandali, Odisha
Noise Monitoring Report

S. N	Name of the unit	Location	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25
			Leq					
1.	110 MW Compressor House CPP	Near Entrance Point	82.5	82.2	80.7	81.6	84.3	80.2
		Near Compressor	90.1	80.6	90	89.9	92.3	90.4
		Inside Operator office	79.4	84.4	78.4	56.8	78	70.4
2.	150 MW Ash Conveying Compressor House CPP	Near Entrance Point	84.2	58.7	84.3	84.9	85.5	84.5
		Near Compressor	92.7	91.6	91.2	91.5	92.8	92
		Inside Operator office	80.6	83.5	80.2	60.4	79.3	71.6
3.	165 MW Compressor House CPP	Near Entrance Point	82.5	82.2	80.7	81.6	84.3	80.2
		Near Compressor	90.1	80.6	90	89.9	92.3	90.4
		Inside Operator office	79.4	84.4	78.4	56.8	78	70.4
4.	300 MW CPP	CFBC Boiler-1						
		Near ID Fan-1	SD	SD	SD	84.8	83.1	84.8
		Near ID Fan-2	SD	SD	SD	84.6	84	85.1
		Near S A Fan	SD	SD	SD	90.5	91.3	90.2
		Near P.A. Fan	SD	SD	SD	91.1	91.5	91
		Near Boiler -1 Area	SD	SD	SD	84.4	83.5	83.8
		CFBC- Boiler-2						
		Near ID Fan-1	85.4	84.9	85.7	85.1	SD	SD
		Near ID Fan-2	85.8	85.1	84.8	85.2	SD	SD
		Near S A Fan	91.5	91.2	90.8	91.3	SD	SD
		Near P.A. Fan	91.6	90.5	90.6	90.8	SD	SD
		Near Boiler -2 Area	84.8	84.6	84.1	82.7	SD	SD
		CFBC- Boiler-3						
		Near ID Fan-1	85.1	85	84.7	SD	84.7	SD
		Near ID Fan-2	85.5	85.2	85	SD	85.3	SD
		Near S A Fan	91.7	91.1	90.2	SD	90.3	SD
		Near P.A. Fan	92	90.7	90.4	SD	91	SD
		Near Boiler -3 Area	85.8	84.2	84.5	SD	84.3	SD
		CFBC- Boiler-4						
		Near ID Fan-1	84.9	SD	SD	SD	SD	85.3
		Near ID Fan-2	85.6	SD	SD	SD	SD	84.9
		Near S A Fan	92.1	SD	SD	SD	SD	91.1
		Near P.A. Fan	91.8	SD	SD	SD	SD	91.8
		Near Boiler -4	85.7	SD	SD	SD	SD	83.2
5.	185 MW CPP	CFBC- Boiler-5						
		Near ID Fan-1	SD	80.2	81	80.2	80.4	80.3
		Near ID Fan-2	SD	80.3	80.4	80.7	80.1	80.1
		Near S A Fan	SD	90	89.5	91.2	90.2	90.5
		Near P.A. Fan	SD	90.1	90	90.5	91.1	90.6
		Near Boiler -5	SD	84.8	84.8	83.6	83.7	84.5
		CFBC- Boiler-6						
		Near ID Fan-1	80.2	SD	SD	80.1	80.5	80.8
		Near ID Fan-2	80.5	SD	SD	80.6	81.9	80.4
		Near S A Fan	92.7	SD	SD	91.5	90.8	91.7
		Near P.A. Fan	91.8	SD	SD	91.8	90.6	91.5
		Near Boiler -6	83.8	SD	SD	84.1	82.7	84.2
		Near Silo Area	84.2	83.7	82.6	83	83.3	83.3

