

Date: 29.11.2025

ESL-IOO/HSE/MoEF/25-26/04

To,
The Deputy Director General of Forests (C),
Ministry of Environment, Forest, and Climate Change,
Regional Office (Eastern Zone),
A/3, Chandrasekhar, Bhubaneswar – 751023

Sub: Submission of Six-monthly EC compliance report for the **Nadidihi Iron and Manganese Ore Mines of M/s ESL Steel Limited for the period 1st April 2025 to 30th September 2025**

Ref: - 1. Vesting Order, no 8472 /SM, Bhubaneswar, Dated 22.10. 2021. Bhubaneswar. issued by Govt of Odisha, Steel and Mines Department.

Sir,

We hereby submitting the half yearly **Environmental clearance** compliance report of reference letter from MoEF &CC, New Delhi- J-11015/249/2016-IA.II (M), Dated: 11.09.2019, for Nadidihi Iron and Manganese Ore **Mines of M/S ESL Steel Ltd.**

Thanking you

Yours Faithfully
For ESL Steel Ltd



Mr. Vikil N Kawale
Mines **Manager**
Nadidihi Iron and Manganese Ore Mine

Copy to:

1. Zonal Office Kolkata, Central Pollution Control Board, South end Conclave, Block 502, 5th and 6th Floors, 1582 Razidanga Main Road, Kolkata, West Bengal 700107.
2. The Member Secretary, State Pollution Control Board, A/118, Nilakantha Nagar, Bhubaneswar, Odisha-751012.
3. The Regional Officer, State Pollution Control Board, Near Panposh Hockey Chawk, Rourkela, Sundargarh, Odisha-769004.

ENVIRONMENT CLEARANCE COMPLIANCE STATUS –Nadidihi Iron and Manganese Ore Mines.

Six Monthly Compliance report of Environmental Clearance for Nadidihi Iron and Manganese Ore Mines, ESL Steel Ltd. for the period from- 1st April 2025 to 30th September 2025

Reference letter from MoEF &CC, New Delhi- J-11015/249/2016-IA.II (M),Dated: 11.09.2019.

Capacity- 7.451 MTPA of iron Ore Production.

Status- Operating Mine of 2.309 MTPA iron ore production.

Sr. No.	A. <u>Specific Conditions</u>	Status of Compliance	Remarks
i)	This EC will be valid upto 31.03.2071	Complied	Noted
ii)	The enhance production shall be on pro-rata basis for the effective period of valid environment clearance granted herein. The PP shall ensure its compliance by getting concurrence in mining plan approved by concerned authority in this regard.	Complied	The mining activity is carried out as per approved mining plan
iii)	PP mentioned that the application for the surrender of forest area over 5.433 ha is submitted to State Govt. and the same has been accepted by the State Govt. Therefore, the lease area will be reduced to 115.962 ha (121.405-5.443 ha = 115.962 ha) and the mining activities will be restricted to 115.962 ha only.	Complied	The mine is an auctioned mine according to the lease deed the mine lease area is 117.206 ha
iv)	This EC for expansion proposal (2.88 MTPA to 6.0 MTPA (pro-rata basis) and reduction in dry processing (crushing and screening) of low-grade iron ore from old stack/dumps from 4.751 MTPA to 1.451 MTPA (Total handling 7.451 MTPA)) shall be operational after submission of an undertaking through affidavit to MoEFF&CC within 15 days of receipt of this letter, for compliance of all the conditions prescribed herein.	Complied	The condition is applicable to the previous lessee it is complied by the previous lessee
V)	PP should adhere with the Site-Specific Conservation Plan for Schedule I species as approved by the Competent Authority.	Complied	Complied by the previous lessee

vi)	PP shall spend R. 1.9 crore as a CER cost within the validity period of EC.	Complied	Complied by previous lessee
B.	<u>Recommendation of CSIR-NEERI Report on “Carrying Capacity Study for Environmentally Sustainable Iron and Manganese Ore Mining Activity in Keonjhar, Sundargarh and Mayurbhanj districts of Odisha State:</u>		
1)	Project Proponent and Department of Steel and Mines, Govt. of Odisha shall ensure the implementation of recommendations of carrying capacity study report conducted by CSIR-NEERI w.r.t. mining proposal of Iron Ore and/or manganese in the State of Odisha.	Complied	PP provides full co-operation to Department of Steel and Mines for implementing of recommendation of NEERI
2)	Department of Steel and Mines, Govt. of Odisha should prepare 5 years regional plan for annual iron ore requirement from the state, which in turn shall be met from different mines/zones (e.g. Joda, Koira) in the state. Accordingly, sustainable annual production (SAP) for each zone/mine may be followed adopting necessary environmental protection measures.	Complied	5 years Regional Plan for annual Iron Ore Requirement is prepared by the Department of Steel & Mines, Govt, of Odisha.
3)	Project Proponent shall construct the cement concrete road from mine entrance and exit to the main road with proper drainage system and green belt development along the roads and construction of road with minimum 300 m inside the mine. This should be done within one year for existing mines and new mine should have since beginning. The Department of Steel and Mines, Govt. of Odisha should ensure compliance and should not issue the Mining permits, if mine lease holder has not constructed proper cement concrete road as suggested. This EC for the expansion project shall be operated only after the compliance of the above-mentioned specific condition.	Agreed to Comply	The construction of cement concrete road is under progress dust suppression measures are being taken through washing the roads by mobile tankers also there is green belt along the road outside lease.
4)	The Committee observed that as per the recommendations of NEERI report, the PP needs to do regular vacuum cleaning	Agreed to Comply	Water tankers are used to regularly spray water on the haulage roads. The junctions are washed to keep it dust

	of all mineral carrying roads aiming at “zero dust suppression” within 3 months. This EC for the expansion project shall be operated only after the compliance of the mentioned specific conditions.		free and ensure dust suppression. The procurement of vacuum cleaning is under progress
5)	PP shall monitor the environmental quality parameters as per EC and CTE/CTO conditions, and implementation of suggested measures for control of road dust and air pollution. OSPCB has to ensure the compliance of CTO/CTE. Regional office of MoEF&CC, Bhubaneswar shall monitor the compliance of the EC conditions. Regional office of IBM shall monitor the compliance of mining plan and progressive mine closure plan. Any violation by mine lease holder may invite actions per the provisions of applicable Acts.	Complied	Environmental quality parameters are monitored on monthly basis based on EC / CTO conditions, reports are attached in Annexure 1. Various dust suppression measures as specified by PCB are adopted on the mines
6)	PP shall ensure the compliance of Suggested Ore Transport Mode (SOTM) with association of the State Govt. of Odisha. All existing mines should ensure adoption of SOTM within 5 years. New mines or mines seeking expansion should incorporate provision of SOTM in the beginning itself, and should have system in place within next 5 years.	Partially Complied	The transportation is carried out basis the available infrastructure in the area. Most of the transportation happened through Road Transport. Out of entire capacity of despatch 15 % is rail transport (Condition applied: Rail transport is available) and rest is road transport (However Rake availability remains a challenge)
7)	The State Govt. of Odisha shall ensure dust free roads in mining areas wherever the road transportation of mineral is involved. The road shoulders shall be paved with fence besides compliance with IRC guidelines. All the roads should have proper drainage system and apart from paving of entire carriage width the remaining right of way should have native plantation (dust capturing species). Further, regular maintenance should also be ensured by the Govt. Of Odisha. Progress on development of dust free roads, implementation of SOTM, increased use of existing rail network, development of additional railway network/conveyor	Complied	It is the responsibility of State Government, co-operation will be given from PP side

	belt/pipelines etc. shall be submitted periodically to Regional Office of the MoEF&CC.		
8)	PP shall develop the parking plazas for trucks with proper basic amenities/facilities inside the mine. This should be done within one year for existing mines and new mines should have since beginning. This EC for the Expansion project shall be operated only after the compliance of the above-mentioned specific condition.	Complied	We have dedicated parking place for mining trucks within the mines. For outbound trucks parking, we are using private land on rent outside the lease area. There is no space within the mine lease for parking plaza as these are very old lease and the area is broken up. There is drinking water and eateries facility available at these places outside & adjacent to lease and mine gate
9)	Department of Steel and Mines shall ensure the construction of NH 215 as minimum 4 lane road with proper drainage system and plantation and subsequent regular maintenance of the road as per the IRC guidelines. Construction of other mineral carrying roads with proper width and drainage system along with road side plantation to be carried out. This shall be completed within 2 years.	Complied	Government of Odisha has constructed NH 215 as 4 lane road
10)	Regular vacuum cleaning of all mineral carrying roads aiming at "Zero Dust Re-suspension" shall be adopted by PWD/NHAI/Mine lease holders within a time of 3 months for existing roads. This EC for the Expansion project shall be operated only after the compliance of the above-mentioned specific condition.	Complied	State government and municipalities has deployed vacuum cleaning machine, from mine exit to National highway continuous dust suppression is done through mobile water tanker of capacity 28 KL and 16 KL
11)	In case the total requirement of iron ore exceeds the suggested limit for that year, permission for annual production by an individual mine may be decided depending on approved EC capacity (for total actual dispatch) and actual production rate of individual mine during last year or any other criteria set by the State Govt i.e. Dept. of Steel and Mines. Department of Steel and Mines in consultation with Indian Bureau of Mines – RO should prepare in advance mine-wise annual production scenario so that demand for iron ore can be anticipated, and actual production/	Complied	Mining is carried out as per approved mining plan.

	dispatch does not exceed the suggested annual production.		
12)	R&D studies towards utilization of low-grade iron ore should be conducted through research/academic institutes like IMMT Bhubaneswar, NML Jamshedpur and concerned metallurgical departments in IITs, NITs, etc. targeting full utilization of low-grade iron ore (Fe content up to 45% by 2020 and up to 40% by 2025). In fact, life cycle assessment of whole process including environmental considerations should be done for techno-economic and environmental validity. R&D studies on utilization of mine wastewater having high concentration of Fe content for different commercial applications in industrial such as cosmetics, pharmaceutical, paint industry should also be explored. Responsibility: IBM, Dept. of Steel and Mines, Individual Mine Lease Holders	Complied	R and D studies towards utilization of low-grade iron ore was conducted through the IMMT, Bhubaneswar for iron ore having Fe content upto 45 %. Since Iron ore having Fe content between 40-45 % is considered as waste and it is auctioned mines so lessee don't have permission to handle / workings of old waste dump as per given EC so we will explore the same in future as per conditions & market feasibility. There is no mine waste water generated the mine pit water is used for dust suppression and plantation
13)	The mining activity in Joda Koira sector is expected to continue for another 100 years, therefore, it will be desirable to develop proper rail network in the region. Rail Transport shall not only be in pollution free mode but also will be a much economical option for iron ore transport. The rail network and/or conveyor belt system up to public railway siding needs to be created. The total length of the conveyor belt system/ rail network to be developed from mines to nearest railway sidings by 11 mines in Joda region is estimated to be around 95 km. Further, it is suggested to develop a rail network connecting Banspani (Joda region) and Roxy railway sidings in Koira region. Responsibility: Dept. of Steel and Mines, Govt. of Odisha and Concerned Mines along with Indian Railways. Time: Minimum 7 years (by 2025). The Dept. of Steel and Mines, Govt. of Odisha should follow up with the concerned departments and railways so	Agreed to Comply	The responsibility of developing the required infrastructure is with various government agencies.

	that proposed proper rail network is in place by 2025.		
14)	State Govt. of Odisha shall make all efforts to ensure exhausting all the Iron and Manganese Ore resources in the existing working mines and from disturbed mining leases/zones in Joda and Koira region. The criteria suggested shall be applicable while suggesting appropriate lease area and sustainable mining rate. Responsibility: Dept. of Steel and Mines, Govt. of Odisha	Complied	Full cooperation will be provided to Dept of steel and mines, Govt of Odisha.
15.	Mining operations/Process related: Project proponent shall implement the following mitigation measures:		
	Appropriate mining process and machinery (viz. right capacity, fuel efficient) should be selected to carry out various mining operations that generate minimal dust/air pollution, noise, wastewater and solid waste e.g. drills should either be operated with dust extractors or equipped with water injection system.	Complied	Mining is carried out as per IBM approved mining plan. Regular maintenance of mining machinery is carried out to obtain optimum fuel consumption. Drills are operated with wet drilling system
	After commencement of mining operation, a study should be conducted to assess and quantify emission load generation (in terms of air pollution, noise, wastewater and solid waste) from each of the mining activity (including transportation) on annual basis. Efforts should be made to further eliminate/minimize generation of air pollution/dust, noise, wastewater, solid waste generation in successive years through use of better technology. This shall be ensured by respective mine lease holders.	Complied	Emission monitoring is carried out through NABL laboratory and reports submitted to authorities. It is observed that the results are within the limit. Efforts are made to improve the environmental performance year on year.
	Various machineries/equipment selected (viz. dumpers, excavators, crushers, screen plants etc.) and transport means should have optimum fuel/power consumption, and their fuel/power consumption should be recorded on monthly basis. Inspection and maintenance of all the machineries / equipment / transport vehicles should	Complied	Various machineries / equipment selected (viz. dumpers, excavators, crushers, screen plants etc.) are inspected and maintained regularly as per manufactures instruction and recommended schedule

	be followed as per manufacturer's instructions /recommended time schedule and record should be maintained by the respective mine lease holders.		
	Digital processing of the entire lease area using remote sensing technique should be carried out regularly once in 3 years for monitoring land use pattern and mining activity taken place. The extent of pit area excavated should also be demarcated based on remote sensing analysis. This should be done by ORSAC (Odisha Space Applications Centre, Bhubaneswar) or an agency of national repute or if done by a private agency, the report shall be vetted/authenticated by ORSAC, Bhubaneswar. Expenses towards the same shall be borne by the respective mine lease holders.	Complied	Digital processing of the entire lease area using remote sensing technique DGPS Drone survey is carried out every year by ORSAC empanelled / accredited agency M/s Skylark Drone Services Pvt Limited. This Drone survey data with land use pattern (demarcating the pit excavated area) is submitted to Indian Bureau of Mines (IBM) , Bhubaneswar on annual basis as per Rule-34A of MCDR-2021.
16.	Air Environment Related: Project Proponent shall implement the following mitigation measures:		
	Fugitive dust emissions from all the sources should be controlled regularly on daily basis. Water spraying arrangement on haul roads, loading, and unloading and at other transfer points should be provided and properly maintained. Water fogging system to be used to minimize water consumption. Ensure that the ambient water quality parameters conform to the norms prescribed by the CPCB in this regard.	Complied	Fugitive dust emission mitigated by water sprinkling through static arrangements system as well as water tankers within mine lease area. Mineral handling units having dry fog system at all discharging points to control dust emission generated by crushing system. Regular air monitoring is carried out and it is ensured that the ambient air quality within limits of CPCB
	The core zone of mining activity should be monitored on daily basis. Minimum 4 ambient air quality monitoring stations should be established in the core zone for SPM, PM10, PM2.5, SO2, NOx, and CO monitoring. Location of air quality monitoring stations should be decided based on the meteorological data, topographical features and environmentally and ecologically	Complied	The core zone is installed with one CAAQMs and buffer zone is installed with one CAAQMs to monitor parameters PM, 10, PM 2.5, SOx, NOx and CO 24 x7, with additional to manual ambient air monitoring system in 6 core and buffer zone to monitor all the 12 parameters and the frequency of monitoring is done as per CTO given by

	sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board (based on Emission Load Assessment Study). The number of monitoring locations may be more for larger capacity mines and working in larger area. Out of 4 stations, one should be online monitoring station in the mines having more than 3 MTPA EC capacity.		SPCB
	Monitoring in buffer zone should be carried out by SPCB or through NABET accredited agency. Air quality parameters (SPM, PM10, PM2.5, SO2, NOx and CO) shall be regularly monitored at locations of nearest human habitation including schools and other public amenities located nearest to source of the dust generation as applicable.	Complied	Environmental monitoring, Air quality parameters (SPM, PM10, PM2.5, SO2, NOx and CO in buffer zone at 4 locations is being carried out by NABL accredited laboratory Reports attached Annexure 1
	Emissions from vehicles as well as heavy machinery should be kept under control and regularly monitored. Measures should be taken for regular maintenance of vehicles used in mining operations and in transportation of mineral.	Complied	Vehicles as well as heavy machineries are regularly maintained and monitored and their emission conforms prescribed limit. Only Pollution Under control certificate available vehicles can ply within mine lease area.
	The vehicles shall be covered with a tarpaulin and should not be overloaded. Possibility of closed container trucks should be explored for direct to destination movement of iron ore. Air quality monitoring at one location should also be carried out along the transport route within the mine (periodically near truck entry and exit gate)	Complied	Overloading of trucks is not allowed All the trucks carrying iron ore to outside the mining lease area are properly covered with tarpaulin. Monitoring is carried out near our exit gate
17.	Noise and Vibration related: Project Proponent shall implement the following mitigation measures:		
	Blasting operation should be carried out only during daytime. Controlled blasting such as Nonel, should be practiced. The mitigation measures for control of ground vibrations and to arrest fly rocks and boulders should be implemented.	Complied	Blasting operations conducted only in day time. Controlled blasting technique is adopted with Nonel to mitigate ground vibrations and arrest fly rocks., Blasting is conducted based on requirement only

	Appropriate measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs.	Complied	Workers are provided with ear plugs in their PPE kit to control, noise that can affect human environment
	Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone. Date, time and distance of measurement also be indicated with the noise levels in the report. The data should be used to map the noise generation from different activities and efforts should be made to maintain the noise levels with the acceptable levels of CPCB (CPCB, 2000)	Complied	Noise zone is monitored regular basis in Core and Buffer Zone also in work zone the report are attached in Annexure 1. The noise level is within the limit prescribed by CPCB in day and night time
	Vibration at various sensitive locations should be monitored at least once in a month and mapped for any significant changes due to successive mining operations. Responsibility: Individual mine lease holders	Complied	The vibration study are conducted during blasting time and reports are attached in Annexure 2
18.	Water/wastewater related: Project Proponent shall implement the following mitigation measures:		
	Mining operations should be restricted to above ground water table, and it should not intersect groundwater table. If enough resources are estimated below the ground water table, the same may be explored after conducting detailed geological studies by GSI and hydrogeological studies by CGWB or NIH or Institute of National repute and ensuring that no damage to the land stability/water aquifer system shall happen. The details/outcome of such study may be reflected/incorporated in the EIA/EMP report of the mine appropriately.	Complied	The mine operations will intersect ground water table a detailed hydrogeological study was conducted through CGWA recognized consultant and submitted to CGWA and MOEF
	Natural watercourse and /or water resources should not be obstructed due to any mining operations. Regular monitoring of the flow rate of the springs and perennial nallas should be carried out and records should be	Complied	Natural water course exist outside the lease and water resources is not obstructed due to mining operations. Regular monitoring of upstream and downstream is done at Karo river stream, it is not passing through the mine lease

	maintained. Regular monitoring of water quality of nallas and river passing through the mine lease area (upstream and downstream locations) should be carried out on monthly basis.		
	Regular monitoring of ground water level and its quality should be carried out within the mine lease area by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out on monthly basis.	Complied	Regular monitoring of ground water level is being carried out by piezometers – digital level recorder (piezometer), monitoring is done 24 x7 also manual monitoring is in place monthly, ground water quality is monitored
	To optimize water requirement, suitable conservation measures to augment ground water resources in the area should be undertaken in consultation with Central Ground Water Board (CGWB)	Complied	A suitable ground water conservation is followed like harvesting rain water in unused pits and part of it getting recharged
	Suitable rainwater harvesting measures on long term basis should be planned and implemented in consultation with CGWB, to recharge the ground water source. CGWB can prepare a comprehensive plan for the whole region.	Complied	All rainwater diverted in to mine pits, harvesting measures are taken
	Appropriate mitigation measures (viz. ETP, STP, garland drains, retaining walls, collection of runoffs etc.) should be taken to prevent pollution of nearby river/other water bodies. Water quality monitoring study should be conducted by State Pollution Control Board to ensure quality of surface and ground water sources on regular basis. The study can be conducted through NABL/NABET approved water testing laboratory. The report should be vetted by SPCB.	Complied	Mitigation measures such as the installation of a Sewage Treatment Plant (STP) with a capacity of 60 KLD and the construction of a retaining wall along the garland drain for runoff collection were implemented. Water quality monitoring for both surface and groundwater was carried out by an NABL-accredited laboratory, and the results were submitted to the State Pollution Control Board (SPCB). Additionally, the monthly progressive report along with the STP laboratory analysis report is being submitted to SPCB on monthly basis
	Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated in ETP to conform to the discharge standards applicable.	Complied	There is no workshop inside the mine lease hence there is no industrial waste water generated
	Oil and grease trap should be installed before discharge of workshop effluents. STP should be installed for the employees/colony, wherever	Complied	Oil and grease trap is not applicable as there is no workshop effluents. Sewage Treatment plant of 60 KLD is set up for sewage generated from office and colony

	applicable.		
	Mine lease holder should ensure that no silt originating due to mining activity is transported in the surface water course or any other water body. Appropriate measures for prevention and control of soil erosion and management of silt should be undertaken. Quantity of silt/soil generated should be measured on regular basis for its better utilization.	Complied	The monsoon run off is channelized into mine pits and settling ponds. It is ensured that the no silt flows outside the mine. The settling ponds are desilted regularly on inspection and the handled silt used in processing based on the quality of silt
	Erosion from dumps site should be protected by providing geo-textile matting or other suitable material, and thick plantation of native trees and shrubs should be carried out at the dump slopes. Dumps should be protected by retaining walls.	Complied	Inward slope is provided to each dump step to prevent erosion along with required protective measures (Garland Drain & Retaining Wall). Geo textile Plantation of native species will be carried out on dump after it s finalized
	Trenches/garland drains should be constructed at the foot of dumps to arrest silt from being carried to water bodies. Adequate number of check dams should be constructed across seasonal/perennial nallahs (if any) flowing through the mine lease areas and silt be arrested. De-silting at regular intervals should be carried out and quantity should be recorded for its better utilization, after proper soil quality analysis.	Complied	Trenches/garland drains constructed at the foot of dumps to arrest silt from being carried to water bodies. And it is renovated pre-monsoon
	The water so collected in the reservoir within the mine should be utilized for the sprinkling on haul roads, green belt development.	Complied	Mine accumulated water is used for water sprinkling purpose and plantation
	There should be zero wastewater discharge from the mine. Based on actual water withdrawal and consumption/utilization in different activities, water balance diagram should be prepared on monthly basis and efforts should be made to optimize consumption of water per ton of ore production in successive years.	Complied	There is zero waste water discharge as the water discharged from mine pits is passed through series of settling ponds and then clean water is discharged, monitoring of the discharged water is done on monthly basis. On the basis of requirement flocculent is added to fasten the settling process
21.	Land/soil/overburden related: Project Proponent shall implement the following mitigation measures:		

	The topsoil should be temporarily stored at earmarked site(s) only and it should not be kept unutilized for long (not more than 3 years or as per provisions mentioned in the mine plan/scheme). The topsoil should be used for land reclamation and plantation appropriately.	Complied	Top soil not available in mine as all the area are already mined by previous lease
	Fodder plots should be developed in the non-mineralized area in lieu of use of grazing land, if any.	Complied	There is no non-mineralized area in the mine lease
	Overburden/low grade ore should be stacked at earmarked dump site(s) only and should not be kept active for long period. The dump height should be decided on case-to-case basis, depending on the size of the mine and quantity of waste material generated. However, slope stability study should be conducted for larger heights, as per IBM approved mine plan and DGMS guidelines. The OB dump should be scientifically vegetated with suitable native species to prevent erosion and surface run-off. In critical areas, use of geo-textiles should be taken for stabilization of dump. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Proper records should be maintained regarding species, their growth, area coverage etc.	Complied	Dumping is carried out as per approved mining plan. Regular survey of dump is carried to keep a check on any movement of material. The dumps once finalized as it is active dumps will be covered with geotextiles and taken up for plantation.
	Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine operation, soil, OB and mineral dumps. The water so collected can be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly de-silted, particularly after monsoon and should be maintained properly. Appropriate documents should be maintained. Garland drains of appropriate size, gradient and length should be constructed for mine pit, soil. OB and mineral dumps and sump capacity	Complied	Garland drains and settling ponds are constructed to arrest silt and sediment, Drains are constructed for mine pit, dumps etc. and before monsoon. The water collected is used for dust suppression, plantation etc

	should be designed with appropriate safety margin based on long term rainfall data. Sump capacity should be provided for adequate retention period to allow proper settling of silt material. Sedimentation pits should be constructed at the corners of the garland drains and de-silted at regular intervals.		
	Backfilling should be done as per approved mining plan/scheme. There should be no OB dumps outside the mine lease area. The backfilled area should be afforested, aiming to restore the normal ground level. Monitoring and management of rehabilitated areas should continue till the vegetation is established and becomes self-generating.	Agreed to Comply	Backfilling will be done as per approved mining plan/scheme. There are no OB dumps outside the mine lease area. The backfilled area will be afforested, aiming to restore the normal ground level as there is no backfilling area during the reporting period
	Hazardous waste such as waste oil, lubricants, resin, and coal tar etc. should be disposed of as per provisions of Hazardous Waste Management Rules, 2016, as amended from time to time. Responsibility: Individual mine lease holders	Complied	Hazardous waste such as. Used oil generated is disposed of as per provisions of Hazardous Waste Management Rules, 2016
22.	Ecology / Biodiversity (Flora-Fauna) Related: Project Proponent shall implement the following mitigation measures:		
	All precautionary measures should be taken during mining operation for conservation and protection of endangered fauna namely elephant, sloth bear etc. spotted in the study area. Action plan for conservation of flora and fauna should be prepared and implemented in consultation with the State Forest and Wildlife Department within the mine lease area, whereas outside the mine lease area, the same should be maintained by State Forest Department.	Complied	Projects are taken as per Biodiversity Management plan. However, a site-specific conservation plan was submitted by previous lessee
	Afforestation is to be done by using local and mixed species saplings within and outside the mining lease area. The reclamation and afforestation are to be done in such a manner like exploring the	Complied	Plantation is done within the lease to promote biodiversity according to mining plan yearly plantation is carried out per-monsoon, local species like Sirus, bela and Karanj, Jamun are planted during pre-

	growth of fruit bearing trees which will attract the fauna and thus maintaining the biodiversity of the area. As afforestation done so far is very less, forest department needs to identify adequate land and do afforestation by involving local people in a time bound manner.		monsoon period
	3. Green Belt development carried out by mines should be monitored regularly in every season and parameters like area under vegetation/plantation, type of plantation, type of tree species/grass species/scrubs etc., distance between the plants and survival rate should be recorded.	Complied	Green belt is developed monitored regularly based on survival rate and recorded
	4. Green Belt is an important sink of air pollutants including noise, development of green cover in mining area will not only help reducing air and noise pollution but also will help improve the ecological conditions and prevent soil erosion to a greater extent. Further, selection of tree species for green belt should constitute dust removal/dust capturing plants since plants can act as efficient biological filters removing significant amounts of particulate pollution. Thus, the identified native trees in the mine area maybe encouraged for plantation. Tree species have small leaf area, dense hair on leaf surface (rough surface), deep channels on leaves should be included for plantation.	Being Complied	Green belt is done dumps and planned further when the dumps get finalized and plantation is done at safety zones of 7.5 m width that act as barrier for noise, light and reduce emission
	5. Vetiver plantation on inactive dumps may be encouraged as the grass species has high strength of anchoring besides medicinal value.	Agreed to Comply	As dumps are not finalized, dumps are in working stage once finalized it will be complied
	6. Details of compensatory afforestation done should be recorded and documented by respective forest divisions, and State Forest Department should present mine-wise annual status, along with mine-wise annual status, along with expenditure details. Responsibility: Individual mine lease holders and State Forest & Wildlife	Complied	Full co-operation is given to Forest division

