ADITYA BIRLA

EMIL

Ref. No. A/ 463 /2023-24

Dated–01.06.2023
(By e-mail)

To

The Director,
Ministry of Environment, Forests & Climate Change
3rd Floor, Vayu Wing, Indira Paryavaran Bhavan
Jor Bagh Road, New Delhi - 110 003
INDIA (diriapolicy-moefcc@gov.in; s.kerketta66@gov.in)

Sub: Submission of half-yearly EC compliance status for the period October-2022 to March-2023 in respect of 1 MTPA Iron Ore Beneficiation Plant at Village-Basantapur, Tehsil-Jhumpura, District-Keonjhar of Essel Mining & Industries Limited.

Ref: 1. Environment Clearance (EC) Vide letter F. No. J-11015/51/2008-IA-II (M) on dated 30.03.2022.
2. S.O. 5845(E), dated the 26th November, 2018

Sir,

With reference to the letters and on the subject cited above, we are submitting herewith the half-yearly EC compliance status along with environmental monitoring report and other relevant documents in respect of 1 MTPA Iron Ore Beneficiation Plant at Village-Basantapur, Tehsil-Jhumpura, District-Keonjhar for the period of **October-2022 to March-2023.**

This is for favour of your kind information.

Thanking you,

Yours Faithfully,
For **ESSEL MINING & INDUSTRIES LTD.**

Pavan Kumar Kakani
Joint President
Head - Iron Ore, Beneficiation & Pelletization

Encl: As above.

Cc: 1. Ministry of Env., Forest and Climate Change, Eastern Regional Office, Bhubaneswar, e-mail: roez.bsr-mef@nic.in
2. The Member Secretary, State Pollution Control Board, Odisha. e-mail: membersecretary@ospcboard.org
3. Regional Director, Central Pollution Control Board, Kolkata. e-mail: zokolkatta.cpcb@nic.in, mkbiswas.cpcb@nic.in

Essel Mining & Industries Ltd.
P.O. Barbil, Dist. Keonjhar,
Odisha-758035, India

Telephone +91 6767 275224, 275422, 276553
Fax +91 6767 275367
CIN U51109WB1950PLC018728

C:\OFFICIAL\PMPL\Envt. Management\Compliance\EC Compliance\EC Upto 2021\Forwarding Letter.Docx
Website www.esselmining.com
Email emilbbl@adityabirla.com

Regd. Office : Industry House, 18th Floor, 10, Camac Street, Kolkata - 700 017

HALF YEARLY COMPLIANCE REPORT OF ENVIRONMENTAL CLEARANCE CONDITIONS

Name of the Project: Compliances to the conditions of the Environmental Clearance for Iron Ore Beneficiation Plant located in Village – Basantpur, Sub-division – Champua, Tehsil- Barbil, District – Keonjhar, Odisha of M/s. Essel Mining & Ind. Ltd.

EC Approval Letter: F. No. J-11015/51/2008-IA-II (M) on dated 18.06.2010 (Original), F. No. J-11015/51/2008-IA-II (M) on dated 27.09.2011 (Transfer of EC to PMPL) and F. No. J-11015/51/2008-IA-II (M) on dated 30.03.2022 (Transfer of EC to EMIL)

Period of Compliance Report: October-2022 to March-2023

Sl. No.	Conditions	Compliance
	Specific conditions	
(i)	The project proponent shall obtain prior Consent to Establish and Consent to operate for the project from the State Pollution Control Board, Orissa and shall effectively implement all the conditions stipulated therein.	Consent to Establish obtained from OSPCB vide letter no-22029/Ind-ll-NOC-4812 dated on 24.12.2010 and the latest Consent to Operate is obtained from OSPCB vide letter no-4886/lND-I-CON-6459 dated 28.03.2023 with validity up to 31.03.2024. The conditions stipulated in the Consent order issued from SPCB, Odisha are being implemented effectively.
(ii)	The water recovery and spill way system shall be so designed that the natural water resources are not affected and that no spill water goes into the nearby Baitarni River.	Zero discharge concept is being adapted in the plant. All the process water is being recycled to the process through concentrate thickener. Adequate safe guard measures have been taken and proper water recovery system /spill way system has been developed for recycle and reuse of the spill water generated from the plant. No water including the surface runoff generated during monsoon is discharged outside the plant premises. The surface runoff is impounded in the rain water harvesting pond within the plant. Hence, the probability of natural water resources are getting affected by spill water is zero.

Sl. No.	Conditions	Compliance
(iii)	The project proponent shall carry out conditioning of the ore with water to mitigate fugitive dust emission.	The raw materials in form of Iron Ore fines of size 0-10mm that are being procured from the nearby mines for beneficiation are already conditioned with water. It is established that the iron ore fines that are reaching at the project site contains 5 to 10% moisture. Fixed water sprinklers arrangement have been made at material stack yard area, loading and unloading points for conditioning of the ore as well as to control the fugitive dust emission. Besides, material feeding point to the beneficiation plant and discharge chutes of the conveyor are fitted with dry fog system to prevent the fugitive dust emission.
(iv)	No activity relating to the project shall be undertaken within 500m of HFL of River Baitarni.	The Plant is far away from the bank of river Baitarani. No activity has been carried out within 500 meter of HFL of the river Baitarani.
(v)	Raw material for beneficiation shall be obtained from the mines existing within 30 km of the plant.	Efforts have been made to procure the raw materials especially iron ore fines from the nearby mines located within 30 km of the plant site. Other raw materials like coke, limestone, Bentonite etc. being not available in the locality, same are procured from outside the state.
(vi)	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as crusher zone, loading and unloading point and all transfer points during handling of the ore. Extensive water sprinkling shall be carried out on roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	The dust control measures at haulage roads, approach road to material stack yard and loading & unloading areas is being carried out with fixed type water sprinklers. In addition to above, mobile water is also deployed to arrest the dust getting airborne due to vehicular movement. All the material feeding points to the plant and discharge chutes of the conveyer are equipped with Dry Fog System. SP is operational at Indurating Furnace area and Bag Filter arrangement have been made at proportionating Building to control the fugitive dust emission. All the necessary air pollution control measures are being strictly followed to control the air pollutant emission to maintain it well within the norms prescribed by CPCB. The air quality at the plant site is well within the prescribed standards of OSPCB /CPCB. Ambient air quality report attached as **Annexure - A.**

Sl. No.	Conditions	Compliance
(vii)	The reject generated during the beneficiation process shall be stacked at earmarked dump site only and it should not be kept active for a long period and their phase-wise stabilization shall be carried out. There shall be one external reject dump in an area of 12.536ha. The maximum height of the dumps shall not exceed 30m having 3 terraces of 10m each and the overall slope of the dump shall be maintained to 28°. The dump should be scientifically vegetated with suitable native species to prevent erosion and surface run off. The reject dump shall be suitably rehabilitated with coco-coir/geo textile to prevent erosion and prevention of fine particles getting airborne. Compliance status shall be submitted to the Ministry of Environment & Forests and its Regional Office located at Bhubaneswar on six monthly basis.	12.536 Ha area within plant premise earmarked for dumping of rejects generated during iron ore beneficiation process and the rejects are being stacked in the area taking all adequate environment protection measures such as the reject dump is being compacted and conditioned in regular interval of time to avoid any sort of fugitive emission getting airborne. The maximum height of the dumps is being kept within 30 m having 3 terraces of 10 m each and the overall slope of the dump is being maintained at below 28°. The dump will be scientifically vegetated with suitable native species once it attains the maturity the same shall be suitably rehabilitated with coco-coir/geo textile to prevent erosion and prevention of fine particles getting airborne. The compliance reports are being submitted to the MoEF Regional Office, BBSR and MoEF &CC, New Delhi on six monthly basis.
(viii)	Catch drains and siltation ponds of appropriate size shall be constructed around the reject dump to prevent run off of water and flow of sediments directly into the Baitarni River and other water bodies. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains shall be regularly desilted particularly after the monsoon and maintained properly. Garland drains, settling tanks and check dams of appropriate size, gradient and length shall be constructed around the reject dump to prevent run off of water and flow of sediments directly into the Baitarni River and other water bodies and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide	Retaining wall (150mtr Length, 200mm width & 2mtr height), catch drains/garland drain (60mtr Length, 500mm width & 500mm depth), with Siltation pond (2mtr Length, 2mtr width & 2.5mtr depth), has been constructed around the earmarked reject dump/tailing cake disposal area to collect the runoff water during rain. The water collected in the siltation pond is being recycled and reused in the plant. The drains and pond is cleaned regularly to accommodate the surface runoff water collection more effective. No water is discharged outside the plant premises. One Rain Water Harvesting structure having holding capacity of 212250 m^3 have been constructed to store the surface runoff water within the plant premise. This water thus collected is being used inside the plant premises for different purposes.

Sl. No.	Conditions	Compliance
	adequate retention period to allow proper settling of silt material. Sedimentation pits shall be constructed at the corners of the garland drains and desilted at regular intervals.	
(ix)	As part of the post project monitoring of ambient air quality, there shall be at least one monitoring station within 500m of the project in predominant down wind direction.	Ambient Air Quality (AAQ) monitoring has been carried out in core as well as buffer zone at 4 locations and these locations has been decided in consultation with Regional Officer, SPCB, Odisha. Based on the predominant wind direction, one AAQ monitoring location has been established within 500m of the project site in Nediguth Village.
(x)	The tailing pond/slime pond shall be lined with impervious lining.	Filter Press with concentrated thickener are being used in place of Tailing Pond to handle slime water but an emergency tailing pond has been constructed to collect the slime water during excessive flow of slime water in to the Thickener & Filter Press. The Emergency tailing pond has been constructed with Cement Concrete. The tailings generated from the filter press in form of dry cake are being disposed off in the earmarked tailing disposal area. The tailing disposal area is properly lined with impervious clay liner.
(xi)	The ground water quality around the tailing pond/slime pond shall be monitored regularly and records maintained.	One monitoring station is established in between the emergency slime pond area and nearby Baitarani river. Ground Water quality monitoring is being carried out on regular interval inside the plant premises and records are maintained. Ground Water Quality Monitoring Report is attached in **Annexure- A.**

Sl. No.	Conditions	Compliance
(xii)	The garland drain shall be constructed around the tailing/slime pond.	Concentrated thickener & Filter Press are being used in the plant for handling slime water /tailing water. The slime water is being sent to the concentrated thickener and from there the recovered water is being recycled to the process and concentrated tailing is being sent to filter press from thickener for the formation of filter cake for onward disposal at the earmarked site inside the plant premises. However, an emergency tailing slime pond has been constructed to handle any sort of emergency situation and pond is made with Cement Concrete.
(xiii)	The decanted water from the tailing/ slime pond shall be re-circulated and there should be zero discharge from the slime/tailing pond.	Filter Press technology and concentrated thickener has been used in process to handle the slime water generated from the process. The slime water is being recycled to the process through the concentrated thickener and the tailings are being sent to filter press for making tailing cake. No slime pond is required for the plant. Only an emergency slime pond has been made to handle any sort of emergency situation. The plant is designed with zero effluent discharge. The decanted water from the emergency slime pond is being recycled to the process through concentrated thickener.

Sl. No.	Conditions	Compliance
(xiv)	The groundwater quality around the tailing/ slime pond shall be monitored regularly. The monitoring network shall be designed in consultation with State Ground Water Board /Central Ground Water Authority. There shall be at least one monitoring station between the tailing/slime pond and the river	Concentrated thickener & Filter Press are used in the plant for handling slime water /tailing water. The slime water is being sent to the concentrated thickener and from there the recovered water is being recycled to the process and concentrated tailing is being sent to filter press from thickener for the formation of filter cake for onward disposal at a earmarked site inside the plant premises. No tailing pond/slime pond is required for the plant. However, an emergency slime pond has been constructed to handle any sort of emergency situation and pond is made with Cement Concrete to avoid any seepage / percolation to contaminate the ground water. Presently, Ground Water monitoring is being carried out inside the plant premises to check the quality of ground water. One monitoring station is in between the emergency slime pond area and river which has been constructed with consultation of the OSPCB officials.
(xv)	Plantation shall be raised in an area of 10.65ha including a green belt of at least 10m width all around the plant by planting the native species in consultation with the local DFO/ Agriculture Department.	Total project area of our integrated plant is 79.77 Acres. 33% of total area which is 26.32 acres which is covered with plantation of about 26,500 saplings of different varieties. The major plantation area is along the boundary of the plant covering 10 m width. This is done in consultation with the local forest dept. officials.
(xvi)	The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	A Report on Rain Water Harvesting in the project area has been prepared in consultation with the Regional Director, CGWA, Bhubaneswar and same have been implemented at the site.
(xvii)	Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers in and around the project area during the beneficiation process. The periodic monitoring [(at least four times in a	One number of water Reservoir having holding capacity of 212250 m^3 have been constructed. During rainy season, surface runoff of the plant area is channelized & collected in the reservoir for industrial use.

Sl. No.	Conditions	Compliance
	year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) once in each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the Central Ground Water Authority and the Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table is getting depleted due to the mining activity, necessary corrective measures shall be carried out.	The reservoir is serving the dual purpose of storage as well as augmentation of ground water potential through recharge. A Hydro-geological study has also been carried out in consultation with CGWB, Odisha. The area is falling under Safe Category as per CGWA notification. Both ground water level & quality are being monitored in and around the plant premises on quarterly basis and the results are being submitted to the Regional Office, MoEF&CC, Bhubaneswar and MoEFCC, New Delhi, Regional Director, CGWB, Bhubaneswar and Member Secretary, Central Ground Water Authority, New Delhi.
(xviii)	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and groundwater) required for the project.	Dept. of Water Resources, Govt. of Odisha allocated 0.305cusec of surface water from the river Baitarani for meeting the requirement of process water. Requisite NOC obtained from the Central Ground Water Authority, New Delhi for withdrawal of Ground water to the tune of 0.35 cusec for the project. NOC obtained from CGWA Attached in **Annexure-B**
(xix)	Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	Hydro-geological study has been carried out in consultation with CGWB, Odisha for the Plant site covering the core and buffer zone. The area is falling under Safe Category as per the CGWA notification. A Report on Rain Water Harvesting in the project area has been prepared in consultation with the Regional Director, CGWB, Bhubaneswar which is being implemented. One number of rain water harvesting structure having capacity of 212250 m^3 has been constructed. During rainy season, surface runoff of the plant area is channelized & collected in the reservoir for use in plant operation.

Sl. No.	Conditions	Compliance
		The reservoir is serving the dual purpose of storage as well as augmentation of ground water potential through recharge.
(xx)	Appropriate mitigative measures shall be taken to prevent pollution of the Baitarni River in consultation with the State Pollution Control Board.	The plant is designed with Zero Discharge Concept. No effluent / runoff water is being discharged from the plant premises to the Baitarani River. In consultation with the OSPCB officials, appropriate measures have been taken to recycle & re-use the waste water to prevent pollution of Baitarani river.
(xxi)	Vehicular emissions shall be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and in transportation of mineral. The mineral transportation shall be carried out through the covered trucks only and the vehicles carrying the mineral shall not be overloaded.	The vehicles are maintained properly to ensure emission levels within permissible limit and the monitoring is done regularly for the emission of the vehicles to ascertain that the emissions from vehicles meet the pollution norms. Mineral carrying trucks are not allowed to entry/exit the plant premises without tarpaulin cover and is being monitored by security personnel at the exit gate. Similarly, Security personnel also do not allow the vehicle to enter into the premise without having valid PUC. The overloading matter is being checked at the Govt. managed weigh bridge at the exit point of the plant.
(xxii)	Mineral handling area shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	The dust control measures at mineral stack yard and loading & unloading areas are being carried out with fixed type water sprinklers. In addition to above, mobile water sprinklers are also deployed to arrest the dust getting airborne along the haulage road. All the material feeding points to the plant and discharge chutes of the conveyer are equipped with Dry Fog System to arrest the suspended dust. ESP is operational at Indurating Furnace area and Bag Filter arrangement have been made at proportionating Building to control the fugitive dust emission. Periodical maintenance of the Pollution Control Equipments are being undertaken in-house for their smooth operation.

