

Date:29.11.2025

ESL-IOO/HSE/MoEF/25-26/03

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 Ore Mines of M/s ESL Steel Limited for the period of 1st April 2025 to 30th September 2025

Ref: - 1. Vesting Order, no 8469/ SM 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 and CC, New Delhi – J-11015/135/2012-IA-II (M) Dated 18.06.2019 Nadidihi Iron Ore Mine of M/S ESL Steel limited

Thanking you

Yours faithfully
For ESL Steel Limited



Mr Sambit Viswanandan Sahoo
Mine Manager
Nadidihi Iron 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 Ore Mines.

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

Reference letter from MoEF andCC, New Delhi- J-11015/135/2012-IA.II (M) dated: 18.06.2019. Capacity- 9.0 MTPA of iron Ore Production.

Status- Operating Mine of 2.77 MTPA iron ore production.

A. Specific Conditions

Sr. No.	Specific Conditions	Status of Compliance	Remarks
1.	The enhance production shall be on pro-rata basis for the effective period of valid environment clearance 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 IBM approved mining plan.
2.	The EC for expansion proposal (iron ore production from 5.3 million TPA (4.3 MTPA ROM Iron ore + 1.0 MTPA of low grade iron ore from old dump within lease area) to 9.0 million TPA (8.0 MTPA ROM + 1.0 MTPA of low grade iron ore from old dump within lease area)) shall be operational after submission of an undertaking through affidavit to MoEF and CC within 15 days of receipt of this letter, for compliance of all conditions prescribed herein.	Complied	The condition is applicable to the previous lessee it is complied by the previous lessee.
3.	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.	Partially Complied	The applicable recommendations of NEERI are included in the specific condition of EC and responses are provided on the same
4.	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.	Complied	5 years Regional Plan for annual Iron Ore Requirement is prepared by the Department of Steel and Mines, Govt, of Odisha.

	Accordingly, sustainable annual production (SAP) for each zone/mine may be followed adopting necessary environmental protection measures.		
5.	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 inside the mine. This should be done within 1 year for existing mines and new mines should have it since the beginning. The Department of Steel and Mines, Govt. of Odisha should ensure the compliance and should not issue the Mining permits, if mine lease holder has not constructed proper cement concrete road as suggested. The EC for the expansion project shall be operated only after the compliance of the specific condition.	Complied	The mine exit to main road is provided with Cement Concrete Road and green belt is provided.
6.	The Committee observed that as per the recommendations of the NEERI report, the PP needs to do regular vacuum cleaning of all minerals carrying roads aiming at “zero dust re-suspension within 3 months”. The EC for the expansion project shall be operated only after the compliance of the specific conditions.	Agreed to Comply	The mineral carrying roads are washed with deployment of tankers for sprinkling and ensure dust suppression, the procurement of vacuum cleaning machine is under progress
7.	Project Proponent 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. Odisha State Pollution Control Board must ensure the compliance of CTE/CTO. Regional office of the MoEFandCC, Bhubaneswar shall monitor the compliance of the EC conditions. Regional Office of the Indian Bureau of Mines (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 like fog canon systems are adopted on the mines.
8.	Project Proponent shall ensure the compliance of Suggested Ore Transport Mode (SOTM) with association of the State Govt. of Odisha.	Partially Complied	The transportation is carried out basis the available infrastructure in the area.

	All existing mines should ensure adoption of SOTM within next 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.		Most of the transportation happened through Road Transport. Out of entire capacity of dispatch 15 % is rail transport and rest is road transport (however rake availability remains a challenge)
9.	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 belt/pipelines, etc. shall be submitted periodically to Regional office of the MoEFandCC.	Complied	Full cooperation will be provided from the PP side.
10.	Project Proponent 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.	Complied	We have dedicated parking place for mining trucks within the mines. For outbound trucks parking is available at Government Land outside the lease area. There is drinking water and eateries facility available at these places, it is under consideration to upgrade the facilities outside the lease which will also encourage the self-employment of stakeholders.
11.	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 IRC guidelines. Construction of other mineral carrying roads with proper	Complied	Government of Odisha has constructed NH 215 as 4 lane road

	width and drainage system along with roadside plantation to be carried out. This shall be completed within 2 years.		
12.	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 period of 3 months for existing roads.	Agreed to Comply	The mineral carrying roads are washed with deployment of tankers for sprinkling and ensure dust suppression, the procurement of vacuum cleaning machine is under progress
13.	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 Dept. in consultation with IBM. RO should prepare in advance mine-wise annual production scenario so that demand for iron ore can be anticipated, and actual production/dispatch does not exceed the suggested annual production.	Complied	Mining is carried out as per approved mining plan.
14.	R and D studies towards utilization of low-grade iron should be conducted through research/academic institutes like IMMT Bhubaneswar, NMI Jamshedpur and concerned metallurgical departments in IITs, NITs, etc. targeting full utilization of low-grade iron (Fe content upto 45% by 2020 and upto 40% by 2025). LCA of whole process including environmental considerations should be done for techno-economic and environmental viability. RandD studies on utilization of mine wastewater having high concentration of Fe content for different commercial applications in industries such as cosmetics, pharmaceutical, paint industry should also be explored. Responsibility: IBM, Dept of Steel and Mines, Individual Mine Lease Holders	Complied	R & 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 and market feasibility. There is no waste water generated the mine pit water is reused for dust suppression, green belt etc

15.	<p>Develop proper rail network in the Joda-Koira region for mining activities. Rail transport shall not only be pollution free mode but also will be much economical option for iron ore transport. The rail network and/or conveyor belt system upto 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 about 64 km. In Koira region, total length of rail network/conveyor system for 8 mines (under SOTM 1and2) is estimated to be around 95 km. Develop a rail network connecting Banspani (Joda region) and Roxy railway sidings in Koira Region.</p> <p>Responsibility: Dept. of Steel and Mines, Govt. of Odisha and Concerned mines along with Indian Railways.</p> <p>Time period: Max 7 years (by 2025)</p> <p>The Dept. of Steel and Mines, Govt. of Odisha should follow up with the concerned departments and railways so that proposed proper rail network is in place by 2025.</p>	Agreed to Comply	The responsibility of developing the required infrastructure is with various government agencies.
16.	<p>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.</p> <p>Responsibility: Dept. of Steel and Mines, Govt. of Odisha</p>	Complied	The responsibility of exhausting all the iron ore is with the Government of Odisha as per approved mining plan and MDPA the production is carried out
17.	<p>Mining operations/Process related: Project proponent shall implement the following mitigation measures:</p> <ol style="list-style-type: none"> 1. 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 	Complied	1. Appropriate Mining process according to IBM approved mining plan is carried out, excavators are selected based on hauling road fleets and also drills are operated with wet drilling system

	<p>should either be operated with dust extractors or equipped with water injection system.</p> <p>2. 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.</p> <p>3. 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 be followed as per manufacturer's instructions/recommended time schedule and record should be maintained by the respective mine lease holders.</p> <p>4. 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</p>	<p>Complied 2.</p> <p>Complied 3.</p> <p>Complied 4.</p>	<p>2. Efforts like usage of mobile tanker, mist canon system deployed for dust suppression, the safety zone plantation acts as a barrier for noise, there is no waste water generated in mine</p> <p>3. Various machineries/equipment selected (viz. dumpers, excavators, crushers, screen plants etc.) are inspected and maintained as per instructions</p> <p>4. Digital processing of the entire lease area using remote sensing technique DGPS Drone survey is carried out every year by ORSAC empaneled / 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</p>
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	agency, the report shall be vetted/authenticated by ORSAC, Bhubaneswar. Expenses towards the same shall be borne by the respective mine lease holders.		
18.	<p>Air Environment Related: Project Proponent shall implement the following mitigation measures:</p> <ol style="list-style-type: none"> 1. 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. 2. 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, NO_x, and CO monitoring. Location of air quality monitoring stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board (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. 3. Monitoring in buffer zone should be carried out by SPCB or through NABET accredited agency. Air quality parameters 	<p>Complied</p> <p>Complied</p> <p>]</p>	<ol style="list-style-type: none"> 1. Dust suppression is done by water sprinklers on haul road of capacity 28 KL, and 16 KL, loading and unloading area and other areas regularly on daily basis also water fogging system is installed 2. The core zone is installed with one CAAQMs to monitor parameters PM₁₀, PM_{2.5}, SO_x, NO_x and CO 24 x7, with additional to manual ambient air monitoring system Near Mine office and Mines gate to monitor all the 12 parameters and the frequency of monitoring is done as per CTO given by SPCB

	<p>(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.</p> <p>4. 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.</p> <p>5. 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)</p> <p>Responsibility: Individual mine lease holders and SPCB</p>	<p>Complied</p> <p>Complied</p> <p>Complied</p>	<p>3. The buffer zone is monitored through NABL accredited agency in 4 location Village Kenduhidi, Badipada, Jhrapani, Kasira, reports attached in Annexure 1</p> <p>4. Emission from vehicle and HEMM are maintained Pollution under control certificate are available and monitored</p> <p>5. The vehicles are covered with tarpaulin and it is not overloaded, one ambient air monitoring is done at exit gate</p>
19.	<p>Noise and Vibration related: Project Proponent shall implement the following mitigation measures:</p> <p>1. 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.</p> <p>2. 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.</p> <p>3. Noise levels should be monitored regularly (on weekly basis) near the major sources of noise generation within the core zone. Date, time and</p>	<p>Complied</p> <p>Complied</p> <p>Complied</p>	<p>1. Blasting operations will be conducted only in day time. Controlled blasting technique will be adopted to mitigate ground vibrations and arrest fly rocks.</p> <p>2. Workers are provided with ear plugs in their PPE kit to control, noise that can affect human environment</p> <p>3. Noise zone is monitored regular basis in Core and Buffer Zone also in work zone areas, noise levels are</p>

	<p>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)</p> <p>4. 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</p>	Complied	<p>within the limit of CPCB</p> <p>4. Vibration study is conducted during blasting. As there was no blasting conducted in the reporting period hence vibration study is not carried out</p>
20.	<p>Water/wastewater related: Project Proponent shall implement the following mitigation measures:</p> <p>1. 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.</p> <p>2. 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 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.</p>	<p>Complied</p> <p>Complied</p> <p>Complied</p>	<p>1. A detailed comprehensive Hydrogeological report was prepared by CGWA accredited consultant and report was submitted to CGWB and MOEF also it is ensured no damage to land stability</p> <p>2. Natural water course does not exist within the lease and water resources is not obstructed due to mining operations. Regular monitoring of upstream and downstream is done at karo river stream</p> <p>3. Regular monitoring of ground water level is being</p>

<p>3. 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.</p>	<p>Complied</p>	<p>carried out by digital water level recorder (piezometer), and ground water quality monitoring is done</p>
<p>4. 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)</p>	<p>Complied</p>	<p>4. A suitable ground water conservation are followed like harvesting rain water mine pits and part of its getting recharged</p>
<p>5. 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.</p>	<p>Complied</p>	<p>5. Suitable all rainwater diverted in to mine pits, harvesting measures on long term basis is planned and implemented, to recharge the ground water source</p>
<p>6. Appropriate mitigation measures (viz. ETP, STP, garland drains, retaining walls, collection of runoff 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.</p>	<p>Complied</p>	<p>6. Retaining wall and garland drain is constructed to prevent run off and also monitoring is done on regular basis by NABAL authorized laboratory as there is no sewage and industrial effluent generated ETP and STP measures not taken</p>
<p>7. Industrial wastewater (workshop and wastewater from the mine) should be properly collected, treated in ETP to conform to the discharge standards applicable.</p>	<p>Complied</p>	<p>7. As there is no workshop there is no wastewater generated to be treated by a ETP</p>
<p>8. Oil and grease trap should be installed before discharge of workshop effluents. STP should be installed for the employees/colony, wherever</p>	<p>Complied</p>	<p>8. Oil and grease will be required for ETP alone as there is no effluent and</p>

	holders, SPCB and CGWB	Complied	plantation activity etc 13. 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 is done on monthly basis for mine discharge, water balance diagram is prepared on monthly basis
21.	<p>Land/soil/overburden related: Project Proponent shall implement the following mitigation measures:</p> <ol style="list-style-type: none"> 1. 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. 2. Fodder plots should be developed in the non-mineralised area in lieu of use of grazing land, if any. 3. 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 	<p>Complied</p> <p>Complied</p> <p>Complied</p>	<p>1. Top soil not available in mine as all the area are already mined by previous lease</p> <p>2. There is no non mineralized area in the mine lease</p> <p>3. Overburden is dumped on the active dumps as per approved mining plan and regular survey of dump is carried to keep a check on any movement of material. The OB dumps will be scientifically vegetated by using geo-textiles once the dump is finalized</p>

<p>management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Proper records should be maintained regarding species, their growth, area coverage etc.</p> <p>4. 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 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.</p> <p>5. 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.</p> <p>6. 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.</p>	<p>Complied</p> <p>Agreed to Comply</p> <p>Complied</p>	<p>4. Garland drains and settling ponds are constructed to arrest silt and sediment, Drains are constructed for mine pit, dumps etc and before monsoon the garland drains and settling pond are desilted before monsoon based on the inspection and requirement</p> <p>5. Backfilling will be done as per approved mining plan/scheme. There is 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</p> <p>6. Hazardous waste such as. Used oil generated is disposed of as per provisions of Hazardous Waste Management Rules, 2016,</p>
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	Responsibility: Individual mine lease holders		
22.	<p>Ecology/Biodiversity (Flora-Fauna) Related:</p> <p>Project Proponent shall implement the following mitigation measures:</p> <p>1. 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.</p> <p>2. 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 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.</p> <p>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.</p> <p>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</p>	<p>Complied</p> <p>Complied</p> <p>Complied</p> <p>Complied</p>	<p>1. Projects are taken as per Biodiversity Management plan. However, a site specific conservation plan was submitted by previous lessee</p> <p>2. Plantation is done within the lease to promote biodiversity according to mining plan yearly plantation is carried out, local species like Jamun, Sirus and medicinal values species like Neem etc are planted During the reporting period 1500 saplings are planted</p> <p>3. Green belt area is developed and monitored regularly based on survival rate and it is recorded</p> <p>4. Green belt is done and also planned further when the dumps gets finalized and also plantation is done at safety zones that act as barrier for noise, light and reduce emission</p>