Annexure-VII

Environment Laboratory
TATA Steel Meramandali, Odisha

S. N	Name of the unit	Location	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25
			Leq					
		Near 150 MW TG	89.2	88.4	89.4	87.3	88.5	86.8
		Near 165 MW TG	90.1	88.9	88.5	85.8	87.1	87
		Control Room Office	78.7	69.5	63.1	68.3	63.5	63.1
		New Control Room Office	90.1	59.2	60.5	58.2	58.2	62.5

e) Trace metals in PM_{10} of Ambient Air

Samples of PM_{10} of twenty-four hours duration were collected on EPM 2000 filter papers at the ten (10) AAQ locations. The filter papers are acid digested, extracted and analysed on MP-AES instrument. For mercury, filter paper was digested and analysed on Cold Vapour Atomic Absorption Spectrophotometer (CVAAS).

The mineralogical composition of PM_{10} in terms of selected metals i.e. heavy metals were carried out in samples for all the ambient air monitoring location for Iron, Manganese, Zinc, Chromium, Cadmium Copper and mercury. The mean results of metal analysis in PM_{10} are presented in **Table 1.6.5**.

The most abundant elements found in PM_{10} in the study area are Fe, Zn & Mn in comparison to other metals. The crustal element Fe ranged from 0.679 to 2.662 µg/m^3 among the ten AAQ locations which is usually found in crustal rock and soil particles in the study area. The decreasing elemental concentration trend is as follows Fe > Zn > Mn > Cu > Cr > Cd > Hg.

High concentrations of iron (Fe) were observed at AAQ locations A3 (Birabahanpur), A10 (Kankalu), and A8 (Galapada). Manganese (Mn) concentrations ranged from 0.030 to 0.154 µg/m^3, with the highest levels recorded at A6 (Nuahata) and A3 (Birabahanpur). Zinc (Zn) concentrations varied between 0.671 and 1.215 µg/m^3.

As there are no national standards for these metals in ambient air, the results have been compared with the Ontario Ambient Air Quality Criteria (AAQC), April 2020. Elevated concentrations of Fe, Mn and Zn were observed at A6 (Nuahata), which is located ~2.8 km from the project site and close to Angul-Talcher road. The nearest inhabited location, A3 (Birabahanpur), showed slightly higher levels of multiple metals but all concentrations remained well within the Ontario AAQC limits.

Table 1.6.5: Mean Results of Metal Analysis in Ambient Air

AAQ Stn. Code	Parameters	Iron as Fe	Manganese as Mn	Zinc as Zn	Chromium as Cr	Cadmium as Cd	Copper as Cu	Mercury as Hg
	Name of Instrument used for Analysis	*MPAES*						*CVAAS*
	Unit	µg/m^3						ng/m^3
	Method sensitivity	DL:0.003	DL: 0.001	DL: 0.003	DL: 0.001	DL: 0.001	DL: 0.001	DL:0.03
A1	Sibapur	1.172	0.064	0.867	0.005	0.001	0.021	0.044
A2	Khaliberana	1.279	0.069	0.958	0.005	0.001	0.015	0.051
A3	Birabahanpur	1.672	0.134	1.192	0.005	0.001	0.028	0.070
A4	Asanabania	0.926	0.094	1.112	0.006	0.001	0.007	0.045
A5	Bhagwatpur	1.129	0.093	1.062	0.005	0.001	0.014	0.035
A6	Nuahata	2.662	0.154	0.775	0.006	0.002	0.021	0.041
A7	Kurunti Chasasahi	1.166	0.077	0.671	0.005	0.001	0.036	0.061
A8	Galapada	1.605	0.106	1.169	0.005	0.002	0.007	0.035
A9	Sanamunda	0.679	0.039	1.006	0.004	<0.001	0.096	0.046
A10	Kankalu	1.628	0.116	1.215	0.005	0.001	0.016	0.050
Ontario Ambient Air Quality Criteria, April 2020 (24 Hr.)		**4.0**	**0.2**	**120**	**0.5**	**0.025**	**50**	**2000**