Sl. No.	Conditions	Compliance
(xxiii)	Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and the wastewater generated during the beneficiation process .	Staff quarters or Colony has not been constructed yet within the plant premise. However, a very negligible quantity of effluents/sewage generated from the Plant office/Admin Office (i.e. from the daily water use of employees and workers) is being discharged to the soak pit via septic tank constructed as per BIS specification. All the process water is being recycled to the process through Concentrate thickener so construction of ETP is not needed. The waste water (i.e. Slime Water) generated from the beneficiation process is being recycled to the process completely for re-use.
(xxiv)	The project authorities should undertake sample survey to generate data on pre-project community health status within a radius of 1 km from the proposed project.	Sample survey to generate data on pre-project community health status within a radius of 1 km from the project was carried out during EIA study. Periodical health Check-up is being organised in the nearby villages through mobile Health Care Unit supported with doctors & paramedics.
(xxv)	Occupational health surveillance program of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed. Health records of the workers shall be maintained.	Health Surveillance Programme in frequent interval for all the employees and workers are being carried out and records are being maintained. The beneficiation process is wet beneficiation process. No such health hazards have been reported related to dust. Moreover, adequate measures has been taken to abate the dust generation in material stack yard, loading and unloading point, discharge chutes of conveyor etc.
(xxvi)	Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	Pre-employment and Periodical medical check-up for all the employees and workers are being carried out and records are being maintained.

Sl. No.	Conditions	Compliance
(xxvii)	The R&R of the project affected people shall be carried out as per the NPRR. The plan shall be prepared within three months in consultation with State Government and a copy submitted.	The private lands involved in the project site have been purchased with the mutual agreement with the local villagers and Gram panchayat. The existing R& R Plan of the State Govt. is not applicable to the project. No SC/ST Land or Home stead land is involved in the project area, So R&R Plan is not envisaged.
(xxviii)	The project proponent shall take all precautionary measures during mining operation for conservation and protection of flora and endangered fauna namely elephant, sloth bear, python, peacock etc. spotted in the study area. Action plan for conservation of flora and fauna prepared shall be implemented in consultation with the State Forest and Wildlife Department. All the safeguard measures brought out in the Wildlife Conservation Plan so prepared specific to this project site shall be effectively implemented. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. A copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	This is not a mining unit. On the other hand, it is an industry for production of iron ore pellets and no such endangered fauna noticed in the plant premises.
(xxix)	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	For construction worker all necessary arrangements such as infrastructure facilities i.e. temporary housing/shelter room, toilets, fuel for cooking, drinking water facility, First-aid facility were made. At present the plant is in operational stage.
(xxx)	The critical parameters such as RSPM (Particulate matter with size less than 10micron i.e., PM_{10}), NO_X in the ambient air within the impact zone shall be monitored periodically. Further, quality of discharged water	Ambient Air Quality (AAQ) monitoring is being carried out at 4 locations covering core and buffer zone which is observed to be well within the NAAQ Standards.

Sl. No.	Conditions	Compliance
	shall also be monitored [TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the website of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The Circular No. J-20012/1/2006-IA.II(M) dated 27.05.2009 issued by Ministry of Environment and Forests, which is available on the website of the Ministry www.envfor.nic.in shall also be referred in this regard for its compliance.	The process water being used is recycled and reused in the process itself. Hence, there is no discharge of any effluents out site the plant premises. However, the surface water quality monitoring is being carried out at 5 locations including the reservoir pond within the plant premise. The status of compliance of the environmental clearance conditions, including results of monitored data are being uploaded in our company's website and the URL is http://www.esselmining.com/sustainability/environmental_reports.html and are updated periodically. All the environmental monitoring reports are being displayed electronically at the Main Gate of the Plant.
General Conditions		
(i)	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	Approval will be sought from MoEF&CC before any expansion / modification of the plant.
(ii)	Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e., PM_{10}), NOx monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Ambient Air Quality (AAQ) monitoring is being carried out at 4 locations twice in a week covering core and buffer zone. The frequency of monitoring, location of monitoring stations is being done in consultation with Regional Officer, OSPCB, Keonjhar. The results are observed to be well within the NAAQ standard.
(iii)	Data on ambient air quality RSPM (Particulate matter with size less than 10 micron i.e., PM_{10}), & NOx should be regularly submitted to the Ministry of Environment and Forests including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	The AAQ monitoring reports, Water Quality analysis report and Noise Monitoring Reports are being submitted to Ministry of Environment and Forests including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board on six monthly basis.

Sl. No.	Conditions	Compliance
(iv)	Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. shall be provided with ear plugs / muffs.	All the Plant machineries have been designed as per Industrial specification to control the noise level within the limit. Adequate measures are being taken to limit the noise level within the prescribed limit given by statutory authorities. Ear plugs and Ear muffs are being provided to the workers and employees engaged in operations of HEMM and high noise generating machines / locations.
(v)	Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19th May 1993 and 31st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	The plant is designed and being operated with zero discharge concept. The waste water generated from the process is being treated and recycled to the process through concentrated thickener. Adequate safe guard measures have been taken and proper water recovery system /spill way system has been developed for recycle and reuse of the spill water generated from the plant. No water is discharged outside the plant premises. The domestic waste water generated from the plant (i.e. from the daily water use of employees and workers) is being discharged to the soak pit via septic tank constructed as per specification.

Sl. No.	Conditions	Compliance
(vi)	Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Adequate dust suppression measures are being taken to arrest the dust getting air borne. In addition to above, dust masks are provided to the workers & employees working in these area. The HR & Safety Department is made responsible to create awareness & provide necessary training to the workers and employees with adequate safety appliances for maintaining occupational health and safety in the workplace. Health Surveillance Programme in frequent interval for all the employees and workers are being carried out to observe any contraction due to exposure to dust and if observed, corrective action is being taken immediately.
(vii)	Separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	A Environment Management Cell with qualified personnel from Environmental back ground is working under the guidance of a Senior Executive for proper management of environment in and around the plant premises and for the compliance of all statutory requirements.
(viii)	The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	The Consent to Establish from the State Pollution Board, Bhubaneswar was granted on 24/12/2010. Environmental Clearance granted in the name of Hari Machine on 18/06/2010 which was transferred to PMPL on 27/09/2011 and subsequently transferred to EMIL on 30/03/2022. Consent to Operate has been obtained on dated 01.05.2013 and subsequently renewed on dated 28.03.2023 valid till 31.03.2024.
(ix)	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	An amount of 5.2 Crores as fixed cost and 0.50 Crores as recurring cost for 5 years was kept separately for environment management in the 1.0 MTPA Iron Ore Beneficiation Plant. The entire environmental pollution control infrastructure has already been installed.

Sl. No.	Conditions	Compliance
(x)	The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Six monthly progress status reports to the conditions given in the Environment Clearance are being submitted to the Regional Office of MoEF with a copy to MoEF&CC, New Delhi as stipulated.
(xi)	The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both in hard copies as well as by email) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board.	Six monthly progress status report to the conditions given in the Environment Clearance and monitoring results of different environment parameters carried out are being submitted to the Regional Office of MoEF at Bhubaneswar with a copy to MoEF, New Delhi, Zonal Office of CPCB at Kolkata, West Bengal and SPCB, Odisha as stipulated. The status of compliance of the environmental clearance conditions, including results of monitored data are being uploaded in our company's website (http://esselmining.com/sustainability/environmental_reports.html) and are updated periodically. However, one LED type electronic display board has been installed in front of the main gate in public domain for display of monitored data.
(xii)	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.	The copy of the environmental Clearance letter was submitted in the office Basantpur GP. The clearance letter has also been put on the website of the Company.
(xiii)	The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.	The same had been duly complied post obtaining the EC.

Sl. No.	Conditions	Compliance
(xiv)	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental clearance conditions and shall also be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.	Environment Statement in prescribed Form-V for each financial year i.e. ending at 31st March is being submitted to State Pollution Control Board. It is being uploaded in the company's website along with the status of compliance of environmental clearance conditions.
(xv)	The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at **http://envfor.nic.in** and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	Advertisement of Environment Clearance was published in the local newspapers (both in English and Odia) regarding grant of clearance to the 1.0 MTPA Beneficiation Plant of M/s Pro Minerals Pvt. Ltd. within 7 days from the date of issuance of Environmental Clearance.

Pavan Kumar Kakani
Joint President
Head - Iron Ore, Beneficiation & Pelletization

Annexure - A

11/10/2022

Monthly Report on Environmental Monitoring

FOR M/S ESSEL MINING & INDUSTRIES LTD

M/S ESSEL MINING & INDUSTRIES LTD.
VILL- BASANTPUR, PO-DUBUNA, TEHSIL-JHUMPURA, KEONJHAR

Contents

AMBIENT AIR MONITORING DATA 3
LOCATION AND WEEKLY MONITORING SCHEDULE 3
SUMMARY SHEET OF SAMPLING 3
LOCATION: Near Filter Cake Storage Yard 5
LOCATION: Near Crushing Plant 6
LOCATION: Near Raw Material Stack Yard 7
LOCATION: Nedigutha Village 8
NOISE LEVEL MONITORING RESULT (In DbA) FOR THE MONTH OF OCTOBER 9
LOCATION AND WEEKLY MONITORING SCHEDULE 9
SUMMARY SHEET OF SAMPLING 9
Date of Monitoring: 02.10.2022 11
Date of Monitoring: 07.10.2022 12
Date of Monitoring: 09.10.2022 13
Date of Monitoring: 14.10.2022 14
Date of Monitoring: 16.10.2022 15
Date of Monitoring: 21.10.2022 16
Date of Monitoring: 23.10.2022 17
Date of Monitoring: 28.10.2022 18
Date of Monitoring: 30.10.2022 19
SURFACE WATER ANALYSIS FOR THE MONTH OF OCTOBER– 2022 20
SUMMARY SHEET OF SAMPLING (SURFACE WATER): 20
Location: JARPADA 21
Location: NANDIGUTU 23
Location: RESERVOUR POND INSIDE PLANT PREMISES 25
Location: DALKI NALA, NEAR PLANT 27
Location: NAIBHANGA 29
GROUND WATER MONITORING REPORT 31
SUMMARY SHEET OF SAMPLING (GROUND WATER): 31
ANALYSIS RESULT 31
REPORT ON GROUND WATER LEVEL ANALYSISFOR THE MONTH OF OCTOBER – 22 33
SUMMARY SHEET OF MONITORING: 33
MONITORING RESULT 33

AMBIENT AIR MONITORING DATA

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON		TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√				√		
Near Crushing Plant		√				√		
Near Raw Material Stack Yard		√				√		
Nediguth Village				√				√

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	03.10.2022	OCPL/ AAQ/EMIL/01/10/22
2.	Sample 02	Near Crushing Plant	03.10.2022	OCPL/ AAQ/EMIL/02/10/22
3.	Sample 03	Near Raw Material Stack Yard	03.10.2022	OCPL/ AAQ/EMIL/03/10/22
4.	Sample 04	Nedigutha Village	04.10.2022	OCPL/ AAQ/EMIL/04/10/22
5.	Sample 05	Near Filter cake storage yard	06.10.2022	OCPL/ AAQ/EMIL/05/10/22
6.	Sample 06	Near Crushing Plant	06.10.2022	OCPL/ AAQ/EMIL/06/10/22
7.	Sample 07	Near Raw Material Stack Yard	06.10.2022	OCPL/ AAQ/EMIL/07/10/22
8.	Sample 08	Nedigutha Village	07.10.2022	OCPL/ AAQ/EMIL/08/10/22
9.	Sample 09	Near Filter cake storage yard	10.10.2022	OCPL/ AAQ/EMIL/09/10/22
10.	Sample 10	Near Crushing Plant	10.10.2022	OCPL/ AAQ/EMIL/10/10/22
11.	Sample 11	Near Raw Material Stack Yard	10.10.2022	OCPL/ AAQ/EMIL/11/10/22
12.	Sample 12	Nedigutha Village	11.10.2022	OCPL/ AAQ/EMIL/12/10/22
13.	Sample 13	Near Filter cake storage yard	13.10.2022	OCPL/ AAQ/EMIL/13/10/22
14.	Sample 14	Near Crushing Plant	13.10.2022	OCPL/ AAQ/EMIL/14/10/22
15.	Sample 15	Near Raw Material Stack Yard	13.10.2022	OCPL/ AAQ/EMIL/15/10/22
16.	Sample 16	Nedigutha Village	14.10.2022	OCPL/ AAQ/EMIL/16/10/22

17.	Sample 17	Near Filter cake storage yard	17.10.2022	OCPL/ AAQ/EMIL/17/10/22
18.	Sample 18	Near Crushing Plant	15.09.2022	OCPL/ AAQ/EMIL/18/10/22
19.	Sample 19	Near Raw Material Stack Yard	17.10.2022	OCPL/ AAQ/EMIL/19/10/22
20.	Sample 20	Nedigutha Village	18.10.2022	OCPL/ AAQ/EMIL/20/10/22
21.	Sample 21	Near Filter cake storage yard	20.10.2022	OCPL/ AAQ/EMIL/21/10/22
22.	Sample 22	Near Crushing Plant	20.10.2022	OCPL/ AAQ/EMIL/22/10/22
23.	Sample 23	Near Raw Material Stack Yard	20.10.2022	OCPL/ AAQ/EMIL/23/10/22
24.	Sample 24	Nedigutha Village	21.10.2022	OCPL/ AAQ/EMIL/24/10/22
25.	Sample 25	Near Filter cake storage yard	24.10.2022	OCPL/ AAQ/EMIL/25/10/22
26.	Sample 26	Near Crushing Plant	24.10.2022	OCPL/ AAQ/EMIL/26/10/22
27.	Sample 27	Near Raw Material Stack Yard	24.10.2022	OCPL/ AAQ/EMIL/27/10/22
28.	Sample 28	Nedigutha Village	25.10.2022	OCPL/ AAQ/EMIL/28/10/22
29.	Sample 29	Near Filter cake storage yard	27.10.2022	OCPL/ AAQ/EMIL/29/10/22
30.	Sample 30	Near Crushing Plant	27.10.2022	OCPL/ AAQ/EMIL/30/10/22
31.	Sample 31	Near Raw Material Stack Yard	27.10.2022	OCPL/ AAQ/EMIL/31/10/22
32.	Sample 32	Nedigutha Village	28.10.2022	OCPL/ AAQ/EMIL/32/10/22
33.	Sample 33	Near Filter cake storage yard	30.10.2022	OCPL/ AAQ/EMIL/33/10/22
34.	Sample 34	Near Crushing Plant	30.10.2022	OCPL/ AAQ/EMIL/34/10/22
35.	Sample 35	Near Raw Material Stack Yard	30.10.2022	OCPL/ AAQ/EMIL/35/10/22
36.	Sample 36	Nedigutha Village	31.09.2022	OCPL/ AAQ/EMIL/36/10/22