	<p>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.</p> <p>5. Vetiver plantation on inactive dumps may be encouraged as the grass species has high strength of anchoring besides medicinal value.</p> <p>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 and Wildlife Department.</p>	<p>Agreed to Comply</p> <p>Complied</p>	<p>5. As dumps are not finalized dumps are in working stage once finalized it will be complied</p> <p>6. Full co-operation is continuously given to Forest division</p>
23.	<p>Socio-economic related: Project Proponent shall implement the following mitigation measures:</p> <p>i) 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.</p> <p>ii) Land outtees and land losers/affected people, if any, should be compensated and rehabilitated as per the national/state policy on Resettlement and Rehabilitation.</p> <p>iii) 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</p>	<p>Complied</p> <p>Complied</p>	<p>1. Being complied. For holistic community development, various community development initiatives such us 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.</p> <p>2. Not applicable as there is no affected people of land losers so compensation</p>

	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	was not required 3. Complied as per the statutory guidelines.
24.	Road Transport Related: Project Proponent shall implement the following mitigation measures: i) All the mine lease holders should follow the suggested ore transport mode (SOTM), based on its EC capacity within next 5 years. ii) 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. iii) 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	Partially Complied Complied Complied	1. There is no rail capacity hence we have to depend on Road Transport for most volumes. Out of entire capacity of dispatch 15 % is rail transport (Condition applied: Rail transport is available) and rest is road transport. As there is no rail network constructed for the full capacity, once the rail network is in place, it will be complied. 2. Construction of Cement road is done at the exit gate of the mine maintenance of the road is done by sprinkling water for dust suppression 3. Transportation of ore is done by truck covered by tarpaulin and Ambient Air monitoring is done at exit gate
25.	Occupational Health Related: Project Proponent shall implement the following mitigation measures:	Complied	1. Personnel working in the mine are provided protective respiratory

<p>i) 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.</p> <p>ii) 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.</p> <p>iii) 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 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 centre should be established near mine site itself. Responsibility: Individual mine lease holders and District Administration (District Medical Officer)</p>	<p>Complied</p> <p>Complied</p>	<p>2. devices and are made educated on safety and health aspects periodically by in house training.</p> <p>2. OHS program of the workers are undertaken periodically by team of professional doctors engaged.</p> <p>3. Periodical health monitoring is done by doctor through conducting health camps every month. Dispensary was set up with qualified doctor and paramedical staff</p> <p>The summary report for occupational Health check is attached in Annexure 2</p>
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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	Implemented by Govt of Odisha
2)	This EC is valid upto 31.03.2071 as the lease	Being	Noted it will be complied

	validity is valid upto 31 st March 2071 as per the Ammended MMDR Act, 2015	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 in matter of Common Cause versus Union of India and Ors.	Complied	The mining operation does not have any compensation and hence mining operation is started
5)	This Environmental Clearance shall become operational only after receiving formal NBWL Clearance from MoEFandCC after the recommendations of the Standing Committee of National Board for Wildlife, if applicable to the Project.	Complied	NBWL is not applicable for 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 FC is obtained with reference to file no F.No.8-97/2008-FC
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 by PP with reference no 6503/IND-I-CON-2266 Dated 28.03.2025
8)	The PP shall adhere to the provision of the Mines Act, 1952, Mines and Mineral (Development and Regulation), Act, 2015 and rules and regulations made there under.	Complied	Mines Act and MMDR act is adhered and various circulars issued by Directorate General Mines Safety

	PP shall adhere to various circulars issued by Directorate General Mines Safety (DGMS) and Indian Bureau of Mines from time to time.		(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 lease area."	Complied	According to the memorandum best mining practices are adopted as per approved mining plan, no water bodies are disturbed, illuminance and noise level are within the limit during night hours, 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
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.	Being complied	Permission from CGWA in under process, applied for renewal,
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 lease
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.	Complied	Complied by previous lease

	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.		
15)	PP shall inform the MoEFandCC 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.	Being Complied	As we are operating with the vesting order Change of ownership is in progress
II.	<u>Air quality monitoring and preservation</u>		
16)	The Project Proponent shall install a 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.	Complied	Since presently the mine is producing less than 3 MPTA iron ore per annum, we are carry out ambient air monitoring through manual sampling mode. As per renewed CTO recommendation one CAAQMS was mentioned and the same is installed in our mine and the data are connected to SPCB portal
17)	Effective safeguard measures for prevention of dust generation and subsequent	Complied	For prevention of dust generation and subsequent

	<p>suppression (like regular water sprinkling, metalled 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/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>		<p>suppression water sprinkling is be carried out in areas prone to air pollution where in high level of pm10 and pm 2.5 are evident and dry fog system is also installed to reduce water consumption with dust suppression. The ambient air parameters are monitored it is under the prescribed standards of MOEF and CPCB</p>
III.	<u>Water quality monitoring and preservation</u>		
18)	<p>In case, immediate mining scheme envisages intersection of ground water 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.</p>	Complied	<p>A detailed comprehensive hydrogeological report was prepared by CGWA accredited consultant and submitted to CGWB and submitted to MOEF during EC half yearly submission period October 24- March 25</p>
19)	<p>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 has to 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</p>	Complied	<p>The natural water bodies or streams are not disturbed. The ground water table is monitored by Digital water level recorder (piezometer) also the ground water level is manually monitored. Till now there is no water scarcity recorded in the area</p>

	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.		
20)	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 Groundwater Department/ State Pollution Control Board.	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 by NABL accredited laboratory, reports are attached in Annexure 1
21)	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	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 are attached in Annexure 1

	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.		
22)	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 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.	Complied	There is no polluted water , only the discharge water quality is maintained and quality monitored regularly, TSS, TDS, pH, COD, BOD and other parameters are monitored
23)	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	Existing mine pits are used as a Rainwater harvesting measures to recharge the ground water.
24)	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.	Complied	Industrial workshop is not inside the mine lease as hence there is no waste water generated
25)	The water balance/water auditing shall be carried out and measured for reducing the consumption of water shall be taken up and	Complied	Action plan and taken for reduce water consumption, monthly MIS is tracked for

	reported to the Regional Office of the MoEFFandCC and State Pollution Control Board/Committee.		water consumption
IV.	<u>Noise and vibration monitoring and prevention</u>		
26)	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.
27)	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 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.	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 the safety zone area acts as a barrier for noise and lights
28)	The PP shall take measures for control of noise levels below 85 dbA 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 is in place to prevent the noise pollution, workers are provided with ear plugs in PPE kit and also saplings are planted in safety zone area as a barrier
V.	<u>Mining Plan</u>		
29)	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,	Complied	Complied as per Approved Mining Plan issued by the IBM, Bhubaneswar. No change has been made in mining proposal like mining technology, excavation, 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 name.		
30)	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 during mine closure as per Approved Mining Plan issued by the IBM, Bhubaneswar under the provision of MMDR ACT 1957
31)	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 excavation vis-à-vis backfilling in the mine lease area and corresponding afforestation is governed as per approved mining plan. There is no rehabilitated area
32)	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	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

	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.		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.
33)	The reject/waste generated during the mining operations shall be stacked at earmarked waste dump site(s) only. 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.	Complied	The waste / reject generated is stacked at waste dump and physical parameter like height, width and angle of slope is maintained as per DGMS
34)	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 is on process
35)	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
36)	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 MoEFandCC.	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 are submitted to MOEF
37)	Catch drains, settling tanks and siltation	Complied	Settling ponds and check

	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 desilted regularly, particularly after monsoon season, and maintained properly.		dams are constructed along with retaining wall at toe of dump and garland drain at benches to prevent run off water and collected in pits is utilized for plantation, dust suppression. The settling ponds, garland drain are desilted on inspection and requirement
38)	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
39)	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	As there is no top soil because it is a brownfield mine, the top soil is handled by previous lease
VII.	<u>Transportation</u>		
40)	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 the purpose of transportation of the minerals leaving an adequate gap (say at least 200 m) so that the	Complied	Transportation of mineral is done on bypass roads there is no roads passing though village / habitations. Vehicular emissions is kept under control and regularly

	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 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.		monitored of Pollution Under Control (PUC) certificate and also water sprinkling is done in mine and exit gate for dust suppression
41)	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 equipments 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 or main haul road in the mine it is not feasible for fixed haul sprinklers, water is sprinkled via mobile tankers of capacity 28 Kl and 16 Kl capacity, areas like crushing plants are provided with water jet sprinkling system
VIII.	Green Belt		
42)	The Project Proponent shall develop Green Belt in 7.5m wide safety zone all along. The mine lease boundary as per the guidelines of	Complied	The Project Proponent has already developed Green Belt in 7.5m wide

	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.		safety zone all along the lease.
43)	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, and density is also maintained
44)	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
45)	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	Complied	Will always take necessary precautions to preserve the endangered flora and fauna and schedule-I species

	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.		during mining operations. The wildlife conservation plan is submitted by previous lessee, and its implementation is reported by previous lessee
46)	And implemented in consultation with the State Forest and Wildlife Department. A copy of wildlife conservation plan and its implementation status (annual) shall be submitted to the Regional Office of the Ministry.	Complied	Submitted by the earlier lessee.
IX.	<u>Public Hearing and Human Health Issues</u>		
47)	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-early 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 report are attached in Annexure 2
48)	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 wellbeing of workers and nearby community. The Proponent shall maintain accurate and systematic records of the HRA. The HRA for neighbourhood has to focus on public health problems like Malaria, Tuberculosis, HIV, Anaemia, Diarrhoea in children under 5 years, respiratory infections	Complied	PP works towards zero harm by identification of various hazards of each and every activity by HIRA and their severity is analysed 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

	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 every 5 years.		sanitation, Personal hygiene .
49)	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, Aluminium, 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).	Complied	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 Periodical Medical examination records 2. Reports are as per NABH-accredited labs, and X-rays meeting ILO standards for size (17x14 inches) and quality. 3. Health Records (health camps, PME records are available in OHC)
X.	<u>Corporate Environment Responsibility (CER)</u>		
54)	The activities and budget earmarked for CER	Complied	Complied by the

	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 MoEFandCC annually along with audited statement.		previous lessee
55)	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 MoEFCC 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>		
56)	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 MOEFandCC.	Complied	LULC map is prepared by ORSAC on profile of Dec-2021 and same is submitted to concerned authorities,
57)	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	Will be complied when it will require
58)	The PP shall submit 6 monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MoEFandCC and its concerned regional office, CPCB and SPCB.	Complied	Complied previous report was submitted on 27.05.2025
59)	A separate 'Environmental Management Cell' with suitable 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	Complied	Environmental management cell is already constructed by the site.

	appointed and submit a report to RO, MoEFCC.		
60)	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 full co-operation will be given to the authorities
61)	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
62)	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
63)	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 199, 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
64)	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**



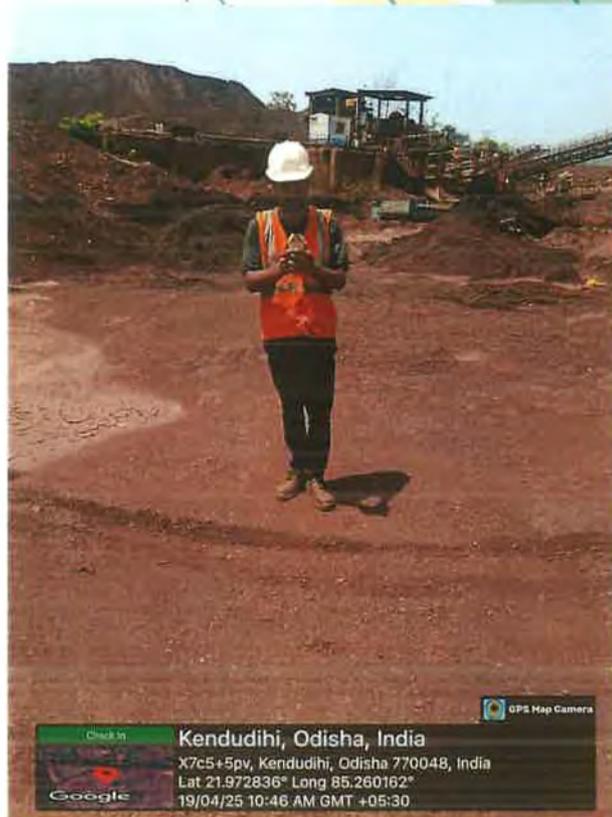
NARAYANI

**Client- M/s. Nadidih Iron Ore Mines (BICO),
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 - Khurdha

Mail Id: greenforceassociates@gmail.com

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Mine Office Lat:21°58'9.21"N & Long:85°15'33.67"E;		
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Date of Sampling	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	PM _{2.5} ($\mu\text{g}/\text{m}^3$)	SO ₂ ($\mu\text{g}/\text{m}^3$)	NO ₂ ($\mu\text{g}/\text{m}^3$)
03.04.2025	58.2	28.6	7.4	13.4
07.04.2025	61.6	30.4	7.8	13.8
10.04.2025	64.2	32.3	8.4	14.8
14.04.2025	59.4	29.6	7.4	13.8
17.04.2025	56.7	28.2	6.8	12.8
21.04.2025	59.8	30.3	7.6	13.8
24.04.2025	62.8	31.6	8.2	14.6
28.04.2025	64.6	32.5	8.8	15.2
Max	64.60	32.50	8.80	15.20
Min	56.70	28.20	6.80	12.80
Average	60.91	30.44	7.80	14.03
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 - Khurdha