	Department.		
23.	Socio-economic related: Project Proponent shall implement the following mitigation measures:		
	Public interaction should be done on regular basis and social welfare activities should be done to meet the requirements of the local communities. Further, basic amenities and infrastructure facilities like education, medical, roads, safe drinking water, sanitation, employment, skill development, training institute, etc. should be developed to alleviate the quality of life of the people of the region.	Complied	Being complied. For holistic community development, various community development initiatives such as health care support, children wellbeing and education, Water and Sanitation, Skilling and Livelihood initiatives, community asset creation etc. has been carried out, from since operation of the mines. Need based assessment survey has been completed and action plan is under implementation for community upliftment.
	Land outeets and land losers/affected people, if any, should be compensated and rehabilitated as per the national/state policy on Resettlement and Rehabilitation.	Complied	Not applicable as there is no affected people of land losers so compensation was not required as it is an auctioned mine
	The socio-economic development in the region should be focused and aligned with the guidelines/initiatives of Govt. Of India/NITI Aayog around prosperity, equality, justice, cleanliness, transparency, employment, respect to women, hope, etc. This can be achieved by providing adequate and quality facilities for education, medical and developing skills in the people of the region. District administration in association with mine lease holders should plan for “Samagra Vikas” of these blocks as well as other blocks of the district. While planning for different schemes in the region, the activities should be prioritized as per Pradhan Mantri Khanij Kshetra Kalyan Yojna (PMKKKY) notified by Ministry of Mines, Govt. Of India, vide letter no. 16/7/2017-M.VI (Part), dated September 16, 2015. Responsibility: District Administration and Individual Mine Lease Holders	Complied	Complied as per the statutory guidelines
24.	Road Transport Related: Project		

	Proponent shall implement the following mitigation measures:		
	All the mine lease holders should follow the suggested ore transport mode (SOTM), based on its EC capacity within next 5 years.	Agreed to Comply	As there is no rail network constructed for the full capacity once the rail network is in place it will be complied
	The mine lease holders should ensure construction of cement road of appropriate width from and to the entry and exit gate of the mine. Further, maintenance of all the roads should be carried out as per requirement to ensure dust free road transport.\	Agreed to Comply	The cement concrete road is under progress Dust suppression measures are being taken by water tankers and also there is green belt along the road outside lease.
	Transportation of ore should be done by covering the trucks with tarpaulin or other suitable mechanism so that no spillage of ore/dust takes place. Further, air quality in terms of dust, PM10 should be monitored near the roads towards entry and exit gate on regular basis and be maintained within acceptable limits. Responsibility: Individual Mine Lease Holders and Dept. of Steel and Mines		Transportation of ore is done by truck covered by tarpaulin and Ambient Air monitoring is done ta exit gate regularly and the values are within the limit prescribed by SPCB
25.	Occupational Health Related: Project Proponent shall implement the following mitigation measures:		
	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects periodically.	Complied	1. Personnel working in the mine are provided protective respiratory devices and are made educated on safety and health aspects periodically by in house training.
	Occupational health surveillance program for all the employees/workers (including casual workers) should be undertaken periodically (on annual basis) to observe any changes due to exposure to dust, and corrective measures should be taken immediately, if needed.	Complied	2. OHS programmed of the workers are undertaken periodically by team of professional doctors engaged.
	Occupational health and safety measures related awareness programs including identification of work-related health hazard, training on malaria eradication, HIV and health effects on exposure to mineral dust, etc. should be carried out for all the workers on regular basis. A full-time qualified doctor	Complied	3. Periodical health monitoring is done by doctor through conducting health camps every month. Dispensary was set up with qualified doctor and paramedical staff. The six-month report is attached in Annexure 3, training on, HIV and health effects on exposure to mineral dust, etc. is carried out for all the workers on regular

	should be engaged for the purpose. Periodic monitoring (on 6 monthly basis) for exposure to respirable minerals dust on the workers should be conducted and record should be maintained, including health record of all the workers. Review of impact of various health measures undertaken (at an interval of 3 years or less) should be conducted followed by follow-up of actions, wherever required. Occupational health center should be established near mine site itself. Responsibility: Individual mine lease holders and District Administration (District Medical Officer)		basis.
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Sr. No.	Standard Conditions	Status of Compliance	Remarks
I.	<u>Statutory Compliance</u>		
1)	This Environment Clearance (EC) is subject to orders/judgement of Hon'ble Supreme Court of India, Hon'ble High Court, Hon'ble NGT and any other Court of Law, Common Cause Conditions as may be applicable.	Complied	Noted
2)	This EC is valid up to 31.03.2071 as the lease validity is valid up to 31 st March 2071 as per the Amended MMDR Act, 2015	Agreed to comply	Noted it will be complied
3)	The Project Proponent complies with all the statutory requirements and judgement of Hon'ble Supreme Court dated August 2 nd , 2017, in Writ Petition (Civil) no. 114 of 2014 in matter of Common Cause versus Union of India and Ors. before commencing the mining operations.	Complied	Complied and all the statutory documents are renewed on timely basis
4)	The State Government concerned shall ensure that mining operation shall not be commenced till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining and Geology in strict compliance of Judgement of Hon'ble Supreme Court dated 2 nd August 2017 in Writ Petition (Civil) no. 114 of 2014	Complied	The mining operation does not have any compensation and hence mining operation is started

	in matter of Common Cause versus Union of India and Ors.		
5)	This Environmental Clearance shall become operational only after receiving formal NBWL Clearance from MoEF & CC after the recommendations of the Standing Committee of National Board for Wildlife, if applicable to the Project.	Complied	NBWL is not applicable to the mine
6)	This Environmental Clearance shall become operational only after receiving formal Forest Clearance (FC) under the provision of Forest Conservation Act, 1980, if applicable to the project.	Complied	Complied by the previous lessee with reference no : F. No/8-68/2011-FC Dated 30th October 2013
7)	Project Proponent (PP) shall obtain Consent to Operate after Grant of EC and effectively implement all the conditions stipulated therein. The mining activity shall not commence prior to obtaining Consent to Establish/Consent to Operate from the concerned State Pollution Control Board/ Committee.	Complied	Consent to operate is obtained with a validity period till 31.03.2026 with Reference No 6256/IND-I-CON-2265 Dated 26.03.2025
8)	The PP shall adhere to the provision of the Mines Act, 1952, Mines and Mineral (Development and Regulation), Act, 2015 and rules & regulations made there under. PP shall adhere to various circulars issued by Directorate General Mines Safety (DGMS) and Indian Bureau of Mines from time to time.	Complied	Mines Act and MMDR act is adhered and various circulars issued by Directorate General Mines Safety (DGMS) and Indian Bureau of Mines from time to time.
9)	The Project Proponent shall obtain consents from all the concerned landowners, before start of mining operations, as per the provisions of MMDR Act, 1957 and rules made there under in respect of lands which are not owned by it.	Complied	The mine was got from auction hence there is no concerned landowner vesting order is there
10)	The Project Proponent shall follow the mitigation measures provided in MoEFCC's Office Memorandum No. Z-11013/57/2014-IA.II (M), dated 29 th October, 2014, titled "Impact of Mining activities on Habitations- Issues related to the Mining Projects wherein Habitations and villages are the part of mine lease areas in Habitations and villages are surrounded by the mine	Complied	According to the memorandum best mining practices are adopted as per approved mining plan, no water bodies are not disturbed, illuminance and noise level are within the limit during night hours, during blasting vibration study is made as there is no permanent haul road it is not feasible for fixed water sprinklers instead mobile water tankers are used, transportation is carried on bypass roads

	lease area.”		
11)	The Project Proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of surface water and from CGWA for withdrawal of ground water for the project.	Complied	NOC from the CGWA is obtained with ref no CGWA/NOC/MIN/REN/1/2025/11439 valid till 15.02.2026
12)	A copy of EC letter will be marked to concerned Panchayat/local NGO etc. if any, from whom suggestion/representation has been received while processing the proposal.	Complied	Complied by the previous lessee
13)	State Pollution Control Board/Committee shall be responsible for display of this EC letter at its Regional office, District Industries Centre and Collector’s office /Tehsildar’s Office for 30 days	Complied	Complied by the state govt
14)	The Project Authorities should widely advertise about the grant of this EC letter by printing the same in at least two local newspapers, one of which shall be in vernacular language of the concerned area. The advertisement shall be done within 7 days of the issue of the clearance letter mentioning that the instant project has been accorded EC and copy of the EC letter is available with the State Pollution Control Board/Committee and website of the Ministry of Environment, Forest and Climate Change (www.parivesh.nic.in). A copy of the advertisement may be forwarded to the concerned MoEFCC Regional Office for compliance and record.	Complied	Complied by previous lessee
15)	PP shall inform the MoEF&CC for any change in ownership of the mining lease. In case there is any change in ownership or mining lease is transferred than mining operation shall only be carried out after transfer of EC as per provisions of the para 11 of EIA notification, 2006 as amended from time to time.	Agreed to Comply	As we are operating with the vesting order Change of ownership and transfer of EC is in progress and lease document is available
II.	<u>Air quality monitoring and preservation</u>		
16)	The Project Proponent shall install a	Complied	As per renewed CTO recommendation 2

	<p>minimum of 3 online Ambient Air Quality Monitoring Stations with 1 in upwind and 2 in downwind direction based on long term climatological data about wind direction such that an angle of 120 degrees is made between the monitoring locations to monitor critical parameters, relevant for mining operations, of air pollution viz. PM10, PM2.5, NO2, CO and SO2 etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PCI/I dated 18.11.2009 covering the aspects of transportation and use of heavy machinery in the impact zone. The ambient air quality shall also be monitored at prominent places like office building, canteen etc. as per the site condition to ascertain the exposure characteristics at specific places. The above data shall be digitally displayed within 03 months in front of the main gate of the mine site.</p>		<p>CAAQMS is mentioned for the mine. 2 CAAQMS is installed and the data are linked to Odisha State pollution Control Board server, out of CAAQMs one in core zone and another in buffer zone is installed</p>
17)	<p>Effective safeguard measures for prevention of dust generation and subsequent suppression (like regular water sprinkling, metaled road construction etc.) shall be carried out in areas prone to air pollution wherein high levels of PM10 and PM2.5 are evident such as haul road, loading and unloading point and transfer points. The fugitive dust emissions from all sources shall be regularly controlled by installation of required equipment's/machineries and preventive maintenance. Use of suitable water-soluble chemical dust suppressing agents may be explored for better effectiveness of dust control system. It shall be ensured air pollution level conform to the standards prescribed by the MoEFF/Central Pollution Control Board.</p>	Complied	<p>For prevention of dust generation and subsequent suppression water sprinkling through water tankers and mist canon system is carried out in areas prone to air pollution where in high level of PM10 and PM 2.5 are evident and dry mist canon system in installed</p>
III.	<u>Water quality monitoring and preservation</u>		
1)	<p>In case, immediate mining scheme envisages intersection of ground water</p>	Complied	<p>The mine operations will intersect ground water table a detailed and comprehensive</p>

	table, then Environmental Clearance shall become operational only after receiving formal clearance from CGWA. In case, mining operation involves intersection of ground water table at a later stage, then PP shall ensure that prior approval from CGWA and MoEFCC is in place before such mining operations. The permission for intersection of ground water table shall essentially be based on detailed hydrogeological study of the area.		hydrogeological study was conducted through CGWA recognized/accredited consultant and submitted to CGWA and MOEF
2)	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintained. The natural waterbodies and or streams which are flowing in and around the village, should not be disturbed. The Water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the PP must provide water to the villagers for their use. A provision for regular monitoring of water table in open dug wall located in village should be incorporated to ascertain the impact of mining over ground water table. The Report on changes in Ground Water level and quality shall be submitted on 6-monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department/State Pollution Control Board.	Complied	The natural water bodies or streams are not disturbed that flow around the mine outside the lease . The ground water table is monitored by Digital water level recorder (piezometer) 24 x 7. Till now there is no water scarcity recorded in the area or reduction in water table
3)	The Project Proponent shall regularly monitor and maintain records wrt ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezometer installations during the mining operations in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on 6-monthly basis to the Regional Office of the Ministry, CGWA and State	Complied	Complied as per CGWA conditions. The ground water level is recorded by Digital water level recorder (piezometers) system inside the mine premises and the ground water quality is monitored. There is no significant reduction in the water table level, and the ground water quality is attached in Annexure 1

	Groundwater Department/ State Pollution Control Board.		
4)	The PP shall undertake regular monitoring of natural water course/water resources/springs and perennial nallahs existing/flowing in and around the mine lease and maintain its records. The project proponent shall undertake regular monitoring of water quality upstream and downstream of water bodies passing within and nearby/adjacent to the mine lease and maintain its records. Sufficient number of gullies shall be provided at appropriate places within the lease for management of water. PP shall carry out regular monitoring wrt pH and include their water quality vis-à-vis suitability for usage as per CPCB criteria and flow rate. It shall be ensured that no obstruction and/or alteration be made to water bodies during mining operations without justification and prior approval of MoEFCC. The monitoring of water courses/bodies existing in lease area shall be carried out four times in a year viz. pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the record of monitored data 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, State Pollution Control Board and Central Pollution Control Board. Clearly showing the trend analysis on 6-monthly basis.	Complied	The Karo river water at upstream and downstream is monitored on monthly basis and reports are attached as per Annexure 1 as Karo river is adjacent to the mine and ground water is also monitored monthly once as per CPCB guidelines and the report is attached in Annexure 1
5)	Quality of polluted water generated from mining operations which include Chemical Oxygen Demand (COD) in mines run-off; acid mine drainage and metal contamination in runoff shall be monitored along with Total Suspended Solids (TSS). The monitored data shall be uploaded on the website of the	Complied	Quality of mine discharge and treated water of STP Maintained and water quality monitored regularly, TSS, TDS, pH, COD, BOD and other parameters are monitored Monitoring data also shared SPCB and MOEFCC.

	company as well as displayed at the project site in public domain, on a display board, at a suitable location near the main gate of the Company. The circular no. J-20012/1/2000-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change may also be referred in this regard.		
6)	Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment groundwater resources in the area in consultation with Central Ground Water Board/State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office MoEFCC annually.	Complied	A suitable ground water conservation is followed like harvesting rain water in settling ponds and part of it getting recharged
7)	Industrial wastewater (workshop and wastewater from the mine) should be properly collected and treated so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through CTO and issued by SPCB. The workshop effluent shall be treated after its initial passage through oil and grease trap.		As there is no workshop located inside the mine lease area, no industrial wastewater is generated that requires treatment in an Effluent Treatment Plant (ETP)
8)	The water balance/water auditing shall be carried out and measured for reducing the consumption of water shall be taken up and reported to the Regional Office of the MoEFF&CC and State Pollution Control Board/Committee.	Complied	Action plan and taken for reducing water consumption, monthly MIS is tracked for water consumption like reuse of mien pit water for sprinkling purpose and STP installation so water is reused
IV.	<u>Noise and vibration monitoring and prevention</u>		
9)	The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines	Complied	PPV at a 500m distance or within the nearest habitation is maintained as per DGMS Guideline.
10)	The illumination and sound at night at project sites disturb the villages in respect to both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to	Complied	Complied as per DGMS standard and noise monitoring is done monthly once the value is under the limit prescribed by SPCB/ All the lights which are installed in the mine are focused towards working mine pit hence it does not reach to the village side also safety

	mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/masks away from the villagers and keeping the noise levels well within the prescribed limits for day/night hours.		zone of 7.5 m is there around mine leas that acts as a barrier
11)	The PP shall take measures for control of noise levels below 85 dB in the work environment. The workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs. All personnel including laborers working in dusty areas shall be provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects. The PP shall be held responsible in case it has been found that workers/personnels/labourers are working without personal protective equipment.	Complied	Necessary precautions are in place to prevent the noise pollution, workers are provided with ear plugs , dust mask in PPE kit and saplings are planted in safety zone area as a barrier
V.	<u>Mining Plan</u>		
12)	PP shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e. quantum of mineral, waste, overburden, interburden and topsoil, etc. No change in basic mining proposal like mining technology, total excavation, mineral and waste production, lease area and scope of working, viz. method of mining, overburden and dump management, OB and dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form to Short Term Permit (STP), Query license or any other	Complied	Complied as per Approved Mining Plan issued by the IBM, Bhubaneswar. No change has been made in basic mining proposal like mining technology, excavation, waste production

	name.		
13)	The PP shall get the Final Mine Closure Plan along with Financial Assurance approved from Indian Bureau of Mines/ Department of Mining and Geology as required under the provision of the MMDR Act, 1957 and Rules/Guidelines made there under. A copy of approved mine closure plan shall be submitted within 2 months of the approval of the same from the competent authority to the Regional Office of the Ministry of Environment, Forest and Climate Change for record and verification.	Agreed to comply	Will be complied as per Approved Mining Plan issued by the IBM, Bhubaneswar.
14)	The land use of the mine lease area at various stages of mining scheme as well as the end of life shall be governed as per the approved Mining Plan. The excavation vis-à-vis backfilling in the mine lease area and corresponding afforestation to be raised in the reclaimed area shall be governed as per approved mining plan. PP shall ensure the monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining. The compliance status shall be submitted half-yearly to the MoEFCC and its concerned Regional Office.	Complied	The land use of the mine lease area at various stages of mining scheme as well as the end of life is governed as per the approved Mining Plan. The land use of mine lease is submitted in the last reporting cycle
VI.	<u>Land Reclamation</u>		
15)	The O.B. generated during the mining operations shall be stacked at earmarked OB dump site(s) only and it should not be kept active for a long period of time. The physical parameters of the OB dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS wrt safety in mining operations shall be strictly adhered to maintain the stability of topsoil/OB dumps. The topsoil shall be used for land reclamation and plantation.	Complied	The O.B. generated during the mining operations is stacked at OB dump. The physical parameters of the OB dumps like height, width and angle of slope is governed as per the approved Mining Plan as per the guidelines/circulars issued by DGMS wrt safety in mining operations is adhered to maintain the stability of OB dumps.
16)	The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only.	Complied	The waste / reject generated is stacked at waste dump and physical parameter like height, width and angle of slope is

	The physical parameters of the waste dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of waste dumps.		maintained as per DGMS
17)	The reclamation of waste dump sites shall be done in scientific manner as per the Approved Mining Plan cum Progressive Mine Closure Plan	Agreed to Comply	As the dumps are not finalized they are active dumps hence it will be complied once the dump gets finalized
18)	The slope of dumps shall be vegetated in scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface run off. The selection of local species regulates local climatic parameters and help in adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of dumps. The dump mass should be consolidated with the help of dozers/compactors thereby ensuring proper filling/levelling of dump mass. In critical areas, use of geo textiles/geo membranes/ clay liners/ bentonite etc. shall be undertaken for stabilization of the dump.	Agreed to Comply	As the dumps are not finalized they are active dumps once it is not finalized it will be vegetated in scientific manner of local species, once the dumps are not finalized laying of geo-textile will be done
19)	The PP shall carry out slope stability study in case the dump height is more than 30 m. The slope stability report shall be submitted to concerned regional office of MoEF&CC.	Complied	Slope stability test/study is done by CSIR-CIMFR and slope stability test/study for pit and dump is done by CSIR-CIMFR and reports submitted in the last reporting cycle
20)	Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mine yards and topsoil/OB/waste dumps to prevent runoff of water and flow of sediments directly into the water bodies (nallah/river/pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains/sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained	Complied	Settling ponds and check dams are constructed along with retaining wall at toe of dump and garland drain at benches to prevent run off water and diverted to the pits, the part of collected water is reused

	properly.		
21)	Check dams of appropriate size, gradient and length shall be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies. A safety margin of 50% shall be kept for designing of sump structures over and above peak rainfall (based on 50 years data) and maximum discharge in the mine and its adjoining area which shall also help in providing adequate retention time thereby allowing proper settling of sediments/silt material. The sedimentation pits/sumps shall be constructed at the corners of the garland drains.	Complied	Check dams are in place and every pre-monsoon the check dam, settling ponds are desilted and maintained regularly based on the inspection of check dams and settling ponds
22)	The topsoil, if any, shall temporarily be stored at earmarked site(s) within the mine lease only and should not be kept unutilized for long. The physical parameters of the topsoil dumps like height, width and angle of slope shall be governed as per the approved Mining Plan and as per the guidelines framed by DGMS wrt safety in mining operations shall be strictly adhered to maintain the stability of dumps. The topsoil shall be used for land reclamation and plantation purpose.	Complied	There is no top soil because it is a brownfield mine as the top soil is handled by previous lease
VII.	<u>Transportation</u>		
23)	No transportation of the minerals shall be allowed in case of roads passing through villages/habitations. In such cases, PP shall construct a 'bypass' road for transportation of the minerals leaving an adequate gap (say at least 200 m) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with Nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/rural roads shall be allowed in consultation with nodal	Complied	Transportation of mineral is done on bypass roads there is no roads passing through village / habitations. Vehicular emissions are kept under control and regularly monitored of Pollution Under Control (PUC) certificate and water sprinkling is done in mine and exit gate for dust suppression.

	State Govt. Department only after required strengthening such that the carrying capacity of roads increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers.		
24)	The main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker-mounted water sprinkling system. The other areas of dust generation like crushing zone, material transfer points, material yards, etc. should invariably be provided with dust suppression arrangements. The air pollution control equipment's like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at crushers, belt conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions.	Complied	As there is no permanent haul road in the mine it is not feasible for fixed haul sprinklers, instead water is sprinkled via mobile tankers of capacity 28 Kl and 16 KL capacity, installed mist canon system and areas like crushing plants are provided with sprinkling system
VIII. Green Belt			
25)	The Project Proponent shall develop Green Belt in 7.5m wide safety zone all along. The mine lease boundary as per the guidelines of CPCB to arrest pollution emanating from mining operations within the lease. The whole green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of green belt shall be governed as per the EC granted by the Ministry irrespective of the stimulation made in approved mine plan.	Complied	The Project Proponent has already developed Green Belt in 7.5m wide safety zone all along the lease.

26)	The PP shall carryout plantation/afforestation in backfilled and reclaimed area of mining lease, around water body, along the roadsides, in community areas etc. by planting the native species in consultation with the State Forest Department/Agriculture Department/ Rural Development department/ Tribal welfare department/ Gram Panchayat such that only those species be selected which are of use to the local people. The CPCB guidelines in this regard shall also be adhered. The density of the trees should be around 2500 saplings per Ha. Adequate budgetary provision shall be made for protection and care of trees.	Complied	Plantation and afforestation proposal conducted as per Approved Mining Plan and CTO conditions in mining lease area, along the roadside of community and density is also maintained
27)	The PP shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease. The development of such grazing land shall be done in consultation with the State Govt. In this regard, the PP should essentially implement the directions of the Hon'ble Supreme Court with regard to acquisition of grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded/protected against felling and plantation of such trees should be promoted.	Complied	There was no gazing land that was in the mine lease if any is instructed from State Government co-operation will be provided
28)	The PP shall undertake all precautionary measures for conservation and protection of endangered flora and fauna and Schedule-I species during mining operation. A wildlife conservation plan shall be prepared for the same clearly delineating action to be taken for conservation of flora and fauna. The Plan shall be approved by Chief Wild Life warden of the State Govt.	Complied	Will always take necessary precautions to preserve the endangered flora and fauna and schedule-I species during mining operations. a wildlife management plan is prepared by previous lessee and it is approved by Chief wild life warden
29)	And implemented in consultation with the State Forest and Wildlife Department. A copy of wildlife	Complied	Submitted by the previous lessee.

	conservation plan and its implementation status (annual) shall be submitted to the Regional Office of the Ministry.		
IX.	<u>Public Hearing and Human Health Issues</u>		
30)	The PP shall appoint an Occupational Health Specialist for Regular as well as Periodical medical examination of the workers engaged in the mining activities, as per the DGMS guidelines. The records shall be maintained properly. PP shall also carry out Occupational Health check-ups in respect of workers who have ailments like BP, diabetes, habitual smoking, etc. The check-ups shall be undertaken once in six months and necessary remedial/preventive measures be taken. A status report on the same day be sent to MoEFCC Regional Office and DGMS on half-yearly basis.	Complied	Appointed a doctor for Regular as well as Periodical medical examination of the workers engaged in the mining activities, as per the DGMS guidelines. The records is maintained properly. Occupational Health check-ups in respect of workers is carried out by Health camps The status report are attached in Annexure 3
31)	The PP must demonstrate commitment to work towards 'Zero Harm' from their mining activities and carry out HIRA for identification of workplace hazards and assess their potential risks to health and determine appropriate control measures to protect the health and well-being of workers and nearby community. The Proponent shall maintain accurate and systematic records of the HRA. The HRA for neighborhood has to focus on Public health problems like Malaria, Tuberculosis, HIV, Anaemia, Diarrhoea in children under 5 years, respiratory infections due to bio mass cooking. The Proponent shall also create awareness and educate the nearby community and workers for Sanitation, Personal Hygiene, Hand washing, not to defecate in open, Women health and hygiene (providing sanitary napkins), hazard of tobacco and alcohol use. The Proponent shall carryout baseline HRA for all the category of workers and thereafter	Complied	PP works towards zero harm by identification of various hazards of each and every activity by HIRA and their severity is analyzed and action plan was made. HIRA for Occupational health which focuses on infections and activity that affect health. Awareness is created to nearby community on sanitation, Personal hygiene.

	every 5 years.		
32)	<p>The Proponent shall carry out Occupational Health surveillance which be a part of HRA and include Biological monitoring where practical and feasible, and then the tests and investigations relevant to the exposure (e.g. for dust a X-Ray chest; for nose audiometric; for lead exposure blood lead; for welders full Ophthalmologic Assessment; for Manganese Miners a complete Neurological Assessment by a Certified Neurologist, and Manganese (Mn) Estimation in Blood; For Inorganic Chromium- Fortnightly skin infection of hands and forearms by a responsible person. Except routine tests, all tests would be carried out in a lab accredited by NABH. Records of Health Surveillance must be kept for 30 years, including results of physical examination and tests. The record of exposure due to materials like Asbestos, Hard Rock Mining, Silica, Gold, Kaolin, Aluminum, Iron, Manganese, Chromium, Lead, Uranium needs to be handed over to the Mining department of the State in case the life of the mine is less than 30 years. It would be obligatory for the State Mines Departments to decide for the safe and secure storage of the records including X-Ray. Only conventional X-Ray will be accepted for record purposes and not the digital one.) X-Ray must meet ILO criteria (17x14 inches and of good quality).</p>	Complied	<p>Occupational health surveillance is done by health camps . 1.Regular health monitoring, including tests specific exposures (e.g., chest X-rays for dust exposure, audiometry for noise is covered in Medical examination records of IME and PME</p> <p>2. Reports are as per NABH-accredited labs, and X-rays meeting ILO standards for size (17x14 inches) and quality.</p> <p>3. Health Records (health camps, IME and PME records are available in OHC)</p>
33)	<p>The Proponent shall maintain a record of performance indicators for workers which includes (a) there should not be significant decline in their Mass Body Index and it should stay between 18.5-24.9, (b) the final chest X-Ray compared with the Baseline X-Ray should not show any capacities, (c) at the end of their leaving job, there should be no Diminution in their Lung Functions Forced Expiratory Volume</p>	Complied	<p>Complied through monthly health camps and Medical examination of works as per DGMS guidelines. and records are maintained</p>

	in one second (FEV1), Forced Vital Capacity (FVC), and the ratio) unless they are smokers which has to be adjusted, and the effect of age, (d) their hearing should not be affected. As a proof, an audiogram (first and last need to be presented), (e) they should not have developed any Persistent Back Pain, Neck Pain and the movement of their Hip, Knee and other joints should have normal range of movement, (f) they should not have suffered loss of any body part. The record of the same should be submitted to the Regional office, MoEF&CC annually along with details of the relief and compensation paid to workers having above indicators.		
34)	The PP shall ensure that Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.	Complied	Compiled by providing suitable PPE like dust mask, ear plugs and training are provided to provide awareness on safety and health aspects
35)	PP shall make provision for the housing for workers/labors or shall construct labor camps within/outside (company owned land) with necessary basic infrastructure/facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche for kids, etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the project related infrastructure. The domestic wastewater should be treated with STP to avoid contamination of underground water.	Complied	Workers colony is provided along with canteen facilities, with all basic infrastructure are provided with safe drinking water, also a STP of 60 KLD capacity is in place to treat the domestic waste water
36)	The activities proposed in action plan prepared for addressing the issues raised during the Public Hearing shall be completed as per the budgetary provisions mentioned in the Action Plan and within the stipulated time frame. The Status Report on implementation of Action Plan shall be submitted to the concerned Regional	Complied	Action plan is compiled by previous lessee

	Office of the Ministry along with District Administration.		
X.	<u>Corporate Environment Responsibility (CER)</u>		
37)	The activities and budget earmarked for CER as per Ministry's O.M No. 22-65/2017-IA. II (M) dated 01.05.2018 or as proposed by EAC should be kept in a separate bank account. The activities proposed for CER shall be implemented in a time bound manner and annual report of implementation of the same along with documentary proof viz. photographs, purchase documents, latitude and longitude of infrastructure developed and road constructed needs to be submitted to Regional Office MoEF&CC annually along with audited statement.	Complied	Complied by previous lessee
38)	PP shall keep the funds earmarked for environmental protection measures in a separate account and refrain from diverting the same for other purposes. The year wise expenditure of such funds should be reported to the MoEF&CC and its concerned Regional Office.	Complied	Annual Budget kept for environmental protection measures and also tracking system in place to track the amount spent.
XI.	<u>Miscellaneous</u>		
39)	The Project Proponent shall prepare digital map (land use and land cover) of the entire lease area once in 5 years purpose of monitoring land use pattern and submit a report to concerned regional office of the MOEF&CC.	Complied	LULC map is prepared by ORSAC on profile of Dec-2021 and same is submitted in the last reporting cycle. The PP will ensue to prepare digital map every 5 year
40)	The Project Authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Agreed to Comply	Noted
41)	The PP shall submit 6 monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MoEF&CC and its concerned regional office, CPCB and SPCB.	Complied	Noted
42)	A separate 'Environmental Management Cell' with suitable	Complied	The environmental cell is established including senior executives

	qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall report directly to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEFCC.		
43)	The concerned Regional office of the MoEFCC shall randomly monitor compliance of the stipulated conditions. The Project authorities should extend full cooperation to the MoEFCC officer(s) by furnishing the requisite data/information/monitoring reports.	Complied	Noted
44)	The Ministry or any other competent authority may alter / modify the above conditions or stipulate any further condition in the interest of environment protection	Complied	Noted
45)	Concealing factual data or submission of false/fabricated data and failure to comply with any of the condition mentioned above may result in withdrawal of this clearance and attract action under the provision of Environmental (Protection) Act 1986	Complied	Noted
46)	The above conditions will be enforced inter-alia under the provisions of the Water (Prevention & Control of Pollution) Act 1974, the Air (Prevention & Control of Pollution) Act 1981, Environment (Protection) Act 1986 and the Public Liability insurance act 1991, along with their amendments and rules made there under and also any other order passed by the Honorable Supreme Court of India / high Court of Odisha and any other Court of law relating to the subject matter	Complied	Noted
47)	Any appeal against the environmental clearance shall lie with the National Green tribunal if preferred within a period of 30 days as prescribed under the section 16 of the National Green Tribunal Act 2010	Complied	Noted there was no appeal

ENVIRONMENT MONITORING REPORT
FOR THE MONTH OF
APRIL- 2025



NARAYANI

Client- M/s. Nadidih Iron Ore & Mn Mines
(FEEGRADE),

M/s ESL Steel Limited,

Address- Koira, Sundargarh, Odisha.