Source: Primary baseline monitoring by MECON, Summer Season 2025

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SUMMARY OF AMBIENT AIR QUALITY
MONTHLY AVERAGE VALUES

Month	Locations of Monitoring	Monthly Average				
		Unit in µg/m^3				Unit in mg/m^3
	Pollutant	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
	Standard	100	60	80	80	2
April'25	CAAQMS-1	152.35	44.82	11.85	6.24	0.65
	CAAQMS-2	251.32	69.18	22.64	4.6	0.73
	CAAQMS-3	125.13	54.26	13.28	10.06	0.74
	CAAQMS-4	76.41	36.33	5.73	18.98	0.26
	CAAQMS-5	94.00	32.23	16.13	13.98	0.28
	CAAQMS-6	111.13	43.79	16.1	11.1	1
	CAAQMS-7	119.90	53.13	19.95	14.41	0.74
May'25	CAAQMS-1	108.09	36.62	4.65	6.62	0.71
	CAAQMS-2	135.98	47.92	19.13	10.08	0.71
	CAAQMS-3	101.00	43.57	13.46	10.07	0.75
	CAAQMS-4	61.77	31.32	6.06	17.23	0.27
	CAAQMS-5	93.50	34.09	16.23	9.43	0.96
	CAAQMS-6	93.71	38.19	15.5	9.88	0.97
	CAAQMS-7	97.97	38.79	14.49	14.47	0.74
June'25	CAAQMS-1	93.25	36.63	5.23	6.03	1.19
	CAAQMS-2	81.73	38	11.9	22.93	0.72
	CAAQMS-3	75.16	37.06	13.9	10.79	0.77
	CAAQMS-4	55.30	23.98	5.82	12.67	0.31
	CAAQMS-5	75.82	34.21	16.59	7.98	0.68
	CAAQMS-6	105.94	42.48	15.68	10.25	0.43
	CAAQMS-7	128.83	42.84	14.42	11.93	0.86
July'25	CAAQMS-1	65.06	24.99	6.61	6.24	0.99
	CAAQMS-2	50.08	24.47	11.89	22.86	0.71
	CAAQMS-3	62.72	31	13.14	10.53	0.57
	CAAQMS-4	34.95	15.28	5.43	10.22	0.27
	CAAQMS-5	36.58	9.92	17.06	10.96	0.6
	CAAQMS-6	80.71	24.71	15.61	10	0.42

Month	Locations of Monitoring	Monthly Average				
		Unit in µg/m³				Unit in mg/m³
	Pollutant	PM_{10}	$PM_{2.5}$	SO_2	NO_X	CO
	Standard	100	60	80	80	2
	CAAQMS-7	97.37	29.79	14.72	12.91	0.78
August'25	CAAQMS-1	69.18	25.47	5.22	7.48	0.77
	CAAQMS-2	85.27	29.54	8.31	22.95	0.69
	CAAQMS-3	104.10	40.69	14.51	10.96	0.71
	CAAQMS-4	45.07	21.48	5.62	10.44	0.47
	CAAQMS-5	50.69	20.51	16.31	12.3	0.54
	CAAQMS-6	65.36	24.53	15.6	10.11	0.48
	CAAQMS-7	84.69	28.86	16.06	5.36	0.72
September'25	CAAQMS-1	79.78	31.07	7.2	9.44	0.92
	CAAQMS-2	81.55	34.26	5.92	22.76	0.69
	CAAQMS-3	102.04	54.41	13.64	11.82	0.87
	CAAQMS-4	59.44	23	7.7	16.26	0.36
	CAAQMS-5	68.17	24.61	16.96	13.41	1.93
	CAAQMS-6	62.23	25.55	13.99	10.67	0.67
	CAAQMS-7	77.10	35.17	18.63	5.41	0.75

All values are in µg/m³ except CO values are in mg/m³. All Values are derived from 24 hourly average data except CO values which are derived from 8 hourly average data.