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit (µg/M^3)	Date									
		03.10.22	06.10.22	10.10.22	13.10.22	17.10.22	20.10.22	24.10.22	27.10.22	30.10.22	Avg
PM_{10}	100	83	85.5	84.4	82.5	89.3	80.5	84.5	85.2	85.2	84.5
$PM_{2.5}$	60	52.8	55.4	53	54.6	51	54.4	58	59.5	55.2	52.3
Sulphur Dioxide (SO_2)	80	32.4	38.1	36.7	41.6	38.2	39.5	38.2	35.4	37.2	36.5
Oxide of Nitrogen (NO_2)	80	32.7	31.6	29.1	33.2	35	36	32.5	28	28.4	30.2
Lead (Pb)	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	178	166	162	172	175.3	171.8	169.3	165.5	166.1	169.5
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia (NH_3)	400	30.6	31.4	34.2	29.2	32.6	38.2	33.5	29.4	35.6	30.6
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel (Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Crushing Plant

Parameters	Limit (µg/ M^3)	DATE									
		03.10.22	06.10.22	10.10.22	13.10.22	17.10.22	20.10.22	24.10.22	27.10.22	30.10.22	Avg
PM_{10}	100	89.6	88.2	82.2	85.1	83.5	82.8	84.1	80.6	88.4	85
$PM_{2.5}$	60	53.2	55.6	56.2	51.6	50	52.9	55	48	45.9	52.1
Sulphur Dioxide (SO_2)	80	27.6	28.6	29	25.3	26.9	22.3	25.3	24.9	21.5	28
Oxide of Nitrogen (NO_2)	80	22.3	25.3	22	26.4	20.6	22	23.4	20.9	18.2	16
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	162.1	166.1	162.3	158	160	166	158.8	155.9	152.5	161
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	32.6	35	28.4	29.7	30.2	28	24.5	25.2	22.6	25.9
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Raw Material Stack Yard

Parameters	Limit ($\mu g/M^3$)	DATE									
		03.10.22	06.10.22	10.10.22	13.10.22	17.10.22	20.10.22	24.10.22	27.10.22	30.10.22	Avg
PM_{10}	100	85.3	84.3	85.2	84	79.1	80.2	75.2	75.2	78.6	74
$PM_{2.5}$	60	58.3	59.3	56.2	59.3	52.8	55.6	58.8	55.9	55.8	56.8
Sulphur Dioxide (SO_2)	80	25.3	24.3	26	20.6	24	23.6	22.6	20.22	21.6	24
Oxide of Nitrogen (NO_2)	80	24.2	23.6	26.8	22.5	23.6	23	25.6	21	20.9	25
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	166.5	161.2	155.8	156.2	159.5	154.9	157	151.6	155.8	152.9
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	29.5	25.2	28	30.2	25	26.8	25.8	27	24.8	27.5
Benzene(C6H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550

Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Nedigutha Village

Parameters	Limit (µg/M^3)	DATE									
		04.10.22	07.10.22	11.10.22	14.10.22	18.10.22	21.10.22	25.10.22	28.10.22	31.10.22	Avg
PM_{10}	100	45.8	44	45	44.8	42.8	45.7	46.8	48	42.8	42
$PM_{2.5}$	60	44.2	45.3	42.5	42	45.2	44.7	45.6	44.8	41.5	40
Sulphur Dioxide (SO_2)	80	18.2	22	16.8	17.4	17.8	16	16.2	18.6	15.3	18
Oxide of Nitrogen (NO_2)	80	15	16.2	16.2	17.8	15.6	17.9	15	17.2	14	17
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	137.6	145	138.2	136.2	137.8	136	139.6	135.2	139	137
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	14.6	14.2	15	13.6	12	11.8	12.2	10.6	10.2	11.3
Benzene(C_6H_6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550

Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

NOISE LEVEL MONITORING RESULT (In DbA) FOR THE MONTH OF OCTOBER

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Beneficiation Plant Establishment Area				√		√	
First-Aid Room				√		√	
Security Office				√		√	
Administrative building				√		√	

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Beneficiation Plant Establishment Area	02.10.2022	OCPL/ NL/EMIL/01/10/22
2.	Sample 02	First-Aid Room	02.10.2022	OCPL/ NL/EMIL/02/10/22
3.	Sample 03	Security Office	02.10.2022	OCPL/ NL/EMIL/03/10/22
4.	Sample 04	Administrative building	02.10.2022	OCPL/ NL/EMIL/04/10/22
5.	Sample 05	Near Beneficiation Plant Establishment Area	07.10.2022	OCPL/ NL/EMIL/05/10/22
6.	Sample 06	First-Aid Room	07.10.2022	OCPL/ NL/EMIL/06/10/22
7.	Sample 07	Security Office	07.10.2022	OCPL/ NL/EMIL/07/10/22
8.	Sample 08	Administrative building	07.10.2022	OCPL/ NL/EMIL/08/10/22
9.	Sample 09	Near Beneficiation Plant Establishment Area	09.10.2022	OCPL/ NL/EMIL/09/10/22
10.	Sample 10	First-Aid Room	09.10.2022	OCPL/ NL/EMIL/10/10/22
11.	Sample 11	Security Office	09.10.2022	OCPL/ NL/EMIL/11/10/22
12.	Sample 12	Administrative building	09.10.2022	OCPL/ NL/EMIL/12/10/22
13.	Sample 13	Near Beneficiation Plant Establishment Area	14.10.2022	OCPL/ NL/EMIL/13/10/22
14.	Sample 14	First-Aid Room	14.10.2022	OCPL/ NL/EMIL/14/10/22
15.	Sample 15	Security Office	14.10.2022	OCPL/ NL/EMIL/15/10/22
16.	Sample 16	Administrative building	14.10.2022	OCPL/ NL/EMIL/16/10/22
17.	Sample 17	Near Beneficiation Plant Establishment Area	16.10.2022	OCPL/ NL/EMIL/17/10/22
18.	Sample 18	First-Aid Room	16.10.2022	OCPL/ NL/EMIL/18/10/22
19.	Sample 19	Security Office	16.10.2022	OCPL/ NL/EMIL/19/10/22
20.	Sample 20	Administrative building	16.10.2022	OCPL/ NL/EMIL/20/10/22
21.	Sample 21	Near Beneficiation Plant Establishment Area	21.10.2022	OCPL/ NL/EMIL/21/10/22
22.	Sample 22	First-Aid Room	21.10.2022	OCPL/ NL/EMIL/22/10/22
23.	Sample 23	Security Office	21.10.2022	OCPL/ NL/EMIL/23/10/22

24.	Sample 24	Administrative building	21.10.2022	OCPL/ NL/EMIL/24/10/22
25.	Sample 25	Near Beneficiation Plant Establishment Area	23.10.2022	OCPL/ NL/EMIL/25/10/22
26.	Sample 26	First-Aid Room	23.10.2022	OCPL/ NL/EMIL/26/10/22
27.	Sample 27	Security Office	23.10.2022	OCPL/ NL/EMIL/27/10/22
28.	Sample 28	Administrative building	23.10.2022	OCPL/ NL/EMIL/28/10/22
29.	Sample 29	Near Beneficiation Plant Establishment Area	28.10.2022	OCPL/ NL/EMIL/29/10/22
30.	Sample 30	First-Aid Room	28.10.2022	OCPL/ NL/EMIL/30/10/22
31.	Sample 31	Security Office	28.10.2022	OCPL/ NL/EMIL/31/10/22
32.	Sample 32	Administrative building	28.10.2022	OCPL/ NL/EMIL/32/10/22
33.	Sample 33	Near Beneficiation Plant Establishment Area	30.10.2022	OCPL/ NL/EMIL/33/10/22
34.	Sample 34	First-Aid Room	30.10.2022	OCPL/ NL/EMIL/34/10/22
35.	Sample 35	Security Office	30.10.2022	OCPL/ NL/EMIL/35/10/22
36.	Sample 36	Administrative building	30.10.2022	OCPL/ NL/EMIL/36/10/22

Date of Monitoring: 02.10.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	54	61.2	64.3	58.9	37.2
2	First-Aid Room	52.6	55.2	55.2	48.2	35.2
3	Security Office	48.6	50.2	50.8	40.2	28.2
4	Administrative building	29.2	35	35.2	32	25.2
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 07.10.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	55	64.5	62.3	52.8	45.1
2	First-Aid Room	48.5	62.3	55.6	45	33
3	Security Office	42.6	65.3	53	48.2	35.2
4	Administrative building	30.3	35	38.2	29.3	24
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 09.10.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	54.2	65.3	66.8	46.8	32.2
2	First-Aid Room	45.2	56.2	56	48.5	30
3	Security Office	39	55	55.1	45	35
4	Administrative building	27.2	30.3	35.2	28.3	26.1
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 14.10.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	56.3	63.2	55	52.3	36.2
2	First-Aid Room	51.3	55	45.3	48	32.3
3	Security Office	45.3	50	45.9	40.3	34.2
4	Administrative building	29.3	35.2	35.3	26.9	25
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 16.10.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	56.3	65.2	62.2	45.9	36
2	First-Aid Room	45.2	48.6	52.8	46.6	28
3	Security Office	40.8	44	48	37.9	25
4	Administrative building	25.9	31.8	35.2	29.2	20.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 21.10.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	55.3	64.3	51.6	42.9	34.8
2	First-Aid Room	48.2	54.7	54.7	40.2	30.8
3	Security Office	45.3	45.9	51	38.5	33
4	Administrative building	36	36.2	38.1	32.6	25
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 23.10.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	62	64.2	55.3	48.6	48.2
2	First-Aid Room	58.3	48.6	47.4	42	32
3	Security Office	54.6	52	52	44.8	26.9
4	Administrative building	35	35.8	34.5	30.1	25
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 28.10.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	62	65.2	55.4	48	36
2	First-Aid Room	48.3	54.2	55	45.6	36
3	Security Office	52	38.7	56.2	45	31.9
4	Administrative building	28.6	33	36.8	28.2	26.3
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 30.10.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	50.2	65	55.3	48.3	45
2	First-Aid Room	54	54.2	48.5	42.5	30.2
3	Security Office	56.6	56.5	50.8	44.2	32.6
4	Administrative building	33	35	32.3	26	22
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

SURFACE WATER ANALYSIS FOR THE MONTH OF OCTOBER– 2022

SUMMARY SHEET OF SAMPLING (SURFACE WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	04- 10 -2022	OCPL/SW/01/10/22
2.	Sample 02	NANDIGUTU	04- 10 -2022	OCPL/SW/02/10/22
3.	Sample 03	RESERVOUR POND INSIDE PLANT	04- 10 -2022	OCPL/SW/03/10/22
4.	Sample 04	DALKI NALA NEAR PLANT	04- 10 -2022	OCPL/SW/04/10/22
5.	Sample 05	NAIBHANGA	04- 10 -2022	OCPL/SW/05/10/22

Location: JARPADA

Lab Sample Code: OCPL/SW/01/10/22		**Report No.- OCPL/EMIL/01/10/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**JARPADA**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- 10 -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- 10 -2022
Sample type	Surface Water	Date of Analysis	06- 10 -2022
Required parameters	As described in W/O	Date of Issue of report	15- 10 -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	26.6
4	pH	-	7.2
5	Total Suspended Solids	mg/L	84.8
6	Total Dissolved Solid	mg/L	918
7	Biochemical Oxygen Demand at 27°C	mg/L	7.2
8	Chemical Oxygen Demand	mg/L	1.2
9	Total Residual Chlorine	mg/L	0.67
10	Alkalinity	mg/L	92
11	Calcium	mg/L	61.5
12	Magnesium	mg/L	40.5
13	Total Hardness as CaCO3	mg/L	47.2
14	Electrical Conductivity	µs/cm	156.5
15	Turbidity	NTU	14.2
16	Arsenic as As	µg/L	ND

17	Lead as Pb	µg/L	<0.05
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	0.12
20	Zinc as Zn	µg/L	0.65
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	16.1
23	Nitrate	mg/L	1.83
24	Sodium as Na	mg/L	4.2
25	Potassium as K	mg/L	2.8
26	Sulfate	mg/L	1.2
27	Nitrate as NO_3	mg/L	3.5
28	Total Silica as SiO_2	mg/L	6.2
29	Total dissolved Solid	mg/L	912

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: NANDIGUTU

Lab Sample Code: OCPL/SW/02/10/22		**Report No.- OCPL/EMIL/02/10/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**NANDIGUTU**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- 10 -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- 10 -2022
Sample type	Surface Water	Date of Analysis	06- 10 -2022
Required parameters	As described in W/O	Date of Issue of report	15- 10 -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.8
2	Odour	-	Agreeable
3	Temperature	°C	26.9
4	pH	-	7.3
5	Total Suspended Solids	mg/L	55.6
6	Total Dissolved Solid	mg/L	838
7	Biochemical Oxygen Demand at 27°C	mg/L	4.8
8	Chemical Oxygen Demand	mg/L	2.1
9	Total Residual Chlorine	mg/L	0.82
10	Alkalinity	mg/L	42.2
11	Calcium	mg/L	44.2
12	Magnesium	mg/L	53.1
13	Total Hardness as CaCO3	mg/L	49.7
14	Electrical Conductivity	µs/cm	94
15	Turbidity	NTU	36.2

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	<0.05
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	1.21
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	19.4
23	Nitrate	mg/L	3.1
24	Sodium as Na	mg/L	1.86
25	Potassium as K	mg/L	0.22
26	Sulfate	mg/L	<0.01
27	Nitrate as NO_3	mg/L	3.6
28	Total Silica as SiO_2	mg/L	6.6
29	Total dissolved Solid	mg/L	842

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: RESERVOUR POND INSIDE PLANT PREMISES

Lab Sample Code: OCPL/SW/03/10/22		**Report No.- OCPL/EMIL/03/10/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**RESERVOUR POND INSIDE PLANT PREMISES**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- 10 -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- 10 -2022
Sample type	Surface Water	Date of Analysis	06- 10 -2022
Required parameters	As described in W/O	Date of Issue of report	15- 10 -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	2.2
2	Odour	-	Agreeable
3	Temperature	°C	24.62
4	pH	-	6.6
5	Total Suspended Solids	mg/L	174
6	Total Dissolved Solid	mg/L	1139
7	Biochemical Oxygen Demand at 27°C	mg/L	9.4
8	Chemical Oxygen Demand	mg/L	4.2
9	Total Residual Chlorine	mg/L	3.83
10	Alkalinity	mg/L	88.4
11	Calcium	mg/L	44.8
12	Magnesium	mg/L	42
13	Total Hardness as CaCO3	mg/L	171.4
14	Electrical Conductivity	µs/cm	185.5

15	Turbidity	NTU	62.8
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	0.03
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	<0.05
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	36.7
23	Nitrate	mg/L	3.6
24	Sodium as Na	mg/L	18.2
25	Potassium as K	mg/L	3.4
26	Sulfate	mg/L	4.6
27	Nitrate as NO_3	mg/L	4.4
28	Total Silica as SiO_2	mg/L	22.8
29	Total dissolved Solid	mg/L	1133