Monitored By - Green Force Associates Pvt. Ltd.

Address- Plot No-1363-3892 ,

Bhaibhab Realcon, Fulnakhara, Cuttack,

Odisha- 754001

NABL Certificate No:- TC-12258

PHOTOGRAPHS OF ENVIRONMENT MONITORING





GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda



Mail Id: greenforceassociates@gmail.com



TC-12258

Report No- GFAPL/25-26/ESLFG/001

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat: 21°58'18.92"N & Long: 85°15'23.08"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
02.04.2025	61.5	30.7	8.8	15.4
05.04.2025	57.5	28.4	8.4	14.8
09.04.2025	60.4	30.1	8.8	15.8
12.04.2025	58.1	28.8	7.8	14.4
16.04.2025	56.1	27.7	6.8	12.8
19.04.2025	58.2	28.8	7.4	13.4
23.04.2025	60.8	30.3	7.8	13.8
26.04.2025	62.8	31.6	8.4	14.4
30.04.2025	65.6	33.1	8.8	15.2
Max	65.60	33.10	8.80	15.80
Min	56.10	27.70	6.80	12.80
Average	60.11	29.94	8.11	14.44
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Technical Manager

Mr. S.K. Parhi

Note:

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END OF REPORT

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
Cuttack, Odisha, India 754001



GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,

Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/002

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ2- Near Mine In-gate; Lat:21°57'35.245"N & Long: 85°15'12.007"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
02.04.2025	68.2	34.5	11.4	17.4
05.04.2025	67.2	33.2	10.8	17.4
09.04.2025	69.8	35.2	11.4	17.8
12.04.2025	66.9	33.6	10.4	16.8
16.04.2025	62.4	31.3	9.4	14.8
19.04.2025	65.6	32.8	10.4	15.8
23.04.2025	68.9	34.6	10.8	16.4
26.04.2025	72.4	36.6	11.8	17.8
30.04.2025	75.8	38.2	12.8	19.6
Max	75.80	38.20	12.80	19.60
Min	62.40	31.30	9.40	14.80
Average	68.58	34.44	11.02	17.09
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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END OF REPORT



GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/003

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ3- Near Rengalberha; Lat: 21°57'19.11"N & Long: 85°15'43.28"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
02.04.2025	60.8	30.5	5.8	11.4
05.04.2025	58.4	29.1	5.4	10.8
09.04.2025	60.2	29.8	5.8	11.4
12.04.2025	56.7	28.2	5.2	10.6
16.04.2025	53.4	26.5	5.2	10.2
19.04.2025	55.1	27.5	5.4	10.4
23.04.2025	57.2	28.3	5.8	10.8
26.04.2025	61.2	30.7	6.4	11.6
30.04.2025	59.4	29.6	6.2	11.2
Max	61.20	30.70	6.40	11.60
Min	53.40	26.50	5.20	10.20
Average	58.04	28.91	5.69	10.93
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
Cuttack, Odisha, India 754001



GREEN FORCE ASSOCIATES PRIVATE LIMITED

Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

Report No- GFAPL/25-26/ESLFG/004

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ4- Near Kalta; Lat: 21°58'2.93"N & Long: 85°13'20.36"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
02.04.2025	59.6	28.8	5.6	10.6
05.04.2025	57.2	28.2	5.2	10.2
09.04.2025	58.6	29.2	5.4	10.6
12.04.2025	55.4	27.6	4.8	9.8
16.04.2025	51.6	25.5	4.8	9.8
19.04.2025	53.2	26.6	5.2	10.2
23.04.2025	54.8	27.1	5.4	10.6
26.04.2025	56.8	28.4	5.8	10.8
30.04.2025	58.2	29.1	6.2	11.2
Max	59.60	29.20	6.20	11.20
Min	51.60	25.50	4.80	9.80
Average	56.16	27.83	5.38	10.42
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/005

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat:21°58'18.92"N & Long: 85°15'23.08"E AAQ2- Near Mine In-gate; Lat:21°57'35.245"N & Long: 85°15'12.007"E AAQ3- Near Rengalberha; Lat:21°57'19.11"N & Long: 85°15'43.28"E AAQ4- Near Kalta; Lat:21°58'2.93"N & Long: 85°13'20.36"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
02.04.2025	0.45	0.5	0.35	0.31
05.04.2025	0.43	0.5	0.33	0.3
09.04.2025	0.46	0.52	0.35	0.32
12.04.2025	0.44	0.49	0.33	0.29
16.04.2025	0.36	0.42	0.31	0.27
19.04.2025	0.37	0.43	0.32	0.29
23.04.2025	0.38	0.45	0.33	0.31
26.04.2025	0.4	0.47	0.35	0.32
30.04.2025	0.41	0.51	0.34	0.33
Max	0.46	0.52	0.35	0.33
Min	0.36	0.42	0.31	0.27
Average	0.41	0.48	0.33	0.30
NAAQ* Standard	4 mg/m3 (for 1hr)			
Methods of Analysis	IS: 5182 (Part- 10)			

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
Cuttack, Odisha, India 754001



GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/006

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat: 21°59'52.38"N, & Long: :85°13'9.76"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
01.04.2025	61.4	30.2	6.2	11.6
04.04.2025	58.6	28.6	5.8	10.8
08.04.2025	60.8	30.3	6.2	11.4
11.04.2025	56.1	28.2	5.6	10.4
15.04.2025	53.8	26.9	5.4	10.2
18.04.2025	52.4	26.1	5.2	10.2
22.04.2025	55.6	27.9	5.4	10.4
25.04.2025	58.8	29.6	6.2	11.4
29.04.2025	61.2	30.7	6.8	12.2
Max	61.40	30.70	6.80	12.20
Min	52.40	26.10	5.20	10.20
Average	57.63	28.72	5.87	10.96
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda
Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/007

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiru, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
01.04.2025	60.4	30.2	5.8	10.8
04.04.2025	58.6	28.6	5.4	10.4
08.04.2025	61.2	30.6	5.8	10.8
11.04.2025	56.8	28.5	5.4	10.4
15.04.2025	52.9	26.5	5.2	10
18.04.2025	50.6	25.1	4.8	9.8
22.04.2025	54.2	26.9	5.4	10.4
25.04.2025	56.9	28.5	5.8	10.8
29.04.2025	59.2	29.7	6.2	11.4
Max	61.20	30.60	6.20	11.40
Min	50.60	25.10	4.80	9.80
Average	56.76	28.29	5.53	10.53
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Mr. S.K. Parhi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

Report No- GFAPL/25-26/ESLFG/008

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat:21°59'52.38"N, & Long: :85°13'9.76"E AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)	
	AAQ5	AAQ6
01.04.2025	0.33	0.32
04.04.2025	0.31	0.3
08.04.2025	0.32	0.32
11.04.2025	0.29	0.29
15.04.2025	0.28	0.28
18.04.2025	0.27	0.26
22.04.2025	0.29	0.27
25.04.2025	0.34	0.29
29.04.2025	0.36	0.31
Max	0.36	0.32
Min	0.27	0.26
Average	0.31	0.29
NAAQ* Standard	4 mg/m3 (for 1hr)	
Methods of Analysis	IS: 5182 (Part- 10)	

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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TC-92258

Report No- GFAPL/25-26/ESLFG/009

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Fugitive Dust Emission (F)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	F1: Mine Face Area; Lat:21° 57' 38.43"N & Long: 85° 15' 16.19"E; F2: Haul Road; Lat:21° 57' 38.16"N & Long: 85° 15' 14.66"E; F3: Near Crushing Plant; Lat: 21° 57' 46.19"N & Long: 85° 15' 10.74"E; F4: Near Screening Plant; Lat:21° 57' 47.89"N & Long:85° 15' 21.11"E; F5: Ore Storage Area; Lat: 21° 57' 42.37"N & Long:85° 15' 13.06"E; F6: West Dump; Lat:21° 58' 09.97"N & Long:85° 15' 19.33"E;		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result (µg/m³)					
		F1	F2	F3	F4	F5	F6
1	01.04.2025	567.3	542.5	556.8	584.6	573.8	534.2
2	04.04.2025	464.2	448.3	460.4	509.4	504.2	489.5
3	08.04.2025	497.2	469.2	483.7	534.2	524.3	497.2
4	11.04.2025	483.7	454.2	473.4	488.4	496.2	482.4
5	15.04.2025	524.5	478.4	508.3	541.2	527.1	512.4
6	18.04.2025	496.8	460.2	483.1	516.4	501.2	478.3
7	22.04.2025	534.6	497.5	522.1	567.2	543.7	501.2
8	25.04.2025	594.2	543.6	562.8	602.4	586.2	552.3
	Max	594.20	543.60	562.80	602.40	586.20	552.30
	Min	464.20	448.30	460.40	488.40	496.20	478.30
	Average	520.73	488.67	507.81	546.27	533.34	508.56
Fugitive Standard		1200 µg/m³					
Methods of Analysis		IS:5182 (Part-4)					

ROSTER ANALYST
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Bhubaneswar, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
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Bhubaneswar, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/010

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha		
Nature of Sampling	Workzone Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Industrial Area
Date of Sampling	11.04.2025	Date of Completion	12.04.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Near Mine Office; Lat:21°58'18.92"N & Long: :85°15'23.08"E	58.1	44.5
2	Near Mine In gate; Lat:21°57'35.245"N & Long: :85°15'12.007"E	69.2	57.8
3	Near Screening Plant-I; Lat:21°58'09.21"N & Long:85°15'33.66"E	68.8	62.1
4	Near Crusher; Lat:21°58'22.32"N,Long:85°15'34.13"E	69.5	62.2
5	Near W.Bridge-1: Lat21°57'53.99"N,Long:85°15'49.64"E	66.4	58.5
6	Near W.Bridge-2; Lat:21°57'54.26"N,Long:85°15'53.53"E	68.5	59.8
Noise permissible limits as per CPCB Norms in dB(A) Leq			
Category of Area		Day Time	Night Time
Industrial Area		75	70
Commercial Area		65	55
Residential Area		55	45
Sensitive Area/ Silence Zone		50	40

Reviewed By

CHIEF ANALYST
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Bhubaneswar, Odisha
Miss. Anuska

Authorized Signatory

TECHNICAL MANAGER
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Mr. S.K. Pahu

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Report No- GFAPL/25-26/ESLFG/011

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Residential Area
Date of Sampling	12.04.2025	Date of Completion	13.04.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Village Rengalberha; Lat:21°57'19.11"N, & Long: :85°15'43.28"E	49.9	39.8
2	Village Kalta; Lat:21°58'2.93"N, & Long: : 85°13'20.36"E	50.2	39.7
3	Village Jhirapani; Lat:21°59'52.38"N & Long:85°13'9.76"E	49.4	39.4
4	Village Kashira; Lat:21°55'9.95"N & Long:85°15'18.13"E	49.5	39.8
Noise permissible limits as per CPCB Norms in dB(A) Leq			
Category of Area		Day Time	Night Time
Industrial Area		75	70
Commercial Area		65	55
Residential Area		55	45
Sensitive Area/ Silence Zone		50	40

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
BARAMUNDA, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
BARAMUNDA, ODISHA
Mr. S.K. Parin

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
Cuttack, Odisha, India 754001



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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Report No- GFAPL/25-26/ESLFG/012

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS-11255
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	11.04.2025	Date of Receiving	12.04.2025
Date of Analysis	12.04.2025	Date of Complete	15.04.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: :-85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Temperature	IS-11255 (PART-3) 1985	K	---	455
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	18.22
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	80.1
04	Sulphur dioxide as SO ₂	IS-11255(PART-2) 1985	mg/Nm ³	600	64.6
05	Carbon Monoxide as CO	IS-13270:1992	%	1%	<0.2
06	Carbon Dioxide as CO ₂	IS-13270:1992	%	---	1.5
07	Oxygen as O ₂	IS-13270:1992	%	---	16.4

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
Bhubaneswar, ODISHA
Miss. Anil Sahoo

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TECHNICAL MANAGER
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Technical Manager
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Report No- GFAPL/25-26/ESLFG/012

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koirā, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Date of Sampling	11.04.2025	Date of Receiving	12.04.2025
Date of Analysis	12.04.2025	Date of Complete	15.04.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & & Long: :-85°15'15.59"E:		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Nitrogen Oxide as NO _x	IS-11255(PART-7) 1985	mg/Nm ³	300	72.8

Reviewed By

CHIEF ANALYST
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Bhubaneswar, ODISHA

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Bhubaneswar, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/013

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	11.04.2025	Date of Receiving	12.04.2025
Date of Analysis	12.04.2025	Date of Complete	17.04.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21.971766, Long: 85.255013; STP2- Inside the ML Area (STP-Outlet); Lat: 21.971749, Long: 85.255002;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	pH	APHA 24th ED 4500- H+B:2023	--	6.5-9.0	7.78	7.14
2.	Total Suspended Solids	APHA 24th ED 2540-D: 2023	mg/l	100	144	10
3.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	--	6.6	<2.0
4.	Biological Oxygen Demand as BOD	IS 3025 (PART 44):1993	mg/l	30	5.2	4.4
5.	Chemical Oxygen Demand as COD	APHA 24 th ED 5220 B:2023	mg/l	--	120	20

Remarks: The Standard as per CTO is only applicable to the Discharge ie., Outlet

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
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Report No- GFAPL/25-26/ESLFG/013

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	18.04.2025	Date of Receiving	19.04.2025
Date of Analysis	19.04.2025	Date of Complete	23.04.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21.971766, Long: 85.255013; STP2- Inside the ML Area (STP-Outlet); Lat: 21.971749, Long: 85.255002;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	Fecal Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	<1000	<1.8	<1.8

Remarks: The Standard as per CTO is only applicable to the Discharge ie., Outlet

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
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Report No- GFAPL/25-26/ESLFG/014

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	18.04.2025	Date of Receiving	19.04.2025
Date of Analysis	19.04.2025	Date of Complete	23.04.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°58'30.34"N & Long: 85°15'28.12"E SW2: Karo River Downstream(DS); Lat: 21°59'35.14"N & Long: 85°16' 21.42"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	<5.0	<5.0
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	<1.0	<1.0
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	--	8.5	7.25	7.29
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	212.93	226.00
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	130	138
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	17	19
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.37	0.4
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	400	5.2	5.5
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	0.12	0.16
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6	5.9
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	3.6	4.8
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	20	24
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.09	0.12

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Bhubaneswar, ODISHA

Miss. Arti Sahoo

Authorized Signatory

GREENFORCE ASSOCIATES PRIVATE LIMITED

Bhubaneswar, Odisha

Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED

Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

Report No- GFAPL/25-26/ESLFG/014

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	18.04.2025	Date of Receiving	19.04.2025
Date of Analysis	19.04.2025	Date of Complete	23.04.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°58'30.34"N & Long: 85°15'28.12"E SW2: Karo River Downstream(DS); Lat: 21°59'35.14"N & Long: 85°16' 21.42"E		

Sl.No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	2.1	2.14
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	350	410

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Report No- GFAPL/25-26/ESLFG/015

Mail Id: greenforceassociates@gmail.com

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	18.04.2025	Date of Receiving	19.04.2025
Date of Analysis	19.04.2025	Date of Complete	23.04.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59' 42.97"N, Long: 85°18' 13.97"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	<5.0
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	<1.0
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.3
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	235.81
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	141
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	21
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.41
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	400	7.8
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	0.22
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	5.8
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	5.4
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	24
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.14

Reviewed By

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GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arli Sahoo

Authorized Signatory

TECHNICAL MANAGER

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TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	18.04.2025	Date of Receiving	19.04.2025
Date of Analysis	19.04.2025	Date of Complete	23.04.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59' 42.97"N, Long: 85°18' 13.97"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	2.88
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	450

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/016

Mail Id: greenforceassociates@gmail.com

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	18.04.2025	Date of Receiving	19.04.2025
Date of Analysis	19.04.2025	Date of Complete	23.04.2025
Sampling Location & Coordinates	Mines Discharge;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	--	<5.0
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	74.6
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	5.5-9.0	7.86
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	319.07
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	--	192
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	--	33
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	--	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	--	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	--	0.45
10.	Sulfate (as SO ₄)	APHA 24th ED 4500-SO ₄ D: 2023	mg/l	--	13.4
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	--	0.25
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	10	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	--	5.7
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	--	8.4
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	30
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.25

Reviewed By
CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory
TECHNICAL MANAGER
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Bhubaneswar, Odisha
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Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	18.04.2025	Date of Receiving	19.04.2025
Date of Analysis	19.04.2025	Date of Complete	23.04.2025
Sampling Location & Coordinates	Mines Discharge;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	--	4.64
2.	Phenolic Compounds as C ₆ H ₅ OH	APIIA 24th ED 5530 B,D:2023	mg/l	--	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	--	0.14
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	--	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	--	0.23
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	--	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	--	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	--	410

Reviewed By

[Signature]
ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

Authorized Signatory

TECHNICAL MANAGER

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Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	O ₃ ($\mu\text{g}/\text{m}^3$)	NH ₃ ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	19.04.2025	9.8	23.2
AAQ-2	Near Mine In Gate;	19.04.2025	11.6	26.9
AAQ-3	Near Rengalberha;	19.04.2025	<8.0	<20.0
AAQ-4	Near Kalta;	19.04.2025	<8.0	<20.0
AAQ-5	Village Jhirapani;	18.04.2025	<8.0	<20.0
AAQ-6	Village Kashira;	18.04.2025	<8.0	<20.0
NAAQ* Standard			100	400
Methods of Analysis			IS:5182 (Part-9)	IS:5182 (Part-25)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

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TECHNICAL MANAGER

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TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)
AAQ-1	Near Vedanta Office	19.04.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine InGate;	19.04.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Near Rengalberha;	19.04.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Near Kalta;	19.04.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-5	Village Jhirapani;	18.04.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-6	Village Kashira;	18.04.2025	<0.06	<0.6	<0.44	<5	<1
NAAQ* Standard			1	20	6	5	1
Methods of Analysis			IS:5182 (Part-22)	IS:5182 (Part-26)	As per CPCB method followed by AAS	IS:5182 (Part-11)	IS:5182 (Part-12)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
Bhubaneswar, ODISHA
Mr. Arif Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
Bhubaneswar, ODISHA
Mr. S.K. Parit

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Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Free Silica ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	19.04.2025	<2.0
AAQ-2	Near Mine InGate;	19.04.2025	<2.0
AAQ-3	Near Rengalberha;	19.04.2025	<2.0
AAQ-4	Near Kalta;	19.04.2025	<2.0
AAQ-5	Village Jhirapani;	18.04.2025	<2.0
AAQ-6	Village Kashira;	18.04.2025	<2.0
Methods of Analysis			NIOSH Method 7500 by X-Ray Diffraction

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
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**ENVIRONMENT MONITORING REPORT
FOR THE MONTH OF
MAY- 2025**



NARAYANI

**Client- M/s. Nadidih Iron Ore & Mn Mines
(FEEGRADE),**

M/s ESL Steel Limited,

Address- Koira, Sundargarh, Odisha.



Monitored By - Green Force Associates Pvt. Ltd.

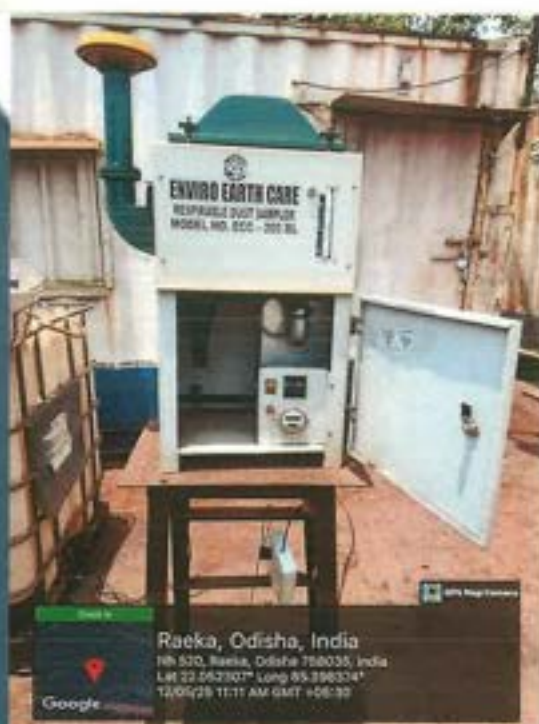
Address- Plot No-1363-3892 ,

Bhaibhab Realcon, Fulnakhara, Cuttack,

Odisha- 754001

NABL Certificate No:- TC-12258

PHOTOGRAPHS OF ENVIRONMENT MONITORING





GREEN FORCE ASSOCIATES PRIVATE LIMITED



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Issued Date-05.06.2025

TEST REPORT

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Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat: 21°58'18.92"N & Long: 85°15'23.08"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.05.2025	62.8	31.4	8.4	14.6
07.05.2025	63.7	31.8	8.8	15.2
10.05.2025	65.6	32.8	9.2	15.8
14.05.2025	66.8	33.5	9.8	16.5
17.05.2025	64.5	32.2	9.2	15.8
21.05.2025	62.4	31.1	8.8	15.4
24.05.2025	58.2	28.9	7.2	13.8
28.05.2025	59.6	29.1	7.2	13.4
31.05.2025	57.4	28.1	6.8	12.6
Max	66.80	33.50	9.80	16.50
Min	57.40	28.10	6.80	12.60
Average	62.33	30.99	8.38	14.79
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurdha

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/019

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ2- Near Mine In-gate; Lat: 21°57'35.245"N & Long: 85°15'12.007"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.05.2025	68.6	34.3	11.8	18.8
07.05.2025	70.4	35.4	12.5	19.4
10.05.2025	73.8	37.2	13.6	20.2
14.05.2025	75.2	38.1	14.2	21.4
17.05.2025	72.8	36.4	13.4	20.2
21.05.2025	68.4	34.2	11.2	18.4
24.05.2025	61.5	30.5	10.2	16.6
28.05.2025	62.8	31.2	9.8	15.4
31.05.2025	60.2	29.8	8.2	13.6
Max	75.20	38.10	14.20	21.40
Min	60.20	29.80	8.20	13.60
Average	68.19	34.12	11.66	18.22
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Bhubaneswar, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

Bhubaneswar, ODISHA
Mr. S.K. Parhi

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
Cuttack, Odisha, India 754001



GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/020

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ3- Near Rengalberha; Lat: 21°57'19.11"N & Long: 85°15'43.28"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.05.2025	57.2	28.5	5.6	10.6
07.05.2025	58.6	29.3	5.9	11.2
10.05.2025	60.2	30.1	6.2	11.6
14.05.2025	61.8	31.1	6.5	12.2
17.05.2025	58.2	28.8	5.8	11.8
21.05.2025	56.4	28.1	5.4	11.4
24.05.2025	55.2	27.4	5.2	10.6
28.05.2025	55.7	27.5	5.2	10.4
31.05.2025	53.5	26.6	4.8	9.8
Max	61.80	31.10	6.50	12.20
Min	53.50	26.60	4.80	9.80
Average	57.42	28.60	5.62	11.07
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Bhubaneswar, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

Bhubaneswar, ODISHA

Mr. S.K. Parhi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/021

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ4- Near Kalta; Lat: 21°58'2.93"N & Long: 85°13'20.36"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.05.2025	56.4	28.1	5.7	10.6
07.05.2025	57.8	28.8	5.3	10.2
10.05.2025	59.2	29.5	5.9	10.8
14.05.2025	60.7	30.4	6.2	11.5
17.05.2025	56.8	28.2	5.8	10.8
21.05.2025	55.4	27.5	5.2	10.4
24.05.2025	54.3	27.1	5.2	10.2
28.05.2025	54.8	27.3	4.6	9.8
31.05.2025	52.9	26.3	<4.0	<9.0
Max	60.70	30.40	6.20	11.50
Min	52.90	26.30	4.60	9.80
Average	56.48	28.13	5.49	10.54
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
Cuttack, Odisha, India 754001



GREEN FORCE ASSOCIATES PRIVATE LIMITED

Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com
(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