Mail Id: greenforceassociates@gmail.com

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 InGate Lat: 21°58'23.32"N & Long: 85°15'44.18"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)
03.04.2025	66.7	33.2	10.4	16.4
07.04.2025	68.2	34.1	10.8	17.4
10.04.2025	70.8	35.5	11.8	18.4
14.04.2025	63.2	31.6	10.6	16.4
17.04.2025	60.8	30.2	9.8	15.2
21.04.2025	64.6	32.4	10.8	16.8
24.04.2025	68.4	34.6	11.8	18.2
28.04.2025	72.6	36.8	12.6	19.4
Max	72.60	36.80	12.60	19.40
Min	60.80	30.20	9.80	15.20
Average	66.91	33.55	11.08	17.28
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/ESLBI/003

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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- Village Kenduhidi; Lat21°59'45.70"N & Long: 85°16'14.44"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)
03.04.2025	52.8	26.2	4.8	10
07.04.2025	54.6	27.3	5.2	10.4
10.04.2025	56.9	28.5	5.6	10.8
14.04.2025	52.6	26.1	5.2	10.2
17.04.2025	50.1	24.8	4.8	9.8
21.04.2025	53.5	26.6	5.4	10.4
24.04.2025	55.2	27.7	5.8	10.8
28.04.2025	58.4	29.3	6.4	11.6
Max	58.40	29.30	6.40	11.60
Min	50.10	24.80	4.80	9.80
Average	54.26	27.06	5.40	10.50
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

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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/ESLBI/004

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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- Village Badipada Lat:21°58'4.60"N & Long:85°18'33.80"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)
03.04.2025	55.2	27.6	5	10.4
07.04.2025	56.8	28.2	5.4	10.8
10.04.2025	59.6	29.5	5.8	11.2
14.04.2025	54.2	27.1	5.4	10.8
17.04.2025	51.8	26.6	5.2	10.4
21.04.2025	55.6	28.1	5.6	10.8
24.04.2025	58.4	29.4	6.2	11.4
28.04.2025	60.2	30.5	6.6	11.8
Max	60.20	30.50	6.60	11.80
Min	51.80	26.60	5.00	10.40
Average	56.48	28.38	5.65	10.95
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
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

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

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	AAQ1- Near Mine Office; Lat:21°58'9.21"N & Long: 85°15'33.67"E; AAQ2- Near Mine In Gate; Lat:21°58'23.32"N & Long: 85°15'44.18"E; AAQ3- Village Kenduhidi; Lat:21°59'45.70"N & Long: 85°16'14.44"E; AAQ4- Village Badipada; Lat:21°58'4.60"N & Long: 85°18'33.80"E;		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m ³)			
	AAQ1	AAQ2	AAQ3	AAQ4
03.04.2025	0.36	0.42	0.27	0.29
07.04.2025	0.38	0.44	0.29	0.31
10.04.2025	0.39	0.46	0.3	0.32
14.04.2025	0.36	0.41	0.28	0.31
17.04.2025	0.34	0.4	0.26	0.3
21.04.2025	0.36	0.43	0.28	0.32
24.04.2025	0.38	0.47	0.31	0.34
28.04.2025	0.4	0.51	0.33	0.35
Max	0.40	0.51	0.33	0.35
Min	0.34	0.40	0.26	0.29
Average	0.37	0.44	0.29	0.32
NAAQ* Standard	4 mg/m ³ (for 1 hr)			
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 - Khurda

Mail Id: greenforceassociates@gmail.com

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	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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END OF REPORT

--1--

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/ESLBI/007

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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)
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
Arti Sahoo
GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
Mr. S.K. Parhi
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/ESLBI/008

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	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

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
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



TC-12259

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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° 58' 17.73"N & Long: 85° 15' 33.03"E F2: Haul Road; Lat: 21° 51' 54.95"N & Long: 85° 15' 50.13"E F3: Near Crushing Plant; Lat: 21° 58' 21.94"N & Long: 85° 15' 35.01"E F4: Near Screening Plant; Lat: 21° 58' 12.05"N & Long: 85° 15' 35.19"E F5: Ore Storage Area; Lat: 21° 58' 05.02"N & Long: 85° 15' 34.55"E F6: West Dump; Lat: 21° 58' 10.99"N & Long: 85° 15' 37.47"		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result ($\mu\text{g}/\text{m}^3$)					
		F1	F2	F3	F4	F5	F6
1	02.04.2025	542.6	539.5	521.5	592.5	492.4	531.2
2	05.04.2025	472.5	576.2	573.8	548.2	464.5	491.5
3	09.04.2025	538.6	536.4	559.6	573.8	504.2	522.4
4	12.04.2025	464.2	472.1	504.2	524.2	453.8	476.2
5	16.04.2025	498.6	504.2	538.4	546.4	473.9	458.3
6	19.04.2025	537.2	553.8	572.6	592.5	504.2	492.1
7	23.04.2025	558.6	573.4	588.1	604.3	519.6	506.3
8	26.04.2025	624.5	645.3	664.2	672.4	579.6	567.2
	30.04.2025	584.3	602.4	631.2	638.5	554.2	560.1
	Max	624.50	645.30	664.20	672.40	579.60	567.20
	Min	464.20	472.10	504.20	524.20	453.80	458.30
	Average	535.68	557.98	572.62	588.09	505.16	511.70
	Fugitive Standard	1200 $\mu\text{g}/\text{m}^3$					
	Methods of Analysis	IS:5182 (Part-4)					

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

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

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	10.04.2025	Date of Completion	11.04.2025
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°58'9.21"N & Long:85°15'33.67"E	63.5	46.8
2	Near Mine In Gate; Lat:21°58'23.32"N & Long:85°15'44.18"E	69.2	58.8
3	Near Screening Plant-1; Lat:21°58'09.21"N & Long:85°15'33.66"E	69.2	65.1
4	Near Crusher; Lat:21°58'22.32"N & Long:85°15'34.13"E	69.6	63.8
5	Near W.Bridge-1; Lat: 21°57'53.99"N & Long:85°15'49.64"E	68.1	58.2
6	Near W.Bridge -2; Lat:21°57'54.26"N & Long:85°15'53.53"E	68.4	58.9

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. Arti Sahoo

Authorized Signatory

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

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Kenduhidi; Lat:21°59'45.70"N & Long:85°16'14.44"E	49.8	39.6
2	Village Badipada; Lat:21°58'4.60"N & Long:85°18'33.80"E	49.7	39.8
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
<i>Noise permissible limits as per CPCB Norms in dB(A) Leq</i>			
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
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,
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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLBI/012

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	18.04.2025	Date of Receiving	19.04.2025
Date of Analysis	19.04.2025	Date of Complete	24.04.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	---	17.69
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	68.2
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	%	---	16.2

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

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Report No- GFAPL/25-26/ESLBI/012

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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	18.04.2025	Date of Receiving	19.04.2025
Date of Analysis	19.04.2025	Date of Complete	24.04.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	60.4

Reviewed By

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

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TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/24-25/ ESLBI/013

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), 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	24.04.2025
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	7.81	7.32
2.	Total Suspended Solids	APHA 24th ED 2540-D: 2023	mg/l	200	142	12
3.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	--	7.3	<2.0
4.	Biological Oxygen Demand as BOD	IS 3025 (PART 44):1993	mg/l	100	42	<2.0
5.	Chemical Oxygen Demand as COD	APHA 24 th ED 5220 B:2023	mg/l	--	148	10

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

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Report No- GFAPL/24-25/ ESLBI/013

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), 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	24.04.2025
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
Chief Analyst
Bhubaneswar, Odisha
Miss. Arti Sahoo

Authorized Signatory

Technical Manager
Mr. S.K. Parhi

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	24.04.2025
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
BARAMUNDA, ODISHA
Miss. Arti Sahoo

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

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	24.04.2025
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
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Miss. Arti Sahoo

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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

Report No- GFAPL/25-26/ESLBI/015 Mail Id: greenforceassociates@gmail.com Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	24.04.2025
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

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

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

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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/ESLBI/015

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	24.04.2025
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 LIM.
Bhubaneswar, Odisha
Mr. S.K. Parhi

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Baramunda, Bhubaneswar, Dist - Khurda

Mail Id: greenforceassociates@gmail.com

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	24.04.2025
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	68.6
3.	pH @25 ^o 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 SO4)	APHA 24th ED 4500-SO4 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 ^o 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. Anil Saboo

Authorized Signatory

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

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Baramunda, Bhubaneswar, Dist - Khurdha

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

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	24.04.2025
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	APHA 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

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
Mr. S.K. Parhi

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Mail Id: greenforceassociates@gmail.com

Report No- GFAPL/25-26/ESLBI/017

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 Mine Office;	17.04.2025	9.6	23.2
AAQ-2	Near Mine In Gate;	17.04.2025	11.6	25.6
AAQ-3	Village Kenduhidi;	17.04.2025	<8.0	<20.0
AAQ-4	Village Badipada;	17.04.2025	<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
Miss. Arti Sahoo

Authorized Signatory

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

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Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 Mine Office;	17.04.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine In Gate;	17.04.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Village Kenduhidi;	17.04.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Village Badipada;	17.04.2025	<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

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
Mr. S.K. Parhi

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END OF REPORT

--2 of 3--

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,
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Report No- GFAPL/25-26/ESLBI/017

Issued Date-05.05.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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
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 Mine Office;	17.04.2025	<2.0
AAQ-2	Near Mine In Gate;	17.04.2025	<2.0
AAQ-3	Village Kenduhidi;	17.04.2025	<2.0
AAQ-4	Village Badipada;	17.04.2025	<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

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



NARAYANI

**Client- M/s. Nadidih Iron Ore Mines (BICO),
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**



GREEN FORCE ASSOCIATES PRIVATE LIMITED



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

Report No- GFAPL/25-26/ESLBI/018

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Mine Office Lat:21°58'9.21"N & Long:85°15'33.67"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)
01.05.2025	59.5	29.7	7.4	14.2
05.05.2025	56.7	28.2	6.8	13.4
08.05.2025	60.4	30.1	7.4	14.4
12.05.2025	62.8	31.5	8.5	15.4
15.05.2025	64.2	32.1	8.8	15.8
19.05.2025	61.4	30.6	8.2	15.2
22.05.2025	60.2	29.8	7.4	14.2
26.05.2025	57.6	28.4	6.4	12.8
29.05.2025	55.4	27.5	5.2	10.8
Max	64.20	32.10	8.80	15.80
Min	55.40	27.50	5.20	10.80
Average	59.80	29.77	7.34	14.02
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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GREEN FORCE ASSOCIATES PRIVATE LIMITED

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



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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 InGate Lat: 21°58'23.32"N & Long: 85°15'44.18"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)
01.05.2025	64.2	32.1	10.8	16.8
05.05.2025	61.3	30.6	9.8	15.8
08.05.2025	65.6	32.9	11.2	17.5
12.05.2025	69.3	35.1	12.8	19.8
15.05.2025	72.8	36.6	13.4	20.4
19.05.2025	68.4	34.3	12.8	18.8
22.05.2025	63.7	32.1	11.2	16.4
26.05.2025	60.2	29.9	9.6	15.2
29.05.2025	58.1	28.7	7.8	13.2
Max	72.80	36.60	13.40	20.40
Min	58.10	28.70	7.80	13.20
Average	64.84	32.48	11.04	17.10
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

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/ESLBI/020

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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- Village Kenduhidi; Lat21°59'45.70"N & Long: 85°16'14.44"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)
01.05.2025	55.8	27.6	5.6	10.6
05.05.2025	52.7	26.1	5.2	10.2
08.05.2025	56.4	28.1	5.6	10.8
12.05.2025	59.8	29.8	6.2	11.4
15.05.2025	61.4	30.6	6.4	11.8
19.05.2025	59.2	29.4	5.8	11.2
22.05.2025	57.5	28.5	5.4	10.6
26.05.2025	55.2	27.3	4.8	10.2
29.05.2025	54.1	26.7	4.8	9.8
Max	61.40	30.60	6.40	11.80
Min	52.70	26.10	4.80	9.80
Average	56.90	28.23	5.53	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

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/ESLBI/021

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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- Village Badipada Lat:21°58'4.60"N & Long:85°18'33.80"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)
01.05.2025	57.5	28.5	5.8	10.8
05.05.2025	54.3	27.1	5.4	10.4
08.05.2025	58.8	29.2	6.2	11.2
12.05.2025	60.2	29.8	6.8	12.2
15.05.2025	60.9	30.5	6.8	12.6
19.05.2025	58.4	29.2	6.2	11.8
22.05.2025	56.2	27.8	5.4	10.8
26.05.2025	55.6	27.6	5.2	10.4
29.05.2025	54.3	27.1	4.8	9.8
Max	60.90	30.50	6.80	12.60
Min	54.30	27.10	4.80	9.80
Average	57.36	28.53	5.84	11.11
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,
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Mail Id: greenforceassociates@gmail.com
(An ISO 14001, 9001, 45001 certified Consulting Organization & NABL Accredited Laboratory)