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: DALKI NALA, NEAR PLANT

Lab Sample Code: OCPL/SW/04/10/22		**Report No.- OCPL/EMIL/04/10/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**DALKI NALA, NEAR PLANT**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- 10 -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- 10 -2022
Sample type	Surface Water	Date of Analysis	06- 10 -2022
Required parameters	As described in W/O	Date of Issue of report	15- 10 -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.8
2	Odour	-	Agreeable
3	Temperature	°C	25.2
4	pH	-	7.2
5	Total Suspended Solids	mg/L	52.6
6	Total Dissolved Solid	mg/L	782
7	Biochemical Oxygen Demand at 27°C	mg/L	4.2
8	Chemical Oxygen Demand	mg/L	1.6
9	Total Residual Chlorine	mg/L	0.18
10	Alkalinity	mg/L	52
11	Calcium	mg/L	28.6
12	Magnesium	mg/L	46.5
13	Total Hardness as CaCO3	mg/L	40.2
14	Electrical Conductivity	µs/cm	106.8
15	Turbidity	NTU	24

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.02
20	Zinc as Zn	µg/L	1.1
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	28.2
23	Nitrate	mg/L	21.4
24	Sodium as Na	mg/L	7.2
25	Potassium as K	mg/L	4.3
26	Sulfate	mg/L	6.2
27	Nitrate as NO_3	mg/L	26
28	Total Silica as SiO_2	mg/L	11.2
29	Total dissolved Solid	mg/L	782

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: NAIBHANGA

Lab Sample Code: OCPL/SW/05/10/22		**Report No.- OCPL/EMIL/05/10/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**NAIBHANGA**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	04- 10 -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- 10 -2022
Sample type	Surface Water	Date of Analysis	06- 10 -2022
Required parameters	As described in W/O	Date of Issue of report	15- 10 -2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.5
2	Odour	-	Agreeable
3	Temperature	°C	25.1
4	pH	-	6.82
5	Total Suspended Solids	mg/L	52.4
6	Total Dissolved Solid	mg/L	967
7	Biochemical Oxygen Demand at 27°C	mg/L	4.18
8	Chemical Oxygen Demand	mg/L	1.4
9	Total Residual Chlorine	mg/L	0.6
10	Alkalinity	mg/L	28.5
11	Calcium	mg/L	40.23
12	Magnesium	mg/L	42.6
13	Total Hardness as CaCO3	mg/L	36.3
14	Electrical Conductivity	µs/cm	157.8
15	Turbidity	NTU	46.4

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	0.6
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	32.3
23	Nitrate	mg/L	2.4
24	Sodium as Na	mg/L	4.66
25	Potassium as K	mg/L	16.2
26	Sulfate	mg/L	3.15
27	Nitrate as NO_3	mg/L	5.2
28	Total Silica as SiO_2	mg/L	4.6
29	Total dissolved Solid	mg/L	966

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

GROUND WATER MONITORING REPORT

SUMMARY SHEET OF SAMPLING (GROUND WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	08- 10 -2022	OCPL/SW/01/10/22
2.	Sample 02	NANDIGUTU	08- 10 -2022	OCPL/SW/02/10/22
3.	Sample 03	NAIBHANGA	08- 10 -2022	OCPL/SW/03/10/22
4.	Sample 04	PLANT- 1 (Near Canteen)	08- 10 -2022	OCPL/SW/04/10/22
5.	Sample 05	PLANT- 2 (Near Tailing Pond)	08- 10 -2022	OCPL/SW/05/10/22

ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			JARPADA	NANDIGUTU	NAIBHANGA	PLANT- 1 (Near Canteen)	PLANT- 2 (Near Tailing Pond)		
1	Colour	Pt-Co	1.2	0.8	1.1	1.1	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	24.5	25.5	24.3	25.5	25.1		
4	pH	-	7.1	7.2	7.1	7.1	6.9	6.5- 8.5	No relaxation
5	Total Hardness (as $CaCO_3$)	mg/L	55	51.5	58	61.3	48	300	600
6	Calcium	mg/L	12	14.5	16.2	16.3	15	75	200
7	Magnesium	mg/L	0.86	1.7	3.9	3.5	2.1	30	No relaxation
8	Chloride	mg/L	8.8	15	12.2	7.9	14	250	1000
9	Alkalinity	mg/L	22	25.8	14.2	22.5	14.2	200	600
10	Electrical Conductivity	µs/cm	62.1	74.3	65	64	73	--	--
11	Arsenic as As	µg/L	ND	ND	ND	0.01	ND	10	No relaxation
12	Lead as Pb	µg/L	ND	ND	ND	ND	0.02	10	No relaxation
13	Cadmium as Cd	µg/L	0.08	0.11	0.02	ND	ND	3.0	No relaxation
14	Total Chromium as Cr	µg/L	ND	ND	0.03	0.04	0.04	50	No relaxation

15	Zinc as Zn	µg/L	76.7	58.7	55.3	59	75.7	5000	No relaxation
16	Fluoride as F	mg/L	ND	ND	ND	ND	ND	1.0	1.9
17	Iron as Fe	µg/L	34.1	19	18.4	16.2	32.5	300	1000
18	Nitrate	mg/L	0.04	0.13	0.02	0.15	0.04	45	100
19	Sodium as Na	mg/L	1.2	1.02	1.04	1.02	0.33	150	No relaxation
20	Potassium as K	mg/L	ND	ND	0.02	0.05	ND	12	No relaxation
21	Sulfate	mg/L	ND	0.03	0.04	ND	0.06	200	400
22	Total Silica as SiO_2	mg/L	ND	0.2	0.04	0.06	0.2	--	--
23	Total suspended Solid	mg/L	0.87	0.42	1.5	0.7	0.6	--	--
24	Total dissolved Solid	mg/L	26	92.3	185	18.3	39	250	2000
25	Turbidity	NTU	0.24	0.2	0.2	0.17	0.15	5	10

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

REPORT ON GROUND WATER LEVEL ANALYSISFOR THE MONTH OF OCTOBER – 2022

SUMMARY SHEET OF MONITORING:

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
6.	Sample 01	JARPADA	11- 10-2022	OCPL/GWL/01/10/22
7.	Sample 02	NANDIGUTU	11- 10-2022	OCPL/GWL/02/10/22
8.	Sample 03	NAIBHANGA	11- 10-2022	OCPL/GWL/03/10/22
9.	Sample 04	PLANT- 1 (Near Canteen)	11- 10-2022	OCPL/GWL/04/10/22
10.	Sample 05	PLANT- 2 (Near Tailing Pond)	11- 10-2022	OCPL/GWL/05/10/22

MONITORING RESULT

Sl No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	JARPADA	Dugwell	0.8	8.2	7.27	--
2	NANDIGUTU	Dugwell	1.2	9.5	7.52	--
3	NAIBHANGA	Dugwell	1.0	8.6	8.25	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	62	13.7	--
5	PLANT- 2 (Near Tailing Pond)	Bore-well	0.1	60	46.52	--

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

11/9/2022

Monthly Report on Environmental Monitoring

FOR M/S ESSEL MINING & INDUSTRIES LTD

M/S ESSEL MINING & INDUSTRIES LTD.
VILL- BASANTPUR, PO-DUBUNA, TEHSIL-JHUMPURA, KEONJHAR

Contents

AMBIENT AIR MONITORING DATA 3

LOCATION: Near Filter Cake Storage Yard 5

LOCATION: Near Crushing Plant 6

LOCATION: Near Raw Material Stack Yard 7

LOCATION: Nedigutha Village 8

NOISE LEVEL MONITORING RESULT (In DbA) FOR THE MONTH OF Nov 9

Date of Monitoring: 02.11.2022 11

Date of Monitoring: 06.11.2022 12

Date of Monitoring: 10.11.2022 13

Date of Monitoring: 13.11.2022 14

Date of Monitoring: 16.11.2022 15

Date of Monitoring: 19.11.2022 16

Date of Monitoring: 22.11.2022 17

Date of Monitoring: 26.11.2022 18

Date of Monitoring: 29.11.2022 19

SURFACE WATER ANALYSIS FOR THE MONTH OF Nov – 2022 20

Location: JARPADA 21

Location: NANDIGUTU 23

Location: RESERVOUR POND INSIDE PLANT PREMISES 25

Location: DALKI NALA, NEAR PLANT 27

Location: NAIBHANGA 29

GROUND WATER MONITORING REPORT 31

ANALYSIS RESULT 31

GROUND WATER LEVEL ANALYSISFOR THE MONTH OF Nov – 2022 33

MONITORING RESULT 33

AMBIENT AIR MONITORING DATA

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard			√		√		
Near Crushing Plant			√		√		
Near Raw Material Stack Yard			√		√		
Nediguth Village		√					√

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	01.11.2022	OCPL/ AAQ/EMIL/01/11/22
2.	Sample 02	Near Crushing Plant	01.11.2022	OCPL/ AAQ/EMIL/02/11/22
3.	Sample 03	Near Raw Material Stack Yard	01.11.2022	OCPL/ AAQ/EMIL/03/11/22
4.	Sample 04	Nedigutha Village	02.11.2022	OCPL/ AAQ/EMIL/04/11/22
5.	Sample 05	Near Filter cake storage yard	03.11.2022	OCPL/ AAQ/EMIL/05/11/22
6.	Sample 06	Near Crushing Plant	03.11.2022	OCPL/ AAQ/EMIL/06/11/22
7.	Sample 07	Near Raw Material Stack Yard	03.11.2022	OCPL/ AAQ/EMIL/07/11/22
8.	Sample 08	Nedigutha Village	05.11.2022	OCPL/ AAQ/EMIL/08/11/22
9.	Sample 09	Near Filter cake storage yard	08.11.2022	OCPL/ AAQ/EMIL/09/11/22
10.	Sample 10	Near Crushing Plant	08.11.2022	OCPL/ AAQ/EMIL/10/11/22
11.	Sample 11	Near Raw Material Stack Yard	08.11.2022	OCPL/ AAQ/EMIL/11/11/22
12.	Sample 12	Nedigutha Village	07.11.2022	OCPL/ AAQ/EMIL/12/11/22
13.	Sample 13	Near Filter cake storage yard	10.11.2022	OCPL/ AAQ/EMIL/13/11/22
14.	Sample 14	Near Crushing Plant	10.11.2022	OCPL/ AAQ/EMIL/14/11/22
15.	Sample 15	Near Raw Material Stack Yard	10.11.2022	OCPL/ AAQ/EMIL/15/11/22
16.	Sample 16	Nedigutha Village	12.11.2022	OCPL/ AAQ/EMIL/16/11/22

17.	Sample 17	Near Filter cake storage yard	15.11.2022	OCPL/ AAQ/EMIL/17/11/22
18.	Sample 18	Near Crushing Plant	15.11.2022	OCPL/ AAQ/EMIL/18/11/22
19.	Sample 19	Near Raw Material Stack Yard	15.11.2022	OCPL/ AAQ/EMIL/19/11/22
20.	Sample 20	Nedigutha Village	14.11.2022	OCPL/ AAQ/EMIL/20/11/22
21.	Sample 21	Near Filter cake storage yard	17.11.2022	OCPL/ AAQ/EMIL/21/11/22
22.	Sample 22	Near Crushing Plant	17.11.2022	OCPL/ AAQ/EMIL/22/11/22
23.	Sample 23	Near Raw Material Stack Yard	17.11.2022	OCPL/ AAQ/EMIL/23/11/22
24.	Sample 24	Nedigutha Village	19.11.2022	OCPL/ AAQ/EMIL/24/11/22
25.	Sample 25	Near Filter cake storage yard	22.11.2022	OCPL/ AAQ/EMIL/25/11/22
26.	Sample 26	Near Crushing Plant	22.11.2022	OCPL/ AAQ/EMIL/26/11/22
27.	Sample 27	Near Raw Material Stack Yard	22.11.2022	OCPL/ AAQ/EMIL/27/11/22
28.	Sample 28	Nedigutha Village	21.11.2022	OCPL/ AAQ/EMIL/28/11/22
29.	Sample 29	Near Filter cake storage yard	24.11.2022	OCPL/ AAQ/EMIL/29/11/22
30.	Sample 30	Near Crushing Plant	24.11.2022	OCPL/ AAQ/EMIL/30/11/22
31.	Sample 31	Near Raw Material Stack Yard	24.11.2022	OCPL/ AAQ/EMIL/31/11/22
32.	Sample 32	Nedigutha Village	26.11.2022	OCPL/ AAQ/EMIL/32/11/22
33.	Sample 33	Near Filter cake storage yard	29.11.2022	OCPL/ AAQ/EMIL/33/11/22
34.	Sample 34	Near Crushing Plant	29.11.2022	OCPL/ AAQ/EMIL/34/11/22
35.	Sample 35	Near Raw Material Stack Yard	29.11.2022	OCPL/ AAQ/EMIL/35/11/22
36.	Sample 36	Nedigutha Village	28.11.2022	OCPL/ AAQ/EMIL/36/11/22

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit (µg/M^3)	Date									
		01.11.22	03.11.22	08.11.22	10.11.22	15.11.22	17.11.22	22.11.22	24.11.22	29.11.22	Avg
PM_{10}	100	80.6	82.5	84	80.8	88.4	82.8	84	81	79.4	82.61
$PM_{2.5}$	60	56	52.4	48.7	48	46.8	45	50.4	47.8	49	49.34
Sulphur Dioxide (SO_2)	80	34	32.8	38.4	42	38.5	36	36.2	35.7	34.6	36.46
Oxide of Nitrogen (NO_2)	80	34.2	31	30.6	32	32.8	35.4	34	30.4	34	32.71
Lead (Pb)	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	178	171.5	182.4	168.6	184.6	188	175	182.4	186.2	179.63
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia (NH_3)	400	27.2	28.4	30	32	31.5	32.2	31.4	28	30.5	30.13
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel (Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550
Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Crushing Plant

Parameters	Limit (µg/ M^3)	DATE									
		01.11.22	03.11.22	08.11.22	10.11.22	15.11.22	17.11.22	22.11.22	24.11.22	29.11.22	Avg
PM_{10}	100	82.5	84	84.6	86.2	84.8	80.8	84.5	84.4	86	84.2
$PM_{2.5}$	60	53.6	54	48.2	50.4	51.8	48.6	49	52.5	54.6	51.41
Sulphur Dioxide (SO_2)	80	29.6	30.5	32.4	31.2	26.6	26	24.5	28	24.6	28.15
Oxide of Nitrogen (NO_2)	80	21.2	24	26.8	28	27.6	22.6	22	20.5	21.6	23.81
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	165.6	166	158.4	168	172.8	168	155.8	158	170.2	164.75
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	28.6	32	34.4	28	30.4	28.6	30.5	28	26	29.61
Benzene(C_6H_6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Raw Material Stack Yard

Parameters	Limit ($\mu g/M^3$)	DATE									
		01.11.22	03.11.22	08.11.22	10.11.22	15.11.22	17.11.22	22.11.22	24.11.22	29.11.22	Avg
PM_{10}	100	86.6	84	80.8	82.8	80	78.2	80	78	76.4	80.75
$PM_{2.5}$	60	58.4	54.6	50.4	56.8	58	48.2	52	54.8	51.8	53.88
Sulphur Dioxide (SO_2)	80	26.1	28	24.4	24	26.8	27	28.6	24	26	26.1
Oxide of Nitrogen (NO_2)	80	20.5	22	24.8	22.8	28.4	20.6	23	24.8	26	23.65
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	164	162	158	157.5	160.2	155	154.6	154.6	158.6	158.2
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	26	28.4	27	31.2	30	32.4	26	24.5	24	27.72
Benzene(C6H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550

Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Nedigutha Village

Parameters	Limit (µg/M^3)	DATE									
		02.11.22	05.11.22	07.11.22	12.11.22	14.11.22	19.11.22	21.11.22	26.11.22	29.11.22	Avg
PM_{10}	100	45	46.2	45	45.2	42	44.6	46	47.5	43	44.94
$PM_{2.5}$	60	44.2	45.8	42.8	42	45.2	44.6	45	44.9	42.4	44.1
Sulphur Dioxide (SO_2)	80	19.6	20.4	18.6	17.5	18	17.8	16	18.2	17.4	18.16
Oxide of Nitrogen (NO_2)	80	18	16.4	18.2	17	15.6	17.9	16.6	18.4	15	17.01
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	142	148	146.2	136	140.4	142	145.4	140	145	142.77
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	14	16.2	15.6	14	12.4	12	14.6	14	12	13.86
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550
Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

NOISE LEVEL MONITORING RESULT (In DbA) FOR THE MONTH OF Nov

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Beneficiation Plant Establishment Area				√		√	
First-Aid Room				√		√	
Security Office				√		√	
Administrative building				√		√	

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Beneficiation Plant Establishment Area	02.11.2022	OCPL/ NL/EMIL/01/11/22
2.	Sample 02	First-Aid Room	02.11.2022	OCPL/ NL/EMIL/02/11/22
3.	Sample 03	Security Office	02.11.2022	OCPL/ NL/EMIL/03/11/22
4.	Sample 04	Administrative building	02.11.2022	OCPL/ NL/EMIL/04/11/22
5.	Sample 05	Near Beneficiation Plant Establishment Area	06.11.2022	OCPL/ NL/EMIL/05/11/22
6.	Sample 06	First-Aid Room	06.11.2022	OCPL/ NL/EMIL/06/11/22
7.	Sample 07	Security Office	06.11.2022	OCPL/ NL/EMIL/07/11/22
8.	Sample 08	Administrative building	06.11.2022	OCPL/ NL/EMIL/08/11/22
9.	Sample 09	Near Beneficiation Plant Establishment Area	10.11.2022	OCPL/ NL/EMIL/09/11/22
10.	Sample 10	First-Aid Room	10.11.2022	OCPL/ NL/EMIL/10/11/22
11.	Sample 11	Security Office	10.11.2022	OCPL/ NL/EMIL/11/11/22
12.	Sample 12	Administrative building	10.11.2022	OCPL/ NL/EMIL/12/11/22
13.	Sample 13	Near Beneficiation Plant Establishment Area	13.11.2022	OCPL/ NL/EMIL/13/11/22
14.	Sample 14	First-Aid Room	13.11.2022	OCPL/ NL/EMIL/14/11/22
15.	Sample 15	Security Office	13.11.2022	OCPL/ NL/EMIL/15/11/22
16.	Sample 16	Administrative building	13.11.2022	OCPL/ NL/EMIL/16/11/22
17.	Sample 17	Near Beneficiation Plant Establishment Area	16.11.2022	OCPL/ NL/EMIL/17/11/22
18.	Sample 18	First-Aid Room	16.11.2022	OCPL/ NL/EMIL/18/11/22
19.	Sample 19	Security Office	16.11.2022	OCPL/ NL/EMIL/19/11/22
20.	Sample 20	Administrative building	16.11.2022	OCPL/ NL/EMIL/20/11/22
21.	Sample 21	Near Beneficiation Plant Establishment Area	19.11.2022	OCPL/ NL/EMIL/21/11/22
22.	Sample 22	First-Aid Room	19.11.2022	OCPL/ NL/EMIL/22/11/22
23.	Sample 23	Security Office	19.11.2022	OCPL/ NL/EMIL/23/11/22

24.	Sample 24	Administrative building	19.11.2022	OCPL/ NL/EMIL/24/11/22
25.	Sample 25	Near Beneficiation Plant Establishment Area	22.11.2022	OCPL/ NL/EMIL/25/11/22
26.	Sample 26	First-Aid Room	22.11.2022	OCPL/ NL/EMIL/26/11/22
27.	Sample 27	Security Office	22.11.2022	OCPL/ NL/EMIL/27/11/22
28.	Sample 28	Administrative building	22.11.2022	OCPL/ NL/EMIL/28/11/22
29.	Sample 29	Near Beneficiation Plant Establishment Area	26.11.2022	OCPL/ NL/EMIL/29/11/22
30.	Sample 30	First-Aid Room	26.11.2022	OCPL/ NL/EMIL/30/11/22
31.	Sample 31	Security Office	26.11.2022	OCPL/ NL/EMIL/31/11/22
32.	Sample 32	Administrative building	26.11.2022	OCPL/ NL/EMIL/32/11/22
33.	Sample 33	Near Beneficiation Plant Establishment Area	29.11.2022	OCPL/ NL/EMIL/33/11/22
34.	Sample 34	First-Aid Room	29.11.2022	OCPL/ NL/EMIL/34/11/22
35.	Sample 35	Security Office	29.11.2022	OCPL/ NL/EMIL/35/11/22
36.	Sample 36	Administrative building	29.11.2022	OCPL/ NL/EMIL/36/11/22

Date of Monitoring: 02.11.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	55.6	63	66.2	56.8	37.2
2	First-Aid Room	50.2	62	60.4	52	32
3	Security Office	45.4	58	52.8	40.6	26
4	Administrative building	27.2	48	34	32	22.8
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 06.11.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	52.4	66	62.8	48.2	37
2	First-Aid Room	45.2	60	54	46.8	32.4
3	Security Office	44.8	68.4	57	48	30.4
4	Administrative building	32	36	32.4	25.5	22.8
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 10.11.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	54.2	68.6	65.2	44	27.6
2	First-Aid Room	48	54.6	56.4	48	30.2
3	Security Office	42.8	50	52	44.8	34.6
4	Administrative building	30	29.2	35.8	27	22.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 13.11.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	60.2	68.4	56	52.4	32
2	First-Aid Room	48.6	54.6	50.4	48.7	28.4
3	Security Office	50.5	49.7	48.6	38.8	34.6
4	Administrative building	24	34.6	35	26.2	19
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 16.11.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	56.2	68	62.6	47.2	34.3
2	First-Aid Room	45	48.6	52	46.6	26.8
3	Security Office	40.8	42.8	48	37.9	23
4	Administrative building	25.3	31.8	34	29	20
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 19.11.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	46.8	66	56.4	38	28.4
2	First-Aid Room	44	54.6	54	40.8	31
3	Security Office	52.4	45.9	54	38	30.2
4	Administrative building	31	35.9	38	32.6	29.4
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 22.11.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	64	68.4	55.2	46	38.8
2	First-Aid Room	56.4	48.2	47.4	41.4	32
3	Security Office	55	50.9	52	40.2	26
4	Administrative building	31	35.8	34	29.8	22.5
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 26.11.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	58	68.4	62.4	52.2	36.8
2	First-Aid Room	50.4	54	52.8	45.2	28
3	Security Office	52	40.5	55.8	42.7	31
4	Administrative building	30.2	34.2	36	20.6	26
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 29.11.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Beneficiation Plant Establishment Area	54.8	66	52.6	42.4	38
2	First-Aid Room	54.2	54.5	48.2	42.8	29
3	Security Office	60.2	56.5	48	44	32.5
4	Administrative building	31.6	34.6	32.4	26	21.4
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

SURFACE WATER ANALYSIS FOR THE MONTH OF Nov – 2022

SUMMARY SHEET OF SAMPLING (SURFACE WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	07- November - 2022	OCPL/SW/01/11/22
2.	Sample 02	NANDIGUTU	07- November - 2022	OCPL/SW/02/11/22
3.	Sample 03	RESERVOUR POND INSIDE PLANT	07- November - 2022	OCPL/SW/03/11/22
4.	Sample 04	DALKI NALA NEAR PLANT	07- November - 2022	OCPL/SW/04/11/22
5.	Sample 05	NAIBHANGA	07- November - 2022	OCPL/SW/05/11/22

Location: JARPADA

Lab Sample Code: OCPL/SW/01/11/22		**Report No.- OCPL/EMIL/01/11/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**JARPADA**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- November -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- November -2022
Sample type	Surface Water	Date of Analysis	08- November -2022
Required parameters	As described in W/O	Date of Issue of report	14- November -2022
EMIL reference	WO No.-5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	24
4	pH	-	6.9
5	Total Suspended Solids	mg/L	82
6	Total Dissolved Solid	mg/L	869
7	Biochemical Oxygen Demand at 27°C	mg/L	7.2
8	Chemical Oxygen Demand	mg/L	1.1
9	Total Residual Chlorine	mg/L	0.68
10	Alkalinity	mg/L	86
11	Calcium	mg/L	58.2
12	Magnesium	mg/L	40
13	Total Hardness as CaCO3	mg/L	46.6
14	Electrical Conductivity	µs/cm	144.8
15	Turbidity	NTU	12.6

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	<0.05
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	0.11
20	Zinc as Zn	µg/L	0.68
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	16.2
23	Nitrate	mg/L	1.8
24	Sodium as Na	mg/L	4.2
25	Potassium as K	mg/L	2.4
26	Sulfate	mg/L	1.2
27	Nitrate as NO_3	mg/L	3.1
28	Total Silica as SiO_2	mg/L	6.1
29	Total dissolved Solid	mg/L	869

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: NANDIGUTU

Lab Sample Code: OCPL/SW/02/11/22		**Report No.- OCPL/EMIL/02/11/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**NANDIGUTU**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- November -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- November -2022
Sample type	Surface Water	Date of Analysis	08- November -2022
Required parameters	As described in W/O	Date of Issue of report	14- November -2022
EMIL reference	WO No.-5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	23
4	pH	-	6.8
5	Total Suspended Solids	mg/L	44.2
6	Total Dissolved Solid	mg/L	814
7	Biochemical Oxygen Demand at 27°C	mg/L	4.2
8	Chemical Oxygen Demand	mg/L	2.1
9	Total Residual Chlorine	mg/L	0.6
10	Alkalinity	mg/L	38.8
11	Calcium	mg/L	42.5
12	Magnesium	mg/L	50.2
13	Total Hardness as CaCO3	mg/L	48.2
14	Electrical Conductivity	µs/cm	82

15	Turbidity	NTU	34.4
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	<0.05
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	1.21
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	19.4
23	Nitrate	mg/L	3.1
24	Sodium as Na	mg/L	1.86
25	Potassium as K	mg/L	0.22
26	Sulfate	mg/L	<0.01
27	Nitrate as NO_3	mg/L	3.6
28	Total Silica as SiO_2	mg/L	6.4
29	Total dissolved Solid	mg/L	814

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: RESERVOUR POND INSIDE PLANT PREMISES

Lab Sample Code: OCPL/SW/03/11/22		**Report No.- OCPL/EMIL/03/11/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**RESERVOUR POND INSIDE PLANT PREMISES**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- November -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- November -2022
Sample type	Surface Water	Date of Analysis	08- November -2022
Required parameters	As described in W/O	Date of Issue of report	14- November -2022
EMIL reference	WO No.-5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.6
2	Odour	-	Agreeable
3	Temperature	°C	24.1
4	pH	-	6.8
5	Total Suspended Solids	mg/L	142
6	Total Dissolved Solid	mg/L	956
7	Biochemical Oxygen Demand at 27°C	mg/L	9.2
8	Chemical Oxygen Demand	mg/L	4.8
9	Total Residual Chlorine	mg/L	3.8
10	Alkalinity	mg/L	88.4
11	Calcium	mg/L	44.8
12	Magnesium	mg/L	42
13	Total Hardness as CaCO3	mg/L	171.4

14	Electrical Conductivity	µs/cm	186.5
15	Turbidity	NTU	62.8
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	0.03
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	<0.05
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	35
23	Nitrate	mg/L	3.4
24	Sodium as Na	mg/L	16.4
25	Potassium as K	mg/L	3.4
26	Sulfate	mg/L	4.6
27	Nitrate as NO_3	mg/L	4.4
28	Total Silica as SiO_2	mg/L	20.4
29	Total dissolved Solid	mg/L	956

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: DALKI NALA, NEAR PLANT

Lab Sample Code: OCPL/SW/04/11/22		**Report No.- OCPL/EMIL/04/11/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**DALKI NALA, NEAR PLANT**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- November -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- November -2022
Sample type	Surface Water	Date of Analysis	08- November -2022
Required parameters	As described in W/O	Date of Issue of report	14- November -2022
EMIL reference	WO No.-5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.2
2	Odour	-	Agreeable
3	Temperature	°C	22.8
4	pH	-	7.1
5	Total Suspended Solids	mg/L	46.5
6	Total Dissolved Solid	mg/L	732
7	Biochemical Oxygen Demand at 27°C	mg/L	4.1
8	Chemical Oxygen Demand	mg/L	1.6
9	Total Residual Chlorine	mg/L	0.18
10	Alkalinity	mg/L	50.2
11	Calcium	mg/L	26
12	Magnesium	mg/L	44.5
13	Total Hardness as CaCO3	mg/L	40.8

14	Electrical Conductivity	µs/cm	89.6
15	Turbidity	NTU	18.8
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.02
20	Zinc as Zn	µg/L	1.1
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	24.4
23	Nitrate	mg/L	16
24	Sodium as Na	mg/L	7.2
25	Potassium as K	mg/L	4.4
26	Sulfate	mg/L	6.2
27	Nitrate as NO_3	mg/L	22.4
28	Total Silica as SiO_2	mg/L	11.4
29	Total dissolved Solid	mg/L	732

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: NAIBHANGA

Lab Sample Code: OCPL/SW/05/11/22		**Report No.- OCPL/EMIL/05/11/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**NAIBHANGA**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	07- November - 2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	08- November - 2022
Sample type	Surface Water	Date of Analysis	08- November - 2022
Required parameters	As described in W/O	Date of Issue of report	14- November - 2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.6
2	Odour	-	Agreeable
3	Temperature	°C	22.4
4	pH	-	6.8
5	Total Suspended Solids	mg/L	48
6	Total Dissolved Solid	mg/L	876
7	Biochemical Oxygen Demand at 27°C	mg/L	3.8
8	Chemical Oxygen Demand	mg/L	1.2
9	Total Residual Chlorine	mg/L	0.6
10	Alkalinity	mg/L	28.5
11	Calcium	mg/L	40.2
12	Magnesium	mg/L	40.6
13	Total Hardness as CaCO3	mg/L	36.8
14	Electrical Conductivity	µs/cm	124

15	Turbidity	NTU	38.6
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	0.6
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	31
23	Nitrate	mg/L	2.4
24	Sodium as Na	mg/L	4.2
25	Potassium as K	mg/L	14
26	Sulfate	mg/L	3.1
27	Nitrate as NO_3	mg/L	5.2
28	Total Silica as SiO_2	mg/L	3.8
29	Total dissolved Solid	mg/L	876