Report No- GFAPL/25-26/ESLFG/022

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, AU/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat:21°58'18.92"N & Long: 85°15'23.08"E AAQ2- Near Mine In-gate; Lat:21°57'35.245"N & Long: 85°15'12.007"E AAQ3- Near Rengalberha; Lat:21°57'19.11"N & Long: 85°15'43.28"E AAQ4- Near Kalta; Lat:21°58'2.93"N & Long: 85°13'20.36"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
03.05.2025	0.38	0.49	0.31	0.3
07.05.2025	0.4	0.51	0.33	0.29
10.05.2025	0.41	0.53	0.35	0.32
14.05.2025	0.43	0.55	0.36	0.34
17.05.2025	0.41	0.52	0.34	0.32
21.05.2025	0.4	0.48	0.33	0.31
24.05.2025	0.36	0.44	0.32	0.3
28.05.2025	0.34	0.4	0.31	0.29
31.05.2025	0.33	0.36	0.29	0.28
Max	0.43	0.55	0.36	0.34
Min	0.33	0.36	0.29	0.28
Average	0.38	0.48	0.33	0.31
NAAQ* Standard	4 mg/m3 (for 1hr)			
Methods of Analysis	IS: 5182 (Part- 10)			

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurdha

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/023

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat: 21°59'52.38"N, & Long: :85°13'9.76"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
02.05.2025	56.4	27.8	5.4	10.8
06.05.2025	52.3	25.8	4.8	9.8
09.05.2025	57.1	27.2	5.5	11.2
13.05.2025	59.6	29.6	6.2	11.8
16.05.2025	52.8	26.2	5.2	10.4
20.05.2025	53.4	26.6	4.8	9.8
23.05.2025	55.2	27.2	4.8	9.8
27.05.2025	51.8	25.6	<4.0	<9.0
30.05.2025	50.7	25.1	<4.0	<9.0
Max	59.60	29.60	6.20	11.80
Min	50.70	25.10	4.80	9.80
Average	54.37	26.79	5.24	10.51
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Chief Analyst
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

Bhubaneswar, Odisha
Mr. S.K. Parhi

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
Cuttack, Odisha, India 754001



GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurdha

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/024

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
02.05.2025	54.2	26.8	5.4	10.6
06.05.2025	51.6	25.6	4.8	9.8
09.05.2025	55.8	27.4	5.5	10.8
13.05.2025	58.6	29.1	6.1	11.4
16.05.2025	53.2	26.2	5.2	10.2
20.05.2025	53.8	26.5	4.8	9.8
23.05.2025	54.4	26.8	4.6	9.6
27.05.2025	50.8	25.2	<4.0	<9.0
30.05.2025	50.2	24.8	<4.0	<9.0
Max	58.60	29.10	6.10	11.40
Min	50.20	24.80	4.60	9.60
Average	53.62	26.49	5.20	10.31
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
Bhubaneswar, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
Bhubaneswar, ODISHA
Mr. S.K. Parhi

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
Cuttack, Odisha, India 754001



GREEN FORCE ASSOCIATES PRIVATE LIMITED

Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurdha
Mail Id: greenforceassociates@gmail.com
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Report No- GFAPL/25-26/ESLFG/025

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat:21°59'52.38"N, & Long: :85°13'9.76"E AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m ³)	
	AAQ5	AAQ6
02.05.2025	0.3	0.28
06.05.2025	0.28	0.27
09.05.2025	0.32	0.3
13.05.2025	0.34	0.32
16.05.2025	0.32	0.3
20.05.2025	0.3	0.28
23.05.2025	0.28	0.28
27.05.2025	0.27	0.27
30.05.2025	0.27	0.26
Max	0.34	0.32
Min	0.27	0.26
Average	0.30	0.28
NAAQ* Standard	4 mg/m ³ (for 1hr)	
Methods of Analysis	IS: 5182 (Part- 10)	

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/026

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Fugitive Dust Emission (F)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	F1: Mine Face Area; Lat:21° 57' 38.43"N & Long: 85° 15' 16.19"E; F2: Haul Road; Lat:21° 57' 38.16"N & Long: 85° 15' 14.66"E; F3: Near Crushing Plant; Lat: 21° 57' 46.19"N & Long: 85° 15' 10.74"E; F4: Near Screening Plant; Lat:21° 57' 47.89"N & Long:85° 15' 21.11"E; F5: Ore Storage Area; Lat: 21° 57' 42.37"N & Long:85° 15' 13.06"E; F6: West Dump; Lat:21° 58' 09.97"N & Long:85° 15' 19.33"E;		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result (µg/m³)					
		F1	F2	F3	F4	F5	F6
1	02.05.2025	492.4	473.5	524.8	567.2	518.2	508.5
2	06.05.2025	528.3	498.4	564.2	594.2	554.1	534.2
3	09.05.2025	567.4	534.2	582.4	614.4	538.2	519.6
4	13.05.2025	504.2	486.4	531.4	568.3	514.1	504.2
5	16.05.2025	498.2	467.5	498.6	524.1	468.2	484.2
6	20.05.2025	502.4	490.4	537.5	557.3	494.2	504.6
7	23.05.2025	486.7	472.4	514.2	542.4	476.4	482.4
8	27.05.2025	464.2	460.5	494.6	506.5	458.2	447.2
9	30.05.2025	443.8	438.2	472.5	497.6	437.2	434.1
Max		567.40	534.20	582.40	614.40	554.10	534.20
Min		443.80	438.20	472.50	497.60	437.20	434.10
Average		498.62	480.17	524.47	552.44	495.42	491.00
Fugitive Standard		1200 µg/m³					
Methods of Analysis		IS:5182 (Part-4)					

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arli Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
Cuttack, Odisha, India 754001



GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/027

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Workzone Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Industrial Area
Date of Sampling	14.05.2025	Date of Completion	15.05.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Near Mine Office; Lat:21°58'18.92"N & Long: :85°15'23.08"E	57.8	43.8
2	Near Mine In gate; Lat:21°57'35.245"N & Long: :85°15'12.007"E	69.4	68.6
3	Near Screening Plant-1; Lat:21°58'09.21"N & Long:85°15'33.66"E	68.6	61.8
4	Near Crusher; Lat:21°58'22.32"N,Long:85°15'34.13"E	69.2	61.9
5	Near W.Bridge-1; Lat:21°57'53.99"N,Long:85°15'49.64"E	67.1	59.4
6	Near W.Bridge-2; Lat:21°57'54.26"N,Long:85°15'53.53"E	68.9	60.6
Noise permissible limits as per CPCB Norms in dB(A) Leq			
Category of Area		Day Time	Night Time
Industrial Area		75	70
Commercial Area		65	55
Residential Area		55	45
Sensitive Area/ Silence Zone		50	40

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
Bhubaneswar, Odisha
Miss. Arati Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
Bhubaneswar, Odisha
Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/028

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Residential Area
Date of Sampling	13.05.2025	Date of Completion	14.05.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Village Rengalberha; Lat:21°57'19.11"N, & Long: :85°15'43.28"E	49.8	39.7
2	Village Kalta; Lat:21°58'2.93"N, & Long: :85°13'20.36"E	50.4	39.8
3	Village Jhirapani; Lat:21°59'52.38"N & Long:85°13'9.76"E	49.2	39.6
4	Village Kashira; Lat:21°55'9.95"N & Long:85°15'18.13"E	49.7	39.5

Noise permissible limits as per CPCB Norms in dB(A) Leq

Category of Area	Day Time	Night Time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Sensitive Area/ Silence Zone	50	40

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Bhubaneswar, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

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Bhubaneswar, ODISHA

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Report No- GFAPL/25-26/ESLFG/029

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS-11255
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	13.05.2025	Date of Receiving	14.05.2025
Date of Analysis	14.05.2025	Date of Complete	17.05.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: -85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Temperature	IS-11255 (PART-3) 1985	K	---	457
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	18.23
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	84.6
04	Sulphur dioxide as SO ₂	IS-11255(PART-2) 1985	mg/Nm ³	600	68.2
05	Carbon Monoxide as CO	IS-13270:1992	%	1%	<0.2
06	Carbon Dioxide as CO ₂	IS-13270:1992	%	---	1.6
07	Oxygen as O ₂	IS-13270:1992	%	---	16.6

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BHUBANESWAR, ODISHA

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BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/029

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Date of Sampling	13.05.2025	Date of Receiving	14.05.2025
Date of Analysis	14.05.2025	Date of Complete	17.05.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: -85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Nitrogen Oxide as NOx	IS-11255(PART-7) 1985	mg/Nm ³	300	69.4

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Anu Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Mr. S.K. Parhi

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Baramunda, Bhubaneswar, Dist - Khurda

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Report No- GFAPL/25-26/ESLFG/030

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21.971766, Long: 85.255013; STP2- Inside the ML Area (STP-Outlet); Lat: 21.971749, Long: 85.255002;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	pH	APHA 24th ED 4500- H+B:2023	--	6.5-9.0	7.64	7.08
2.	Total Suspended Solids	APHA 24th ED 2540-D: 2023	mg/l	100	162	14
3.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	--	6.4	<2.0
4.	Biological Oxygen Demand as BOD	IS 3025 (PART 44):1993	mg/l	30	48	4.2
5.	Chemical Oxygen Demand as COD	APHA 24 th ED 5220 B:2023	mg/l	--	112	18

Remarks: The Standard as per CTO is only applicable to the Discharge ie., Outlet

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CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

Miss. Arti Sahoo

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TECHNICAL MANAGER

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Report No- GFAPL/25-26/ESLFG/030

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21.971766, Long: 85.255013; STP2- Inside the ML Area (STP-Outlet); Lat: 21.971749, Long: 85.255002;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	Fecal Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	<1000	<1.8	<1.8

Remarks: The Standard as per CTO is only applicable to the Discharge i.e., Outlet

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory
TECHNICAL MANAGER
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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/031

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	O ₃ ($\mu\text{g}/\text{m}^3$)	NH ₃ ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	21.05.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	21.05.2025	<8.0	<20.0
AAQ-3	Near Rengalberha;	21.05.2025	<8.0	<20.0
AAQ-4	Near Kalta;	21.05.2025	<8.0	<20.0
AAQ-5	Village Jhirapani;	20.05.2025	<8.0	<20.0
AAQ-6	Village Kashira;	20.05.2025	<8.0	<20.0
	NAAQ* Standard		100	400
	Methods of Analysis		IS:5182 (Part-9)	IS:5182 (Part-25)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

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TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

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Report No- GFAPL/25-26/ESLFG/031

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)
AAQ-1	Near Vedanta Office	21.05.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine InGate;	21.05.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Near Rengalberha;	21.05.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Near Kalta;	21.05.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-5	Village Jhirapani;	20.05.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-6	Village Kashira;	20.05.2025	<0.06	<0.6	<0.44	<5	<1
NAAQ* Standard			1	20	6	5	1
Methods of Analysis			IS:5182 (Part-22)	IS:5182 (Part-26)	As per CPCB method followed by AAS	IS:5182 (Part-11)	IS:5182 (Part-12)

Reviewed By

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GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

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Report No- GFAPL/25-26/ESLFG/031

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Free Silica ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	21.05.2025	<2.0
AAQ-2	Near Mine InGate;	21.05.2025	<2.0
AAQ-3	Near Rengalberha;	21.05.2025	<2.0
AAQ-4	Near Kalta;	21.05.2025	<2.0
AAQ-5	Village Jhirapani;	20.05.2025	<2.0
AAQ-6	Village Kashira;	20.05.2025	<2.0
Methods of Analysis			NIOSH Method 7500 by X-Ray Diffraction

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

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Report No- GFAPL/25-26/ESLFG/032

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- <i>Koira, Sundargarh, Odisha.</i>		
Nature of Sampling	Ground Water (GW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	GW1: Within Mine Lease; Lat: 21°58'19.58"N & Long: 85°15'24.19"E GW2: Village Rengalberha; Lat: 21°57'10.45"N & Long: 85°14'55.35"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2
				AL	PL		
1	Colour	IS 3025: (Part 4)- 2021	Hazen	5	15	<5.0	<5.0
2	Turbidity	APHA 24th ED: 2130-B -2023	NTU	1	5	<1	<1
3	pH Value @25°C	APIIA 24th ED 4500- H+B:2023	--	6.5-8.5	NR	6.92	6.84
4	Total Dissolved Solids (TDS)	APHA 24th ED: 2540-C: 2023	mg/l	500	2000	201	170
5	Chloride (as Cl)	APHA 24th Ed 4500- Cl-B:2023	mg/l	250	1000	19	16
6	Total Hardness	APHA 24th ED 2340-C: 2023	mg/l	200	600	133	112
7	Calcium	APHA 24th Ed 3500- Ca-B:2023	mg/l	75	200	34.9	28.9
8	Magnesium	APHA 24th ED 3500-Mg-B: 2023	mg/l	30	100	11.2	9.7
9	Total Alkalinity	APHA 24th ED 2320-B: 2023	mg/l	200	600	121	105
10	Residual Free Chlorine	APHA 24 th ED 4500 CL-B:2023	mg/l	0.2	1.0	<0.2	<0.2
11	Cyanide	APHA 24th ED 4500 CN-F:2023	mg/l	0.05	NR	<0.02	<0.02
12	Hexavalent Chromium	APHA 24th ED 3500-Cr-B: 2023	mg/l	0.05	NR	<0.05	<0.05
13	Total Chromium	APHA 24th ED 3500-Cr-B: 2023	mg/l	0.05	NR	<0.05	<0.05
14	Iron	APHA 24th ED 3500-Fe-B: 2023	mg/l	0.3	NR	0.25	0.23



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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2
				AL	PL		
15	Sulfate	APHA 24th ED 4500-SO ₄ E: 2023	mg/l	200	400	3.8	3.1
16	Fluoride	APHA 24th ED 4500-F-C: 2023	mg/l	1.0	1.5	<0.05	<0.05
18	Boron	APHA 24th ED 4500 B-B:2023	mg/l	0.5	1.0	<0.01	<0.01
18	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	0.1	0.3	<0.05	<0.05
19	Sodium as Na	APHA 24th ED 3500- Na-B	mg/l	--	--	11.6	9.7
20	Potassium as K	APHA 24th ED 3500- K-B	mg/l	--	--	1.1	0.9

REMARKS: NR- Not Relaxable; AL.-Acceptable Limit; PL.- Permissible Limit; al- agreeable;

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIM

BHUBANESWAR, ODISHA

Mr. S.K. Parhi

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(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

Report No- GFAPL/25-26/ESLFG/032

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ground Water (GW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	GW1: Within Mine Lease; Lat: 21°58'19.58"N & Long: 85°15'24.19"E GW2: Village Rengalberha; Lat: 21°57'10.45"N & Long: 85°14'55.35"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2
				AL	PL		
1	Odour	APHA 24th ED: 2150-B -2023	---	Agreeable	Agreeable	U/O	U/O
2	Taste	APHA 24th ED: 2160-B -2023	---	Agreeable	Agreeable	al	al
3	Nitrate	APHA 24th ED 4500-NO3-E : 2023	mg/l	45	NR	1.78	1.72
4	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	NR	<0.001	<0.001
5	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	1.5	<0.03	<0.03
6	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	15	<0.03	<0.03
7	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	NR	<0.01	<0.01
8	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.001	NR	<0.001	<0.001
9	Mercury (as Hg)	APHA 24th ED3500Hg: 2023	mg/l	0.001	NR	<0.001	<0.001
10	Arsenic (as As)	IS: 3025 (Part 37)	mg/l	0.01	0.05	<0.001	<0.001
11	Aluminum (as Al)	APHA 24th ED 3500Al : 2023	mg/l	0.03	0.2	<0.01	<0.01
12	Mineral Oil	APHA 24th ED 5220 B: 2023	mg/l	0.5	NR	ND	ND
13	Anionic Detergents (as MBAS)	APHA 24th ED 5540 C : 2023	mg/l	0.2	1.0	ND	ND



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Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2
				AL	AL		
14	Phenolic Compound (as C ₆ H ₅ OH)	APHA 24th ED 5530 B,D: 2023	mg/l	0.001	0.002	<0.001	<0.001
15	Total Coliforms	APHA 24th ED 9222-H: 2023	MPN/100ml	-	-	<1.8	<1.8

REMARKS: NR- Not Relaxable; AL-Acceptable Limit; PL- Permissible Limit; al- agreeable;

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Anil Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA
Mr. S.K. Puri

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Report No- GFAPL/25-26/ESLFG/033

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ground Water (GW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	GW3: Village Kendudihi; Lat: 21°59'40.63"N & Long: 85°16'07.74"E GW4: Village Kalta; Lat: 21°57'54.83"N & Long: 85°12'49.46"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW3	GW4
				AL	PL		
1	Colour	IS 3025: (Part 4)- 2021	Hazen	5	15	<5.0	<5.0
2	Turbidity	APHA 24th ED: 2130-B -2023	NTU	1	5	<1	<1
3	pH Value @25°C	APHA 24th ED 4500- H+B:2023	--	6.5-8.5	NR	6.92	7.01
4	Total Dissolved Solids(TDS)	APHA 24th ED: 2540-C: 2023	mg/l	500	2000	174	186
5	Chloride (as Cl)	APHA 24th Ed 4500- Cl-B:2023	mg/l	250	1000	17	18
6	Total Hardness	APHA 24th ED 2340-C: 2023	mg/l	200	600	114	121
7	Calcium	APHA 24th Ed 3500- Ca-B:2023	mg/l	75	200	29.7	30.5
8	Magnesium	APHA 24th ED 3500-Mg-B: 2023	mg/l	30	100	9.7	10.9
9	Total Alkalinity	APHA 24th ED 2320-B: 2023	mg/l	200	600	104	111
10	Residual Free Chlorine	APHA 24 th ED 4500 CL-B:2023	mg/l	0.2	1.0	<0.2	<0.2
11	Cyanide	APHA 24th ED 4500 CN-F:2023	mg/l	0.05	NR	<0.02	<0.02
12	Hexavalent Chromium	APHA 24th ED 3500-Cr-B: 2023	mg/l	0.05	NR	<0.05	<0.05
13	Total Chromium	APHA 24th ED 3500-Cr-B: 2023	mg/l	0.05	NR	<0.05	<0.05
14	Iron	APHA 24th ED 3500-Fe-B: 2023	mg/l	0.3	NR	0.26	0.25



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Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW3	GW4
				AL	PL		
15	Sulfate	APHA 24th ED 4500-SO4 E: 2023	mg/l	200	400	3.2	3.4
16	Fluoride	APHA 24th ED 4500-F-C: 2023	mg/l	1.0	1.5	<0.05	<0.05
17	Boron	APHA 24th ED 4500 B-B:2023	mg/l	0.5	1.0	<0.01	<0.01
18	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	0.1	0.3	<0.05	<0.05
19	Sodium as Na	APHA 24th ED 3500- Na-B	mg/l	--	--	10.3	11.1
20	Potassium as K	APHA 24th ED 3500- K-B	mg/l	--	--	0.9	1.1

REMARKS: NR- Not Relaxable; AL-Acceptable Limit; PL- Permissible Limit

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Chief Analyst
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/033

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ground Water (GW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	GW3: Village Kendudihi; Lat: 21°59'40.63"N, Long: 85°16'07.74"E GW4: Village Kalta; Lat: 21°57'54.83"N, Long: 85°12'49.46"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW3	GW4
				AL	PL		
1	Odour	APHA 24th ED: 2150-B -2023	---	Agreeable	Agreeable	U/O	U/O
2	Taste	APHA 24th ED: 2160-B -2023	---	Agreeable	Agreeable	al	al
3	Nitrate	APHA 24th ED 4500-NO ₃ -E : 2023	mg/l	45	NR	1.4	1.44
4	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	NR	<0.001	<0.001
5	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	1.5	<0.03	<0.03
6	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	15	<0.03	<0.03
7	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	NR	<0.01	<0.01
8	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.001	NR	<0.001	<0.001
9	Mercury (as Hg)	APHA 24th ED 3500 Hg: 2023	mg/l	0.001	NR	<0.001	<0.001
10	Arsenic (as As)	IS: 3025 (Part 37)	mg/l	0.01	0.05	<0.001	<0.001
11	Aluminum (as Al)	APHA 24th ED 3500 Al : 2023	mg/l	0.03	0.2	<0.01	<0.01
12	Mineral Oil	APHA 24th ED 5220 B: 2023	mg/l	0.5	NR	ND	ND
13	Anionic Detergents (as MBAS)	APHA 24th ED 5540 C : 2023	mg/l	0.2	1.0	ND	ND



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Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW3	GW4
				AL	AL		
14	Phenolic Compound (as C ₆ H ₅ OH)	APHA 24th ED 5530 B,D: 2023	mg/l	0.001	0.002	<0.001	<0.001
15	Total Coliforms	APHA 24th ED 9222-H: 2023	MPN/100ml	-	-	<1.8	<1.8

REMARKS: NR- Not Relaxable; AL-Acceptable Limit; PL- Permissible Limit; al- agreeable;

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/034

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°58'30.34"N & Long: 85°15'28.12"E SW2: Karo River Downstream(DS); Lat: 21°59'35.14"N & Long: 85°16' 21.42"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	<5.0	<5.0
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	<1.0	<1.0
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.27	7.32
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	221.12	232.55
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	135	142
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	18	20
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.36	0.4
10.	Sulfate (as SO ₄)	APHA 24th ED 4500-SO ₄ D: 2023	mg/l	400	5.3	5.5
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	0.11	0.15
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6	5.9
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	3.4	4.4
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	18	24
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.1	0.12

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

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Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/034

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°58'30.34"N & Long: 85°15'28.12"E SW2: Karo River Downstream(DS); Lat: 21°59'35.14"N & Long: 85°16' 21.42"E		

SL.N o.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	2.24	2.32
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001	<0.001
9.	Total Coliform	APHA 24th ED 9222-II: 2023	MPN/100ml	--	310	370

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Pathi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/035

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59' 42.97"N, Long: 85°18' 13.97"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	<5.0
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	<1.0
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	--	8.5	7.34
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	244.17
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	146
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	22
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.42
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	400	7.9
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	0.21
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	5.8
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	5.6
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	26
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.15

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Mr. S.K. Panigrahi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED

Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

Report No- GFAPL/25-26/ESLFG/035

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59' 42.97"N, Long: 85°18' 13.97"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	2.98
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	---	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	---	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	410

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/036

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	Mines Discharge;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	--	<5.0
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	<1.0
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	5.5-9.0	7.78
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	329.04
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	--	198
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	--	35
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	--	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	--	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	--	0.46
10.	Sulfate (as SO ₄)	APHA 24th ED 4500-SO ₄ D: 2023	mg/l	--	12.8
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	--	0.28
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	10	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	--	5.7
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	--	8.2
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	28
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.27

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Chief Analyst
Miss: Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

Technical Manager
Mr. S.K. Parhi

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(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

Report No- GFAPL/25-26/ESLFG/036

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	Mines Discharge;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	--	5.12
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	--	0.16
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	--	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	--	0.25
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	--	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	--	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	--	470

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
Bhubaneswar, Odisha
Miss. Aru Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurdha



Mail Id: greenforceassociates@gmail.com



Report No- GFAPL/25-26/ESLFG/037

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Soil		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per TNAU Agritech Portal
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Soil and Rock
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	S1: Lease Area S2: Village Rengalberha		

Sl. No.	Parameters	Standard	Unit	S1	S2
1	pH	IS: 2720(Part-26)-1987	%	5.82	5.96
2	Organic Carbon Content	IS: 2720(Part-22)-1972	%	1.14	1.4
3	Water Content (Moisture)	IS: 2720(Part-2)-1973	%	6.3	6.4
4	Specific gravity	IS: 2720(Part-3/Sec1)-1980	Gs	2.69	2.67
5	Sulfate	IS: 2720(Part-27)-1977	mg/Kg	84	114

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/037

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Soil		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per TNAU Agritech Portal
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Soil and Rock
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	S1: Lease Area S2: Village Rengalberha		

Sl. No.	Parameters	Standard	Unit	S1	S2
1.	Colour	GFAPL/SOP/Soil & Rock/01-23	--	Brown	Brown
2.	Electrical conductivity (as EC)	IS:14767: 2000	micro s/cm	211.4	192.4
3.	Soil Texture	GFAPL/SOP/Soil & Rock/02-23	--	Sandy loamy	Sandy Clay loamy
4.	Bulk Density	GFAPL/SOP/Soil & Rock/03-23	gm/cc	1.34	1.26
5.	Calcium (as Ca)	IS: 2720(Part-23)	mg/kg	467	378
6.	Magnesium (as Mg)	GFAPL/SOP/Soil & Rock/04-23	mg/kg	230	182
7.	Nitrogen (as N)	IS:14684: 1999	kg/hect	70	114
8.	Phosphorus (as p)	GFAPL/SOP/Soil & Rock/05-23	kg/hect	28	30
9.	Potassium (as K)	GFAPL/SOP/Soil & Rock/06-23	mg/kg	160	138
10.	Chloride(as Cl)	GFAPL/SOP/Soil & Rock/07-23	mg/kg	142	128
11.	Manganese (as Mn)	GFAPL/SOP/Soil & Rock/08-23	mg/kg	9.2	2.8
12.	Iron (as Fe)	GFAPL/SOP/Soil & Rock/09-23	%	2.94	1.78

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BA, CHIEF ANALYST, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BA, TECHNICAL MANAGER, ODISHA

Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda



Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/038

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Soil		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per TNAU Agritech Portal
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Soil and Rock
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	S3: Village Kendudihi; S4: Village Village Kalta;		

Sl. No.	Parameters	Standard	Unit	S3	S4
1	pH	IS: 2720(Part-26)-1987	%	6.04	6.08
2	Organic Carbon Content	IS: 2720(Part-22)-1972	%	1.48	1.46
3	Water Content (Moisture)	IS: 2720(Part-2)-1973	%	6.4	6.3
4	Specific gravity	IS: 2720(Part-3/Sec1)-1980	Gs	2.66	2.66
5	Sulfate	IS: 2720(Part-27)-1977	mg/Kg	124	120

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Sahoo

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Mr. S.K. Parhi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/038 (An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory) Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Soil		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per TNAU Agritech Portal
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Soil and Rock
Date of Sampling	20.05.2025	Date of Receiving	21.05.2025
Date of Analysis	21.05.2025	Date of Complete	26.05.2025
Sampling Location & Coordinates	S3: Village Kendudihi; S4: Village Village Kalta;		

Sl. No.	Parameters	Standard	Unit	S3	S4
1.	Colour	GFAPL/SOP/Soil & Rock/01-23	--	Brown	Brown
2.	Electrical conductivity (as EC)	IS:14767: 2000	micro s/cm	188.4	190.1
3.	Soil Texture	GFAPL/SOP/Soil & Rock/02-23	--	Sandy Clay loamy	Sandy Clay loamy
4.	Bulk Density	GFAPL/SOP/Soil & Rock/03-23	gm/cc	1.26	1.26
5.	Calcium (as Ca)	IS: 2720(Part-23)	mg/kg	368	372
6.	Magnesium (as Mg)	GFAPL/SOP/Soil & Rock/04-23	mg/kg	178	174
7.	Nitrogen (as N)	IS:14684: 1999	kg/hect	108	112
8.	Phosphorus (as p)	GFAPL/SOP/Soil & Rock/05-23	kg/hect	30	30
9.	Potassium (as K)	GFAPL/SOP/Soil & Rock/06-23	mg/kg	136	140
10.	Chloride(as Cl)	GFAPL/SOP/Soil & Rock/07-23	mg/kg	128	124
11.	Manganese (as Mn)	GFAPL/SOP/Soil & Rock/08-23	mg/kg	2.7	2.9
12.	Iron (as Fe)	GFAPL/SOP/Soil & Rock/09-23	%	1.94	1.88

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
Mr. S.K. Parhi

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**ENVIRONMENT MONITORING REPORT
FOR THE MONTH OF
JUNE- 2025**



NARAYANI

**Client- M/s. Nadidih Iron Ore & Mn Mines
(FEEGRADE),**

M/s ESL Steel Limited,

Address- Koira, Sundargarh, Odisha.



Monitored By - Green Force Associates Pvt. Ltd.