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Mine Office; Lat:21°58'9.21"N & Long: 85°15'33.67"E; AAQ2- Near Mine In Gate; Lat:21°58'23.32"N & Long: 85°15'44.18"E; AAQ3- Village Kenduhidi; Lat:21°59'45.70"N & Long: 85°16'14.44"E; AAQ4- Village Badipada; Lat:21°58'4.60"N & Long: 85°18'33.80"E;		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
01.05.2025	0.38	0.46	0.3	0.33
05.05.2025	0.36	0.45	0.29	0.32
08.05.2025	0.39	0.49	0.31	0.34
12.05.2025	0.41	0.52	0.32	0.35
15.05.2025	0.42	0.54	0.34	0.36
19.05.2025	0.41	0.5	0.33	0.34
22.05.2025	0.38	0.44	0.32	0.33
26.05.2025	0.34	0.42	0.31	0.32
29.05.2025	0.32	0.35	0.29	0.3
Max	0.42	0.54	0.34	0.36
Min	0.32	0.35	0.29	0.30
Average	0.38	0.46	0.31	0.33
NAAQ* Standard	4 mg/m3 (for 1hr)			
Methods of Analysis	IS: 5182 (Part- 10)			

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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GREEN FORCE ASSOCIATES PRIVATE LIMITED



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

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	<4.0	<9.0
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
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,
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Report No- GFAPL/25-26/ESLBI/024

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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

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

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Report No- GFAPL/25-26/ESLBI/025

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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
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/m3 (for 1hr)	
Methods of Analysis	IS: 5182 (Part- 10)	

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

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

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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° 58' 17.73"N & Long: 85° 15' 33.03"E F2: Haul Road; Lat: 21° 51' 54.95"N & Long: 85° 15' 50.13"E F3: Near Crushing Plant; Lat: 21° 58' 21.94"N & Long: 85° 15' 35.01"E F4: Near Screening Plant; Lat: 21° 58' 12.05"N & Long: 85° 15' 35.19"E F5: Ore Storage Area; Lat: 21° 58' 05.02"N & Long: 85° 15' 34.55"E F6: West Dump; Lat: 21° 58' 10.99"N & Long: 85° 15' 37.47"		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result ($\mu\text{g}/\text{m}^3$)					
		F1	F2	F3	F4	F5	F6
1	03.05.2025	542.3	538.2	573.8	589.5	512.4	521.3
2	07.05.2025	568.2	578.4	604.2	624.5	542.5	532.4
3	10.05.2025	591.4	601.2	635.6	653.4	558.2	564.2
4	14.05.2025	486.2	514.2	524.8	564.2	465.2	452.8
5	17.05.2025	534.2	564.3	579.5	591.2	478.4	467.1
6	21.05.2025	567.2	557.4	582.4	604.1	512.4	492.1
7	24.05.2025	496.2	483.5	504.2	524.6	473.5	464.5
8	28.05.2025	486.2	473.4	498.3	512.4	464.2	457.2
	31.05.2025	432.4	452.8	467.2	489.4	422.8	424.3
	Max	591.40	601.20	635.60	653.40	558.20	564.20
	Min	432.40	452.80	467.20	489.40	422.80	424.30
	Average	522.70	528.15	552.22	572.59	492.18	486.21
	Fugitive Standard	1200 $\mu\text{g}/\text{m}^3$					
	Methods of Analysis	IS:5182 (Part-4)					

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

TECHNICAL 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 - Khurdha



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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	12.05.2025	Date of Completion	13.05.2025
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°58'9.21"N & Long:85°15'33.67"E	62.8	45.2
2	Near Mine In Gate; Lat:21°58'23.32"N & Long:85°15'44.18"E	69.6	59.1
3	Near Screening Plant-1; Lat:21°58'09.21"N & Long:85°15'33.66"E	69.6	64.8
4	Near Crusher; Lat:21°58'22.32"N & Long:85°15'34.13"E	69.8	64.1
5	Near W.Bridge-1; Lat: 21°57'53.99"N & Long:85°15'49.64"E	68.6	58.5
6	Near W.Bridge -2; Lat:21°57'54.26"N & Long:85°15'53.53"E	68.8	58.7

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

Chief Analyst
BRUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BRUBANESWAR, ODISHA
Mr. S.K. Parida

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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,
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Report No- GFAPL/25-26/ESLBI/028

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	13.05.2025	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 Kenduhidi; Lat:21°59'45.70"N & Long:85°16'14.44"E	49.6	39.8
2	Village Badipada; Lat:21°58'4.60"N & Long:85°18'33.80"E	49.5	39.5
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
<i>Noise permissible limits as per CPCB Norms in dB(A) Leq</i>			
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

Mr. S.R. Parida

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--1--

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/ESLBI/029

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	12.05.2025	Date of Receiving	13.05.2025
Date of Analysis	13.05.2025	Date of Complete	17.05.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	---	18.14
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	82.4
04	Sulphur dioxide as SO ₂	IS-11255(PART-2) 1985	mg/Nm ³	600	66.5
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

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	12.05.2025	Date of Receiving	13.05.2025
Date of Analysis	13.05.2025	Date of Complete	17.05.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	62.4

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CHIEF ANALYST

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

Authorized Signatory

TECHNICAL MANAGER

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Bhubaneswar, Odisha
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Report No- GFAPL/25-26/ESLBI/031

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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
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 Mine Office;	19.05.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	19.05.2025	<8.0	<20.0
AAQ-3	Village Kenduhidi;	19.05.2025	<8.0	<20.0
AAQ-4	Village Badipada;	19.05.2025	<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
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

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

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TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 Mine Office;	20.05.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine In Gate;	20.05.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Village Kenduhidi;	20.05.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Village Badipada;	20.05.2025	<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)

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CHIEF ANALYST

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BHUBANESHWAR, ODISHA

Miss. Arti Sahoo

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TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Mr. S.K. Parhi

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Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 Mine Office;	20.05.2025	<2.0
AAQ-2	Near Mine In Gate;	20.05.2025	<2.0
AAQ-3	Village Kenduhidi;	20.05.2025	<2.0
AAQ-4	Village Badipada;	20.05.2025	<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

Chief Analyst
Miss. Arti Sahoo

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TECHNICAL MANAGER

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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°58'19.62"N & Long: 85°15'24.14"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	APHA 24th ED 4500- H+B:2023	--	6.5-8.5	NR	6.82	6.84
4	Total Dissolved Solids (TDS)	APHA 24th ED: 2540-C: 2023	mg/l	500	2000	208	170
5	Chloride (as Cl)	APHA 24th Ed 4500- Cl-B:2023	mg/l	250	1000	20	16
6	Total Hardness	APHA 24th ED 2340-C: 2023	mg/l	200	600	134	112
7	Calcium	APHA 24th Ed 3500- Ca-B:2023	mg/l	75	200	34.5	28.9
8	Magnesium	APHA 24th ED 3500-Mg-B: 2023	mg/l	30	100	11.7	9.7
9	Total Alkalinity	APHA 24th ED 2320-B: 2023	mg/l	200	600	126	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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Sl. No.	Parameter	Testing Methods	Unit	Standard as per IS: 10500, 2012		GW1	GW2
				AL	PL		
15	Sulfate	APHA 24th ED 4500-SO4 E: 2023	mg/l	200	400	4.1	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	--	--	12.2	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

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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°58'19.62"N & Long: 85°15'24.14"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	1.88	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;

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GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha
Miss. Arti Sahoo

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TECHNICAL MANAGER

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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
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/ESLBI/033

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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-NO3-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 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		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
Mr. S.K. Parhi

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 SO4)	APHA 24th ED 4500-SO4 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

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 Miss. Arti Sahoo

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 Mr. S.K. Parhi

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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.	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-H: 2023	MPN/100ml	---	310	370

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Arpi Sahoo

Authorized Signatory

TECHNICAL MANAGER

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Mr. S.K. Parhi

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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

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Mr. S.K. Parida

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

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TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 SO4)	APHA 24th ED 4500-SO4 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

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Miss. Arti Sahoo

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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. Arti Sahoo

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 - Khurdha

Mail Id: greenforceassociates@gmail.com

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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; Lat: 21°58'11.97"N & Long: 85°15'32.81"E S2: Village Rengalberha; Lat: 21°57'09.84"N & Long: 85°14'55.34"E		

Sl. No.	Parameters	Standard	Unit	S1	S2
1	pH	IS: 2720(Part-26)-1987	%	5.84	5.96
2	Organic Carbon Content	IS: 2720(Part-22)-1972	%	1.04	1.4
3	Water Content (Moisture)	IS: 2720(Part-2)-1973	%	6.2	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	80	114

Reviewed By

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

Authorized Signatory
TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Technical Manager
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Baramunda, Bhubaneswar, Dist - Khurdha

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

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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; Lat: 21°58'11.97"N & Long: 85°15'32.81"E S2: Village Rengalberha; Lat: 21°57'09.84"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	207.2	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	1.35	1.26
5.	Calcium (as Ca)	IS: 2720(Part-23)	mg/kg	434	378
6.	Magnesium (as Mg)	GFAPL/SOP/Soil & Rock/04-23	mg/kg	222	182
7.	Nitrogen (as N)	IS:14684: 1999	kg/hect	60	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	164	138
10.	Chloride(as Cl)	GFAPL/SOP/Soil & Rock/07-23	mg/kg	130	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	%	2.96	1.78

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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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/ESLBI/038

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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; Lat: 21°59'40.58"N & Long: 85°16'09.91"E S4: Village Kalta; Lat: 21°57'54.22"N & Long: 85°12'48.59"E		

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

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

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

Issued Date-05.06.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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; Lat: 21°59'40.58"N & Long: 85°16'09.91"E S4: Village Kalta; Lat: 21°57'54.22"N & Long: 85°12'48.59"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	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
Bhubaneswar, Odisha
Miss. Arti Sahoo

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

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END OF REPORT

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



NARAYANI

**Client- M/s. Nadidih Iron Ore Mines (BICO),
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/ESLBI/039

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Mine Office Lat:21°58'9.21"N & Long:85°15'33.67"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)
02.06.2025	58.6	29.4	5.8	11.8
05.06.2025	56.4	28.1	5.6	11.6
09.06.2025	52.4	25.2	5.2	11.2
12.06.2025	48.2	23.7	5	11.2
16.06.2025	42.4	20.2	4.8	10.8
19.06.2025	40.8	18.4	4.8	10.4
23.06.2025	42.5	19.6	4.8	10.2
26.06.2025	44.2	20.8	5.2	10.6
30.06.2025	47.4	22.4	5.4	10.8
Max	58.60	29.40	5.80	11.80
Min	40.80	18.40	4.80	10.20
Average	48.10	23.09	5.18	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

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. Parui

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END OF REPORT

--1--

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/ESLBI/040

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 InGate Lat: 21°58'23.32"N & Long: 85°15'44.18"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)
02.06.2025	64.8	32.4	8.8	14.8
05.06.2025	60.4	30.1	8.2	14.2
09.06.2025	56.8	28.3	7.8	13.8
12.06.2025	54.2	26.8	7.6	13.6
16.06.2025	53.1	26.5	7.2	13.4
19.06.2025	52.4	25.1	6.4	12.2
23.06.2025	53.8	26.1	6.2	11.2
26.06.2025	55.2	27.2	6.4	11.6
30.06.2025	58.4	28.5	6.8	12.2
Max	64.80	32.40	8.80	14.80
Min	52.40	25.10	6.20	11.20
Average	56.57	27.89	7.27	13.00
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 - Khurdha
Mail Id: greenforceassociates@gmail.com

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	AAQ3- Village Kenduhidi; Lat21°59'45.70"N & Long: 85°16'14.44"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)
02.06.2025	56.4	28.2	5.2	10.4
05.06.2025	54.2	26.8	5.0	10.2
09.06.2025	51.6	25.5	<4.0	<9.0
12.06.2025	48.1	23.5	<4.0	<9.0
16.06.2025	42.4	19.8	<4.0	<9.0
19.06.2025	38.2	19.1	<4.0	<9.0
23.06.2025	35.2	16.4	<4.0	<9.0
26.06.2025	36.3	16.8	<4.0	<9.0
30.06.2025	38.4	18.2	<4.0	<9.0
Max	56.40	28.20	<4.0	<9.0
Min	35.20	16.40	<4.0	<9.0
Average	44.53	21.59	<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
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

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

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END OF REPORT

--1--

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,
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Mail Id: greenforceassociates@gmail.com

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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- Village Badipada Lat:21°58'4.60"N & Long:85°18'33.80"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)
02.06.2025	57.5	28.7	5.2	10.6
05.06.2025	55.2	27.5	4.8	9.8
09.06.2025	52.4	25.4	<4.0	<9.0
12.06.2025	49.6	22.8	<4.0	<9.0
16.06.2025	44.2	21.1	<4.0	<9.0
19.06.2025	39.6	18.2	<4.0	<9.0
23.06.2025	35.1	16.8	<4.0	<9.0
26.06.2025	36.4	17.2	<4.0	<9.0
30.06.2025	38.6	18.3	<4.0	<9.0
Max	57.50	28.70	<4.0	<9.0
Min	35.10	16.80	<4.0	<9.0
Average	45.40	21.78	<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