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

GROUND WATER MONITORING REPORT

SUMMARY SHEET OF SAMPLING (GROUND WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	JARPADA	08- 11 -2022	OCPL/SW/01/11/22
2.	Sample 02	NANDIGUTU	08- 11 -2022	OCPL/SW/02/11/22
3.	Sample 03	NAIBHANGA	08- 11 -2022	OCPL/SW/03/11/22
4.	Sample 04	PLANT- 1 (Near Canteen)	08- 11 -2022	OCPL/SW/04/11/22
5.	Sample 05	PLANT- 2 (Near Tailing Pond)	08- 11 -2022	OCPL/SW/05/11/22

ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			JARPADA	NANDIGUTU	NAIBHANGA	PLANT- 1 (Near Canteen)	PLANT- 2 (Near Tailing Pond)		
1	Colour	Pt-Co	1.1	0.8	1.0	1.0	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	24.8	25.4	24.2	25.5	25.2		
4	pH	-	7.1	6.9	7.2	6.8	6.9	6.5- 8.5	No relaxation
5	Total Hardness (as $CaCO_3$)	mg/L	50.2	48.6	55	61.8	40.8	300	600
6	Calcium	mg/L	11.4	14.5	16.2	16	15.2	75	200
7	Magnesium	mg/L	0.85	1.6	3.2	3.4	2.2	30	No relaxation
8	Chloride	mg/L	8.8	14.8	12.2	7.8	14.5	250	1000
9	Alkalinity	mg/L	22.2	26.8	14	22.5	13.8	200	600
10	Electrical Conductivity	µs/cm	60.5	74	56	62	71.5	--	--
11	Arsenic as As	µg/L	ND	ND	ND	0.01	ND	10	No relaxation
12	Lead as Pb	µg/L	ND	ND	ND	ND	0.01	10	No relaxation
13	Cadmium as Cd	µg/L	0.08	0.1	0.01	ND	ND	3.0	No relaxation
14	Total Chromium as Cr	µg/L	ND	ND	0.02	0.04	0.04	50	No relaxation

15	Zinc as Zn	µg/L	86.4	62	55.8	68	75.4	5000	No relaxation
16	Fluoride as F	mg/L	ND	ND	ND	ND	ND	1.0	1.9
17	Iron as Fe	µg/L	34.2	22	18.4	18.4	35.2	300	1000
18	Nitrate	mg/L	0.02	0.16	0.02	0.16	0.02	45	100
19	Sodium as Na	mg/L	1.1	1.02	1.04	1.01	0.32	150	No relaxation
20	Potassium as K	mg/L	ND	ND	0.02	0.05	ND	12	No relaxation
21	Sulfate	mg/L	ND	0.02	0.04	ND	0.02	200	400
22	Total Silica as SiO_2	mg/L	ND	0.06	0.04	0.06	0.2	--	--
23	Total suspended Solid	mg/L	0.88	0.42	1.2	0.8	0.4	--	--
24	Total dissolved Solid	mg/L	42	84.5	94.6	46	38	250	2000
25	Turbidity	NTU	0.22	0.41	0.12	0.18	0.22	5	10

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

REPORT ON GROUND WATER LEVEL ANALYSISFOR THE MONTH OF Nov – 2022

SUMMARY SHEET OF MONITORING:

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
6.	Sample 01	JARPADA	11- 11-2022	OCPL/GWL/01/11/22
7.	Sample 02	NANDIGUTU	11- 11-2022	OCPL/GWL/02/11/22
8.	Sample 03	NAIBHANGA	11- 11-2022	OCPL/GWL/03/11/22
9.	Sample 04	PLANT- 1 (Near Canteen)	11- 11-2022	OCPL/GWL/04/11/22
10.	Sample 05	PLANT- 2 (Near Tailing Pond)	11- 11-2022	OCPL/GWL/05/11/22

MONITORING RESULT

Sl No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	JARPADA	Dugwell	0.8	8.2	7.29	--
2	NANDIGUTU	Dugwell	1.2	9.5	7.62	--
3	NAIBHANGA	Dugwell	1.0	8.6	8.4	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	62	13.8	--
5	PLANT- 2 (Near Tailing Pond)	Bore-well	0.1	60	46.66	--

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

1/10/2023

Monthly Report on Environmental Monitoring

FOR M/S ESSEL MINING & INDUSTRIES LTD

M/S ESSEL MINING & INDUSTRIES LTD.
VILL- BASANTPUR, PO-DUBUNA, TEHSIL-JHUMPURA, KEONJHAR

Contents

AMBIENT AIR MONITORING DATA 3
LOCATION AND WEEKLY MONITORING SCHEDULE 3
SUMMARY SHEET OF SAMPLING 3
LOCATION: Near Filter Cake Storage Yard 5
LOCATION: Near Crushing Plant 6
LOCATION: Near Raw Material Stack Yard 7
LOCATION: Nedigutha Village 8
NOISE LEVEL MONITORING RESULT IN dBA 9
LOCATION AND WEEKLY MONITORING SCHEDULE 9
SUMMARY SHEET OF SAMPLING 9
Date of Monitoring: 02.12.2022 11
Date of Monitoring: 06.12.2022 12
Date of Monitoring: 09.12.2022 13
Date of Monitoring: 13.12.2022 14
Date of Monitoring: 16.12.2022 15
Date of Monitoring: 20.12.2022 16
Date of Monitoring: 23.12.2022 17
Date of Monitoring: 27.12.2022 18
Date of Monitoring: 30.12.2022 19
SURFACE WATER ANALYSIS FOR THE MONTH OF DECEMBER – 2022 20
SUMMARY SHEET OF SAMPLING (SURFACE WATER): 20
Location: MALDA VILLAGE 21
Location: NEDIGUTH 23
Location: RESERVOUR POND INSIDE PLANT PREMISES 25
Location: DALKI NALA, NEAR PLANT 27
Location: TALA SAHI 29
GROUND WATER MONITORING REPORT 31
SUMMARY SHEET OF SAMPLING (GROUND WATER): 31
ANALYSIS RESULT 31
REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF DECEMBER – 2022 33
SUMMARY SHEET OF MONITORING: 33
MONITORING RESULT 33

AMBIENT AIR MONITORING DATA

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard			√			√	
Near Crushing Plant			√			√	
Near Raw Material Stack Yard			√			√	
Nediguth Village		√					√

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	02.12.2022	OCPL/ AAQ/EMIL/01/12/22
2.	Sample 02	Near Crushing Plant	02.12.2022	OCPL/ AAQ/EMIL/02/12/22
3.	Sample 03	Near Raw Material Stack Yard	02.12.2022	OCPL/ AAQ/EMIL/03/12/22
4.	Sample 04	Nedigutha Village	03.12.2022	OCPL/ AAQ/EMIL/04/12/22
5.	Sample 05	Near Filter cake storage yard	06.12.2022	OCPL/ AAQ/EMIL/05/12/22
6.	Sample 06	Near Crushing Plant	06.12.2022	OCPL/ AAQ/EMIL/06/12/22
7.	Sample 07	Near Raw Material Stack Yard	06.12.2022	OCPL/ AAQ/EMIL/07/12/22
8.	Sample 08	Nedigutha Village	10.12.2022	OCPL/ AAQ/EMIL/08/12/22
9.	Sample 09	Near Filter cake storage yard	09.12.2022	OCPL/ AAQ/EMIL/09/12/22
10.	Sample 10	Near Crushing Plant	09.12.2022	OCPL/ AAQ/EMIL/10/12/22
11.	Sample 11	Near Raw Material Stack Yard	09.12.2022	OCPL/ AAQ/EMIL/11/12/22
12.	Sample 12	Nedigutha Village	05.12.2022	OCPL/ AAQ/EMIL/12/12/22
13.	Sample 13	Near Filter cake storage yard	13.12.2022	OCPL/ AAQ/EMIL/13/12/22
14.	Sample 14	Near Crushing Plant	13.12.2022	OCPL/ AAQ/EMIL/14/12/22
15.	Sample 15	Near Raw Material Stack Yard	13.12.2022	OCPL/ AAQ/EMIL/15/12/22
16.	Sample 16	Nedigutha Village	12.12.2022	OCPL/ AAQ/EMIL/16/12/22
17.	Sample 17	Near Filter cake storage	16.12.2022	OCPL/

		yard		AAQ/EMIL/17/12/22
18.	Sample 18	Near Crushing Plant	16.12.2022	OCPL/ AAQ/EMIL/18/12/22
19.	Sample 19	Near Raw Material Stack Yard	16.12.2022	OCPL/ AAQ/EMIL/19/12/22
20.	Sample 20	Nedigutha Village	17.12.2022	OCPL/ AAQ/EMIL/20/12/22
21.	Sample 21	Near Filter cake storage yard	20.12.2022	OCPL/ AAQ/EMIL/21/12/22
22.	Sample 22	Near Crushing Plant	20.12.2022	OCPL/ AAQ/EMIL/22/12/22
23.	Sample 23	Near Raw Material Stack Yard	20.12.2022	OCPL/ AAQ/EMIL/23/12/22
24.	Sample 24	Nedigutha Village	19.12.2022	OCPL/ AAQ/EMIL/24/12/22
25.	Sample 25	Near Filter cake storage yard	23.12.2022	OCPL/ AAQ/EMIL/25/12/22
26.	Sample 26	Near Crushing Plant	23.12.2022	OCPL/ AAQ/EMIL/26/12/22
27.	Sample 27	Near Raw Material Stack Yard	23.12.2022	OCPL/ AAQ/EMIL/27/12/22
28.	Sample 28	Nedigutha Village	24.12.2022	OCPL/ AAQ/EMIL/28/12/22
29.	Sample 29	Near Filter cake storage yard	27.12.2022	OCPL/ AAQ/EMIL/29/12/22
30.	Sample 30	Near Crushing Plant	27.12.2022	OCPL/ AAQ/EMIL/30/12/22
31.	Sample 31	Near Raw Material Stack Yard	27.12.2022	OCPL/ AAQ/EMIL/31/12/22
32.	Sample 32	Nedigutha Village	26.12.2022	OCPL/ AAQ/EMIL/32/12/22
33.	Sample 33	Near Filter cake storage yard	30.12.2022	OCPL/ AAQ/EMIL/33/12/22
34.	Sample 34	Near Crushing Plant	30.12.2022	OCPL/ AAQ/EMIL/34/12/22
35.	Sample 35	Near Raw Material Stack Yard	30.12.2022	OCPL/ AAQ/EMIL/35/12/22
36.	Sample 36	Nedigutha Village	31.12.2022	OCPL/ AAQ/EMIL/36/12/22

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit (µg/M^3)	Date									
		02.12.22	06.12.22	09.12.22	13.12.22	16.12.22	20.12.22	23.12.22	27.12.22	30.12.22	Avg
PM_{10}	100	80.5	82	86.2	86.2	84.8	80.8	84.5	84.4	84.6	83.77
$PM_{2.5}$	60	54	56.4	48.2	50.4	51.8	48.6	49	52.5	52.8	51.52
Sulphur Dioxide (SO_2)	80	28.8	32	32.4	31.2	25.5	26	24.5	28	26	28.26
Oxide of Nitrogen (NO_2)	80	22.5	26.8	24.6	28	27.6	22.6	22	20.5	23.4	24.22
Lead (Pb)	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	168.2	166	158.4	157.4	172.8	168	155.8	162	172.4	164.55
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia (NH_3)	400	30.5	34.8	36.2	32	30.4	28.6	30.5	29.5	28.8	31.25
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel (Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Crushing Plant

Parameters	Limit (µg/ M^3)	DATE									
		02.12.22	06.12.22	09.12.22	13.12.22	16.12.22	20.12.22	23.12.22	27.12.22	30.12.22	Avg
PM_{10}	100	80.6	84.8	84	80.8	86.4	82.8	84	82	79.4	82.75
$PM_{2.5}$	60	56	52.4	48.5	48	46.8	46.9	50.4	47.8	52.4	49.91
Sulphur Dioxide (SO_2)	80	36.2	32.8	38.4	42	38.5	36	38.4	35.7	34.6	36.95
Oxide of Nitrogen (NO_2)	80	36.8	32.6	30.6	32	32.8	35.4	34	30.4	34	33.17
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	176.5	171.5	182.4	168.6	184.6	188	175	182.4	187	179.55
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	28.4	28.4	30	34.5	31.5	32.2	35.6	28	32.8	31.26
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550
Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Raw Material Stack Yard

Parameters	Limit ($\mu g/M^3$)	DATE									
		02.12.22	06.12.22	09.12.22	13.12.22	16.12.22	20.12.22	23.12.22	27.12.22	30.12.22	Avg
PM_{10}	100	87.4	86.2	82	82.4	78.8	76	81.5	82	80.4	81.85
$PM_{2.5}$	60	57	54.6	50.4	55.4	54	50.4	54.4	56	52.2	53.82
Sulphur Dioxide (SO_2)	80	27.8	26.2	26.5	27	26.8	28.4	28	26.9	27.2	27.2
Oxide of Nitrogen (NO_2)	80	22.8	24	24.8	22.8	28.4	22.5	24	26.4	25.8	24.61
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	165	166.5	159.4	160	162.8	158	154.6	154.6	164.6	160.6
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	28.5	28	24.4	32.8	34.4	36	30.8	34	29.8	30.96
Benzene(C6H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550

Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Nedigutha Village

Parameters	Limit (µg/M^3)	DATE									
		03.12.22	05.12.22	10.12.22	12.12.22	17.12.22	19.12.22	24.12.22	26.12.22	31.12.22	Avg
PM_{10}	100	45.2	44.8	48	46.6	44.4	44.6	46	47.5	44.2	45.7
$PM_{2.5}$	60	44.2	44	42.8	46	45.8	45.2	44.6	44.9	45	44.72
Sulphur Dioxide (SO_2)	80	20.2	20	19.8	17.9	18	17.8	17.2	18.2	18	18.56
Oxide of Nitrogen (NO_2)	80	18.5	17.6	18.2	18.4	15.6	17.5	17	18.4	16.4	17.51
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	146.2	145.4	148	144.2	138	146.5	145.4	142	146.6	144.7
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	12.5	15.8	15.6	14	14.6	15.2	14.6	16.2	14.4	14.76
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550
Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

ORGANIC CONSULTING PVT. LTD. Tested By: OCPL

NOISE LEVEL MONITORING RESULT (In DbA) FOR THE MONTH OF DECEMBER

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Beneficiation Plant Establishment Area				√		√	
First-Aid Room				√		√	
Security Office				√		√	
Administrative building				√		√	