Address- Plot No-1363-3892 ,

Bhaibhab Realcon, Fulnakhara, Cuttack,

Odisha- 754001

NABL Certificate No:- TC-12258

PHOTOGRAPHS OF ENVIRONMENT MONITORING





GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda
Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/039

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQI- Near Vedanta Office; Lat: 21°58'18.92"N & Long: 85°15'23.08"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.06.2025	59.6	29.6	7.4	13.4
06.06.2025	56.4	28.1	7.2	13.2
10.06.2025	52.5	25.2	6.2	12.2
13.06.2025	54.8	26.5	6.6	12.8
17.06.2025	50.4	24.9	6.2	11.8
20.06.2025	52.9	25.6	6.4	12.2
24.06.2025	47.2	23.4	5.8	11.4
27.06.2025	45.2	21.8	5.4	10.6
Max	59.60	29.60	7.40	13.40
Min	45.20	21.80	5.40	10.60
Average	52.38	25.64	6.40	12.20
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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END OF REPORT



GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda



Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/040

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ2- Near Mine In-gate; Lat: 21°57'35.245"N & Long: 85°15'12.007"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.06.2025	66.2	33.5	9.2	14.8
06.06.2025	64.1	32.2	8.8	13.8
10.06.2025	58.2	28.9	8.2	13.2
13.06.2025	59.6	29.6	8.4	13.6
17.06.2025	56.4	28.1	7.8	13.2
20.06.2025	55.3	27.4	7.6	12.8
24.06.2025	50.4	24.6	6.2	12.2
27.06.2025	49.6	24.1	5.8	11.8
Max	66.20	33.50	9.20	14.80
Min	49.60	24.10	5.80	11.80
Average	57.48	28.55	7.75	13.18
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda
Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/041

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ3- Near Rengalberha; Lat: 21°57'19.11"N & Long: 85°15'43.28"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.06.2025	54.6	27.2	5.2	10.4
06.06.2025	52.8	26.2	4.8	9.8
10.06.2025	50.4	24.8	<4.0	<9.0
13.06.2025	48.6	23.7	<4.0	<9.0
17.06.2025	44.5	21.8	<4.0	<9.0
20.06.2025	45.2	22.1	<4.0	<9.0
24.06.2025	40.5	18.4	<4.0	<9.0
27.06.2025	38.2	17.2	<4.0	<9.0
Max	54.60	27.20	5.20	10.40
Min	38.20	17.20	<4.0	<9.0
Average	46.85	22.68	5.00	10.10
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/042

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ4- Near Kalta; Lat: 21°58'2.93"N & Long: 85°13'20.36"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.06.2025	53.8	26.5	<4.0	<9.0
06.06.2025	51.5	25.1	<4.0	<9.0
10.06.2025	49.2	23.8	<4.0	<9.0
13.06.2025	45.4	22.1	<4.0	<9.0
17.06.2025	43.8	21.3	<4.0	<9.0
20.06.2025	40.2	19.1	<4.0	<9.0
24.06.2025	36.8	16.2	<4.0	<9.0
27.06.2025	34.2	15.4	<4.0	<9.0
Max	53.80	26.50	<4.0	<9.0
Min	34.20	15.40	<4.0	<9.0
Average	44.36	21.19	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com
(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

Report No- GFAPL/25-26/ESLFG/043

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat:21°58'18.92"N & Long: 85°15'23.08"E AAQ2- Near Mine In-gate; Lat:21°57'35.245"N & Long: 85°15'12.007"E AAQ3- Near Rengalberha; Lat:21°57'19.11"N & Long: 85°15'43.28"E AAQ4- Near Kalta; Lat:21°58'2.93"N & Long: 85°13'20.36"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
03.06.2025	0.35	0.39	0.3	0.29
06.06.2025	0.34	0.37	0.28	0.27
10.06.2025	0.32	0.35	0.26	0.25
13.06.2025	0.34	0.36	0.25	0.22
17.06.2025	0.32	0.35	0.22	0.2
20.06.2025	0.33	0.34	0.21	0.18
24.06.2025	0.31	0.32	0.19	0.16
27.06.2025	0.3	0.31	0.18	0.15
Max	0.35	0.39	0.30	0.29
Min	0.30	0.31	0.18	0.15
Average	0.33	0.35	0.24	0.22
NAAQ* Standard	4 mg/m3 (for 1hr)			
Methods of Analysis	IS: 5182 (Part- 10)			

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Mr. S.K. Parhi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Report No- GFAPL/25-26/ESLFG/044

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat: 21°59'52.38"N, & Long: :85°13'9.76"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
04.06.2025	53.2	25.6	<4.0	<9.0
07.06.2025	50.4	24.5	<4.0	<9.0
11.06.2025	49.1	23.2	<4.0	<9.0
14.06.2025	46.2	22.5	<4.0	<9.0
18.06.2025	41.8	19.4	<4.0	<9.0
21.06.2025	38.2	18.6	<4.0	<9.0
25.06.2025	36.2	16.4	<4.0	<9.0
28.06.2025	35.2	15.8	<4.0	<9.0
Max	53.20	25.60	<4.0	<9.0
Min	35.20	15.80	<4.0	<9.0
Average	43.79	20.75	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/045

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
02.05.2025	54.2	26.8	5.4	10.6
06.05.2025	51.6	25.6	4.8	9.8
09.05.2025	55.8	27.4	5.5	10.8
13.05.2025	58.6	29.1	6.1	11.4
16.05.2025	53.2	26.2	5.2	10.2
20.05.2025	53.8	26.5	4.8	9.8
23.05.2025	54.4	26.8	4.6	9.6
27.05.2025	50.8	25.2	<4.0	<9.0
30.05.2025	50.2	24.8	<4.0	<9.0
Max	58.60	29.10	6.10	11.40
Min	50.20	24.80	<4.0	<9.0
Average	53.62	26.49	5.20	10.31
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/046

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat:21°59'52.38"N, & Long: :85°13'9.76"E AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m ³)	
	AAQ5	AAQ6
04.06.2025	0.28	0.27
07.06.2025	0.26	0.26
11.06.2025	0.24	0.23
14.06.2025	0.23	0.2
18.06.2025	0.21	0.19
21.06.2025	0.19	0.18
25.06.2025	0.17	0.16
28.06.2025	0.16	0.15
Max	0.28	0.16
Min	0.16	0.15
Average	0.22	0.20
NAAQ* Standard	4 mg/m ³ (for 1hr)	
Methods of Analysis	IS: 5182 (Part- 10)	

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/047

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Fugitive Dust Emission (F)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	F1: Mine Face Area; Lat:21° 57' 38.43"N & Long: 85° 15' 16.19"E; F2: Haul Road; Lat:21° 57' 38.16"N & Long: 85° 15' 14.66"E; F3: Near Crushing Plant; Lat: 21° 57' 46.19"N & Long: 85° 15' 10.74"E; F4: Near Screening Plant; Lat:21° 57' 47.89"N & Long:85° 15' 21.11"E; F5: Ore Storage Area; Lat: 21° 57' 42.37"N & Long:85° 15' 13.06"E; F6: West Dump; Lat:21° 58' 09.97"N & Long:85° 15' 19.33"E;		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result (µg/m³)					
		F1	F2	F3	F4	F5	F6
1	03.06.2025	401.2	386.5	435.6	468.2	404.2	398.6
2	06.06.2025	434.4	418.2	482.5	504.2	418.6	414.2
3	10.06.2025	468.2	449.3	505.2	543.5	434.8	442.5
4	13.06.2025	479.4	464.1	488.9	504.6	397.2	405.3
5	17.06.2025	392.4	376.2	435.6	456.2	354.5	348.5
6	20.06.2025	302.1	294.2	328.2	356.2	253.5	267.2
7	24.06.2025	276.2	256.4	306.4	342.1	231.6	239.4
8	27.06.2025	242.5	230.1	283.5	306.8	216.8	227.6
Max		479.40	464.10	505.20	543.50	434.80	442.50
Min		242.50	230.10	283.50	306.80	216.80	227.60
Average		374.55	359.38	408.24	435.23	338.90	342.91
Fugitive Standard		1200 µg/m³					
Methods of Analysis		IS:5182 (Part-4)					

Reviewed By: **ANALYST**
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Ardi Sahoo

Authorized Signatory: **TECHNICAL MANAGER**
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA
Mr. S.R. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurdha

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/048

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Workzone Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Industrial Area
Date of Sampling	14.06.2025	Date of Completion	15.06.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Near Mine Office; Lat:21°58'18.92"N & Long: :85°15'23.08"E	56.9	43.1
2	Near Mine In gate; Lat:21°57'35.245"N & Long: :85°15'12.007"E	68.4	65.2
3	Near Screening Plant-1; Lat:21°58'09.21"N & Long:85°15'33.66"E	68.8	62.1
4	Near Crusher; Lat:21°58'22.32"N,Long:85°15'34.13"E	69.1	62.2
5	Near W.Bridge-1; Lat21°57'53.99"N,Long:85°15'49.64"E	67.8	60.2
6	Near W.Bridge-2; Lat:21°57'54.26"N,Long:85°15'53.53"E	68.8	61.1
Noise permissible limits as per CPCB Norms in dB(A) Leq			
Category of Area		Day Time	Night Time
Industrial Area		75	70
Commercial Area		65	55
Residential Area		55	45
Sensitive Area/ Silence Zone		50	40

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/049

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koirā, Sundargarh, Odisha.		
Nature of Sampling	Ambient Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Residential Area
Date of Sampling	13.06.2025	Date of Completion	14.06.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Village Rengalberha; Lat:21°57'19.11"N. & Long: :85°15'43.28"E	49.2	39.2
2	Village Kalta; Lat:21°58'2.93"N. & Long: : 85°13'20.36"E	49.6	39.5
3	Village Jhirapani; Lat:21°59'52.38"N & Long:85°13'9.76"E	48.6	39.2
4	Village Kashira; Lat:21°55'9.95"N & Long:85°15'18.13"E	48.8	39.2

Noise permissible limits as per CPCB Norms in dB(A) Leq

Category of Area	Day Time	Night Time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Sensitive Area/ Silence Zone	50	40

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/050

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS-11255
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	13.06.2025	Date of Receiving	14.06.2025
Date of Analysis	14.06.2025	Date of Complete	18.06.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: -85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Temperature	IS-11255 (PART-3) 1985	K	---	453
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	17.9
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	82.1
04	Sulphur dioxide as SO ₂	IS-11255(PART-2) 1985	mg/Nm ³	600	70.4
05	Carbon Monoxide as CO	IS-13270:1992	%	1%	<0.2
06	Carbon Dioxide as CO ₂	IS-13270:1992	%	---	1.4
07	Oxygen as O ₂	IS-13270:1992	%	---	16.4

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BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/050

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Date of Sampling	13.06.2025	Date of Receiving	14.06.2025
Date of Analysis	14.06.2025	Date of Complete	18.06.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: :-85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Nitrogen Oxide as NO _x	IS-11255(PART-7) 1985	mg/Nm ³	300	73.6

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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/051

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	20.06.2025	Date of Receiving	21.06.2025
Date of Analysis	21.06.2025	Date of Complete	26.06.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21.971766, Long: 85.255013; STP2- Inside the ML Area (STP-Outlet); Lat: 21.971749, Long: 85.255002;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	pH	APHA 24 th ED 4500- H+B:2023	--	6.5-9.0	7.58	7.14
2.	Total Suspended Solids	APHA 24 th ED 2540-D: 2023	mg/l	100	194	12
3.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	--	5.8	<2.0
4.	Biological Oxygen Demand as BOD	IS 3025 (PART 44):1993	mg/l	30	40	<2.0
5.	Chemical Oxygen Demand as COD	APHA 24 th ED 5220 B:2023	mg/l	--	80	10

Remarks: The Standard as per CTO is only applicable to the Discharge ie., Outlet

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BHUBANESWAR, ODISHA

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M.P. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/051

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	20.06.2025	Date of Receiving	21.06.2025
Date of Analysis	21.06.2025	Date of Complete	26.06.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21.971766, Long: 85.255013; STP2- Inside the ML Area (STP-Outlet); Lat: 21.971749, Long: 85.255002;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	Fecal Coliform	APHA 24 th ED 9222-H: 2023	MPN/100ml	<1000	<1.8	<1.8

Remarks: The Standard as per CTO is only applicable to the Discharge i.e., Outlet

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/052

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.06.2025	Date of Receiving	21.06.2025
Date of Analysis	21.06.2025	Date of Complete	26.06.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°58'30.34"N & Long: 85°15'28.12"E SW2: Karo River Downstream(DS); Lat: 21°59'35.14"N & Long: 85°16' 21.42"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	50	80
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	6.8	10.2
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.18	7.2
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	170.34	183.42
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	104	112
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	14	15
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.32	0.36
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	400	3.2	3.5
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	<0.05	<0.05
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6.5	6.4
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	<2.0	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	8	10
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	<0.05	<0.05

ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/052

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.06.2025	Date of Receiving	21.06.2025
Date of Analysis	21.06.2025	Date of Complete	26.06.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°58'30.34"N & Long: 85°15'28.12"E SW2: Karo River Downstream(DS); Lat: 21°59'35.14"N & Long: 85°16' 21.42"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	1.42	1.68
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	900	900

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Mr. S.K. Parhi

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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/053

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.06.2025	Date of Receiving	21.06.2025
Date of Analysis	21.06.2025	Date of Complete	26.06.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59' 42.97"N, Long: 85°18' 13.97"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	100
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	11.6
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.24
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	194.00
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	116
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	16
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.38
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	400	5.2
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	<0.05
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6.2
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	14
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	<0.05

Reviewed By
CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
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Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.06.2025	Date of Receiving	21.06.2025
Date of Analysis	21.06.2025	Date of Complete	26.06.2025
Sampling Location & Coordinates	SW3: Topadih: Lat: 21°59' 42.97"N, Long: 85°18' 13.97"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	1.74
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B.D:2023	mg/l	—	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	—	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	900

Reviewed By
CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

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TECHNICAL MANAGER
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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/054

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.06.2025	Date of Receiving	21.06.2025
Date of Analysis	21.06.2025	Date of Complete	26.06.2025
Sampling Location & Coordinates	Mines Discharge;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	--	60
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	74
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	5.5-9.0	7.42
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	235.98
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	--	142
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	--	20
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	--	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	--	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	--	0.4
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	--	10.4
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	--	0.08
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	10	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	--	6.2
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	--	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	20
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.1

Reviewed By

CHEMICAL ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

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GREEN FORCE ASSOCIATES PRIVATE LIMITED

Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com
(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

Report No- GFAPL/25-26/ESLFG/054

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.06.2025	Date of Receiving	21.06.2025
Date of Analysis	21.06.2025	Date of Complete	26.06.2025
Sampling Location & Coordinates	Mines Discharge;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	--	4.18
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B.D:2023	mg/l	--	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	--	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	--	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	--	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	--	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	--	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	--	900

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Bhubaneswar, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA

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GREEN FORCE ASSOCIATES PRIVATE LIMITED



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Baramunda, Bhubaneswar, Dist - Khurdha

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLFG/055

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	O3 (µg/m³)	NH3 (µg/m³)
AAQ-1	Near Vedanta Office;	20.06.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	20.06.2025	<8.0	<20.0
AAQ-3	Near Rengalberha;	20.06.2025	<8.0	<20.0
AAQ-4	Near Kalta;	20.06.2025	<8.0	<20.0
AAQ-5	Village Jhirapani;	21.06.2025	<8.0	<20.0
AAQ-6	Village Kashira;	21.06.2025	<8.0	<20.0
	NAAQ* Standard		100	400
	Methods of Analysis		IS:5182 (Part-9)	IS:5182 (Part-25)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

Chief Analyst
Miss. Arati Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

Technical Manager
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/055

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)
AAQ-1	Near Vedanta Office	20.06.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine InGate;	20.06.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Near Rengalberha;	20.06.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Near Kalta;	20.06.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-5	Village Jhirapani;	21.06.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-6	Village Kashira;	21.06.2025	<0.06	<0.6	<0.44	<5	<1
NAAQ* Standard			1	20	6	5	1
Methods of Analysis			IS:5182 (Part-22)	IS:5182 (Part-26)	As per CPCB method followed by AAS	IS:5182 (Part-11)	IS:5182 (Part-12)

Reviewed By

ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/055

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Free Silica ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	20.06.2025	<2.0
AAQ-2	Near Mine InGate;	20.06.2025	<2.0
AAQ-3	Near Rengalberha;	20.06.2025	<2.0
AAQ-4	Near Kalta;	20.06.2025	<2.0
AAQ-5	Village Jhirapani;	21.06.2025	<2.0
AAQ-6	Village Kashira;	21.06.2025	<2.0
Methods of Analysis			NIOSH Method 7500 by X-Ray Diffraction

Reviewed By

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ ESLFG/056

Issued Date-08.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiru, Sundargarh, Odisha.		
Nature of Sampling	Ground Water Level Monitoring		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per CPCB Guidelines
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	20.06.2025		

Sl. No.	Parameters	Result
1	GWLI- Near Mines Substation; Latitude: 21° 58' 16.66" N & Longitude: 85° 15' 22.35" E	12.4 m

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

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END OF REPORT

**ENVIRONMENT MONITORING REPORT
FOR THE MONTH OF
JULY- 2025**



NARAYANI

**Client- M/s. Nadidih Iron Ore & Mn Mines
(FEEGRADE),**

**M/s ESL Steel Limited,
Address- Koira, Sundargarh, Odisha.**



Monitored By - Green Force Associates Pvt. Ltd.

**Address- Plot No-1363-3892 ,
Bhaibhab Realcon, Fulnakhara, Cuttack,
Odisha- 754001**

NABL Certificate No:- TC-12258

PHOTOGRAPHS OF ENVIRONMENT MONITORING



Report No- GFAPL/25-26/ESLFG/057

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat: 21°58'18.92"N & Long: 85°15'23.08"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.07.2025	45.2	21.8	5	10
07.07.2025	44.6	21.2	4.8	9.8
10.07.2025	47.8	22.5	5.2	10.2
14.07.2025	43.2	20.6	4.8	9.8
17.07.2025	48.5	23.4	5.2	10.4
21.07.2025	45.1	22.6	5	10.2
24.07.2025	43.8	21.8	4.8	9.8
28.07.2025	46.2	22.7	5	10.2
31.07.2025	48.4	23.8	5.2	10.4
Max	48.50	23.80	5.20	10.40
Min	43.20	20.60	4.80	9.80
Average	45.87	22.27	5.00	10.09
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/058

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ2- Near Mine In-gate; Lat:21°57'35.245"N & Long: 85°15'12.007"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.07.2025	51.6	23.8	5.4	11
07.07.2025	50.4	23.2	5	10.4
10.07.2025	54.2	26.4	5.6	11.2
14.07.2025	49.7	23.8	5.2	10.2
17.07.2025	53.6	26.2	5.8	11.4
21.07.2025	52.8	25.2	5.2	10.6
24.07.2025	51.6	24.8	5	10.2
28.07.2025	54.3	26.9	5.4	10.8
31.07.2025	56.7	27.6	5.8	11.2
Max	56.70	27.60	5.80	11.40
Min	49.70	23.20	5.00	10.20
Average	52.77	25.32	5.38	10.78
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
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Report No- GFAPL/25-26/ESLFG/059

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ3- Near Rengalberha; Lat: 21°57'19.11"N & Long: 85°15'43.28"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.07.2025	34.6	15.2	<4.0	<9.0
07.07.2025	33.2	14.2	<4.0	<9.0
10.07.2025	33.8	14.6	<4.0	<9.0
14.07.2025	29.2	13.3	<4.0	<9.0
17.07.2025	32.6	14.6	<4.0	<9.0
21.07.2025	30.5	13.8	<4.0	<9.0
24.07.2025	29.2	13.2	<4.0	<9.0
28.07.2025	31.5	14.4	<4.0	<9.0
31.07.2025	33.6	15.6	<4.0	<9.0
Max	34.60	15.60	<4.0	<9.0
Min	29.20	13.20	<4.0	<9.0
Average	32.02	14.32	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/060

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koirra, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ4- Near Kalta; Lat: 21°58'2.93"N & Long: 85°13'20.36"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.07.2025	33.7	13.8	<4.0	<9.0
07.07.2025	31.2	12.6	<4.0	<9.0
10.07.2025	32.4	12.9	<4.0	<9.0
14.07.2025	28.5	12.8	<4.0	<9.0
17.07.2025	32.1	14.8	<4.0	<9.0
21.07.2025	29.4	13.5	<4.0	<9.0
24.07.2025	27.6	12.4	<4.0	<9.0
28.07.2025	30.8	14.2	<4.0	<9.0
31.07.2025	32.6	14.8	<4.0	<9.0
Max	33.70	14.80	<4.0	<9.0
Min	27.60	12.40	<4.0	<9.0
Average	30.92	13.53	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
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GREEN FORCE

ASSOCIATES PRIVATE LIMITED

An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory

Report No- GFAPL/25-26/ESLFG/061

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat:21°58'18.92"N & Long: 85°15'23.08"E AAQ2- Near Mine In-gate; Lat:21°57'35.245"N & Long: 85°15'12.007"E AAQ3- Near Rengalberha; Lat:21°57'19.11"N & Long: 85°15'43.28"E AAQ4- Near Kalta; Lat:21°58'2.93"N & Long: 85°13'20.36"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
03.07.2025	0.27	0.3	0.16	0.14
07.07.2025	0.26	0.29	0.14	0.12
10.07.2025	0.28	0.31	0.14	0.13
14.07.2025	0.24	0.29	0.12	0.12
17.07.2025	0.26	0.31	0.14	0.13
21.07.2025	0.25	0.29	0.13	0.12
24.07.2025	0.24	0.28	0.12	0.11
28.07.2025	0.26	0.3	0.12	0.13
31.07.2025	0.27	0.31	0.13	0.14
Max	0.28	0.31	0.16	0.14
Min	0.24	0.28	0.12	0.11
Average	0.26	0.30	0.13	0.13
NAAQ* Standard	4 mg/m3 (for 1hr)			
Methods of Analysis	IS: 5182 (Part- 10)			

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/062

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat: 21°59'52.38"N, & Long: :85°13'9.76"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.07.2025	34.2	14.1	<4.0	<9.0
07.07.2025	32.2	13.4	<4.0	<9.0
10.07.2025	33.4	13.6	<4.0	<9.0
14.07.2025	29.4	12.8	<4.0	<9.0
17.07.2025	32.6	13.5	<4.0	<9.0
21.07.2025	30.5	12.9	<4.0	<9.0
24.07.2025	29.1	12.6	<4.0	<9.0
28.07.2025	31.2	13.1	<4.0	<9.0
31.07.2025	33.6	14.4	<4.0	<9.0
Max	34.20	14.40	<4.0	<9.0
Min	29.10	12.60	<4.0	<9.0
Average	31.80	13.38	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

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GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Mr. S. K. P. P. P.

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Report No- GFAPL/25-26/ESLFG/063

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.07.2025	33.7	14.2	<4.0	<9.0
07.07.2025	31.4	12.9	<4.0	<9.0
10.07.2025	32.6	13.2	<4.0	<9.0
14.07.2025	28.2	12.1	<4.0	<9.0
17.07.2025	31.9	13.7	<4.0	<9.0
21.07.2025	28.6	12.6	<4.0	<9.0
24.07.2025	25.4	12.1	<4.0	<9.0
28.07.2025	26.2	12.4	<4.0	<9.0
31.07.2025	29.8	13.2	<4.0	<9.0
Max	33.70	14.20	<4.0	<9.0
Min	25.40	12.10	<4.0	<9.0
Average	29.76	12.93	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

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BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
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Report No- GFAPL/25-26/ESLFG/064

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat:21°59'52.38"N, & Long: :85°13'9.76"E AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)	
	AAQ5	AAQ6
03.07.2025	0.16	0.14
07.07.2025	0.13	0.12
10.07.2025	0.14	0.13
14.07.2025	0.13	0.12
17.07.2025	0.14	0.13
21.07.2025	0.13	0.12
24.07.2025	0.12	0.11
28.07.2025	0.13	0.12
31.07.2025	0.14	0.13
Max	0.16	0.16
Min	0.12	0.11
Average	0.14	0.13
NAAQ* Standard	4 mg/m3 (for 1hr)	
Methods of Analysis	IS: 5182 (Part- 10)	

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/065

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Fugitive Dust Emission (F)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	F1: Mine Face Area; Lat:21° 57' 38.43"N & Long: 85° 15' 16.19"E; F2: Haul Road; Lat:21° 57' 38.16"N & Long: 85° 15' 14.66"E; F3: Near Crushing Plant; Lat: 21° 57' 46.19"N & Long: 85° 15' 10.74"E; F4: Near Screening Plant; Lat:21° 57' 47.89"N & Long:85° 15' 21.11"E; F5: Ore Storage Area; Lat: 21° 57' 42.37"N & Long:85° 15' 13.06"E; F6: West Dump; Lat:21° 58' 09.97"N & Long:85° 15' 19.33"E;		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result (µg/m ³)					
		F1	F2	F3	F4	F5	F6
1	01.07.2025	235.6	226.4	272.4	298.8	242.5	219.6
2	04.07.2025	221.8	219.3	259.6	269.3	216.8	224.5
3	08.07.2025	342.8	294.5	342.2	406.8	294.2	280.4
4	11.07.2025	272.4	264.6	306.4	328.5	253.7	252.4
5	15.07.2025	243.8	220.5	273.8	294.2	246.4	231.6
6	18.07.2025	240.9	258.3	301.2	327.4	237.1	227.5
7	22.07.2025	228.3	237.6	273.8	346.8	231.6	256.4
8	25.07.2025	209.4	227.3	254.1	294.5	312.4	291.4
	29.07.2025	270.5	281.3	337.9	378.1	270.8	281.5
	Max	342.80	294.50	342.20	406.80	312.40	291.40
	Min	209.40	219.30	254.10	269.30	216.80	219.60
	Average	251.72	250.43	291.27	327.16	256.17	251.70
Fugitive Standard		1200 µg/m ³					
Methods of Analysis		IS:5182 (Part-4)					

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Chief Analyst

BHUBANESWAR, ODISHA

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/066

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Workzone Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Industrial Area
Date of Sampling	15.07.2025	Date of Completion	16.07.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Near Mine Office; Lat:21°58'18.92"N & Long: :85°15'23.08"E	57.1	42.8
2	Near Mine In gate; Lat:21°57'35.245"N & Long: :85°15'12.007"E	67.9	62.7
3	Near Screening Plant-1; Lat:21°58'09.21"N & Long:85°15'33.66"E	68.6	62.6
4	Near Crusher; Lat:21°58'22.32"N,Long:85°15'34.13"E	69.4	63.1
5	Near W.Bridge-1; Lat21°57'53.99"N,Long:85°15'49.64"E	67.2	61.1
6	Near W.Bridge-2; Lat:21°57'54.26"N,Long:85°15'53.53"E	67.5	60.7

Noise permissible limits as per CPCB Norms in dB(A) Leq

Category of Area	Day Time	Night Time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Sensitive Area/ Silence Zone	50	40

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/066

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Residential Area
Date of Sampling	21.07.2025	Date of Completion	22.07.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Village Rengalberha; Lat:21°57'19.11"N, & Long: :85°15'43.28"E	48.8	38.9
2	Village Kalta; Lat:21°58'2.93"N, & Long: : 85°13'20.36"E	49.1	39.1
3	Village Jhirapani; Lat:21°59'52.38"N & Long:85°13'9.76"E	48.7	38.8
4	Village Kashira; Lat:21°55'9.95"N & Long:85°15'18.13"E	48.6	38.7

Noise permissible limits as per CPCB Norms in dB(A) Leq

Category of Area	Day Time	Night Time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Sensitive Area/ Silence Zone	50	40

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Mr. S.K. Parhi

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END OF REPORT

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Report No- GFAPL/25-26/ESLFG/067

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS-11255
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	13.07.2025	Date of Receiving	14.07.2025
Date of Analysis	14.07.2025	Date of Complete	18.07.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: :-85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Temperature	IS-11255 (PART-3) 1985	K	---	451
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	18.06
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	78.8
04	Sulphur dioxide as SO ₂	IS-11255(PART-2) 1985	mg/Nm ³	600	66.2
05	Carbon Monoxide as CO	IS-13270:1992	%	1%	<0.2
06	Carbon Dioxide as CO ₂	IS-13270:1992	%	---	1.5
07	Oxygen as O ₂	IS-13270:1992	%	---	16.2