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

-1-



GREEN FORCE ASSOCIATES PRIVATE LIMITED

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

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

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Mine Office; Lat:21°58'9.21"N & Long: 85°15'33.67"E; AAQ2- Near Mine In Gate; Lat:21°58'23.32"N & Long: 85°15'44.18"E; AAQ3- Village Kenduhidi; Lat:21°59'45.70"N & Long: 85°16'14.44"E; AAQ4- Village Badipada; Lat:21°58'4.60"N & Long: 85°18'33.80"E;		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m ³)			
	AAQ1	AAQ2	AAQ3	AAQ4
02.06.2025	0.33	0.38	0.3	0.31
05.06.2025	0.33	0.36	0.3	0.3
09.06.2025	0.32	0.35	0.28	0.28
12.06.2025	0.32	0.34	0.26	0.28
16.06.2025	0.31	0.34	0.21	0.24
19.06.2025	0.3	0.33	0.2	0.2
23.06.2025	0.29	0.31	0.18	0.18
26.06.2025	0.3	0.32	0.17	0.17
30.06.2025	0.3	0.33	0.18	0.19
Max	0.33	0.38	0.30	0.31
Min	0.29	0.31	0.17	0.17
Average	0.31	0.34	0.23	0.24
NAAQ* Standard	4 mg/m ³ (for 1hr)			
Methods of Analysis	IS: 5182 (Part- 10)			

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. Parit

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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/ESLBI/044

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	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

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/ESLBI/045

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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)
04.06.2025	51.6	25.2	<4.0	<9.0
07.06.2025	50.4	24.6	<4.0	<9.0
11.06.2025	46.7	22.4	<4.0	<9.0
14.06.2025	42.4	19.6	<4.0	<9.0
18.06.2025	40.6	18.2	<4.0	<9.0
21.06.2025	38.2	16.8	<4.0	<9.0
25.06.2025	35.4	15.5	<4.0	<9.0
28.06.2025	34.6	14.8	<4.0	<9.0
Max	51.60	25.20	<4.0	<9.0
Min	34.60	14.80	<4.0	<9.0
Average	42.49	19.64	<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. Panda

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Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Report No- GFAPL/25-26/ESLBI/046

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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/m3)	
	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/m3 (for 1hr)	
Methods of Analysis	IS: 5182 (Part- 10)	

Reviewed By

Authorized Signatory

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

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Technical Manager
Mr. S.K. Parhi WA

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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° 58' 17.73"N & Long: 85° 15' 33.03"E F2: Haul Road; Lat: 21° 51' 54.95"N & Long: 85° 15' 50.13"E F3: Near Crushing Plant; Lat: 21° 58' 21.94"N & Long: 85° 15' 35.01"E F4: Near Screening Plant; Lat: 21° 58' 12.05"N & Long: 85° 15' 35.19"E F5: Ore Storage Area; Lat: 21° 58' 05.02"N & Long: 85° 15' 34.55"E F6: West Dump; Lat: 21° 58' 10.99"N & Long: 85° 15' 37.47"		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result ($\mu\text{g}/\text{m}^3$)					
		F1	F2	F3	F4	F5	F6
1	04.06.2025	384.2	412.5	428.3	456.2	386.2	392.5
2	07.06.2025	456.4	478.6	494.2	504.5	432.1	424.3
3	11.06.2025	372.5	402.5	427.3	453.1	356.2	364.2
4	14.06.2025	305.2	356.4	368.2	386.2	298.2	304.2
5	18.06.2025	298.6	318.5	335.6	354.2	276.4	264.8
6	21.06.2025	246.2	270.2	301.2	324.5	234.2	220.4
7	25.06.2025	279.3	294.3	324.1	356.2	260.5	251.3
8	28.06.2025	316.3	324.2	343.7	372.5	286.4	285.6
Max		456.40	478.60	494.20	504.50	432.10	424.30
Min		246.20	270.20	301.20	324.50	234.20	220.40
Average		332.34	349.24	377.83	400.93	316.28	313.41
Fugitive Standard		1200 $\mu\text{g}/\text{m}^3$					
Methods of Analysis		IS:5182 (Part-4)					

Reviewed By
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Miss. Arti Sahoo

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
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Report No- GFAPL/25-26/ESLBI/048

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	12.06.2025	Date of Completion	13.06.2025
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°58'9.21"N & Long:85°15'33.67"E	60.4	41.2
2	Near Mine In Gate; Lat:21°58'23.32"N & Long:85°15'44.18"E	68.2	58.6
3	Near Screening Plant-1; Lat:21°58'09.21"N & Long:85°15'33.66"E	69.2	63.5
4	Near Crusher; Lat:21°58'22.32"N & Long:85°15'34.13"E	69.5	63.8
5	Near W.Bridge-1; Lat: 21°57'53.99"N & Long:85°15'49.64"E	68.2	58.2
6	Near W.Bridge -2; Lat:21°57'54.26"N & Long:85°15'53.53"E	68.1	57.6
<i>Noise permissible limits as per CPCB Norms in dB(A) Leq</i>			
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

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TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Kenduhidi; Lat:21°59'45.70"N & Long:85°16'14.44"E	48.9	39.4
2	Village Badipada; Lat:21°58'4.60"N & Long:85°18'33.80"E	49.1	39.1
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
<i>Noise permissible limits as per CPCB Norms in dB(A) Leq</i>			
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
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

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Plot No- 1363-3892, Baibhab Realcon, Fulnakhara,
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Report No- GFAPL/25-26/ESLBI/050

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	12.06.2025	Date of Receiving	13.06.2025
Date of Analysis	13.06.2025	Date of Complete	17.06.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	---	445
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	17.86
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	80.2
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	%	---	1.4
07	Oxygen as O ₂	IS-13270:1992	%	---	16.6

Reviewed By

CHIEF ANALYST

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Bhubaneswar, ODISHA
Miss. Arti Sahoo

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TECHNICAL MANAGER

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Mr. S.K. Parhi

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GREEN FORCE ASSOCIATES PRIVATE LIMITED

Plot No.-1666, Phase-II, Delta Colony, Nilakantheswar Marg,
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Report No- GFAPL/25-26/ESLBI/051

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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	12.06.2025	Date of Receiving	13.06.2025
Date of Analysis	13.06.2025	Date of Complete	17.06.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	60.8

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BHUBANESWAR, ODISHA
Miss. Arti Sahoo

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BHUBANESWAR, ODISHA
Mr. S.K. Parhi

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), 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 24th ED 4500- H+B:2023	--	6.5-9.0	7.72	7.14
2.	Total Suspended Solids	APHA 24th ED 2540-D: 2023	mg/l	200	224	18
3.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	--	6.2	<2.0
4.	Biological Oxygen Demand as BOD	IS 3025 (PART 44):1993	mg/l	100	36	<2.0
5.	Chemical Oxygen Demand as COD	APHA 24 th ED 5220 B:2023	mg/l	--	124	10

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
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/ ESLBI/052

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), 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 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

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/ESLBI/053

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	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
Chief Analyst
Bhubaneswar, Odisha
Miss. Arti Sahoo

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

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	1.28	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

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
Mr. S.K. Parhi

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	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
CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

Chief Analyst
Bhubaneswar, ODISHA
Miss. Arti Sahoo

Authorized Signatory
TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

Technical Manager
Mr. S.K. Parhi

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	--	80
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	76.8
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

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Bhubaneswar, ODISHA
Miss. Arti Sahoo

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Bhubaneswar, ODISHA
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Report No- GFAPL/25-26/ESLBI/055

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	--	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

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/ESLBI/056

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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	O3 (µg/m ³)	NH3 (µg/m ³)
AAQ-1	Near Mine Office;	19.06.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	19.06.2025	<8.0	<20.0
AAQ-3	Village Kenduhidi;	19.06.2025	<8.0	<20.0
AAQ-4	Village Badipada;	19.06.2025	<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
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Arif Sahoo

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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.	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

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

Chief Analyst

Mr. S.K. Parhi

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 - Khurdha

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

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 Mine Office;	19.06.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine In Gate;	19.06.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Village Kenduhidi;	19.06.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Village Badipada;	19.06.2025	<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

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
Mr. S.K. Parida

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

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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
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 Mine Office;	19.06.2025	<2.0
AAQ-2	Near Mine In Gate;	19.06.2025	<2.0
AAQ-3	Village Kenduhidi;	19.06.2025	<2.0
AAQ-4	Village Badipada;	19.06.2025	<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

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

Authorized Signatory

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

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END OF REPORT



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/ESLBI/057

Issued Date-07.07.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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

Arti Sahoo
ANALYST

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

Authorized Signatory

S.K. Parni
TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA
Mr. S.K. Parni

Note:

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END OF REPORT

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



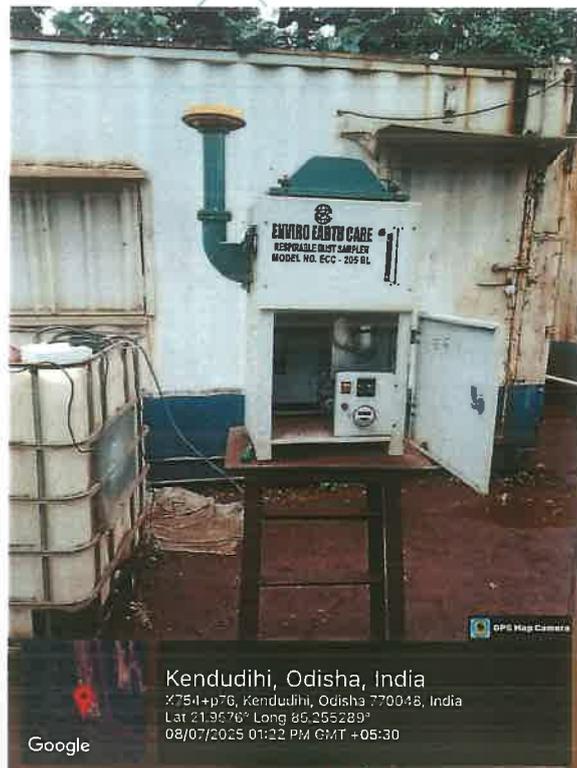
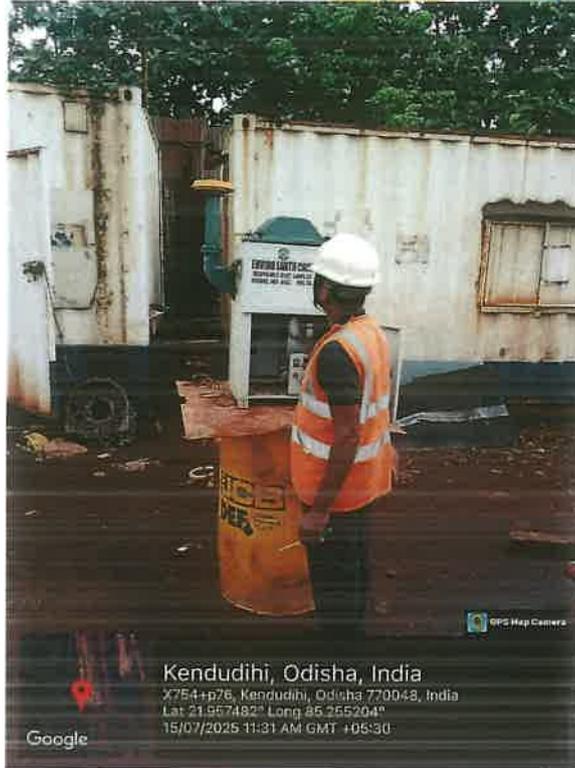
NARAYANI

**Client- M/s. Nadidih Iron Ore Mines (BICO),
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/ESLBI/057

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	AAQ1- Near Mine Office Lat:21°58'9.21"N & Long:85°15'33.67"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	45.5	21.6	5.2	10.2
07.07.2025	42.8	20.8	4.8	9.8
10.07.2025	45.4	21.8	5.4	10.4
14.07.2025	41.6	20.1	4.8	9.8
17.07.2025	46.8	22.8	5.4	10.4
21.07.2025	45.5	22.4	5	10
24.07.2025	46.2	22.9	5.0	10.2
28.07.2025	48.4	23.6	5.2	10.4
31.07.2025	50.1	24.8	5.4	10.8
Max	50.10	24.80	5.40	10.80
Min	41.60	20.10	4.80	9.80
Average	45.81	22.31	5.13	10.22
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

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

--1--

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 InGate Lat: 21°58'23.32"N & Long: 85°15'44.18"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	55.2	26.4	5.8	11.8
07.07.2025	52.6	25.1	5.4	10.6
10.07.2025	56.4	27.3	6.2	11.8
14.07.2025	51.8	24.2	5.2	10.4
17.07.2025	55.9	26.8	5.8	11.2
21.07.2025	54.2	26.6	5.4	10.8
24.07.2025	53.9	26.2	5.2	10.4
28.07.2025	56.8	27.9	5.8	10.8
31.07.2025	57.2	28.6	6.2	11.8
Max	57.20	28.60	6.20	11.80
Min	51.80	24.20	5.20	10.40
Average	54.89	26.57	5.67	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

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. Parida

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Report No- GFAPL/25-26/ESLBI/059

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	AAQ3- Village Kenduhidi; Lat21°59'45.70"N & Long: 85°16'14.44"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	15.8	<4.0	<9.0
07.07.2025	32.6	13.2	<4.0	<9.0
10.07.2025	33.4	13.5	<4.0	<9.0
14.07.2025	30.4	12.7	<4.0	<9.0
17.07.2025	32.8	14.1	<4.0	<9.0
21.07.2025	33.4	15.4	<4.0	<9.0
24.07.2025	31.8	14.8	<4.0	<9.0
28.07.2025	34.2	16.2	<4.0	<9.0
31.07.2025	36.4	17.7	<4.0	<9.0
Max	36.40	17.70	<4.0	<9.0
Min	30.40	12.70	<4.0	<9.0
Average	33.24	14.82	<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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Report No- GFAPL/25-26/ESLBI/060