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Main Gate Area	02.12.2022	OCPL/ NL/EMIL/01/12/22
2.	Sample 02	Near Back Gate Area	02.12.2022	OCPL/ NL/EMIL/02/12/22
3.	Sample 03	Near Palate Plant Area	02.12.2022	OCPL/ NL/EMIL/03/12/22
4.	Sample 04	Near IOBP Area	02.12.2022	OCPL/ NL/EMIL/04/12/22
5.	Sample 05	Near Main Gate Area	07.12.2022	OCPL/ NL/EMIL/05/12/22
6.	Sample 06	Near Back Gate Area	07.12.2022	OCPL/ NL/EMIL/06/12/22
7.	Sample 07	Near Palate Plant Area	07.12.2022	OCPL/ NL/EMIL/07/12/22
8.	Sample 08	Near IOBP Area	07.12.2022	OCPL/ NL/EMIL/08/12/22
9.	Sample 09	Near Main Gate Area	09.12.2022	OCPL/ NL/EMIL/09/12/22
10.	Sample 10	Near Back Gate Area	09.12.2022	OCPL/ NL/EMIL/10/12/22
11.	Sample 11	Near Palate Plant Area	09.12.2022	OCPL/ NL/EMIL/11/12/22
12.	Sample 12	Near IOBP Area	09.12.2022	OCPL/ NL/EMIL/12/12/22
13.	Sample 13	Near Main Gate Area	14.12.2022	OCPL/ NL/EMIL/13/12/22
14.	Sample 14	Near Back Gate Area	14.12.2022	OCPL/ NL/EMIL/14/12/22
15.	Sample 15	Near Palate Plant Area	14.12.2022	OCPL/ NL/EMIL/15/12/22
16.	Sample 16	Near IOBP Area	14.12.2022	OCPL/ NL/EMIL/16/12/22
17.	Sample 17	Near Main Gate Area	16.12.2022	OCPL/ NL/EMIL/17/12/22
18.	Sample 18	Near Back Gate Area	16.12.2022	OCPL/ NL/EMIL/18/12/22
19.	Sample 19	Near Palate Plant Area	16.12.2022	OCPL/ NL/EMIL/19/12/22
20.	Sample 20	Near IOBP Area	16.12.2022	OCPL/ NL/EMIL/20/12/22
21.	Sample 21	Near Main Gate Area	21.12.2022	OCPL/ NL/EMIL/21/12/22
22.	Sample 22	Near Back Gate Area	21.12.2022	OCPL/ NL/EMIL/22/12/22
23.	Sample 23	Near Palate Plant Area	21.12.2022	OCPL/ NL/EMIL/23/12/22
24.	Sample 24	Near IOBP Area	21.12.2022	OCPL/ NL/EMIL/24/12/22
25.	Sample 25	Near Main Gate Area	23.12.2022	OCPL/ NL/EMIL/25/12/22
26.	Sample 26	Near Back Gate Area	23.12.2022	OCPL/ NL/EMIL/26/12/22
27.	Sample 27	Near Palate Plant Area	23.12.2022	OCPL/ NL/EMIL/27/12/22
28.	Sample 28	Near IOBP Area	23.12.2022	OCPL/ NL/EMIL/28/12/22
29.	Sample 29	Near Main Gate Area	28.12.2022	OCPL/ NL/EMIL/29/12/22

30.	Sample 30	Near Back Gate Area	28.12.2022	OCPL/ NL/EMIL/30/12/22
31.	Sample 31	Near Palate Plant Area	28.12.2022	OCPL/ NL/EMIL/31/12/22
32.	Sample 32	Near IOBP Area	28.12.2022	OCPL/ NL/EMIL/32/12/22
33.	Sample 33	Near Main Gate Area	30.12.2022	OCPL/ NL/EMIL/33/12/22
34.	Sample 34	Near Back Gate Area	30.12.2022	OCPL/ NL/EMIL/34/12/22
35.	Sample 35	Near Palate Plant Area	30.12.2022	OCPL/ NL/EMIL/35/12/22
36.	Sample 36	Near IOBP Area	30.12.2022	OCPL/ NL/EMIL/36/12/22

Date of Monitoring: 02.12.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	58.2	63.4	68	58.4	30.5
2	Near Back Gate Area	52.6	62.5	60.4	56.4	29
3	Near Palate Plant Area	46.4	58	58.4	40.6	26.2
4	Near IOBP Area	34	52	34.8	32.6	22.8
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 07.12.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	56.2	66.8	62.8	42	32.8
2	Near Back Gate Area	46.6	60	54	47	32.5
3	Near Palate Plant Area	51	68.4	57	48	29.6
4	Near IOBP Area	48.8	36	32.4	35.8	34
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 09.12.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	55.8	68.6	62	44.2	27.6
2	Near Back Gate Area	48.9	54.6	56.4	48	30.2
3	Near Palate Plant Area	56	50.4	52	44.8	34.6
4	Near IOBP Area	52.8	32.8	48	39	22.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 14.12.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	57	68.4	56	52.4	32
2	Near Back Gate Area	56.4	54.6	50.4	48.7	27
3	Near Palate Plant Area	54	52.5	48.6	38.8	42.6
4	Near IOBP Area	55.8	52	49.5	50	38
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 16.12.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	56	68	62.6	47.2	34.3
2	Near Back Gate Area	55.9	48.6	52	46.6	26.8
3	Near Palate Plant Area	45.8	42.8	55	37.9	32.5
4	Near IOBP Area	48	56	49	38	36.2
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 21.12.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	45.8	60.8	56.4	38	35
2	Near Back Gate Area	48.8	54.6	54	40.8	32
3	Near Palate Plant Area	46	48.8	58	37.9	38.4
4	Near IOBP Area	48.2	54	42	38	34
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 23.12.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	64	68.4	55.2	46	38.8
2	Near Back Gate Area	50.8	48.2	42.8	40.6	32.2
3	Near Palate Plant Area	55	50.9	52	40.2	38.6
4	Near IOBP Area	58	52	42	48.4	40.8
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 28.12.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	58	68.4	65.8	52.2	32.8
2	Near Back Gate Area	50.4	54.8	52.8	45.2	31.8
3	Near Palate Plant Area	54.6	46	52.4	42.7	36.8
4	Near IOBP Area	58	62.2	40.8	35	32.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 30.12.2022

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	58	66.2	52.6	42.4	35
2	Near Back Gate Area	50.6	54.5	48.8	42.8	28
3	Near Palate Plant Area	60.8	56.5	48.5	56	36
4	Near IOBP Area	48	52.4	44.6	49	38.5
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

SURFACE WATER ANALYSIS FOR THE MONTH OF DECEMBER – 2022

SUMMARY SHEET OF SAMPLING (SURFACE WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	BAITARANI RIVER (UPPER AREA)	08- December - 2022	OCPL/SW/01/12/22
2.	Sample 02	BAITARANI RIVER (NEAR PLANT AREA)	08- December - 2022	OCPL/SW/02/12/22
3.	Sample 03	RESERVOUR POND INSIDE PLANT	08- December - 2022	OCPL/SW/03/12/22
4.	Sample 04	DALKI NALA NEAR PLANT	08- December - 2022	OCPL/SW/04/12/22
5.	Sample 05	DHANURJAYPUR	08- December - 2022	OCPL/SW/05/12/22

Location: BAITARANI RIVER (Upper Area)

Lab Sample Code: OCPL/SW/01/12/22		**Report No.- OCPL/EMIL/01/12/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**MALDA VILLAGE**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	08- December -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	09- December -2022
Sample type	Surface Water	Date of Analysis	09- December -2022
Required parameters	As described in W/O	Date of Issue of report	17- December -2022
EMIL reference	WO No.-5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	24.3
4	pH	-	6.8
5	Total Suspended Solids	mg/L	78
6	Total Dissolved Solid	mg/L	818
7	Biochemical Oxygen Demand at 27°C	mg/L	7.1
8	Chemical Oxygen Demand	mg/L	1.1
9	Total Residual Chlorine	mg/L	0.68
10	Alkalinity	mg/L	86.4
11	Calcium	mg/L	55
12	Magnesium	mg/L	38
13	Total Hardness as CaCO3	mg/L	42.8
14	Electrical Conductivity	µs/cm	135
15	Turbidity	NTU	11.8

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	<0.05
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	0.11
20	Zinc as Zn	µg/L	0.64
21	Fluoride as F	mg/L	<0.05
22	Iron as Fe	mg/L	15.6
23	Nitrate	mg/L	1.4
24	Sodium as Na	mg/L	3.8
25	Potassium as K	mg/L	2.2
26	Sulfate	mg/L	1.4
27	Nitrate as NO_3	mg/L	3.04
28	Total Silica as SiO_2	mg/L	5.8
29	Total dissolved Solid	mg/L	818

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: BAITARANI RIVER (NEAR PLANT AREA)

Lab Sample Code: OCPL/SW/02/12/22		**Report No.- OCPL/EMIL/02/12/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**NEDIGUTH**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	08- December -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	09- December -2022
Sample type	Surface Water	Date of Analysis	09- December -2022
Required parameters	As described in W/O	Date of Issue of report	17- December -2022
EMIL reference	WO No.-5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	22.1
4	pH	-	6.9
5	Total Suspended Solids	mg/L	46
6	Total Dissolved Solid	mg/L	788
7	Biochemical Oxygen Demand at 27°C	mg/L	4.5
8	Chemical Oxygen Demand	mg/L	1.04
9	Total Residual Chlorine	mg/L	0.6
10	Alkalinity	mg/L	26
11	Calcium	mg/L	22.2
12	Magnesium	mg/L	41
13	Total Hardness as CaCO3	mg/L	35.2
14	Electrical Conductivity	µs/cm	75.8

15	Turbidity	NTU	28
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	<0.05
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	1.02
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	12.6
23	Nitrate	mg/L	2.2
24	Sodium as Na	mg/L	1.6
25	Potassium as K	mg/L	0.2
26	Sulfate	mg/L	<0.01
27	Nitrate as NO_3	mg/L	3.4
28	Total Silica as SiO_2	mg/L	4.4
29	Total dissolved Solid	mg/L	788

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: RESERVOUR POND INSIDE PLANT PREMISES

Lab Sample Code: OCPL/SW/03/12/22		**Report No.- OCPL/EMIL/03/12/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**RESERVOUR POND INSIDE PLANT PREMISES**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	08- December -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	09- December -2022
Sample type	Surface Water	Date of Analysis	09- December -2022
Required parameters	As described in W/O	Date of Issue of report	17- December -2022
EMIL reference	WO No.-5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.7
2	Odour	-	Agreeable
3	Temperature	°C	23.6
4	pH	-	6.6
5	Total Suspended Solids	mg/L	158
6	Total Dissolved Solid	mg/L	1045
7	Biochemical Oxygen Demand at 27°C	mg/L	9.8
8	Chemical Oxygen Demand	mg/L	4.9
9	Total Residual Chlorine	mg/L	4.4
10	Alkalinity	mg/L	78.2
11	Calcium	mg/L	56.8
12	Magnesium	mg/L	42.4
13	Total Hardness as CaCO3	mg/L	162

14	Electrical Conductivity	µs/cm	156.3
15	Turbidity	NTU	58
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	0.04
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	<0.05
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	32.8
23	Nitrate	mg/L	3.8
24	Sodium as Na	mg/L	21.4
25	Potassium as K	mg/L	4.2
26	Sulfate	mg/L	4.8
27	Nitrate as NO_3	mg/L	5.9
28	Total Silica as SiO_2	mg/L	16.6
29	Total dissolved Solid	mg/L	1045

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: DALKI NALA, NEAR PLANT

Lab Sample Code: OCPL/SW/04/12/22		**Report No.- OCPL/EMIL/04/12/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**DALKI NALA, NEAR PLANT**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	08- December -2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	09- December -2022
Sample type	Surface Water	Date of Analysis	09- December -2022
Required parameters	As described in W/O	Date of Issue of report	17- December -2022
EMIL reference	WO No.-5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	22.2
4	pH	-	7.1
5	Total Suspended Solids	mg/L	42.8
6	Total Dissolved Solid	mg/L	706
7	Biochemical Oxygen Demand at 27°C	mg/L	3.8
8	Chemical Oxygen Demand	mg/L	1.2
9	Total Residual Chlorine	mg/L	0.06
10	Alkalinity	mg/L	48.5
11	Calcium	mg/L	26.5
12	Magnesium	mg/L	42.6
13	Total Hardness as CaCO3	mg/L	41.4

14	Electrical Conductivity	µs/cm	90.4
15	Turbidity	NTU	20.5
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.02
20	Zinc as Zn	µg/L	1.06
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	25
23	Nitrate	mg/L	16.2
24	Sodium as Na	mg/L	8.6
25	Potassium as K	mg/L	4.8
26	Sulfate	mg/L	6.5
27	Nitrate as NO_3	mg/L	21.4
28	Total Silica as SiO_2	mg/L	9.4
29	Total dissolved Solid	mg/L	706

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: DHANURJAYPUR

Lab Sample Code: OCPL/SW/05/12/22		**Report No.- OCPL/EMIL/05/12/22**	
Sample description:		Test method	APHA 22nd edition
Sample location	**TALA SAHI**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	08- December - 2022
Sample quantity	1no.s X 1 Lit.	Date of sample received	09- December - 2022
Sample type	Surface Water	Date of Analysis	09- December - 2022
Required parameters	As described in W/O	Date of Issue of report	17- December - 2022
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	21.9
4	pH	-	6.9
5	Total Suspended Solids	mg/L	42.6
6	Total Dissolved Solid	mg/L	684
7	Biochemical Oxygen Demand at 27°C	mg/L	3.5
8	Chemical Oxygen Demand	mg/L	1.1
9	Total Residual Chlorine	mg/L	0.6
10	Alkalinity	mg/L	32
11	Calcium	mg/L	42.4
12	Magnesium	mg/L	38.6
13	Total Hardness as CaCO3	mg/L	35.4
14	Electrical Conductivity	µs/cm	76

15	Turbidity	NTU	28.6
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	0.4
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	14.2
23	Nitrate	mg/L	1.4
24	Sodium as Na	mg/L	2.2
25	Potassium as K	mg/L	2.6
26	Sulfate	mg/L	2.04
27	Nitrate as NO_3	mg/L	3.8
28	Total Silica as SiO_2	mg/L	3.2
29	Total dissolved Solid	mg/L	684

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

GROUND WATER MONITORING REPORT

SUMMARY SHEET OF SAMPLING (GROUND WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	MALDA VILLAGE	15- December - 2022	OCPL/SW/01/12/22
2.	Sample 02	NEDIGUTH	15- December - 2022	OCPL/SW/02/12/22
3.	Sample 03	TALA SAHI	15- December - 2022	OCPL/SW/03/12/22
4.	Sample 04	PLANT- 1 (Near Canteen)	15- December - 2022	OCPL/SW/04/12/22
5.	Sample 05	PLANT- 2 (SLIME POND)	15- December - 2022	OCPL/SW/05/12/22

ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALA SAHI	PLANT- 1 (Near Canteen)	PLANT- 2 (SLIME POND)		
1	Colour	Pt-Co	1.1	0.8	1.0	1.0	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	24.4	23.5	24.1	25.2	24.8		
4	pH	-	7.1	6.8	7.1	6.8	6.9	6.5- 8.5	No relaxation
5	Total Hardness (as $CaCO_3$)	mg/L	55	48.5	42.6	62	48.8	300	600
6	Calcium	mg/L	8	11.8	12.5	16.5	19.5	75	200
7	Magnesium	mg/L	0.8	1.4	3.1	4.2	4.9	30	No relaxation
8	Chloride	mg/L	8.6	14.8	14.5	7.88	14.8	250	1000
9	Alkalinity	mg/L	22.2	26.8	14	22.5	13.8	200	600
10	Electrical Conductivity	µs/cm	62	74	56.8	62	75.4	--	--
11	Arsenic as As	µg/L	ND	ND	ND	0.01	ND	10	No relaxation
12	Lead as Pb	µg/L	ND	ND	ND	ND	0.01	10	No relaxation