Reviewed By

Authorized Signatory

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Bhubaneswar, ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA

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Report No- GFAPL/25-26/ESLFG/068

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Date of Sampling	13.07.2025	Date of Receiving	14.07.2025
Date of Analysis	14.07.2025	Date of Complete	18.07.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: :-85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Nitrogen Oxide as NOx	IS-11255(PART-7) 1985	mg/Nm3	300	71.5

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/069

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	21.07.2025	Date of Receiving	22.07.2025
Date of Analysis	22.07.2025	Date of Complete	26.07.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21.971766, Long: 85.255013; STP2- Inside the ML Area (STP-Outlet); Lat: 21.971749, Long: 85.255002;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	pH	APHA 24th ED 4500- H+B:2023	--	6.5-9.0	7.52	7.12
2.	Total Suspended Solids	APHA 24th ED 2540-D: 2023	mg/l	100	228	16
3.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	--	4.9	<2.0
4.	Biological Oxygen Demand as BOD	IS 3025 (PART 44):1993	mg/l	30	38	<2.0
5.	Chemical Oxygen Demand as COD	APHA 24 th ED 5220 B:2023	mg/l	--	80	12

Remarks: The Standard as per CTO is only applicable to the Discharge ie., Outlet

Reviewed By

CHIEF ANALYST
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BHUBANESWAR, ODISHA

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BHUBANESWAR, ODISHA
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GREEN FORCE

ASSOCIATES PRIVATE LIMITED

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Report No- GFAPL/25-26/ESLFG/069

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	21.07.2025	Date of Receiving	22.07.2025
Date of Analysis	22.07.2025	Date of Complete	26.07.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21.971766, Long: 85.255013; STP2- Inside the ML Area (STP-Outlet); Lat: 21.971749, Long: 85.255002;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	Fecal Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	<1000	<1.8	<1.8

Remarks: The Standard as per CTO is only applicable to the Discharge ie., Outlet

Reviewed By
CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

Technical Manager
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/070

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.07.2025	Date of Receiving	22.07.2025
Date of Analysis	22.07.2025	Date of Complete	26.07.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°58'30.34"N & Long: 85°15'28.12"E SW2: Karo River Downstream(DS); Lat: 21°59'35.14"N & Long: 85°16' 21.42"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	40	80
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	5.6	12.5
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.18	7.2
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	153.6	163.2
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	96	102
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	11	12
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.28	0.3
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	400	2.8	3.1
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	<0.05	<0.05
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6.5	6.4
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	<2.0	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	6.2	8
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	<0.05	<0.05

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

CHHANNAR, ODISHA

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/070

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.07.2025	Date of Receiving	22.07.2025
Date of Analysis	22.07.2025	Date of Complete	26.07.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°58'30.34"N & Long: 85°15'28.12"E SW2: Karo River Downstream(DS); Lat: 21°59'35.14"N & Long: 85°16' 21.42"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	1.28	1.4
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	—	<0.001	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	—	<0.001	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	—	900	900

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/071

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.07.2025	Date of Receiving	22.07.2025
Date of Analysis	22.07.2025	Date of Complete	26.07.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59' 42.97"N, Long: 85°18' 13.97"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	120
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	---	14.5
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.24
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	---	179.2
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	112
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	15
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.32
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	400	4.8
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	<0.05
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6.3
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	---	12
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	---	<0.05

Reviewed By

Authorized Signatory

GREENFORCE ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

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Report No- GFAPL/25-26/ESLFG/071

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.07.2025	Date of Receiving	22.07.2025
Date of Analysis	22.07.2025	Date of Complete	26.07.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59' 42.97"N, Long: 85°18' 13.97"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	1.5
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	900

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Saboo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.07.2025	Date of Receiving	22.07.2025
Date of Analysis	22.07.2025	Date of Complete	26.07.2025
Sampling Location & Coordinates	Mines Discharge;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	--	80
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	9.8
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	5.5-9.0	7.42
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	220.8
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	--	138
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	--	18
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	--	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	--	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	--	0.36
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	--	8.7
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	--	0.06
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	10	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	--	6.3
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	--	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	16
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.08

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/072

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.07.2025	Date of Receiving	22.07.2025
Date of Analysis	22.07.2025	Date of Complete	26.07.2025
Sampling Location & Coordinates	Mines Discharge;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	--	3.42
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	--	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	--	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	--	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	--	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	--	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	--	900

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/073

Issued Date-05.08.2025

TEST REPORT

Client Name &Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	O3 (µg/m³)	NH3 (µg/m³)
AAQ-1	Near Vedanta Office;	21.07.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	21.07.2025	<8.0	<20.0
AAQ-3	Near Rengalberha;	21.07.2025	<8.0	<20.0
AAQ-4	Near Kalta;	21.07.2025	<8.0	<20.0
AAQ-5	Village Jhirapani;	20.07.2025	<8.0	<20.0
AAQ-6	Village Kashira;	20.07.2025	<8.0	<20.0
NAAQ* Standard			100	400
Methods of Analysis			IS:5182 (Part-9)	IS:5182 (Part-25)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Patra

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Report No- GFAPL/25-26/ESLFG/073

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)
AAQ-1	Near Vedanta Office	21.07.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine InGate;	21.07.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Near Rengalberha;	21.07.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Near Kalta;	21.07.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-5	Village Jhirapani;	20.07.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-6	Village Kashira;	20.07.2025	<0.06	<0.6	<0.44	<5	<1
NAAQ* Standard			1	20	6	5	1
Methods of Analysis			IS:5182 (Part-22)	IS:5182 (Part-26)	As per CPCB method followed by AAS	IS:5182 (Part-11)	IS:5182 (Part-12)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
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Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Free Silica ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	21.07.2025	<2.0
AAQ-2	Near Mine InGate;	21.07.2025	<2.0
AAQ-3	Near Rengalberha;	21.07.2025	<2.0
AAQ-4	Near Kalta;	21.07.2025	<2.0
AAQ-5	Village Jhirapani;	20.07.2025	<2.0
AAQ-6	Village Kashira;	20.07.2025	<2.0
Methods of Analysis			NIOSH Method 7500 by X-Ray Diffraction

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Mr. S.R. Pahal

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END OF REPORT

**ENVIRONMENT MONITORING REPORT
FOR THE MONTH OF
AUGUST- 2025**



NARAYANI

**Client- M/s. Nadidih Iron Ore & Mn Mines
(FEEGRADE),**

M/s ESL Steel Limited,

Address- Koira, Sundargarh, Odisha.



Monitored By - Green Force Associates Pvt. Ltd.

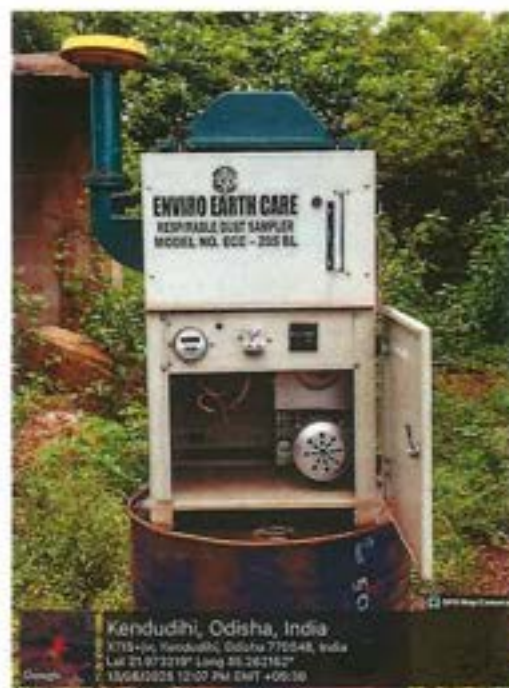
Address- Plot No-1363-3892 ,

Bhaibhab Realcon, Fulnakhara, Cuttack,

Odisha- 754001

NABL Certificate No:- TC-12258

PHOTOGRAPHS OF ENVIRONMENT MONITORING



Report No- GFAPL/25-26/ESLFG/073

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat: 21°58'18.92"N & Long: 85°15'23.08"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
04.08.2025	54.2	27.2	6	12.8
07.08.2025	51.6	25.4	5.4	11
11.08.2025	53.8	26.6	5.8	11.8
14.08.2025	50.4	24.8	5.4	10.6
18.08.2025	48.2	23.2	5	10.2
21.08.2025	44.8	21.2	4.8	9.8
25.08.2025	42.1	20.4	4.6	9.6
28.08.2025	46.4	22.5	4.8	10
Max	54.20	27.20	6.00	12.80
Min	42.10	20.40	4.60	9.60
Average	48.94	23.91	5.23	10.73
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA
Mr. S. K. Patra

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/074

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ2- Near Mine In-gate; Lat: 21°57'28.39"N & Long: 85°15'19.40"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
04.08.2025	64.2	32.3	7.4	14.4
07.08.2025	59.2	29.5	6.4	13.2
11.08.2025	61.6	30.5	6.8	13.8
14.08.2025	58.4	28.9	6.2	12.4
18.08.2025	55.6	27.4	5.8	11.4
21.08.2025	50.2	24.3	5.2	10.4
25.08.2025	47.5	23.1	4.8	10
28.08.2025	49.4	23.8	5	10.2
Max	64.20	32.30	7.40	14.40
Min	47.50	23.10	4.80	10.00
Average	55.76	27.48	5.95	11.98
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/075

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ3- Near Rengalberha; Lat: 21°57'9.84"N & Long: 85°14'55.34"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
04.08.2025	38.5	19.2	<4.0	<9.0
07.08.2025	35.2	17.4	<4.0	<9.0
11.08.2025	37.4	18.2	<4.0	<9.0
14.08.2025	34.8	16.4	<4.0	<9.0
18.08.2025	31.2	15.8	<4.0	<9.0
21.08.2025	28.6	13.4	<4.0	<9.0
25.08.2025	26.2	12.8	<4.0	<9.0
28.08.2025	29.4	14.2	<4.0	<9.0
Max	38.50	19.20	<4.0	<9.0
Min	26.20	12.80	<4.0	<9.0
Average	32.66	15.93	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Mr. S.K. Parida

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/076

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ4- Near Kalta; Lat: 21°57'59.29"N & Long: 85°12'59.68"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
04.08.2025	36.1	17.6	<4.0	<9.0
07.08.2025	33.5	15.8	<4.0	<9.0
11.08.2025	34.7	16.2	<4.0	<9.0
14.08.2025	31.2	15.1	<4.0	<9.0
18.08.2025	29.1	13.8	<4.0	<9.0
21.08.2025	26.9	12.5	<4.0	<9.0
25.08.2025	24.2	11.4	<4.0	<9.0
28.08.2025	25.8	12.2	<4.0	<9.0
Max	36.10	17.60	<4.0	<9.0
Min	24.20	11.40	<4.0	<9.0
Average	30.19	14.33	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR ODISHA
Mr. S.K. Parhi

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END OF REPORT

GREEN FORCE

ASSOCIATES PRIVATE LIMITED

An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory

Report No- GFAPL/25-26/ESLFG/077

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat:21°58'18.92"N & Long: 85°15'23.08"E AAQ2- Near Mine In-gate; Lat:21°57'35.245"N & Long: 85°15'12.007"E AAQ3- Near Rengalberha; Lat: 21°57'9.84"N& Long: 85°14'55.34"E AAQ4- Near Kalta; Lat: 21°57'59.29"N & Long: 85°12'59.68"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
04.08.2025	0.33	0.36	0.19	0.18
07.08.2025	0.31	0.33	0.16	0.16
11.08.2025	0.32	0.34	0.17	0.16
14.08.2025	0.31	0.33	0.16	0.14
18.08.2025	0.28	0.32	0.14	0.13
21.08.2025	0.26	0.3	0.13	0.12
25.08.2025	0.24	0.29	0.12	0.11
28.08.2025	0.26	0.29	0.13	0.12
Max	0.33	0.36	0.19	0.18
Min	0.24	0.29	0.12	0.11
Average	0.29	0.32	0.15	0.14
NAAQ* Standard	4 mg/m3 (for 1hr)			
Methods of Analysis	IS: 5182 (Part- 10)			

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Aru Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Puri

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/078

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat: 21°59'52.38"N, & Long: :85°13'9.76"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
01.08.2025	35.4	17.6	<4.0	<9.0
05.08.2025	38.6	19.3	<4.0	<9.0
08.08.2025	35.2	17.4	<4.0	<9.0
12.08.2025	36.8	17.9	<4.0	<9.0
15.08.2025	33.4	15.8	<4.0	<9.0
19.08.2025	30.6	14.7	<4.0	<9.0
22.08.2025	28.2	13.2	<4.0	<9.0
26.08.2025	24.2	11.4	<4.0	<9.0
29.08.2025	25.3	11.8	<4.0	<9.0
Max	38.60	19.30	<4.0	<9.0
Min	24.20	11.40	<4.0	<9.0
Average	31.97	15.46	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Mr. S.K. Parhi

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/079

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
01.08.2025	36.4	19.8	<4.0	<9.0
05.08.2025	35.6	17.4	<4.0	<9.0
08.08.2025	32.2	15.5	<4.0	<9.0
12.08.2025	33.4	15.9	<4.0	<9.0
15.08.2025	30.6	14.6	<4.0	<9.0
19.08.2025	28.2	13.2	<4.0	<9.0
22.08.2025	26.4	12.6	<4.0	<9.0
26.08.2025	23.2	11.1	<4.0	<9.0
29.08.2025	24.4	11.6	<4.0	<9.0
Max	36.40	19.80	<4.0	<9.0
Min	23.20	11.10	<4.0	<9.0
Average	30.04	14.63	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Samboi

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Technician Manager
Mr. S.K. Parhi

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END OF REPORT

GREEN FORCE ASSOCIATES PRIVATE LIMITED

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Report No- GFAPL/25-26/ESLFG/080

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat:21°59'52.38"N, & Long: :85°13'9.76"E AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)	
	AAQ5	AAQ6
01.08.2025	0.17	0.19
05.08.2025	0.19	0.18
08.08.2025	0.17	0.16
12.08.2025	0.18	0.16
15.08.2025	0.16	0.14
19.08.2025	0.14	0.12
22.08.2025	0.13	0.11
26.08.2025	0.12	0.1
29.08.2025	0.12	0.11
Max	0.19	0.19
Min	0.12	0.10
Average	0.15	0.14
NAAQ* Standard	4 mg/m3 (for 1hr)	
Methods of Analysis	IS: 5182 (Part- 10)	

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/081

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koirra, Sundargarh, Odisha.		
Nature of Sampling	Fugitive Dust Emission (F)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	F1: Mine Face Area; Lat:21° 57' 38.43"N & Long: 85° 15' 16.19"E; F2: Haul Road; Lat:21° 57' 38.16"N & Long: 85° 15' 14.66"E; F3: Near Crushing Plant; Lat: 21° 57' 46.19"N & Long: 85° 15' 10.74"E; F4: Near Screening Plant-1; Lat:21° 57' 47.89"N & Long:85° 15' 21.11"E; F5: Near Weigh Bridge; Lat: 21°57'38.16"N & Long: 85°15'12.96"E; F6: Near Screening Plant-2; Lat: 21°57'45.08"N & Long: 85°15'12.44"E;		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result (µg/m ³)					
		F1	F2	F3	F4	F5	F6
1	02.08.2025	342.5	356.8	438.2	468.2	361.2	352.8
2	06.08.2025	330.4	327.2	401.4	431.2	321.4	331.2
3	09.08.2025	291.4	284.6	346.5	367.9	284.6	278.8
4	13.08.2025	256.7	264.2	297.2	308.5	253.4	251.2
5	16.08.2025	234.2	228.5	273.6	290.4	228.4	219.6
6	20.08.2025	191.6	194.6	243.1	256.4	189.6	194.2
7	23.08.2025	102.5	106.2	184.2	198.3	142.5	156.2
8	27.08.2025	164.5	172.5	242.5	264.5	198.3	205.3
	30.08.2025	213.4	228.3	285.3	302.3	214.3	228.3
	Max	342.50	327.20	438.20	468.20	361.20	352.80
	Min	102.50	106.20	184.20	198.30	142.50	156.20
	Average	236.36	225.76	301.33	320.86	243.74	246.40
Fugitive Standard		1200 µg/m ³					
Methods of Analysis		IS:5182 (Part-4)					

Reviewed By
CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
RUBANESWAR, ODISHA
Miss. Aru Sahoo

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
ANESWAR, ODISHA
Mr. S. K. Parida

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Report No- GFAPL/25-26/ESLFG/082

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Workzone Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Industrial Area
Date of Sampling	15.08.2025	Date of Completion	16.08.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Near Mine Office; Lat:21°58'18.92"N & Long: :85°15'23.08"E	57.2	42.5
2	Near Mine In gate; Lat:21°57'35.245"N & Long: :85°15'12.007"E	68.2	61.9
3	Near Screening Plant-1; Lat: 21°57'42.30"N & Long: 85°15'9.04"E	69.1	62.8
4	Near Crusher; Lat: 21°57'48.19"N,Long: 85°15'20.00"E	69.5	62.8
5	Near Weigh Bridge; Lat: 21°57'38.16"N & Long: 85°15'12.96"E;	67.6	61.5
6	Near Screening Plant-2; Lat: 21°57'45.08"N & Long: 85°15'12.44"E;	67.3	60.6

Noise permissible limits as per CPCB Norms in dB(A) Leq

Category of Area	Day Time	Night Time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Sensitive Area/ Silence Zone	50	40

Reviewed By

Authorized Signatory

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ODISHA
Miss. Arli Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
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Mr. S.K. Das

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Report No- GFAPL/25-26/ESLFG/083

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Residential Area
Date of Sampling	21.08.2025	Date of Completion	22.08.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Village Rengalberha; Lat:21°57'19.11"N, & Long: :85°15'43.28"E	48.5	38.6
2	Village Kalta; Lat:21°58'2.93"N, & Long: : 85°13'20.36"E	48.8	38.7
3	Village Jhirapani; Lat:21°59'52.38"N & Long:85°13'9.76"E	48.1	38.2
4	Village Kashira; Lat:21°55'9.95"N & Long:85°15'18.13"E	48.4	38.3
Noise permissible limits as per CPCB Norms in dB(A) Leq			
Category of Area		Day Time	Night Time
Industrial Area		75	70
Commercial Area		65	55
Residential Area		55	45
Sensitive Area/ Silence Zone		50	40

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Mr. S.K. Parhi

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END OF REPORT

-1--

Report No- GFAPL/25-26/ESLFG/084

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS-11255
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	13.08.2025	Date of Receiving	14.08.2025
Date of Analysis	14.08.2025	Date of Complete	18.08.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: :-85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Temperature	IS-11255 (PART-3) 1985	K	---	449
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	17.82
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	75.8
04	Sulphur dioxide as SO ₂	IS-11255(PART-2) 1985	mg/Nm ³	600	63.6
05	Carbon Monoxide as CO	IS-13270:1992	%	1%	<0.2
06	Carbon Dioxide as CO ₂	IS-13270:1992	%	---	1.4
07	Oxygen as O ₂	IS-13270:1992	%	---	16.4

Reviewed By

CHIEF ANALYST

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BHUBANESHWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

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BHUBANESHWAR, ODISHA

Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/084

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Date of Sampling	13.08.2025	Date of Receiving	14.08.2025
Date of Analysis	14.08.2025	Date of Complete	18.08.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: :-85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Nitrogen Oxide as NOx	IS-11255(PART-7) 1985	mg/Nm3	300	66.2

Reviewed By

Authorized Signatory

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Chief Analyst,
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Miss. Arti Sahoo

TECHNICAL MANAGER
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Technical Manager
Bhubaneswar, Odisha
Mr. R. P. Mishra

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Report No- GFAPL/25-26/ESLFG/085

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21°58'18.36"N, Long: 85°15'18.05"E; STP2- Inside the ML Area (STP-Outlet); Lat: 21°58'18.30"N, Long: 85°15'18.01"E;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	pH	APHA 24th ED 4500- H+B:2023	--	6.5-9.0	7.58	7.15
2.	Total Suspended Solids	APHA 24th ED 2540-D: 2023	mg/l	100	242	18
3.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	--	4.5	<2.0
4.	Biological Oxygen Demand as BOD	IS 3025 (PART 44):1993	mg/l	30	36	<2.0
5.	Chemical Oxygen Demand as COD	APHA 24 th ED 5220 B:2023	mg/l	--	78	14

Remarks: The Standard as per CTO is only applicable to the Discharge ie., Outlet

Reviewed By

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Bhubaneswar, Odisha
Miss. Ardi Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. K. K. Sahoo

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Report No- GFAPL/25-26/ESLFG/085

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21°58'18.36"N, Long: 85°15'18.05"E; STP2- Inside the ML Area (STP-Outlet); Lat: 21°58'18.30"N, Long: 85°15'18.01"E;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	Fecal Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	<1000	<1.8	<1.8

Remarks: The Standard as per CTO is only applicable to the Discharge i.e., Outlet

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
MRS. S. S. S. S.

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/086

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°57'51.50"N & Long: 85°15'1.33"E SW2: Karo River Downstream(DS); Lat: 21°58'37.78"N & Long: 85°16'6.64"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	50	80
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	40	56
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.12	7.16
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	147.2	158.4
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	92	99
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	10	11
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.25	0.28
10.	Sulfate (as SO ₄)	APHA 24th ED 4500-SO ₄ D: 2023	mg/l	400	2.6	2.8
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	<0.05	<0.05
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6.6	6.4
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	<2.0	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	6	8
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	<0.05	<0.05

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED

Miss. Arti Sahoo

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/086

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°57'51.50"N & Long: 85°15'1.33"E SW2: Karo River Downstream(DS); Lat: 21°58'37.78"N & Long: 85°16'6.64"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	1.04	1018
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	—	<0.001	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	—	<0.001	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	570	900

Reviewed By

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Miss. Arti Sahoo

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Technical Manager
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END OF REPORT

Report No- GFAPL/25-26/ESLFG/087

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59'21.57"N, Long: 85°18'15.30"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	120
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	65
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.21
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	176
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	110
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	14
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.3
10.	Sulfate (as SO ₄)	APHA 24th ED 4500-SO ₄ D: 2023	mg/l	400	4.5
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	<0.05
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6.4
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	12
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	<0.05

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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TECHNICAL MANAGER

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BHUBANESWAR, ODISHA
Mr. S.R. PARIJA

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END OF REPORT

GREEN FORCE ASSOCIATES PRIVATE LIMITED

An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory

Report No- GFAPL/25-26/ESLFG/087

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59'21.57"N, Long: 85°18'15.30"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	1.22
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	900

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUANESHWAR, ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUANESHWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/088

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	Mine Discharge Water (Near Sub Station); Lat: 21°57'35.69"N, Long: 85°15'14.09"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	--	70
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	88
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	--	5.5-9.0	7.32
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	211.2
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	--	132
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	--	18
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	--	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	--	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	--	0.34
10.	Sulfate (as SO ₄)	APHA 24th ED 4500-SO ₄ D: 2023	mg/l	--	7.5
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	--	0.08
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	10	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	--	6.4
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	--	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	12
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.08

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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ASSOCIATES PRIVATE LIMITED

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Report No- GFAPL/25-26/ESLFG/088

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	Mine Discharge Water (Near Sub Station); Lat: 21°57'35.69"N, Long: 85°15'14.09"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	--	2.88
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	--	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	--	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	--	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	--	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	--	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	--	900

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arati Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Bhatt

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Report No- GFAPL/25-26/ESLFG/089

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ground Water (GW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	GW1: Within Mine Lease; Lat: 21°58'19.62"N & Long: 85°15'24.14"E GW2: Village Rengalberha; Lat: 21°57'10.45"N & Long: 85°14'55.35"E GW3: Village Kendudihi; Lat: 21°59'40.63"N & Long: 85°16'07.74"E GW4: Village Kalta; Lat: 21°57'54.83"N & Long: 85°12'49.46"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2	GW3	GW4
				AL	PL				
1	Colour	IS 3025: (Part 4)- 2021	Hazen	5	15	<5.0	<5.0	<5.0	<5.0
2	Turbidity	APHA 24th ED: 2130-B - 2023	NTU	1	5	<1	<1	<1	<1
3	pH Value @25°C	APHA 24th ED 4500-H+B:2023	---	6.5-8.5	NR	7.04	7.06	7.12	7.14
4	Total Dissolved Solids (TDS)	APHA 24th ED: 2540-C: 2023	mg/l	500	2000	175	156	160	186
5	Chloride (as Cl)	APHA 24th Ed 4500- Cl-B:2023	mg/l	250	1000	15	14	15	16
6	Total Hardness	APHA 24th ED 2340-C: 2023	mg/l	200	600	118	102	104	174
7	Calcium	APHA 24th Ed 3500- Ca-B:2023	mg/l	75	200	30.5	26.5	26.9	28.9
8	Magnesium	APHA 24th ED 3500-Mg-B: 2023	mg/l	30	100	10.2	8.8	9	10.5
9	Total Alkalinity	APHA 24th ED 2320-B: 2023	mg/l	200	600	108	96	97	105
10	Residual Free Chlorine	APHA 24 th ED 4500 CL-B:2023	mg/l	0.2	1.0	<0.2	<0.2	<0.2	<0.2
11	Cyanide	APHA 24th ED 4500 CN-F:2023	mg/l	0.05	NR	<0.02	<0.02	<0.02	<0.02
12	Hexavalent Chromium	APHA 24th ED 3500-Cr-B: 2023	mg/l	0.05	NR	<0.05	<0.05	<0.05	<0.05
13	Total Chromium	APHA 24th ED 3500-Cr-B: 2023	mg/l	0.05	NR	<0.05	<0.05	<0.05	<0.05
14	Iron	APHA 24th ED 3500-Fe-B: 2023	mg/l	0.3	NR	0.23	0.22	0.24	0.23

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2	GW3	GW4
				AL	PL				
15	Sulfate	APHA 24th ED 4500-SO ₄ E: 2023	mg/l	200	400	3.2	2.8	2.9	3.1
16	Fluoride	APHA 24th ED 4500-F-C: 2023	mg/l	1.0	1.5	<0.05	<0.05	<0.05	<0.05
18	Boron	APHA 24th ED 4500 B-B:2023	mg/l	0.5	1.0	<0.01	<0.01	<0.01	<0.01
18	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	0.1	0.3	<0.05	<0.05	<0.05	<0.05
19	Sodium as Na	APHA 24th ED 3500- Na-B	mg/l	--	--	9	8.2	9	9.5
20	Potassium as K	APHA 24th ED 3500- K-B	mg/l	--	--	0.9	0.7	0.8	0.9

REMARKS: NR- Not Relaxable; AL-Acceptable Limit; PL- Permissible Limit; al- agreeable;

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
 Chief Analyst
 BHUBANESHWAR, ODISHA
 Mrs. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
 Technical Manager
 BHUBANESHWAR, ODISHA
 Mr. S.K. Puri

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GREEN FORCE

ASSOCIATES PRIVATE LIMITED

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Report No- GFAPL/25-26/ESLBI/0889

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ground Water (GW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	GW1: Within Mine Lease; Lat: 21°58'19.62"N & Long: 85°15'24.14"E GW2: Village Rengalberha; Lat: 21°57'10.45"N & Long: 85°14'55.35"E GW3: Village Kendudihi; Lat: 21°59'40.63"N & Long: 85°16'07.74"E GW4: Village Kalta; Lat: 21°57'54.83"N & Long: 85°12'49.46"E		