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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- Village Badipada Lat:21°58'4.60"N & Long:85°18'33.80"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	33.9	13.8	<4.0	<9.0
07.07.2025	31.6	13.1	<4.0	<9.0
10.07.2025	32.8	13.3	<4.0	<9.0
14.07.2025	28.6	12.4	<4.0	<9.0
17.07.2025	31.9	13.8	<4.0	<9.0
21.07.2025	28.6	12.4	<4.0	<9.0
24.07.2025	30.1	12.8	<4.0	<9.0
28.07.2025	32.4	13.9	<4.0	<9.0
31.07.2025	33.5	15.1	<4.0	<9.0
Max	33.90	15.10	<4.0	<9.0
Min	28.60	12.40	<4.0	<9.0
Average	31.49	13.40	<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
Chief Analyst
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

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Mine Office; Lat:21°58'9.21"N & Long: 85°15'33.67"E; AAQ2- Near Mine In Gate; Lat:21°58'23.32"N & Long: 85°15'44.18"E; AAQ3- Village Kenduhidi; Lat:21°59'45.70"N & Long: 85°16'14.44"E; AAQ4- Village Badipada; Lat:21°58'4.60"N & Long: 85°18'33.80"E;		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
03.07.2025	0.28	0.32	0.15	0.16
07.07.2025	0.27	0.31	0.14	0.14
10.07.2025	0.29	0.32	0.14	0.14
14.07.2025	0.24	0.29	0.13	0.12
17.07.2025	0.28	0.31	0.14	0.13
21.07.2025	0.26	0.3	0.14	0.12
24.07.2025	0.27	0.29	0.13	0.12
28.07.2025	0.28	0.31	0.14	0.13
31.07.2025	0.3	0.33	0.15	0.14
Max	0.30	0.33	0.15	0.16
Min	0.24	0.29	0.13	0.12
Average	0.27	0.31	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
(Mr. S.K. Parhi)

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END OF REPORT

-1-

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	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

Authorized Signatory

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

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

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END OF REPORT

-1-

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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)
03.07.2025	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

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/ESLBI/064

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	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

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Miss. Arti Sahoo

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Mr. S.K. Parhi

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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° 58' 17.73"N & Long: 85° 15' 33.03"E F2: Haul Road; Lat: 21° 51' 54.95"N & Long: 85° 15' 50.13"E F3: Near Crushing Plant; Lat: 21° 58' 21.94"N & Long: 85° 15' 35.01"E F4: Near Screening Plant; Lat: 21° 58' 12.05"N & Long: 85° 15' 35.19"E F5: Ore Storage Area; Lat: 21° 58' 05.02"N & Long: 85° 15' 34.55"E F6: West Dump; Lat: 21° 58' 10.99"N & Long: 85° 15' 37.47"		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result ($\mu\text{g}/\text{m}^3$)					
		F1	F2	F3	F4	F5	F6
1	02.07.2025	264.2	258.3	294.2	298.6	248.3	253.4
2	05.07.2025	248.3	249.3	282.5	286.2	237.8	242.8
3	09.07.2025	328.3	356.8	408.2	432.8	321.5	342.6
4	12.07.2025	271.5	297.4	341.2	356.9	267.3	278.2
5	16.07.2025	253.4	268.3	304.1	327.3	234.2	242.1
6	19.07.2025	228.6	259.8	297.2	314.2	219.6	234.2
7	23.07.2025	273.5	284.1	314.8	356.4	274.2	256.1
8	26.07.2025	212.8	243.8	264.5	273.1	208.3	204.1
9	30.07.2025	237.6	240.9	284.6	304.2	224.5	216.8
Max		328.30	356.80	408.20	432.80	321.50	342.60
Min		212.80	240.90	264.50	273.10	208.30	204.10
Average		257.58	275.05	310.14	327.74	248.41	252.26
Fugitive Standard		1200 $\mu\text{g}/\text{m}^3$					
Methods of Analysis		IS:5182 (Part-4)					

Reviewed By
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 BHUBANESWAR, ODISHA

Authorized Signatory
TECHNICAL MANAGER
 GREENFORCE ASSOCIATES PRIVATE LIMITED
 Technical Manager
 BHUBANESWAR, ODISHA

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--1--

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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	14.07.2025	Date of Completion	15.07.2025
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°58'9.21"N & Long:85°15'33.67"E	59.9	41.4
2	Near Mine In Gate; Lat:21°58'23.32"N & Long:85°15'44.18"E	68.8	58.8
3	Near Screening Plant-1; Lat:21°58'09.21"N & Long:85°15'33.66"E	69.8	64.1
4	Near Crusher; Lat:21°58'22.32"N & Long:85°15'34.13"E	69.4	64.2
5	Near W.Bridge-1; Lat: 21°57'53.99"N & Long:85°15'49.64"E	68.3	58.4
6	Near W.Bridge -2; Lat:21°57'54.26"N & Long:85°15'53.53"E	68.3	57.2
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
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 Miss. Arti Sahoo

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 BHUBANESHWAR, ODISHA

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Kenduhidi; Lat:21°59'45.70"N & Long:85°16'14.44"E	48.8	38.9
2	Village Badipada; Lat:21°58'4.60"N & Long:85°18'33.80"E	48.6	38.6
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
<i>Noise permissible limits as per CPCB Norms in dB(A) Leq</i>			
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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Miss. Aru Sahoo

TECHNICAL MANAGER
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Technical Manager
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Mr. S.K. Parida

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	12.07.2025	Date of Receiving	13.07.2025
Date of Analysis	14.07.2025	Date of Complete	17.07.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	---	447
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	18.1
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	83.5
04	Sulphur dioxide as SO ₂	IS-11255(PART-2) 1985	mg/Nm ³	600	68.6
05	Carbon Monoxide as CO	IS-13270:1992	%	1%	<0.2
06	Carbon Dioxide as CO ₂	IS-13270:1992	%	---	1.3
07	Oxygen as O ₂	IS-13270:1992	%	---	16.8

Reviewed By
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Miss. Arti Sahoo

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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	12.07.2025	Date of Receiving	13.07.2025
Date of Analysis	14.07.2025	Date of Complete	17.07.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	64.2

Reviewed By

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), 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	7.64	7.18
2.	Total Suspended Solids	APHA 24th ED 2540-D: 2023	mg/l	200	232	20
3.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	--	4.8	<2.0
4.	Biological Oxygen Demand as BOD	IS 3025 (PART 44):1993	mg/l	100	32	<2.0
5.	Chemical Oxygen Demand as COD	APHA 24 th ED 5220 B:2023	mg/l	--	80	8

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

Reviewed By

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Miss. Arti Sahoo

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), 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 i.e., Outlet

Reviewed By

CHIEF ANALYST
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BHUBANESHWAR, ODISHA
Miss. Arti Sahoo

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

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

Issued Date-05.08.2025

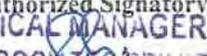
TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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
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 Chief Analyst, ODISHA
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TECHNICAL MANAGER
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 Technical Manager, ODISHA
 (Mr. S.K. Parhi)

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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
Chief Analyst
Miss. Arti Sahoo

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

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END OF REPORT

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 ^o 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 ^o 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

Chief Analyst
Bhubaneswar, ODISHA
Miss. Arti 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

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

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Sahoo

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

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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 ^o 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 ^o 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
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

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Miss. Arti Sahoo

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TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESWAR, ODISHA

Mr. S.K. Pathi

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 Mine Office;	20.07.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	20.07.2025	<8.0	<20.0
AAQ-3	Village Kenduhidi;	20.07.2025	<8.0	<20.0
AAQ-4	Village Badipada;	20.07.2025	<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
Chief Analyst
Miss. Arti Sahoo

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

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 Mine Office;	20.07.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine In Gate;	20.07.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Village Kenduhidi;	20.07.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Village Badipada;	20.07.2025	<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

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
Mr. S.K. Parhi

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

Issued Date-05.08.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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
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 Mine Office;	20.07.2025	<2.0
AAQ-2	Near Mine In Gate;	20.07.2025	<2.0
AAQ-3	Village Kenduhidi;	20.07.2025	<2.0
AAQ-4	Village Badipada;	20.07.2025	<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

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

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



NARAYANI

**Client- M/s. Nadidih Iron Ore Mines (BICO),
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**

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Bico Out Gate Lat: 21°57'51.36"N & Long: 85°15'59.43"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	54.8	27.2	6	11.8
07.08.2025	52.6	25.9	5.4	10.4
11.08.2025	54.2	26.8	5.6	10.8
14.08.2025	49.6	24.1	5.2	10.4
18.08.2025	47.5	22.8	4.8	10
21.08.2025	44.2	21.1	4.6	9.8
25.08.2025	40.4	19.2	<4.0	<9.0
28.08.2025	43.8	20.8	<4.0	<9.0
Max	54.80	27.20	6.00	11.80
Min	40.40	19.20	<4.0	<9.0
Average	48.39	23.49	5.27	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

Authorized Signatory

CHIEF ANALYST

Chief Analyst

GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA
Miss. Anu Sahoo

TECHNICAL MANAGER

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

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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°58'23.32"N & Long: 85°15'44.18"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	63.4	31.6	7.2	14.2
07.08.2025	59.2	29.2	6.4	12.8
11.08.2025	60.8	30.1	6.8	13.4
14.08.2025	55.4	27.5	6	12.2
18.08.2025	52.6	25.8	5.4	11.2
21.08.2025	48.1	23.2	5.2	10.4
25.08.2025	45.6	21.8	4.8	10
28.08.2025	47.2	23.2	5	10.2
Max	63.40	31.60	7.20	14.20
Min	45.60	21.80	4.80	10.00
Average	54.04	26.55	5.85	11.80
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

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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- Village Kenduhidi; Lat21°59'45.70"N & Long: 85°16'14.44"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	41.4	20.5	<4.0	<9.0
07.08.2025	36.8	18.1	<4.0	<9.0
11.08.2025	38.2	18.8	<4.0	<9.0
14.08.2025	34.8	16.8	<4.0	<9.0
18.08.2025	32.1	15.4	<4.0	<9.0
21.08.2025	29.2	14.4	<4.0	<9.0
25.08.2025	25.4	11.8	<4.0	<9.0
28.08.2025	26.4	12.1	<4.0	<9.0
Max	41.40	20.50	<4.0	<9.0
Min	25.40	11.80	<4.0	<9.0
Average	33.04	15.99	<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
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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END OF REPORT

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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- Village Badipada Lat:21°58'4.60"N & Long:85°18'33.80"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	39.1	19.5	<4.0	<9.0
07.08.2025	35.8	17.4	<4.0	<9.0
11.08.2025	37.2	18.2	<4.0	<9.0
14.08.2025	34.2	16.6	<4.0	<9.0
18.08.2025	31.6	15.1	<4.0	<9.0
21.08.2025	28.1	13.1	<4.0	<9.0
25.08.2025	24.6	11.2	<4.0	<9.0
28.08.2025	25.8	11.8	<4.0	<9.0
Max	39.10	19.50	<4.0	<9.0
Min	24.60	11.20	<4.0	<9.0
Average	32.05	15.36	<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

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

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA

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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/ESLBI/077

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Bico Out Gate; Lat: 21°57'51.36"N & Long: 85°15'59.43"E; AAQ2- Near Mine In Gate; Lat:21°58'23.32"N & Long: 85°15'44.18"E; AAQ3- Village Kenduhidi; Lat:21°59'45.70"N & Long: 85°16'14.44"E; AAQ4- Village Badipada; Lat:21°58'4.60"N & Long: 85°18'33.80"E;		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
04.08.2025	0.33	0.36	0.21	0.2
07.08.2025	0.31	0.33	0.19	0.18
11.08.2025	0.32	0.34	0.2	0.19
14.08.2025	0.31	0.33	0.17	0.17
18.08.2025	0.28	0.32	0.16	0.15
21.08.2025	0.26	0.3	0.14	0.13
25.08.2025	0.23	0.26	0.12	0.12
28.08.2025	0.22	0.27	0.12	0.12
Max	0.33	0.36	0.21	0.20
Min	0.22	0.26	0.12	0.12
Average	0.28	0.31	0.16	0.16
NAAQ* Standard	4 mg/m3 (for 1hr)			
Methods of Analysis	IS: 5182 (Part- 10)			

Reviewed By

Authorized Signatory

CHIEF ANALYST

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
BHUBANESWAR, ODISHA

GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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)
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

Authorized Signatory

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

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

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GREEN FORCE ASSOCIATES PRIVATE LIMITED

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	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

Authorized Signatory

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
BHUBANESWAR, ODISHA
Ms. Arpita Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA

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END OF REPORT

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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° 58' 17.73"N & Long: 85° 15' 33.03"E F2: Haul Road; Lat: 21° 51' 54.95"N & Long: 85° 15' 50.13"E F3: Near Crushing Plant; Lat: 21° 58' 21.94"N & Long: 85° 15' 35.01"E F4: Near Screening Plant; Lat: 21° 58' 12.05"N & Long: 85° 15' 35.19"E F5: Near W. Bridge-1; Lat: 21° 57' 53.99"N & Long: 85° 15' 49.64"E F6: Near W. Bridge-2; Lat: 21° 57' 54.26"N & Long: 85° 15' 53.53"E		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result ($\mu\text{g}/\text{m}^3$)					
		F1	F2	F3	F4	F5	F6
1	02.08.2025	294.5	301.2	405.2	442.5	278.2	284.6
2	06.08.2025	253.4	248.6	382.4	392.4	243.2	239.2
3	09.08.2025	287.6	294.5	304.2	328.6	256.8	269.4
4	13.08.2025	224.6	242.4	249.6	276.2	216.2	226.2
5	16.08.2025	198.2	206.2	218.6	243.5	188.5	194.6
6	20.08.2025	124.5	118.6	132.4	184.2	135.6	128.3
7	23.08.2025	94.2	90.4	106.5	126.5	88.1	92.4
8	27.08.2025	132.5	146.8	154.2	188.3	130.1	140.2
9	30.08.2025	248.2	264.3	284.3	297.3	234.5	246.5
Max		294.50	301.20	405.20	442.50	278.20	284.60
Min		94.20	90.40	106.50	126.50	88.10	92.40
Average		206.41	212.56	248.60	275.50	196.80	202.38
Fugitive Standard		1200 $\mu\text{g}/\text{m}^3$					
Methods of Analysis		IS:5182 (Part-4)					