CAAQMS 1: Near Township; CAAQMS 2: Near Utility Department; CAAQMS 3: Near CRM; CAAQMS 4: Near Water Complex; CAAQMS 5: Near Coke Oven 2; CAAQMS 6: Near Wagon Tippler; CAAQMS 7: Near Material Gate, UM: Under Maintenance.

TSM-CPP/SPCB/TS-06/2025-01/186
April 25, 2025

The Member Secretary
State Pollution Control Board, Odisha
PariveshBhawan, A/118,
Nilakantha Nagar, Unit-VIII,
Bhubaneswar-751 012

Subject: Submission of ash 'Annual Implementation Report' for the financial year 2024-25

Dear Sir,
With reference to the captioned subject and Fly ash notification dtd. September 14, 1999 and its amendment, we are submitting hereby the ash 'Annual implementation report' for the period from 1st April' 2024 to 31st March' 2025 of M/s. TSM-CPP located at Ganthigadia, Dist. Angul, Odisha.

Particulars	Generation (MT)	Disposal/Utilization (MT)	Disposal/Utilization (%)
Fly Ash	729696	729696	100%
Bottom Ash	103217	103217	100%
Total Quantity	832913	832913	100%

Mode of Ash Disposal/Utilization	Quantity (MT)
Brick Manufacturing	187005
Cement Plant	374956
Quarry Filling	9343
NH/ Road Making	244901
Low Lying Area Filling & internal utilisation	16708
Total Utilization/ Disposal Quantity	**832913**

Hope, the information furnished above is in line with the statutory requirement.

Thanking you

Yours faithfully,

For TSM-CPP

Rajesh Kumar Agrawal
(Factory Manager)

S.P.C. BOARD BHUBANESWAR

Received No. 28 Dt. 29/4/2025 REGIONAL OFFICE ORISSA POLLUTION CONTROL BOARD ANGUL

Copy to:
1. Deputy Director General Forest(C) IRO, MoEF&CC, Eastern Zone, Bhubaneswar.
2. The Divisional Head, CPCB, Eastern Region, Kolkata.
3. The Regional Officer, State Pollution Control Board, Odisha, Angul.
4. Central Electricity Authority (CEA), New Delhi.

TATA STEEL LIMITED
Ganthigadia Nuahata Banarpal Angul 759 128 Odisha India Tel 91 6762 352000
Registered Office Bombay House 24 Homi Mody Street Fort Mumbai 400 001 India Tel 91 22 6665 7371 Fax 91 22 66657724
Corporate Identification Number L27100MH1907PLC000260 Website www.tatasteel.com

Annexure-X

SUMMARY OF GASEOUS EMISSION

Period: From April 2025 to September 2025

TSM-CPP, CEMS- 1 (Boiler 1 & 2)				TSM-CPP, CEMS- 2 (Boiler 3 & 4)			TSM-CPP, CEMS- 3 (Boiler 5 & 6)		
Month	**PM in mg/m^3**	**SO_2 in mg/m^3**	**NOx in mg/m^3**	**PM in mg/m^3**	**SO_2 in mg/m^3**	**NOx in mg/m^3**	**PM in mg/m^3**	**SO_2 in mg/m^3**	**NOx in mg/m^3**
April-25	33.14	1113.5	138.1	37.56	872.0	UM	34.17	876.2	122.7
May-25	60.6	1164.0	104.4	44.5	1035.4	UM	52.5	1015.5	191.6
June-25	31.1	1113.2	74.0	27.8	1019.9	UM	23.2	808.4	163.4
July-25	25.9	1048.1	184.0	29.3	968.6	UM	29.3	873.4	211.3
August-25	29.24	1082.6	266.1	19.90	959.1	169.9	33.25	861.2	194.1
Sepetmber-25	21.3	1141.3	73.7	30.4	614.0	UM	34.2	835.9	202.5