Sl. No	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2	GW3	GW4
				AL	PL				
1	Odour	APHA 24th ED: 2150-B - 2023	---	Agreeable	Agreeable	U/O	U/O	U/O	U/O
2	Taste	APHA 24th ED: 2160-B - 2023	---	Agreeable	Agreeable	al	al	al	al
3	Nitrate	APHA 24th ED 4500-NO3-E : 2023	mg/l	45	NR	1.54	1.6	1.28	1.3
4	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	NR	<0.001	<0.001	<0.001	<0.001
5	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	1.5	<0.03	<0.03	<0.03	<0.03
6	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	15	<0.03	<0.03	<0.03	<0.03
7	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	NR	<0.01	<0.01	<0.01	<0.01
8	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.001	NR	<0.001	<0.001	<0.001	<0.001
9	Mercury (as Hg)	APHA 24th ED 3500Hg: 2023	mg/l	0.001	NR	<0.001	<0.001	<0.001	<0.001
10	Arsenic (as As)	IS: 3025 (Part 37)	mg/l	0.01	0.05	<0.001	<0.001	<0.001	<0.001
11	Aluminum (as Al)	APHA 24th ED 3500Al : 2023	mg/l	0.03	0.2	<0.01	<0.01	<0.01	<0.01
12	Mineral Oil	APHA 24th ED 5220 B: 2023	mg/l	0.5	NR	ND	ND	ND	ND
13	Anionic Detergents (as MBAS)	APHA 24th ED 5540 C : 2023	mg/l	0.2	1.0	ND	ND	ND	ND

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Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2	GW3	GW4
				AL	AL				
14	Phenolic Compound (as C ₆ H ₅ OH)	APHA 24th ED 5530 B,D: 2023	mg/l	0.001	0.002	<0.001	<0.001	<0.001	<0.001
15	Total Coliforms	APHA 24th ED 9222-H: 2023	MPN/100ml	-	-	<1.8	<1.8	<1.8	<1.8

REMARKS: NR- Not Relaxable; AL-Acceptable Limit; PL- Permissible Limit; al- agreeable;

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/090

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Soil		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per TNAU Agritech Portal
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Soil and Rock
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	S1: Lease Area; Lat: 21°57'42.30"N; & Long: 85°15'9.04"E S2: Village Rengalberha'; Lat: 21°57'9.84"N& Long: 85°14'55.34"E		

Sl. No.	Parameters	Standard	Unit	S1	S2
1	pH	IS: 2720(Part-26)-1987	%	6.14	6.22
2	Organic Carbon Content	IS: 2720(Part-22)-1972	%	1.02	1.44
3	Water Content (Moisture)	IS: 2720(Part-2)-1973	%	8.5	8.4
4	Specific gravity	IS: 2720(Part-3/Sec1)-1980	Gs	2.7	2.66
5	Sulfate	IS: 2720(Part-27)-1977	mg/Kg	72	128

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Mr. S.R. Mishra

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Report No- GFAPL/25-26/ESLFG/090

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Soil		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per TNAU Agritech Portal
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Soil and Rock
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	S1: Lease Area; Lat: 21°57'42.30"N; & Long: 85°15'9.04"E S2: Village Rengalberha'; Lat: 21°57'9.84"N& Long: 85°14'55.34"E		

Sl. No.	Parameters	Standard	Unit	S1	S2
1.	Colour	GFAPL/SOP/Soil & Rock/01-23	---	Brown	Brown
2.	Electrical conductivity (as EC)	IS:14767: 2000	micro s/cm	208.6	191.6
3.	Soil Texture	GFAPL/SOP/Soil & Rock/02-23	---	Sandy loamy	Sandy Clay loamy
4.	Bulk Density	GFAPL/SOP/Soil & Rock/03-23	gm/cc	1.35	1.26
5.	Calcium (as Ca)	IS: 2720(Part-23)	mg/kg	458	372
6.	Magnesium (as Mg)	GFAPL/SOP/Soil & Rock/04-23	mg/kg	224	180
7.	Nitrogen (as N)	IS:14684: 1999	kg/hect	56	98
8.	Phosphorus (as p)	GFAPL/SOP/Soil & Rock/05-23	kg/hect	28	32
9.	Potassium (as K)	GFAPL/SOP/Soil & Rock/06-23	mg/kg	164	134
10.	Chloride(as Cl)	GFAPL/SOP/Soil & Rock/07-23	mg/kg	138	122
11.	Manganese (as Mn)	GFAPL/SOP/Soil & Rock/08-23	mg/kg	9.4	2.6
12.	Iron (as Fe)	GFAPL/SOP/Soil & Rock/09-23	%	2.88	1.8

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/091

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Soil		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per TNAU Agritech Portal
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Soil and Rock
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	S3: Village Kendudihi; Lat: 21°59'40.58"N& Long: 85°16'9.91"E S4: Village Village Kalta; Lat: 21°57'59.29"N& Long: 85°12'59.68"E		

Sl. No.	Parameters	Standard	Unit	S3	S4
1	pH	IS: 2720(Part-26)-1987	%	6.38	6.24
2	Organic Carbon Content	IS: 2720(Part-22)-1972	%	1.5	1.48
3	Water Content (Moisture)	IS: 2720(Part-2)-1973	%	8.3	8.5
4	Specific gravity	IS: 2720(Part-3/Sec1)-1980	Gs	2.66	2.66
5	Sulfate	IS: 2720(Part-27)-1977	mg/Kg	132	124

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Chief Analyst
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

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END OF REPORT

GREEN FORCE

ASSOCIATES PRIVATE LIMITED

An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory

Report No- GFAPL/25-26/ESLFG/091

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Soil		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per TNAU Agritech Portal
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Soil and Rock
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	S3: Village Kendudihi; Lat: 21°59'40.58"N& Long: 85°16'9.91"E S4: Village Village Kalta; Lat: 21°57'59.29"N& Long: 85°12'59.68"E		

Sl. No.	Parameters	Standard	Unit	S3	S4
1.	Colour	GFAPL/SOP/Soil & Rock/01-23	--	Brown	Brown
2.	Electrical conductivity (as EC)	IS:14767: 2000	micro s/cm	189.3	191.4
3.	Soil Texture	GFAPL/SOP/Soil & Rock/02-23	---	Sandy Clay loamy	Sandy Clay loamy
4.	Bulk Density	GFAPL/SOP/Soil & Rock/03-23	gm/cc	1.26	1.26
5.	Calcium (as Ca)	IS: 2720(Part-23)	mg/kg	370	374
6.	Magnesium (as Mg)	GFAPL/SOP/Soil & Rock/04-23	mg/kg	180	182
7.	Nitrogen (as N)	IS:14684: 1999	kg/hect	106	114
8.	Phosphorus (as p)	GFAPL/SOP/Soil & Rock/05-23	kg/hect	34	32
9.	Potassium (as K)	GFAPL/SOP/Soil & Rock/06-23	mg/kg	130	135
10.	Chloride(as Cl)	GFAPL/SOP/Soil & Rock/07-23	mg/kg	121	116
11.	Manganese (as Mn)	GFAPL/SOP/Soil & Rock/08-23	mg/kg	2.5	2.8
12.	Iron (as Fe)	GFAPL/SOP/Soil & Rock/09-23	%	1.82	1.78

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/092

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	O ₃ ($\mu\text{g}/\text{m}^3$)	NH ₃ ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	21.08.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	21.08.2025	<8.0	<20.0
AAQ-3	Near Rengalberha;	21.08.2025	<8.0	<20.0
AAQ-4	Near Kalta;	21.08.2025	<8.0	<20.0
AAQ-5	Village Jhirapani;	21.08.2025	<8.0	<20.0
AAQ-6	Village Kashira;	21.08.2025	<8.0	<20.0
NAAQ* Standard			100	400
Methods of Analysis			IS:5182 (Part-9)	IS:5182 (Part-25)

Reviewed By

Authorized Signatory

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Chief Analyst, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

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GREEN FORCE

ASSOCIATES PRIVATE LIMITED

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Report No- GFAPL/25-26/ESLFG/092

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)
AAQ-1	Near Vedanta Office	21.08.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine InGate;	21.08.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Near Rengalberha;	21.08.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Near Kalta;	21.08.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-5	Village Jhirapani;	21.08.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-6	Village Kashira;	21.08.2025	<0.06	<0.6	<0.44	<5	<1
NAAQ* Standard			1	20	6	5	1
Methods of Analysis			IS:5182 (Part-22)	IS:5182 (Part-26)	As per CPCB method followed by AAS	IS:5182 (Part-11)	IS:5182 (Part-12)

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/092

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Free Silica ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	21.08.2025	<2.0
AAQ-2	Near Mine InGate;	21.08.2025	<2.0
AAQ-3	Near Rengalberha;	21.08.2025	<2.0
AAQ-4	Near Kalta;	21.08.2025	<2.0
AAQ-5	Village Jhirapani;	21.08.2025	<2.0
AAQ-6	Village Kashira;	21.08.2025	<2.0
Methods of Analysis			NIOSH Method 7500 by X-Ray Diffraction

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
P. K. Sahoo

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Report No- GFAPL/25-26/ ESLFG/093

Issued Date-06.09.2025


TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ground Water Level Monitoring		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per CPCB Guidelines
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025		

Sl. No.	Parameters	Result
1	GWL1- Near Mines Substation; Latitude: 21° 58' 16.66" N & Longitude: 85° 15' 22.35" E	11.8 m

Reviewed By

Authorized Signatory


CHIEF ANALYST
 GREENFORCE ASSOCIATES PRIVATE LIMITED
 Miss. Arti Sahoo


TECHNICAL MANAGER
 GREENFORCE ASSOCIATES PRIVATE LIMITED
 BHUBANESWAR, ODISHA
 Mr. S.K. Parhi

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/094

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Surface Water Flow Rate		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per CPCB Guidelines
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025		

Sl. No.	Sampling Location	Coordinates		Result
		Latitude	Longitude	
1	Karo river Upstream	21°57'51.50"N	85°15'1.33"E	3.1 m/sec
2	Karo river Downstream	21°58'37.78"N	85°16'6.64"E	3.6 m/sec

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Miss. Anil Kumar Odisha

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar Odisha
Mr. S.K. Parhi

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/089

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ground Water (GW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	GW1: Bhanjapali Munda Sahil; Lat: 21.917898 & Long: 85.257635 GW2: Feegrade office ; Lat: 21.953047 & Long: 85.24916 GW3: Rengalbeda High School; Lat: 21.953827 & Long: 85.255226 GW4: Rengalbeda Rahadi Hating; Lat: 21.960128 & Long: 85.252218		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2	GW3	GW4
				AL	PL				
1	Colour	IS 3025: (Part 4)- 2021	Hazen	5	15	<5.0	<5.0	<5.0	<5.0
2	Turbidity	APHA 24th ED: 2130-B - 2023	NTU	1	5	<1	<1	<1	<1
3	pH Value @25°C	APHA 24th ED 4500-H+B:2023	--	6.5-8.5	NR	7.09	6.94	7.05	6.96
4	Total Dissolved Solids (TDS)	APHA 24th ED: 2540-C: 2023	mg/l	500	2000	146	126	130	136
5	Chloride (as Cl)	APHA 24th Ed 4500- Cl-B:2023	mg/l	250	1000	10	10	11	11
6	Total Hardness	APHA 24th ED 2340-C: 2023	mg/l	200	600	95	84	86	90
7	Calcium	APHA 24th Ed 3500- Ca-B:2023	mg/l	75	200	23.7	21.2	21.6	22.4
8	Magnesium	APHA 24th ED 3500-Mg-B: 2023	mg/l	30	100	8.8	7.5	7.8	8.3
9	Total Alkalinity	APHA 24th ED 2320-B: 2023	mg/l	200	600	90	79	79	84
10	Residual Free Chlorine	APHA 24 th ED 4500 CL-B:2023	mg/l	0.2	1.0	<0.2	<0.2	<0.2	<0.2
11	Cyanide	APHA 24th ED 4500 CN-F:2023	mg/l	0.05	NR	<0.02	<0.02	<0.02	<0.02
12	Hexavalent Chromium	APHA 24th ED 3500-Cr-B: 2023	mg/l	0.05	NR	<0.05	<0.05	<0.05	<0.05
13	Total Chromium	APHA 24th ED 3500-Cr-B: 2023	mg/l	0.05	NR	<0.05	<0.05	<0.05	<0.05
14	Iron	APHA 24th ED 3500-Fe-B: 2023	mg/l	0.3	NR	0.20	0.20	0.21	0.22

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2	GW3	GW4
				AL	PL				
15	Sulfate	APHA 24th ED 4500-SO4 E: 2023	mg/l	200	400	3.9	2.1	2.2	2.2
16	Fluoride	APHA 24th ED 4500-F-C: 2023	mg/l	1.0	1.5	<0.05	<0.05	<0.05	<0.05
18	Boron	APHA 24th ED 4500 B-B:2023	mg/l	0.5	1.0	<0.01	<0.01	<0.01	<0.01
18	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	0.1	0.3	<0.05	<0.05	<0.05	<0.05
19	Sodium as Na	APHA 24th ED 3500- Na-B	mg/l	--	--	6	6	6.5	6.4
20	Potassium as K	APHA 24th ED 3500- K-B	mg/l	--	--	0.5	0.6	0.5	0.6

REMARKS: NR- Not Relaxable; AL-Acceptable Limit; PL- Permissible Limit; al- agreeable;

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arati Sahoo

Authorized Signatory

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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END OF REPORT

Report No- GFAPL/25-26/ESLBI/0889

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ground Water (GW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	GW1: Bhanjapali Munda Sahi; Lat: 21.917898 & Long: 85.257635 GW2: Feegrade office ; Lat: 21.953047 & Long: 85.24916 GW3: Rengalbeda High School; Lat: 21.953827 & Long: 85.255226 GW4: Rengalbeda Rahadi Hating; Lat: 21.960128 & Long: 85.252218		

Sl. No	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2	GW3	GW4
				AL	PL				
1	Odour	APHA 24th ED: 2150-B - 2023	---	Agreeable	Agreeable	U/O	U/O	U/O	U/O
2	Taste	APHA 24th ED: 2160-B - 2023	---	Agreeable	Agreeable	al	al	al	al
3	Nitrate	APHA 24th ED 4500-NO3-E : 2023	mg/l	45	NR	2.42	1.35	1.46	1.32
4	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	NR	<0.001	<0.001	<0.001	<0.001
5	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	1.5	<0.03	<0.03	<0.03	<0.03
6	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	15	<0.03	<0.03	<0.03	<0.03
7	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	NR	<0.01	<0.01	<0.01	<0.01
8	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.001	NR	<0.001	<0.001	<0.001	<0.001
9	Mercury (as Hg)	APHA 24th ED 3500 Hg: 2023	mg/l	0.001	NR	<0.001	<0.001	<0.001	<0.001
10	Arsenic (as As)	IS: 3025 (Part 37)	mg/l	0.01	0.05	<0.001	<0.001	<0.001	<0.001
11	Aluminum (as Al)	APHA 24th ED 3500 Al : 2023	mg/l	0.03	0.2	<0.01	<0.01	<0.01	<0.01
12	Mineral Oil	APHA 24th ED 5220 B: 2023	mg/l	0.5	NR	ND	ND	ND	ND
13	Anionic Detergents (as MBAS)	APHA 24th ED 5540 C : 2023	mg/l	0.2	1.0	ND	ND	ND	ND

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Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2	GW3	GW4
				AL	AL				
14	Phenolic Compound (as C ₆ H ₅ OH)	APHA 24th ED 5530 B,D: 2023	mg/l	0.001	0.002	<0.001	<0.001	<0.001	<0.001
15	Total Coliforms	APHA 24th ED 9222-H: 2023	MPN/100ml	-	-	<1.8	<1.8	<1.8	<1.8

REMARKS: NR- Not Relaxable; AL-Acceptable Limit; PL- Permissible Limit; al- agreeable;

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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END OF REPORT

**ENVIRONMENT MONITORING REPORT
FOR THE MONTH OF
SEPTEMBER- 2025**



NARAYANI

**Client- M/s. Nadidih Iron Ore & Mn Mines
(FEEGRADE),**

M/s ESL Steel Limited,

Address- Koira, Sundargarh, Odisha.



Monitored By - Green Force Associates Pvt. Ltd.

Address- Plot No-1363-3892 ,

Bhaibhab Realcon, Fulnakhara, Cuttack,

Odisha- 754001

NABL Certificate No:- TC-12258

PHOTOGRAPHS OF ENVIRONMENT MONITORING



Report No- GFAPL/25-26/ESLFG/095

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat: 21°58'18.92"N & Long: 85°15'23.08"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
01.09.2025	49.8	24.6	5.2	10.6
04.09.2025	47.2	23.5	5	10.2
08.09.2025	46.5	23.1	4.6	9.8
11.09.2025	49.4	24.4	5.2	10.4
15.09.2025	48.2	23.7	5	10.2
18.09.2025	51.5	25.8	5.4	10.6
22.09.2025	53.6	26.2	5.6	11.2
25.09.2025	48.6	23.8	4.8	10
29.09.2025	44.5	21.8	4.6	9.6
Max	53.60	26.20	5.60	11.20
Min	44.50	21.80	4.60	9.60
Average	48.81	24.10	5.04	10.29
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By
CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/096

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ2- Near Mine In-gate; Lat: 21°57'28.39"N & Long: 85°15'19.40"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
01.09.2025	55.2	27.7	5.8	11.4
04.09.2025	51.6	25.8	5.6	11
08.09.2025	50.4	25.1	5.4	10.8
11.09.2025	54.8	27.2	5.8	11.4
15.09.2025	53.5	26.6	5.6	11.2
18.09.2025	57.6	28.6	6.2	11.8
22.09.2025	59.8	29.7	6.6	12.2
25.09.2025	52.4	26.1	5.4	10.8
29.09.2025	49.5	24.5	5.2	10.4
Max	59.80	29.70	6.60	12.20
Min	49.50	24.50	5.20	10.40
Average	53.87	26.81	5.73	11.22
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Chief Analyst
Miss. Arti Sahoo

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/097

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ3- Near Rengalberha; Lat: 21°57'9.84"N & Long: 85°14'55.34"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
01.09.2025	32.5	15.8	<4.0	<9.0
04.09.2025	28.2	13.7	<4.0	<9.0
08.09.2025	26.8	13.1	<4.0	<9.0
11.09.2025	30.4	15.1	<4.0	<9.0
15.09.2025	27.6	13.4	<4.0	<9.0
18.09.2025	31.5	15.5	<4.0	<9.0
22.09.2025	33.2	16.1	<4.0	<9.0
25.09.2025	26.8	12.8	<4.0	<9.0
29.09.2025	25.4	12.2	<4.0	<9.0
Max	33.20	16.10	<4.0	<9.0
Min	25.40	12.20	<4.0	<9.0
Average	29.16	14.19	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By
CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Chief Analyst
Miss. Arti Sahoo

Authorized Signatory
TECHNICAL MANAGER
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BHUBANESWAR, ODISHA
Technical Manager
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/098

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ4- Near Kalta; Lat: 21°57'59.29"N & Long: 85°12'59.68"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
01.09.2025	28.5	13.8	<4.0	<9.0
04.09.2025	26.4	13.1	<4.0	<9.0
08.09.2025	25.7	12.4	<4.0	<9.0
11.09.2025	28.6	13.6	<4.0	<9.0
15.09.2025	26.4	12.8	<4.0	<9.0
18.09.2025	29.2	14.1	<4.0	<9.0
22.09.2025	30.5	14.6	<4.0	<9.0
25.09.2025	25.8	12.5	<4.0	<9.0
29.09.2025	24.1	11.6	<4.0	<9.0
Max	30.50	14.60	<4.0	<9.0
Min	24.10	11.60	<4.0	<9.0
Average	27.24	13.17	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Chief Analyst

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Technical Manager
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/099

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ1- Near Vedanta Office; Lat:21°58'18.92"N & Long: 85°15'23.08"E AAQ2- Near Mine In-gate; Lat:21°57'35.245"N & Long: 85°15'12.007"E AAQ3- Near Rengalberha; Lat: 21°57'9.84"N& Long: 85°14'55.34"E AAQ4- Near Kalta; Lat: 21°57'59.29"N & Long: 85°12'59.68"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
01.09.2025	0.29	0.31	0.15	0.13
04.09.2025	0.28	0.3	0.14	0.12
08.09.2025	0.27	0.3	0.13	0.11
11.09.2025	0.28	0.31	0.14	0.13
15.09.2025	0.27	0.31	0.14	0.12
18.09.2025	0.28	0.32	0.15	0.14
22.09.2025	0.3	0.33	0.16	0.14
25.09.2025	0.27	0.31	0.14	0.13
29.09.2025	0.26	0.3	0.13	0.12
Max	0.30	0.33	0.16	0.14
Min	0.26	0.30	0.13	0.11
Average	0.28	0.31	0.14	0.13
NAAQ* Standard	4 mg/m3 (for 1hr)			
Methods of Analysis	IS: 5182 (Part- 10)			

Reviewed By

CHIEF ANALYST
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BHUBANESWAR, ODISHA
Miss. Arti Sambo

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/100


Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat: 21°59'52.38"N, & Long: 85°13'9.76"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.09.2025	29.8	14.7	<4.0	<9.0
06.09.2025	27.6	13.5	<4.0	<9.0
10.09.2025	25.2	12.2	<4.0	<9.0
14.09.2025	29.4	14.6	<4.0	<9.0
17.09.2025	28.1	13.7	<4.0	<9.0
20.09.2025	30.6	14.8	<4.0	<9.0
24.09.2025	28.8	13.8	<4.0	<9.0
27.09.2025	25.8	12.5	<4.0	<9.0
Max	30.60	14.80	<4.0	<9.0
Min	25.20	12.20	<4.0	<9.0
Average	28.16	13.73	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By


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Bhubaneswar, Odisha

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TECHNICAL MANAGER
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Bhubaneswar, Odisha
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Report No- GFAPL/25-26/ESLFG/101

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koirra, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: 85°15'18.13"E		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO ₂ (µg/m ³)
03.09.2025	27.6	13.2	<4.0	<9.0
06.09.2025	25.2	12.2	<4.0	<9.0
10.09.2025	23.7	11.6	<4.0	<9.0
14.09.2025	28.4	13.8	<4.0	<9.0
17.09.2025	26.5	12.6	<4.0	<9.0
20.09.2025	29.1	14.4	<4.0	<9.0
24.09.2025	27.2	13.4	<4.0	<9.0
27.09.2025	25.4	12.1	<4.0	<9.0
Max	29.10	14.40	<4.0	<9.0
Min	23.70	11.60	<4.0	<9.0
Average	26.64	12.91	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-2)	IS:5182 (Part-6)

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Technical Manager
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/102

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	AAQ5- Village Jhirapani; Lat:21°59'52.38"N, & Long: :85°13'9.76"E AAQ6- Village Kashira; Lat:21°55'9.95"N, & Long: :85°15'18.13"E		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)	
	AAQ5	AAQ6
03.09.2025	0.14	0.13
06.09.2025	0.13	0.12
10.09.2025	0.12	0.11
14.09.2025	0.14	0.13
17.09.2025	0.14	0.12
20.09.2025	0.15	0.13
24.09.2025	0.14	0.13
27.09.2025	0.12	0.12
Max	0.15	0.16
Min	0.12	0.11
Average	0.14	0.13
NAAQ* Standard	4 mg/m3 (for 1hr)	
Methods of Analysis	IS: 5182 (Part- 10)	

Reviewed By


CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
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Mr. S.K. Parhi

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/103

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Fugitive Dust Emission (F)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Sampling Location & Coordinates	F1: Mine Face Area; Lat:21° 57' 38.43"N & Long: 85° 15' 16.19"E; F2: Haul Road; Lat:21° 57' 38.16"N & Long: 85° 15' 14.66"E; F3: Near Crushing Plant; Lat: 21° 57' 46.19"N & Long: 85° 15' 10.74"E; F4: Near Screening Plant-1; Lat:21° 57' 47.89"N & Long:85° 15' 21.11"E; F5: Near Weigh Bridge; Lat: 21°57'38.16"N & Long: 85°15'12.96"E; F6: Near Screening Plant-2; Lat: 21°57'45.08"N & Long: 85°15'12.44"E;		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result (µg/m³)					
		F1	F2	F3	F4	F5	F6
1	02.09.2025	242.5	219.6	305.6	348.2	234.5	258.2
2	05.09.2025	284.6	270.5	368.2	401.5	269.8	290.4
3	09.09.2025	325.2	286.9	442.5	484.5	297.5	324.2
4	12.09.2025	298.6	264.8	384.5	443.8	280.4	301.6
5	16.09.2025	356.8	319.6	414.2	497.2	309.6	358.9
6	19.09.2025	468.2	324.8	504.2	568.2	357.2	401.2
7	23.09.2025	424.5	306.5	486.9	524.1	314.1	364.1
8	26.09.2025	258.5	243.9	312.5	356.8	250.5	284.6
9	30.09.2025	246.9	231.5	289.6	312.5	228.6	242.5
Max		468.20	324.80	504.20	568.20	357.20	401.20
Min		242.50	231.50	289.60	312.50	228.60	242.50
Average		322.87	281.06	389.80	437.42	282.47	313.97
Fugitive Standard		1200 µg/m³					
Methods of Analysis		IS:5182 (Part-4)					

Reviewed By
CHIEF ANALYST
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BHUBANESWAR, ODISHA
Miss. Ardi Sahoo

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BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/104

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Workzone Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Industrial Area
Date of Sampling	12.09.2025	Date of Completion	13.09.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Near Mine Office; Lat:21°58'18.92"N & Long: :85°15'23.08"E	57.5	41.4
2	Near Mine In gate; Lat:21°57'35.245"N & Long: :85°15'12.007"E	68.2	60.8
3	Near Screening Plant-1; Lat: 21°57'42.30"N & Long: 85°15'9.04"E	68.4	61.9
4	Near Crusher; Lat: 21°57'48.19"N,Long: 85°15'20.00"E	68.6	61.8
5	Near Weigh Bridge; Lat: 21°57'38.16"N & Long: 85°15'12.96"E;	65.4	60.2
6	Near Screening Plant-2; Lat: 21°57'45.08"N & Long: 85°15'12.44"E;	66.1	60.4

Noise permissible limits as per CPCB Norms in dB(A) Leq

Category of Area	Day Time	Night Time
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Sensitive Area/ Silence Zone	50	40

Reviewed By

CHIEF ANALYST

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BHUBANESWAR, ODISHA

Miss. Arti Sahoo

TECHNICAL MANAGER

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Report No- GFAPL/25-26/ESLFG/105

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Noise Monitoring		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Site Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Environmental Condition	Good	Time Integration	1 second
Time Weighing	Fast	Frequency Weighing	A- Weighing
Sampling Duration	24 hrs	Area categorization	Residential Area
Date of Sampling	23.09.2025	Date of Completion	24.09.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Village Rengalberha; Lat:21°57'19.11"N, & Long: :85°15'43.28"E	47.8	37.7
2	Village Kalta; Lat:21°58'2.93"N, & Long: : 85°13'20.36"E	47.7	37.6
3	Village Jhirapani; Lat:21°59'52.38"N & Long:85°13'9.76"E	47.5	37.5
4	Village Kashira; Lat:21°55'9.95"N & Long:85°15'18.13"E	47.9	37.7
Noise permissible limits as per CPCB Norms in dB(A) Leq			
Category of Area		Day Time	Night Time
Industrial Area		75	70
Commercial Area		65	55
Residential Area		55	45
Sensitive Area/ Silence Zone		50	40

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Ardi Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Technical Manager
Mr. S.K. Parhi

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-1-

Report No- GFAPL/25-26/ESLFG/106

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS-11255
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	12.09.2025	Date of Receiving	13.09.2025
Date of Analysis	13.09.2025	Date of Complete	17.09.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & Long: -85°15'15.59"E;		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Temperature	IS-11255 (PART-3) 1985	K	---	444
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	17.8
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	73.1
04	Sulphur dioxide as SO ₂	IS-11255(PART-2) 1985	mg/Nm ³	600	62.4
05	Carbon Monoxide as CO	IS-13270:1992	%	1%	<0.2
06	Carbon Dioxide as CO ₂	IS-13270:1992	%	---	1.2
07	Oxygen as O ₂	IS-13270:1992	%	---	16.8

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Miss. Arti Sahoo

Technical Manager

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Technical Manager

Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/107

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Stack Monitoring (ST)		
Sampling By	GFAPL's Representative		
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Date of Sampling	12.09.2025	Date of Receiving	13.09.2025
Date of Analysis	13.09.2025	Date of Complete	17.09.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°57'37.63"N & & Long: :-85°15'15.59"E:		
Instrument Used	Stack monitoring Kit; Vacuum Pump; Pyrometer		