Reviewed By

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

Authorized Signatory

TECHNICAL MANAGER
 Technical Manager
 GREENFORCE ASSOCIATES PRIVATE LIMITED
 BHUBANESHWAR, ODISHA

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END OF REPORT

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	14.08.2025	Date of Completion	15.08.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Near Bico Out Gate; Lat: 21°57'51.36"N & Long: 85°15'59.43"E;	58.9	40.8
2	Near Mine In Gate; Lat:21°58'23.32"N & Long: 85°15'44.18"E;	69.1	58.2
3	Near Screening Plant-1; Lat:21°58'09.21"N & Long:85°15'33.66"E	69.6	64.5
4	Near Crusher; Lat:21°58'22.32"N & Long:85°15'34.13"E	69.9	65.4
5	Near W.Bridge-1; Lat: 21°57'53.99"N & Long:85°15'49.64"E	68.6	58.2
6	Near W.Bridge -2; Lat:21°57'54.26"N & Long:85°15'53.53"E	68.5	56.9
<i>Noise permissible limits as per CPCB Norms in dB(A) Leq</i>			
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

Miss. Aarti Sahoo
Bhubaneswar, Odisha

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

Technical Manager
Mr. S.K. Parhi
Bhubaneswar, Odisha

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END OF REPORT

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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 Kenduhidi; Lat:21°59'45.70"N & Long: 85°16'14.44"E;	48.9	38.6
2	Village Badipada; Lat:21°58'4.60"N & Long: 85°18'33.80"E;	48.2	38.5
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
<i>Noise permissible limits as per CPCB Norms in dB(A) Leq</i>			
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

GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
BHUBANESWAR, ODISHA

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA

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END OF REPORT

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	13.08.2025	Date of Receiving	14.08.2025
Date of Analysis	14.08.2025	Date of Complete	17.08.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	---	443
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	17.77
03	Particulate Matter as PM	IS-11255(PART-1) 1985 Gravimetric Method	mg/Nm ³	100	78.3
04	Sulphur dioxide as SO ₂	IS-11255(PART-2) 1985	mg/Nm ³	600	64.2
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	%	---	16.6

Reviewed By

Authorized Signatory

CHIEF ANALYST

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

GREENFORCE ASSOCIATES PRIVATE LIMITED
Bhubaneswar, Odisha

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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	17.08.2025
Sampling Location & Coordinates	ST- DG SET; Lat: 21°58'23.31"N & Long: 85°15'37.17"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	60.6

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/ESLBI/085

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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.	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 SO4)	APHA 24th ED 4500-SO4 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

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED

BHUBANESHWAR, ODISHA

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ASSOCIATES PRIVATE LIMITED

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	SW3- Topadihi Nala; Lat- 21°59'21.57"N; & Long: 85°18'15.30"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	--	120
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	65
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	5.5-9.0	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	--	110
6.	Chloride (as Cl)	APHA 24th ED 4500- CI-B:2023	mg/l	--	14
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	--	0.3
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	--	4.5
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	--	<0.05
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	--	<0.05

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/ESLBI/086

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	SW3- Topadihi Nala; Lat- 21°59'21.57"N; & Long: 85°18'15.30"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	--	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	--	<0.03
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
 Chief Analyst
BHUBANESWAR, ODISHA
 Mrs. Arti Sahoo


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

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END OF REPORT

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Dispensary); Lat: 21°58'24.10"N; & Long: 85°15'55.36"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
17.	Colour	IS 3025: (Part 4)- 2021	Hazen	--	70
18.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	84
19.	pH @25°C	APHA 24th ED 4500- H+B:2023	--	5.5-9.0	7.3
20.	Conductivity	APHA 24th ED 2510-B: 2023	µS/cm	--	216
21.	Total Dissolved Solid	APHA 24th ED 2540-C: 2023	mg/l	--	135
22.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	--	17
23.	Cyanide (as CN)	APHA 24th ED 4500-CN-F	mg/l	--	<0.02
24.	Hexavalent Chromium(asCr+6)	APHA 24 th ED 3500-Cr-B: 2023	mg/l	--	<0.05
25.	Iron (as Fe)	APHA 24th ED 3500-Fe-B: 2023	mg/l	--	0.35
26.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	--	7.4
27.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	--	0.07
28.	Oil & Grease	IS 3025 PART 39-1991 RA-2003	mg/l	10	<2.0
29.	Dissolved oxygen	APHA 24th ED 4500 O-C:2023	mg/l	--	6.4
30.	BOD (3)days at 27°C	IS 3025 (PART 44): 1993 REA-2009	mg/l	--	<2.0
31.	Chemical Oxygen Demand as COD	APHA 24th ED 5220 C:2023	mg/l	--	14
32.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	0.09

Reviewed By

CHIEF ANALYST

GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
BHUBANESWAR, ODISHA

Ms. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA

Mr. S.K. Parhi

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Dispensary); Lat: 21°58'24.10"N; & Long: 85°15'55.36"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	--	2.76
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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END OF REPORT

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Kendudih; 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	7.08	7.06	7.12	7.14
4	Total Dissolved Solids (TDS)	APHA 24th ED: 2540-C: 2023	mg/l	500	2000	186	156	160	186
5	Chloride (as Cl)	APHA 24th Ed 4500- Cl-B:2023	mg/l	250	1000	16	14	15	16
6	Total Hardness	APHA 24th ED 2340-C: 2023	mg/l	200	600	122	102	104	174
7	Calcium	APHA 24th Ed 3500- Ca-B:2023	mg/l	75	200	31.7	26.5	26.9	28.9
8	Magnesium	APHA 24th ED 3500-Mg-B: 2023	mg/l	30	100	10.5	8.8	9	10.5
9	Total Alkalinity	APHA 24th ED 2320-B: 2023	mg/l	200	600	115	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	0.24	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-SO4 E: 2023	mg/l	200	400	3.4	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	--	--	9.4	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

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/ESLBI/088

Issued Date-06.09.2025

TEST REPORT

Client Name &Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Kendudih; 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	1.68	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 ED3500Hg: 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 C6H5OH)	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/ESLBI/089

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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; Lat: 21°58'11.97"N & Long: 85°15'32.81"E S2: Village Rengalberha; Lat: 21°57'09.84"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	%	1.06	1.44
3	Water Content (Moisture)	IS: 2720(Part-2)-1973	%	8.1	8.4
4	Specific gravity	IS: 2720(Part-3/Sec1)-1980	Gs	2.69	2.66
5	Sulfate	IS: 2720(Part-27)-1977	mg/Kg	78	128

Reviewed By

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

Authorized Signatory

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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°58'11.97"N & Long: 85°15'32.81"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	206.8	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	1.34	1.26
5.	Calcium (as Ca)	IS: 2720(Part-23)	mg/kg	430	372
6.	Magnesium (as Mg)	GFAPL/SOP/Soil & Rock/04-23	mg/kg	216	180
7.	Nitrogen (as N)	IS:14684: 1999	kg/hect	48	98
8.	Phosphorus (as p)	GFAPL/SOP/Soil & Rock/05-23	kg/hect	24	32
9.	Potassium (as K)	GFAPL/SOP/Soil & Rock/06-23	mg/kg	168	134
10.	Chloride(as Cl)	GFAPL/SOP/Soil & Rock/07-23	mg/kg	134	122
11.	Manganese (as Mn)	GFAPL/SOP/Soil & Rock/08-23	mg/kg	9.6	2.6
12.	Iron (as Fe)	GFAPL/SOP/Soil & Rock/09-23	%	3.01	1.8

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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END OF REPORT

-- of 2--

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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°16'09.91"E S4: 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

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/ESLBI/090

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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°16'09.91"E S4: 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
Chief Analyst
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

TECHNICAL MANAGER
GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
BHUBANESWAR, ODISHA

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END OF REPORT

--2 of 2--

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 ($\mu\text{g}/\text{m}^3$)	NH3 ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Mine Office;	21.08.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	21.08.2025	<8.0	<20.0
AAQ-3	Village Kenduhidi;	21.08.2025	<8.0	<20.0
AAQ-4	Village Badipada;	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

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BHUBANESWAR, ODISHA
Miss. Arti Sahoo

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

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 Mine Office;	21.08.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine In Gate;	21.08.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Village Kenduhidi;	21.08.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Village Badipada;	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

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/ESLBI/091

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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
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 Mine Office;	21.08.2025	<2.0
AAQ-2	Near Mine In Gate;	21.08.2025	<2.0
AAQ-3	Village Kenduhidi;	21.08.2025	<2.0
AAQ-4	Village Badipada;	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
Chief Analyst
BHUBANESWAR, ODISHA
Dr. Arun Sahoo

TECHNICAL MANAGER
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Technical Manager
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Report No- GFAPL/25-26/ESLBI/091

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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

CHIEF ANALYST
GREENFORCE ASSOCIATES PRIVATE LIMITED
Chief Analyst
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

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), M/s ESL Steel Limited, At/PO:- Koira, 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

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

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

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END OF REPORT

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

Issued Date-06.09.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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: Village Nadidih; Lat: 21.973654 & Long: 85.257038 GW2: BICO Colony; Lat: 21.973702 & Long: 85.256985 GW3: Village Nuagaon; Lat: 21.972312 & Long: 85.270283 GW4: Rengalberha Munda Sahi; Lat: 21.96278 & Long: 85.261492		

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	7.08	7.06	7.12	7.14
4	Total Dissolved Solids (TDS)	APHA 24th ED: 2540-C: 2023	mg/l	500	2000	186	156	160	186
5	Chloride (as Cl)	APHA 24th Ed 4500- Cl-B:2023	mg/l	250	1000	16	14	15	16
6	Total Hardness	APHA 24th ED 2340-C: 2023	mg/l	200	600	122	102	104	174
7	Calcium	APHA 24th Ed 3500- Ca-B:2023	mg/l	75	200	31.7	26.5	26.9	28.9
8	Magnesium	APHA 24th ED 3500-Mg-B: 2023	mg/l	30	100	10.5	8.8	9	10.5
9	Total Alkalinity	APHA 24th ED 2320-B: 2023	mg/l	200	600	115	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	0.24	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-SO4 E: 2023	mg/l	200	400	3.4	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	--	--	9.4	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
 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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END OF REPORT

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

Issued Date-06.09.2025

TEST REPORT

Client Name &Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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: Village Nadidihi; Lat: 21.973654 & Long: 85.257038 GW2: BICO Colony; Lat: 21.973702 & Long: 85.256985 GW3: Village Nuagaon; Lat: 21.972312 & Long: 85.270283 GW4: Rengalberha Munda Sahi; Lat: 21.96278 & Long: 85.261492		

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	1.68	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 ED3500Hg: 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

--3 of 4--

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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

Chief Analyst
Miss. Arti Sahoo
BHUBANESWAR, ODISHA

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
Technical Manager
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 Mines (BICO),
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/ESLBI/093

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Bico Out Gate Lat: 21°57'51.36"N & Long: 85°15'59.43"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	46.4	22.7	4.8	10
04.09.2025	43.7	21.6	4.6	9.6
08.09.2025	46.8	23.2	4.8	9.8
11.09.2025	44.2	21.8	4.6	9.6
15.09.2025	40.8	19.5	<4.0	<9.0
18.09.2025	45.9	22.2	4.6	9.6
22.09.2025	50.4	24.9	5	10.2
25.09.2025	46.2	22.8	4.8	9.8
29.09.2025	43.8	21.4	<4.0	<9.0
Max	50.40	24.90	5.00	10.20
Min	40.80	19.50	<4.0	<9.0
Average	45.36	22.23	4.74	9.80
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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END OF REPORT

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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°58'23.32"N & Long: 85°15'44.18"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	52.8	26.2	5.8	11.8
04.09.2025	49.6	24.5	5.4	10.6
08.09.2025	52.4	25.8	5.6	11
11.09.2025	50.5	24.8	5.2	10.4
15.09.2025	47.9	23.5	5	10
18.09.2025	54.6	24.6	5.6	10.8
22.09.2025	58.5	29.3	6.2	11.8
25.09.2025	54.5	27.5	5.6	11
29.09.2025	50.2	24.6	4.6	9.8
Max	58.50	29.30	6.20	11.80
Min	47.90	23.50	4.60	9.80
Average	52.33	25.64	5.44	10.80
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
BHUBANESWAR, ODISHA
Miss. Arti Sahoo

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	AAQ3- Village Kenduhidi; Lat21°59'45.70"N & Long: 85°16'14.44"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	29.5	14.1	<4.0	<9.0
04.09.2025	26.8	12.8	<4.0	<9.0
08.09.2025	25.5	12.2	<4.0	<9.0
11.09.2025	27.8	13.1	<4.0	<9.0
15.09.2025	26.4	12.7	<4.0	<9.0
18.09.2025	29.5	13.8	<4.0	<9.0
22.09.2025	27.2	13.2	<4.0	<9.0
25.09.2025	24.3	11.6	<4.0	<9.0
29.09.2025	22.8	10.8	<4.0	<9.0
Max	29.50	14.10	<4.0	<9.0
Min	22.80	10.80	<4.0	<9.0
Average	26.64	12.70	<4.0	<9.0
NAAQ* Standard	100	60	80	80
Methods of Analysis	IS:5182 (Part-23)	IS:5182 (Part-24)	IS:5182 (Part-25)	IS:5182 (Part-6)

CHIEF ANALYST
Reviewed By
GREENFORCE ASSOCIATES PRIVATE LIMITED
BHUBANESWAR, ODISHA

Chief Analyst
Miss. Arti Sahoo

TECHNICAL MANAGER
Authorized Signature
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Report No- GFAPL/25-26/ESLBI/096

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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- Village Badipada Lat:21°58'4.60"N & Long:85°18'33.80"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	28.8	13.9	<4.0	<9.0
04.09.2025	27.1	13.2	<4.0	<9.0
08.09.2025	26.4	12.7	<4.0	<9.0
11.09.2025	29.2	14.2	<4.0	<9.0
15.09.2025	27.5	13.4	<4.0	<9.0
18.09.2025	28.8	13.8	<4.0	<9.0
22.09.2025	26.4	12.8	<4.0	<9.0
25.09.2025	25.1	12.1	<4.0	<9.0
29.09.2025	23.2	11.6	<4.0	<9.0
Max	29.20	14.20	<4.0	<9.0
Min	23.20	11.60	<4.0	<9.0
Average	26.94	13.08	<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

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	AAQ1- Near Bico Out Gate; Lat: 21°57'51.36"N & Long: 85°15'59.43"E; AAQ2- Near Mine In Gate; Lat:21°58'23.32"N & Long: 85°15'44.18"E; AAQ3- Village Kenduhidi; Lat:21°59'45.70"N & Long: 85°16'14.44"E; AAQ4- Village Badipada; Lat:21°58'4.60"N & Long: 85°18'33.80"E;		
Instrument Used	CO Analyser		

Date of Sampling	CO (mg/m3)			
	AAQ1	AAQ2	AAQ3	AAQ4
01.09.2025	0.25	0.32	0.14	0.14
04.09.2025	0.24	0.3	0.13	0.13
08.09.2025	0.26	0.31	0.13	0.13
11.09.2025	0.24	0.3	0.14	0.14
15.09.2025	0.21	0.29	0.13	0.13
18.09.2025	0.24	0.3	0.14	0.13
22.09.2025	0.27	0.32	0.13	0.12
25.09.2025	0.26	0.3	0.12	0.12
29.09.2025	0.24	0.28	0.11	0.11
Max	0.27	0.32	0.14	0.14
Min	0.21	0.28	0.11	0.11
Average	0.25	0.30	0.13	0.13
NAAQ* Standard	4 mg/m3 (for 1hr)			
Methods of Analysis	IS: 5182 (Part-10)			

Reviewed By

Arti Sahoo
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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END OF REPORT

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	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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Miss. Arti Sahoo

TECHNICAL MANAGER
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Report No- GFAPL/25-26/ESLBI/099

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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

Authorized Signatory

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Miss. Arti Sahoo

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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

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Report No- GFAPL/25-26/ESLBI/101

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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° 58' 17.73"N & Long: 85° 15' 33.03"E F2: Haul Road; Lat: 21° 51' 54.95"N & Long: 85° 15' 50.13"E F3: Near Crushing Plant; Lat: 21° 58' 21.94"N & Long: 85° 15' 35.01"E F4: Near Screening Plant; Lat: 21° 58' 12.05"N & Long: 85° 15' 35.19"E F5: Near W. Bridge-1; Lat: 21° 57' 53.99"N & Long: 85° 15' 49.64"E F6: Near W. Bridge-2; Lat: 21° 57' 54.26"N & Long: 85° 15' 53.53"E		
Instrument Used	Respirable Dust Sampler (RDS)		

Sl. No.	Date of Sampling	Result (µg/m ³)					
		F1	F2	F3	F4	F5	F6
1	03.09.2025	240.5	252.5	278.6	294.2	224.5	228.6
2	06.09.2025	294.6	304.2	354.8	384.6	268.2	258.7
3	10.09.2025	262.4	254.2	302.6	364.8	242.5	234.5
4	13.09.2025	290.8	298.7	349.8	402.5	278.3	288.9
5	17.09.2025	342.5	328.6	425.6	467.2	302.4	324.6
6	20.09.2025	268.5	269.8	324.5	355.4	248.3	267.2
7	24.09.2025	213.4	214.5	267.2	286.5	204.5	225.6
8	27.09.2025	176.5	170.6	228.6	237.7	168.2	180.5
	Max	342.50	328.60	425.60	467.20	302.40	324.60
	Min	176.50	170.60	228.60	237.70	168.20	180.50
	Average	261.15	261.64	316.46	349.11	242.11	251.08
	Fugitive Standard	1200 µg/m ³					
	Method	IS:5182 (Part-4)					

GREENFORCE ASSOCIATES PRIVATE LIMITED
 Resigned By
BHUBANESWAR, ODISHA
 Chief Analyst
 Miss. Arti Sahoo

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

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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	11.09.2025	Date of Completion	12.09.2025
Instrument Used	Noise Meter	Sampling Method	As per IS: 9989

S. No.	Locations	Day Time	Night Time
		Results in dB(A)	
1	Near Bico Out Gate; Lat: 21°57'51.36"N & Long: 85°15'59.43"E;	57.3	40.1
2	Near Mine In Gate; Lat:21°58'23.32"N & Long: 85°15'44.18"E;	67.8	57.6
3	Near Screening Plant-1; Lat:21°58'09.21"N & Long:85°15'33.66"E	68.4	62.8
4	Near Crusher; Lat:21°58'22.32"N & Long:85°15'34.13"E	68.6	63.8
5	Near W.Bridge-1; Lat: 21°57'53.99"N & Long:85°15'49.64"E	68.2	56.7
6	Near W.Bridge -2; Lat:21°57'54.26"N & Long:85°15'53.53"E	67.9	55.4

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

GREENFORCE ASSOCIATES PRIVATE LIMITED

Chief Analyst
Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

GREENFORCE ASSOCIATES PRIVATE LIMITED
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Report No- GFAPL/25-26/ESLBI/103

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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 Kenduhidi; Lat:21°59'45.70"N & Long: 85°16'14.44"E;	47.8	37.6
2	Village Badipada; Lat:21°58'4.60"N & Long: 85°18'33.80"E;	47.6	37.8
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
<i>Noise permissible limits as per CPCB Norms in dB(A) Leq</i>			
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
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Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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°58'23.31"N & Long: 85°15'37.17"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	---	441
02	Velocity	IS-11255 (PART-3) 1985	m/sec	---	17.31
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	%	---	1.3
07	Oxygen as O ₂	IS-13270:1992	%	---	16.8

Reviewed By
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BHUBANESWAR, ODISHA
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Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), M/s ESL Steel Limited, At/PO:- Koirra, 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°58'23.31"N & Long: 85°15'37.17"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	56.8

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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.	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 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	6.6	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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Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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

CHIEF ANALYST

Chief Analyst

Miss. Arti Sahoo

Authorized Signatory

TECHNICAL MANAGER

Technical Manager

Mr. S.K. Parhi

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

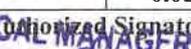
Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	SW3- Topadihi Nala; Lat- 21°59'21.57"N; & Long: 85°18'15.30"E		

Sl. No.	Parameter	Testing Methods	Unit	Standard as per CTO	Result
1.	Colour	IS 3025: (Part 4)- 2021	Hazen	--	120
2.	Total Suspended Solid	APHA 24th ED 2540-D: 2023	mg/l	100	80
3.	pH @25°C	APHA 24th ED 4500- H+B:2023	---	5.5-9.0	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	--	112
6.	Chloride (as Cl)	APHA 24th ED 4500- Cl-B:2023	mg/l	--	15
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	--	0.32
10.	Sulfate (as SO4)	APHA 24th ED 4500-SO4 D: 2023	mg/l	--	4.8
11.	Fluoride (as F)	APHA 24th ED 4500-F-C: 2023	mg/l	--	<0.05
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	--	10
16.	Manganese	IS 3025 PART-59 :2006 RA 2012	mg/l	--	<0.05


CHIEF ANALYST
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 Miss. Arti Sahoo


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 Mr. S.K. Parhi

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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	SW3- Topadihi Nala; Lat- 21°59'21.57"N; & Long: 85°18'15.30"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	--	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	--	<0.03
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

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Chief Analyst
Miss. Arti Sahoo

Authorized Signatory

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

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Dispensary); Lat: 21°58'24.10"N; & Long: 85°15'55.36"E		

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

Reviewed By
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Chief Analyst
Miss. Arti Sahoo

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

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

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore Mines (BICO), 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 Dispensary); Lat: 21°58'24.10"N; & Long: 85°15'55.36"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

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BHUBANESHWAR, ODISHA
Chief Analyst
Miss. Arti Sahoo

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Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), 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	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

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Technical Manager
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Report No- GFAPL/25-26/ESLBI/109

Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO), M/s ESL Steel Limited, At/PO:- Koira, 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

Received By
CHIEF ANALYST
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BHUBANESWAR, ODISHA
Chief Analyst
Miss. Arti Sahoo

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Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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
Instrument Used	Respirable Dust Sampler, Fine Particulate Dust Sampler		

Location Code	Sampling Location	Date of Sampling	O3 ($\mu\text{g}/\text{m}^3$)	NH3 ($\mu\text{g}/\text{m}^3$)
AAQ-1	Near Mine Office;	22.09.2025	<8.0	<20.0
AAQ-2	Near Mine In Gate;	22.09.2025	<8.0	<20.0
AAQ-3	Village Kenduhidi;	22.09.2025	<8.0	<20.0
AAQ-4	Village Badipada;	22.09.2025	<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

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Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) 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 (µg/m ³)	Ni (ng/m ³)	As (ng/m ³)	C6H6 (µg/m ³)	BaP (ng/m ³)
AAQ-1	Near Mine Office;	22.09.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-2	Near Mine In Gate;	22.09.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-3	Village Kenduhidi;	22.09.2025	<0.06	<0.6	<0.44	<5	<1
AAQ-4	Village Badipada;	22.09.2025	<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

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Miss. Arti Sahoo

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TECHNICAL MANAGER

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Issued Date-07.10.2025

TEST REPORT

Client Name & Address	M/s. Nadidih Iron Ore & Mn Mines (BICO) M/s ESL Steel Limited, At/PO:- Koirā, 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 (µg/m ³)
AAQ-1	Near Mine Office;	22.09.2025	<2.0
AAQ-2	Near Mine In Gate;	22.09.2025	<2.0
AAQ-3	Village Kenduhidi;	22.09.2025	<2.0
AAQ-4	Village Badipada;	22.09.2025	<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

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Miss. Arti Sahoo

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Annexure 2

Occupational Health Survey Report

Initial & Periodical Examination details

Nadidihi Iron Ore Mine

Total PME has done from April 2025 to September 2025 – 05

Total IME has completed April 2025 to September 2025 – 18

Periodical Medical Examination Details

SL NO.	DATE	PME CODE	NAME OF EMPLOYEE	COMPANY/ CONTRACTOR
01	01-07-2025	CARE/25/3945	RAJESH KUMAR SHARMA	NSIPL
02	01-07-2025	CARE/25/3950	GURU CHARAN NAYAK	NSIPL
03	01-07-2025	CARE/25/3951	ARABINDA ROY	NSIPL
04	01-07-2025	CARE/25/3952	SUSHIL KUJUR	NSIPL
05	01-07-2025	CARE/25/3949	RAJESH KUMAR PANDEY	NSIPL

Initial Medical Examination Details

SL NO.	DATE	IME CODE	NAME OF EMPLOYEE	COMPANY/ CONTRACTOR
01	14-04-2025	CARE/5/2275	BUDHLAL BOIPAI	NSIPL
02	10-04-2025	JSW/455	SANJU ORAM	NSIPL
03	10-04-2025	JSW/453	BEHERA BIRUA	NSIPL
04	10-04-2025	JSW/452	TULU KUMAR ORAM	NSIPL
05	10-05-2025	JCO/07/3046/25	NANDIKA J REDDY	NSIPL
06	25-05-2025	CARE/25/2872	BISWARANJAN BEHURIA	NSIPL
07	25-05-2025	CARE/25/2873	ASIT DASH	NSIPL
08	25-05-2025	CARE/25/2874	MANOJ KUMAR DASH	NSIPL



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09	01-07-2025	CARE/25/3953	SANTOSH KUMAR PRADHAN	NSIPL
10	01-07-2025	CARE/25/3965	SURAJ HEMBROM	NSIPL
11	01-07-2025	CARE/25/3966	MASIHDASH KONGARI	NSIPL
12	01-07-2025	CARE/25/3964	KALICHARAN DASH	NSIPL
13	01-07-2025	CARE/25/3967	SREERAM MOHANTA	NSIPL
14	01-07-2025	CARE/25/3969	RAJU LOHRA	NSIPL
15	01-07-2025	CARE/25/3970	NARESH LOHRA	NSIPL
16	01-07-2025	CARE/25/3971	SUNIL MOHANTA	NSIPL
17	01-07-2025	CARE/25/3972	KSHIROD CHANDRA MOHANTA	NSIPL
18	01-07-2025	CARE/25/3956	DEEPAK KUMAR JORA	NSIPL

Occupational Health Survey Summary

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.

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.



Medical Officer
Nadidihi Iron Ore Mines



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