Sl. No	Items	Testing Method	Unit	As per CPCB Standard	Result
01	Nitrogen Oxide as NOx	IS-11255(PART-7) 1985	mg/Nm3	300	64.1

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BHUBANESWAR, ODISHA
Technical Manager
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/108

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21°58'18.36"N, Long: 85°15'18.05"E; STP2- Inside the ML Area (STP-Outlet); Lat: 21°58'18.30"N, Long: 85°15'18.01"E:		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	pH	APHA 24th ED 4500- H+B:2023	--	6.5-9.0	7.72	7.21
2.	Total Suspended Solids	APHA 24th ED 2540-D: 2023	mg/l	100	214	20
3.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	--	4.2	<2.0
4.	Biological Oxygen Demand as BOD	IS 3025 (PART 44):1993	mg/l	30	32	<2.0
5.	Chemical Oxygen Demand as COD	APHA 24 th ED 5220 B:2023	mg/l	--	72	12

Remarks: The Standard as per CTO is only applicable to the Discharge ie., Outlet

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Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/109

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	STP Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Environment & Pollution
Date of Sampling	21.08.2025	Date of Receiving	22.08.2025
Date of Analysis	22.08.2025	Date of Complete	26.08.2025
Sampling Location & Coordinates	STP1- Inside the ML Area (STP-Inlet); Lat: 21°58'18.36"N, Long: 85°15'18.05"E; STP2- Inside the ML Area (STP-Outlet); Lat: 21°58'18.30"N, Long: 85°15'18.01"E;		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	STP1	STP2
1.	Fecal Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	<1000	<1.8	<1.8

Remarks: The Standard as per CTO is only applicable to the Discharge ie., Outlet

Reviewed By

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Bhubaneswar, Odisha
Miss. Arti Sahoo

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GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/110

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	23.09.2025	Date of Receiving	24.09.2025
Date of Analysis	24.09.2025	Date of Complete	29.09.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°57'51.50"N & Long: 85°15'1.33"E SW2: Karo River Downstream(DS); Lat: 21°58'37.78"N & Long: 85°16'6.64"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	80	110
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	60	76
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.15	7.19
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	150.4	161.6
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	94	101
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	10	12
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.26	0.3
10.	Sulfate (as SO ₄)	APHA 24th ED 4500-SO ₄ D: 2023	mg/l	400	2.8	3.1
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	<0.05	<0.05
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6.6	6.5
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	<2.0	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	6	8
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	<0.05	<0.05

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Miss. Arti Sahoo

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TECHNICAL MANAGER
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BHUBANESWAR, ODISHA

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Report No- GFAPL/25-26/ESLFG/110

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	23.09.2025	Date of Receiving	24.09.2025
Date of Analysis	24.09.2025	Date of Complete	29.09.2025
Sampling Location & Coordinates	SW1: Karo River Upstream(US); Lat: 21°57'51.50"N & Long: 85°15'1.33"E SW2: Karo River Downstream(DS); Lat: 21°58'37.78"N & Long: 85°16'6.64"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW1	SW2
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	1.08	1.24
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	900	900

Reviewed By

[Signature]
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GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/111

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	23.09.2025	Date of Receiving	24.09.2025
Date of Analysis	24.09.2025	Date of Complete	29.09.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59'21.57"N, Long: 85°18'15.30"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	300	120
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	--	80
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	8.5	7.24
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	179.2
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	1500	112
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	600	15
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	0.05	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	0.05	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	50	0.32
10.	Sulfate (as SO ₄)	APHA 24th ED 4500-SO ₄ D: 2023	mg/l	400	4.8
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	1.5	<0.05
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	0.1	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	4	6.5
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	3.0	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	10
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	<0.05

Reviewed By
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BHUBANESWAR, ODISHA
Miss. Arti Sahoo

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BHUBANESWAR, ODISHA
Mr. S.K. Panda

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Report No- GFAPL/25-26/ESLFG/111

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Surface Water (SW)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	23.09.2025	Date of Receiving	24.09.2025
Date of Analysis	24.09.2025	Date of Complete	29.09.2025
Sampling Location & Coordinates	SW3: Topadih; Lat: 21°59'21.57"N, Long: 85°18'15.30"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS-2296 Class-C	SW3
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	50	1.3
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	---	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	0.05	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	0.01	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	5	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	---	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	0.005	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	0.003	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	---	900

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Report No- GFAPL/25-26/ESLFG/112

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	23.09.2025	Date of Receiving	24.09.2025
Date of Analysis	24.09.2025	Date of Complete	29.09.2025
Sampling Location & Coordinates	Mine Discharge Water (Near Sub Station); Lat: 21°57'35.69"N, Long: 85°15'14.09"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	--	80
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	92
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	5.5-9.0	7.32
4.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	220.8
5.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	--	138
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	--	17
7.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	--	<0.02
8.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	--	<0.05
9.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	--	0.36
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	--	7.8
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	--	0.06
12.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	10	<2.0
13.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	--	6.5
14.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	--	<2.0
15.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	12
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.06

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Mr. S.K. Panda

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END OF REPORT

GREEN FORCE

ASSOCIATES PRIVATE LIMITED

An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory

Report No- GFAPL/25-26/ESLFG/112

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Mines Discharge Water		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per APHA 24 th ED 1060 B: 2023
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	23.09.2025	Date of Receiving	24.09.2025
Date of Analysis	24.09.2025	Date of Complete	29.09.2025
Sampling Location & Coordinates	Mine Discharge Water (Near Sub Station); Lat: 21°57'35.69"N, Long: 85°15'14.09"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Nitrate (as NO ₃)	APHA 24th ED 4500-NO ₃ -E: 2023	mg/l	--	2.64
2.	Phenolic Compounds as C ₆ H ₅ OH	APHA 24th ED 5530 B,D:2023	mg/l	--	<0.001
3.	Copper (as Cu)	IS: 3025(Part 42)	mg/l	--	<0.03
4.	Lead (as Pb)	APHA 24th ED 3500 Pb: 2023	mg/l	--	<0.01
5.	Zinc (as Zn)	APHA 24th ED 3500 Zn: 2023	mg/l	--	<0.03
6.	Arsenic as As	IS: 3025 (Part 37)	mg/l	--	<0.001
7.	Selenium (as Se)	APHA 24th ED 3500 B: 2023	mg/l	--	<0.001
8.	Cadmium (as Cd)	IS: 3025(Part 41)	mg/l	--	<0.001
9.	Total Coliform	APHA 24th ED 9222-H: 2023	MPN/100ml	--	900

Reviewed By

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Mr. S.K. Parida

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Report No- GFAPL/25-26/ ESLFG/113

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ground Water Level Monitoring		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per CPCB Guidelines
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	23.09.2025		

Sl. No.	Parameters	Result
1	GWL1- Near Mines Substation; Latitude: 21° 58' 16.66" N & Longitude: 85° 15' 22.35" E	10.5 m

Reviewed By

[Signature]
ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Mr. S.K. PANDA

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/114

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koirra, Sundargarh, Odisha.		
Nature of Sampling	Surface Water Flow Rate		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per CPCB Guidelines
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Water
Date of Sampling	23.09.2025		

Sl. No.	Sampling Location	Coordinates		Result
		Latitude	Longitude	
1	Karo river Upstream	21°57'51.50"N	85°15'1.33"E	3.22 m/sec
2	Karo river Downstream	21°58'37.78"N	85°16'6.64"E	3.63 m/sec

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESHWAR, ODISHA
Mr. S.K. Parhi

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END OF REPORT

Report No- GFAPL/25-26/ESLFG/115

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	O ₃ ($\mu\text{g}/\text{m}^3$)	NH ₃ ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	23.09.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	23.09.2025	<8.0	<20.0
AAQ-3	Near Rengalberha;	23.09.2025	<8.0	<20.0
AAQ-4	Near Kalta;	23.09.2025	<8.0	<20.0
AAQ-5	Village Jhirapani;	20.09.2025	<8.0	<20.0
AAQ-6	Village Kashira;	20.09.2025	<8.0	<20.0
NAAQ* Standard			100	400
Methods of Analysis			IS:5182 (Part-9)	IS:5182 (Part-25)

Reviewed By

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, ODISHA
Mr. S.K. Patra

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GREEN FORCE

ASSOCIATES PRIVATE LIMITED

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Report No- GFAPL/25-26/ESLFG/115

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koiria, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Pb ($\mu\text{g}/\text{m}^3$)	Ni (ng/m^3)	As (ng/m^3)	C6H6 ($\mu\text{g}/\text{m}^3$)	BaP (ng/m^3)
AAQ-1	Near Vedanta Office	23.09.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine InGate;	23.09.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Near Rengalberha;	23.09.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Near Kalta;	23.09.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-5	Village Jhirapani;	20.09.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-6	Village Kashira;	20.09.2025	<0.06	<0.6	<0.44	<5	<1
NAAQ* Standard			1	20	6	5	1
Methods of Analysis			IS:5182 (Part-22)	IS:5182 (Part-26)	As per CPCB method followed by AAS	IS:5182 (Part-11)	IS:5182 (Part-12)

Reviewed By
CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Chief Analyst
Miss. Arti Sahoo

TECHNICAL SIGNATORY
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Technical Manager
Mr. S.K. Parhi

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Report No- GFAPL/25-26/ESLFG/115

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (FEEGRADE), M/s ESL Steel Limited, At/PO:- Koira, Sundargarh, Odisha.		
Nature of Sampling	Ambient Air Quality Monitoring (AAQ)		
Sampling By	GFAPL's Representative		
Environmental Condition	Good	Sampling Method	As per IS: 5182
Location of performance of Laboratory activities	Laboratory Permanent Facility	Deviation from the method (if any)	NO
Discipline	Chemical	Group	Atmospheric Pollution
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	Free Silica ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Vedanta Office;	23.09.2025	<2.0
AAQ-2	Near Mine InGate;	23.09.2025	<2.0
AAQ-3	Near Rengalberha;	23.09.2025	<2.0
AAQ-4	Near Kalta;	23.09.2025	<2.0
AAQ-5	Village Jhirapani;	20.09.2025	<2.0
AAQ-6	Village Kashira;	20.09.2025	<2.0
Methods of Analysis			NIOSH Method 7500 by X-Ray Diffraction

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

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BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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END OF REPORT

Date/Time Long at 14:45:25 July 19, 2025
Trigger Source Geo: 0.700 mm/s, Mic: 2.000 pa.(L)
Range Geo: 254.0 mm/s
Record Time 5.0 sec at 1024 sps
Operator/Setup: Operator/NSIPL_FEEGRADE.MMB

Serial Number UM20028 V 10-90FB Micromate ISEE
Battery Level 3.5 Volts
Unit Calibration November 29, 2024 by UES New Delhi
File Name UM20028_20250313132935.IDFW
Scaled Distance N/A

Notes

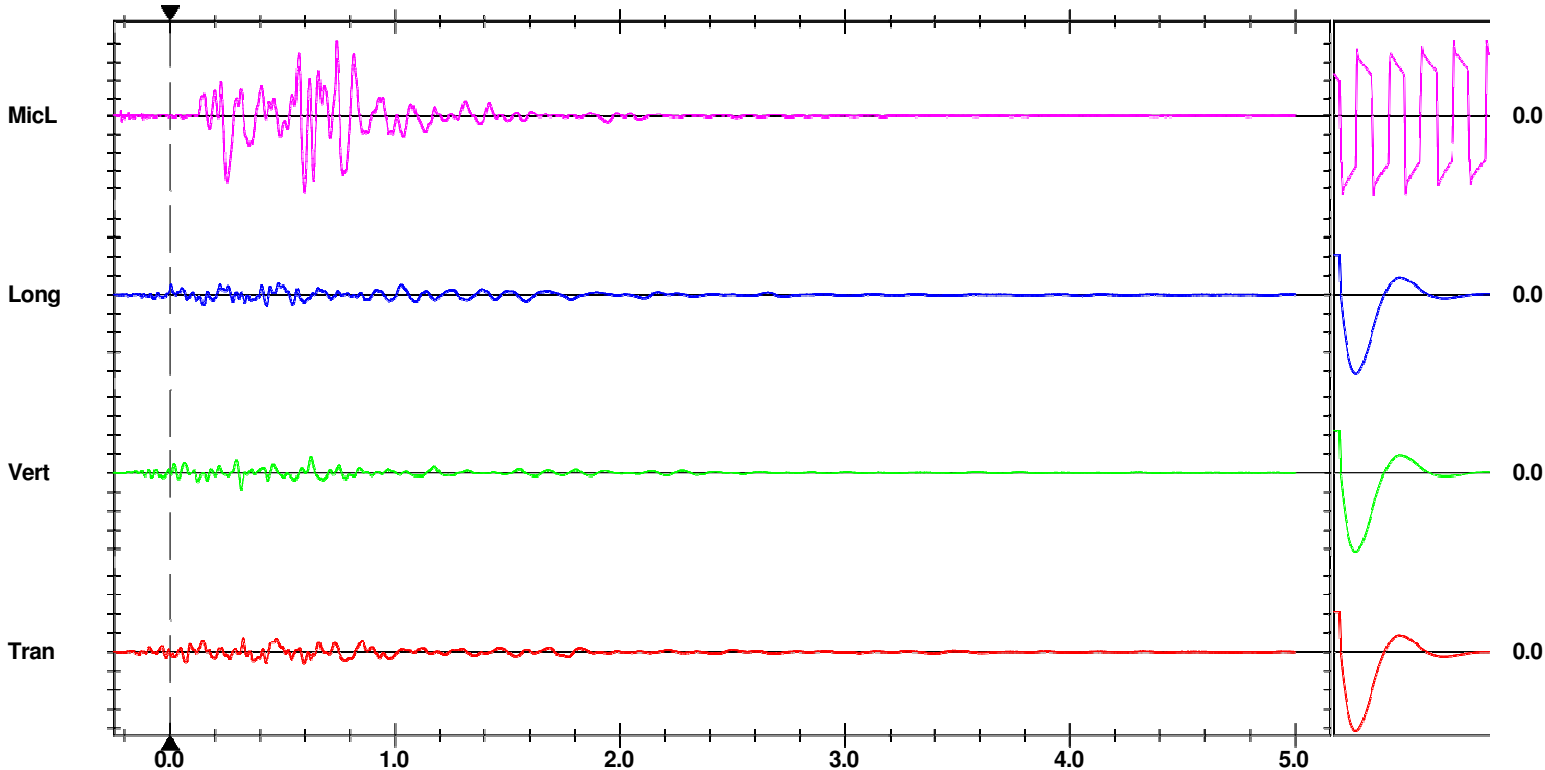
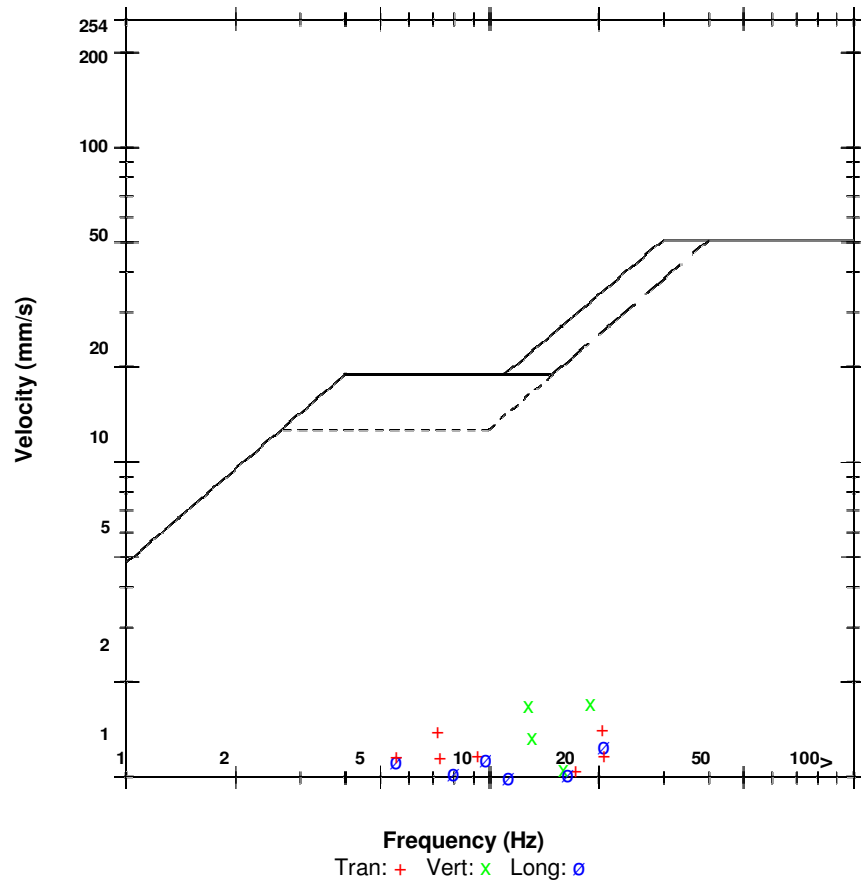
Location: FEEGRADE
Client: NARAYANI SONS INDIA PVT.LTD,
User Name: TRIMURTI EXPLOSIVES
General: NADIDIHI IRON & MN ORE MINES FEEGRADE

Microphone Linear Weighting
PSPL 20.99 pa.(L) at 0.598 sec
ZC Freq 17Hz
Channel Test Passed (Freq = 19.7 Hz Amp = 1157 mv)

	Tran	Vert	Long	
PPV	1.427	1.718	1.237	mm/s
ZC Freq	20	19	20	Hz
Time (Rel. to Trig)	0.326	0.315	0.430	sec
Peak Acceleration	0.034	0.023	0.026	g
Peak Displacement	0.027	0.017	0.026	mm
Sensor Check	Passed	Passed	Passed	
Frequency	7.3	7.3	7.3	Hz
Overswing Ratio	4.7	4.4	4.6	

Peak Vector Sum 1.883 mm/sat 0.625 sec

USBM RI8507 And OSMRE



Annexure 3

Occupational Health Survey report

Initial & Periodical Examination details

Nadidihi Iron and Manganese Ore Mine

Total PME has done from April 2025 to September 2025 – 03

Total IME has completed April 2025 to September 2025 – 93

Periodical Medical Examination Details

SL NO.	DATE	PME CODE	NAME OF THE EMPLOYEE	COMPANY/ CONTRACTOR
01	01-07-2025	CARE/25.3946	RAJESH KUMAR PATRA	NSIPL
02	01-07-2025	CARE/25/3947	DILLIP KUMAR PATRA	NSIPL
03	01-07-2025	CARE/25/3954	IBRAR ANSARI	IMPL

Initial Medical Examination Details

Employees Name	Company/Contractor	IME No	IME DATE
AMRIT RAJAK	IMPL	CARE/25/2142	03-Apr-2025
NAKULA MUNDA	IMPL	CARE/25/2456	12-May-2025
SAMIR MUNDA	IMPL	CARE/25/2144	03-Apr-2025
MADAN TUTY	IMPL	CARE/25/2143	03-Apr-2025
ROHIT KUMAR MAHARANA	IMPL	CARE/25/2883	25-May-2025
ELIYAS MUNDA	IMPL	JSW/334	19-Jun-2025
CHAMBARA SOY	IMPL	JSW/336	19-Jun-2025
WASIM AKRAM	IMPL	CARE/25/3955	01-July-2025
SUDERSHAN KOIRI	IMPL	CARE/25/2244	13-Apr-2025
MANORANJAN DAS	IMPL	CARE/25/2228	13-Apr-2025
PRASANNA BARIK	IMPL	JSW/13541	10-Jun-2025
SIRAM PURTY	IMPL	CARE/25/2231	13-Apr-2025
PURUSHOTTAM LAKRA	IMPL	CARE/25/232	01-July-2025

SUDARSAN MOHANTY	NSIPL	CARE/25/2146	03-Apr-2025
BIKASH CHANDRA NAYAK	NSIPL	CARE/25/2147	03-Apr-2025
MANAS KUMAR GIRI	NSIPL	CARE/25/2148	03-Apr-2025
RASHMIRANJAN MOHANTA	NSIPL	CARE/25/2149	03-Apr-2025
KOUSHIK NANDI	NSIPL	CARE/25/2151	03-Apr-2025
GANESWAR PRADHAN	NSIPL	CARE/25/2052	03-Apr-2025
SUSHANTA MAHANTA	NSIPL	CARE/25/2153	03-Apr-2025
SILU MOHANTA	NSIPL	CARE/25/2154	03-Apr-2025
MANAS JENA	NSIPL	CARE/25/2156	03-Apr-2025
RAJEEV RANJAN	NSIPL	CARE/21/2162	03-Apr-2025
SUBRAT BEHERA	NSIPL	CARE/25/2449	12-May-2025
SOURYABRATTA NAYAK	NSIPL	CARE/25/2448	12-May-2025
SAMBHU MOHANTA	NSIPL	CARE/25/2425	11-May-2025
JAYKRUSHNA SENAPATI	NSIPL	CARE/25/2437	11-May-2025
JAGANNATHA PATRA	NSIPL	CARE/25/2444	11-May-2025
RASMIKANTA BARIK	NSIPL	CARE/25/2434	11-May-2025
BALIA MOHANTA	NSIPL	CARE/25/2875	25-May-2025
AVIJEET ROUT	NSIPL	CARE/25/2876	25-May-2025
AKASH BEHERA	NSIPL	CARE/25/2877	25-May-2025
PARAMESWAR MAHARANA	NSIPL	CARE/25/2881	25-May-2025
MANOJ KUMAR MAHANTA	NSIPL	CARE/25/2886	25-May-2025
SIMANCHALA BARIK	NSIPL	CARE/25/2887	25-May-2025
HARIKESH KUMAR MISHRA	NSIPL	CARE/25/2888	25-May-2025
KARTIK PATRA	NSIPL	CARE/25/2889	25-May-2025
DASHARATHI NATH	NSIPL	CARE/25/2890	25-May-2025
DAMBARUDHAR MAHANTA	NSIPL	CARE/25/2891	25-May-2025
SIKANDER PURTY	NSIPL	CARE/25/2884	25-May-2025
MOTILAL LOHAR	NSIPL	CARE/25/3957	01-Jun-2025
JOYDEV BANERJEE	NSIPL	CARE/25/2283	14-Apr-2025

MITHUN DAS	NSIPL	CARE/25/2278	10-Apr-2025
MANOJ KUMAR SUBUDHI	NSIPL	CARE/25/2241	13-Apr-2025
RAJAKISHOR BARAL	NSIPL	CARE/25/156	01-Jun-2025
TANMAY CHATTERJEE	NSIPL	CARE/25/2284	14-Apr-2025
KRUSHNA CHANDRA MAHANTA	NSIPL	JSW/08/381	01-Aug-2025
JAMBESWAR MAHANTA	NSIPL	JSW/08/380	01-Aug-2025
DEEPAK KUMAR GIRI	G4S	CN/5549	01-09-2025
BHANJA KISHORE PATRA	G4S	CN/5550	01-09-2025
JAGDISH PARIDA	G4S	CN/5551	01-09-2025
BENUDHAR MAHANTA	G4S	CN/5548	01-09-2025
CHHABILA NAIK	G4S	CN/5542	29-08-2025
YASOBANTA MAHANTA	G4S	CN/5540	27-08-2025
MANORANJAN MAHANTA	G4S	CN/5533	26-08-2025
PATEL BARIK	G4S	CN/5530	25-08-2025
RAJENDRA PRASAD GIRI	G4S	CN/5538	26-08-2025
FAKIRA MOHAN NAYAK	G4S	CN/5526	25-08-2025
JAGDISH BEHERA	G4S	CN/5537	26-08-2025
KSHIROD CHL GIRI	G4S	CN/5527	28-08-2025
SAMIL BARIK	G4S	CN/5531	25-08-2025
DIBYA RANJAN BARIK	G4S	CN/5547	31-08-2025
NITYANANDA MAHANTA	G4S	CN/5528	25-08-2025
CHHATISH APAT	G4S	CN/5523	23-08-2025
BIBEKANANDA BEHERA	G4S	CN/5512	19-08-2025
TRIPURA SAHOO	G4S	CN/5509	13-08-2025
UTTAM PRADHAN	G4S	CN/5502	06-08-2025
DHANANJAY GIRI	G4S	CN/5513	19-08-2025
TIKAN KUMAR SAHOO	G4S	CN/5517	20-08-2025
ANIL KUMAR PRADHAN	G4S	CN/5543	29-08-2025
ANGAJA MUNDA	G4S	CN/5541	27-08-2025
DEWAN MUNDA	G4S	CN/5539	27-08-2025
RAKESH KUMAR MOHAPATRA	G4S	CN/5575	24-09-2025
DHANESWAR NAYAK	G4S	CN/5560	16-09-2025

MANAS RANJAN SETHY	G4S	CN/5552	03-09-2025
TRILOCHAN GIRI	G4S	CN/5578	29-09-2025
CHHATISH APAT	G4S	CN/5523	23-08-2025
JAGDISH PARIDA	G4S	CN/5551	01-09-2025
NITYANANDA MAHANTA	G4S	CN/5528	25-08-2025
DIBYA RANJAN BARIK	G4S	CN/5547	31-08-2025
SAMIL BARIK	G4S	CN/5531	25-08-2025
MANORANJAN MAHANTA	G4S	CN/5533	26-08-2025
YASOBANTA MAHANTA	G4S	CN/5540	27-08-2025
CHHABILA NAIK	G4S	CN/5542	29-08-2025
BENUDHAR MAHANTA	G4S	CN/5548	01-09-2025
BHIANJA KISHORE PATRA	G4S	CN/5550	01-09-2025
PATEL BARIK	G4S	CN/5530	25-08-2025
RAJENDRA PRASAD GIRI	G4S	CN/5538	26-08-2025
FAKIRA MOHAN NAYAK	G4S	CN/5526	25-08-2025
HIMANSHU BHOI	G4S	CN/5558	12-09-2025
JAGADISH BEHERA	G4S	CN/5537	25-08-2025
KSHIROD CH. GIRI	G4S	CN/5527	28-08-2025
SOUBHAGYA RANA	SWASTIK	JSW/219	17-07-2025

Occupational Health Survey Summary:

A monthly health camp has occurred in both the mines. The Total number of employees covered in health camp from the month of April 2025 to September 2025 is: **181** (One Hundred Eighty-One Total)

There are no such instances of occupational health diseases, and there have been no significant findings related to chronic diseases or health-related abnormalities that may impact their work profile. Some of them have some metabolic disorders like hypertension & diabetes, which have been followed up every month in OHC.

An annual health surveillance for occupational health related disorders like pneumoconiosis, silicosis etc., has been planned to diagnose through chest x ray & other medical test for persons who are dust affected have been tracked soon.

Preventive measures advised during health camp:

1. Diet Modification by advising reduce salt & sugar intake in their daily diet.
2. Reduce oily, spices & fatty raw foods with advice for regular exercise, yoga & lifestyle modification.
3. Cessation of smoking and alcohol. Complete avoid & stop all tobacco, nicotinic elements and sedative things.
4. Attend the regular medical checkup and follow the treatment protocol advised by doctor.
5. Regular tracking of all hypertensive & diabetic patients by regular checking their RBS & BP value by proper monitoring & tracking

Awareness program held for mine workers during these months :

- Training sessions on burn case management, shock and emergency aid.
- Awareness program on common viral diseases with its prevention & control.
- Basic first aid management & training on Cardiopulmonary resuscitation.
- Training on tobacco & smoking control with cancer management.
- Training in Ergonomics and work-related stress management.
- Training in biomedical waste management.
- Awareness program on HIV- AIDS, its prevention & control.
- Training on Tuberculosis & Covid 19, 2 & H3N2.
- Awareness program on food hygiene, safety, & diet plan.



Medical Officer
Nadidihi Iron and Manganese ore Mine



Mines Manager
Nadidihi Iron and Manganese ore Mine