13	Cadmium as Cd	µg/L	0.06	0.1	ND	ND	0.01	3.0	No relaxation
14	Total Chromium as Cr	µg/L	ND	ND	0.02	0.04	0.02	50	No relaxation
15	Zinc as Zn	µg/L	86.4	62.5	50.6	68.8	76	5000	No relaxation
16	Fluoride as F	mg/L	ND	ND	ND	ND	ND	1.0	1.9
17	Iron as Fe	µg/L	34.8	24.5	21.4	20.2	34	300	1000
18	Nitrate	mg/L	0.02	0.1	0.02	0.18	0.08	45	100
19	Sodium as Na	mg/L	1.04	1.02	1.04	1.2	0.32	150	No relaxation
20	Potassium as K	mg/L	ND	ND	0.02	0.05	ND	12	No relaxation
21	Sulfate	mg/L	ND	0.02	0.04	ND	0.02	200	400
22	Total Silica as SiO_2	mg/L	ND	0.06	0.04	0.06	0.2	--	--
23	Total suspended Solid	mg/L	0.04	0.42	1.2	0.8	0.64	--	--
24	Total dissolved Solid	mg/L	38.8	42	36.8	60.2	58.5	250	2000
25	Turbidity	NTU	0.2	0.41	0.14	0.15	0.22	5	10

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

REPORT ON GROUND WATER LEVEL ANALYSISFOR THE MONTH OF DECEMBER – 2022

SUMMARY SHEET OF MONITORING:

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
6.	Sample 01	MALDA VILLAGE	22- DECEMBER -2022	OCPL/GWL/01/12/22
7.	Sample 02	NEDIGUTH	22- DECEMBER -2022	OCPL/GWL/02/12/22
8.	Sample 03	TALA SAHI	22- DECEMBER -2022	OCPL/GWL/03/12/22
9.	Sample 04	PLANT- 1 (Near Canteen)	22- DECEMBER -2022	OCPL/GWL/04/12/22
10.	Sample 05	PLANT- 2 (SLIME POND)	22- DECEMBER -2022	OCPL/GWL/05/12/22

MONITORING RESULT

Sl No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	MALDA VILLAGE	Dugwell	0.8	8.2	7.28	--
2	NEDIGUTH	Dugwell	1.2	9.5	7.64	--
3	TALA SAHI	Dugwell	1.0	8.6	8.38	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	62	13.75	--
5	PLANT- 2 (SLIME POND)	Bore-well	0.1	60	46.62	--

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

2/8/2023

Monthly Report on Environmental Monitoring

FOR M/S ESSEL MINING & INDUSTRIES LTD

M/S ESSEL MINING & INDUSTRIES LTD.
VILL- BASANTPUR, PO-DUBUNA, TEHSIL-JHUMPURA, KEONJHAR

Contents

AMBIENT AIR MONITORING DATA 3
LOCATION AND WEEKLY MONITORING SCHEDULE 3
SUMMARY SHEET OF SAMPLING 3
LOCATION: Near Filter Cake Storage Yard 5
LOCATION: Near Crushing Plant 6
LOCATION: Near Raw Material Stack Yard 7
LOCATION: Nadigutha Village 8
NOISE LEVEL MONITORING RESULT IN dBA 9
LOCATION AND WEEKLY MONITORING SCHEDULE 9
SUMMARY SHEET OF SAMPLING 9
Date of Monitoring: 02.01.2023 11
Date of Monitoring: 04.01.2023 12
Date of Monitoring: 09.01.2023 13
Date of Monitoring: 11.01.2023 14
Date of Monitoring: 16.01.2023 15
Date of Monitoring: 18.01.2023 16
Date of Monitoring: 23.01.2023 17
Date of Monitoring: 25.01.2023 18
Date of Monitoring: 30.01.2023 19
SURFACE WATER ANALYSIS FOR THE MONTH OF JANUARY – 2023 20
SUMMARY SHEET OF SAMPLING (SURFACE WATER): 20
Location: Baitarani River (Dhanurjaypur) 21
Location: Baitarani River (near Plant) 23
Location: RESERVOUR POND INSIDE PLANT PREMISES 25
Location: DALKI NALA, NEAR PLANT 27
Location: NADIGUTH 29
GROUND WATER MONITORING REPORT 31
SUMMARY SHEET OF SAMPLING (GROUND WATER): 31
ANALYSIS RESULT 31
REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF JANUARY – 2023 33
SUMMARY SHEET OF MONITORING: 33
MONITORING RESULT 33

AMBIENT AIR MONITORING DATA

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√			√		
Near Crushing Plant		√			√		
Near Raw Material Stack Yard		√			√		
Nadiguth Village			√			√	

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	02.01.2023	OCPL/ AAQ/EMIL/01/01/23
2.	Sample 02	Near Crushing Plant	02.01.2023	OCPL/ AAQ/EMIL/02/01/23
3.	Sample 03	Near Raw Material Stack Yard	02.01.2023	OCPL/ AAQ/EMIL/03/01/23
4.	Sample 04	Nedigutha Village	03.01.2023	OCPL/ AAQ/EMIL/04/01/23
5.	Sample 05	Near Filter cake storage yard	05.01.2023	OCPL/ AAQ/EMIL/05/01/23
6.	Sample 06	Near Crushing Plant	05.01.2023	OCPL/ AAQ/EMIL/06/01/23
7.	Sample 07	Near Raw Material Stack Yard	05.01.2023	OCPL/ AAQ/EMIL/07/01/23
8.	Sample 08	Nedigutha Village	06.01.2023	OCPL/ AAQ/EMIL/08/01/23
9.	Sample 09	Near Filter cake storage yard	09.01.2023	OCPL/ AAQ/EMIL/09/01/23
10.	Sample 10	Near Crushing Plant	09.01.2023	OCPL/ AAQ/EMIL/10/01/23
11.	Sample 11	Near Raw Material Stack Yard	09.01.2023	OCPL/ AAQ/EMIL/11/01/23
12.	Sample 12	Nedigutha Village	10.01.2023	OCPL/ AAQ/EMIL/12/01/23
13.	Sample 13	Near Filter cake storage yard	12.01.2023	OCPL/ AAQ/EMIL/13/01/23
14.	Sample 14	Near Crushing Plant	12.01.2023	OCPL/ AAQ/EMIL/14/01/23
15.	Sample 15	Near Raw Material Stack Yard	12.01.2023	OCPL/ AAQ/EMIL/15/01/23
16.	Sample 16	Nedigutha Village	13.01.2023	OCPL/ AAQ/EMIL/16/01/23
17.	Sample 17	Near Filter cake storage	16.01.2023	OCPL/

		yard		AAQ/EMIL/17/01/23
18.	Sample 18	Near Crushing Plant	16.01.2023	OCPL/ AAQ/EMIL/18/01/23
19.	Sample 19	Near Raw Material Stack Yard	16.01.2023	OCPL/ AAQ/EMIL/19/01/23
20.	Sample 20	Nedigutha Village	17.01.2023	OCPL/ AAQ/EMIL/20/01/23
21.	Sample 21	Near Filter cake storage yard	19.01.2023	OCPL/ AAQ/EMIL/21/01/23
22.	Sample 22	Near Crushing Plant	19.01.2023	OCPL/ AAQ/EMIL/22/01/23
23.	Sample 23	Near Raw Material Stack Yard	19.01.2023	OCPL/ AAQ/EMIL/23/01/23
24.	Sample 24	Nedigutha Village	20.01.2023	OCPL/ AAQ/EMIL/24/01/23
25.	Sample 25	Near Filter cake storage yard	23.01.2023	OCPL/ AAQ/EMIL/25/01/23
26.	Sample 26	Near Crushing Plant	23.01.2023	OCPL/ AAQ/EMIL/26/01/23
27.	Sample 27	Near Raw Material Stack Yard	23.01.2023	OCPL/ AAQ/EMIL/27/01/23
28.	Sample 28	Nedigutha Village	24.01.2023	OCPL/ AAQ/EMIL/28/01/23
29.	Sample 29	Near Filter cake storage yard	26.01.2023	OCPL/ AAQ/EMIL/29/01/23
30.	Sample 30	Near Crushing Plant	26.01.2023	OCPL/ AAQ/EMIL/30/01/23
31.	Sample 31	Near Raw Material Stack Yard	26.01.2023	OCPL/ AAQ/EMIL/31/01/23
32.	Sample 32	Nedigutha Village	27.01.2023	OCPL/ AAQ/EMIL/32/01/23
33.	Sample 33	Near Filter cake storage yard	30.01.2023	OCPL/ AAQ/EMIL/33/01/23
34.	Sample 34	Near Crushing Plant	30.01.2023	OCPL/ AAQ/EMIL/34/01/23
35.	Sample 35	Near Raw Material Stack Yard	30.01.2023	OCPL/ AAQ/EMIL/35/01/23
36.	Sample 36	Nedigutha Village	31.01.2023	OCPL/ AAQ/EMIL/36/01/23

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit (µg/M^3)	Date									
		02.01.23	05.01.23	09.01.23	12.01.23	16.01.23	19.01.23	23.01.23	26.01.23	30.01.23	Avg
PM_{10}	100	86.4	84	82.8	84.4	82.8	84.6	88.6	86	87.2	85.2
$PM_{2.5}$	60	55.8	58.2	56	54.4	54.8	52.4	56.2	56	58.6	55.82
Sulphur Dioxide (SO_2)	80	32.4	34.2	34	35.6	32.8	32.5	29.6	30.6	34.8	32.94
Oxide of Nitrogen (NO_2)	80	26.2	25.8	25	24.8	30.4	31.2	28	28.8	28.2	27.6
Lead (Pb)	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	166.4	168	172.5	164.8	171	175	175.5	169.6	172	170.53
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia (NH_3)	400	34	35.2	38.6	38	36.4	34.8	36.5	36	36.2	36.18
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel (Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550
Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Crushing Plant

Parameters	Limit (µg/ M^3)	DATE									
		02.01.23	05.01.23	09.01.23	12.01.23	16.01.23	19.01.23	23.01.23	26.01.23	30.01.23	Avg
PM_{10}	100	82.6	84.8	86.2	86	88.6	84.5	86.8	85	86.2	85.63
$PM_{2.5}$	60	54.2	56	58.4	56.6	55.5	58.5	54	56.2	54.8	56.02
Sulphur Dioxide (SO_2)	80	36	38.2	37	40.4	42	42.8	44	39	44.2	40.4
Oxide of Nitrogen (NO_2)	80	34.8	35.2	38	40.5	38.5	40	41.2	40.8	39.8	38.75
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	186.8	185	188.4	184	184.6	182.4	180	182.4	186.4	184.44
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	30.4	32	34.2	34.8	36.2	34.8	35.6	32	34.4	33.82
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550
Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Raw Material Stack Yard

Parameters	Limit ($\mu g/M^3$)	DATE									
		02.01.23	05.01.23	09.01.23	12.01.23	16.01.23	19.01.23	23.01.23	26.01.23	30.01.23	Avg
PM_{10}	100	86.4	88	86.5	84.8	88.2	84.5	86.4	85.2	84	86
$PM_{2.5}$	60	54.2	54	56.4	58.4	58	58.5	55.2	56	60.2	56.76
Sulphur Dioxide (SO_2)	80	26	26.2	28.4	27	28.8	28.4	30.2	31	28.6	28.28
Oxide of Nitrogen (NO_2)	80	24.6	25	25.2	26.6	28.2	28.8	26	26.4	28	26.53
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	163.5	164	162.8	166.8	168	162.4	164	166.4	165	164.7
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	28	28.6	26.8	29.5	34.4	36	34.4	36.2	38	32.43
Benzene(C6H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550

Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

Checked By: OCPL

LOCATION: Nedigutha Village

Parameters	Limit (µg/M^3)	DATE									
		03.01.23	06.01.23	10.01.23	13.01.23	17.01.23	20.01.23	24.01.23	27.01.23	31.01.23	Avg
PM_{10}	100	42	44	46.5	45	44.4	46.2	46	48.2	41.3	44.84
$PM_{2.5}$	60	41.4	42.2	42.8	40.2	41.5	42	42.5	42.8	40.6	41.77
Sulphur Dioxide (SO_2)	80	18.2	18	19.2	20.4	19.5	20.6	18	16.4	16.8	18.56
Oxide of Nitrogen (NO_2)	80	16.2	16	18.8	16.2	18	18.2	16.4	18.2	16.8	17.2
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	144.2	148	142.8	140.8	144.8	145	144	142.6	142	143.8
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	12	14.2	14	12.8	12.8	14.4	14	12.6	12.4	13.244
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550
Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

NOISE LEVEL MONITORING RESULT (In DbA) FOR THE MONTH OF JANUARY

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Main Gate Area		√		√			
Near Back Gate Area		√		√			
Near Palate Plant Area		√		√			
Near IOBP Area		√		√			

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Main Gate Area	02.01.2023	OCPL/ NL/EMIL/01/01/23
2.	Sample 02	Near Back Gate Area	02.01.2023	OCPL/ NL/EMIL/02/01/23
3.	Sample 03	Near Palate Plant Area	02.01.2023	OCPL/ NL/EMIL/03/01/23
4.	Sample 04	Near IOBP Area	02.01.2023	OCPL/ NL/EMIL/04/01/23
5.	Sample 05	Near Main Gate Area	04.01.2023	OCPL/ NL/EMIL/05/01/23
6.	Sample 06	Near Back Gate Area	04.01.2023	OCPL/ NL/EMIL/06/01/23
7.	Sample 07	Near Palate Plant Area	04.01.2023	OCPL/ NL/EMIL/07/01/23
8.	Sample 08	Near IOBP Area	04.01.2023	OCPL/ NL/EMIL/08/01/23
9.	Sample 09	Near Main Gate Area	09.01.2023	OCPL/ NL/EMIL/09/01/23
10.	Sample 10	Near Back Gate Area	09.01.2023	OCPL/ NL/EMIL/10/01/23
11.	Sample 11	Near Palate Plant Area	09.01.2023	OCPL/ NL/EMIL/11/01/23
12.	Sample 12	Near IOBP Area	09.01.2023	OCPL/ NL/EMIL/12/01/23
13.	Sample 13	Near Main Gate Area	11.01.2023	OCPL/ NL/EMIL/13/01/23
14.	Sample 14	Near Back Gate Area	11.01.2023	OCPL/ NL/EMIL/14/01/23
15.	Sample 15	Near Palate Plant Area	11.01.2023	OCPL/ NL/EMIL/15/01/23
16.	Sample 16	Near IOBP Area	11.01.2023	OCPL/ NL/EMIL/16/01/23
17.	Sample 17	Near Main Gate Area	16.01.2023	OCPL/ NL/EMIL/17/01/23
18.	Sample 18	Near Back Gate Area	16.01.2023	OCPL/ NL/EMIL/18/01/23
19.	Sample 19	Near Palate Plant Area	16.01.2023	OCPL/ NL/EMIL/19/01/23
20.	Sample 20	Near IOBP Area	16.01.2023	OCPL/ NL/EMIL/20/01/23
21.	Sample 21	Near Main Gate Area	17.01.2023	OCPL/ NL/EMIL/21/01/23
22.	Sample 22	Near Back Gate Area	17.01.2023	OCPL/ NL/EMIL/22/01/23
23.	Sample 23	Near Palate Plant Area	17.01.2023	OCPL/ NL/EMIL/23/01/23
24.	Sample 24	Near IOBP Area	17.01.2023	OCPL/ NL/EMIL/24/01/23
25.	Sample 25	Near Main Gate Area	23.01.2023	OCPL/ NL/EMIL/25/01/23
26.	Sample 26	Near Back Gate Area	23.01.2023	OCPL/ NL/EMIL/26/01/23
27.	Sample 27	Near Palate Plant Area	23.01.2023	OCPL/ NL/EMIL/27/01/23
28.	Sample 28	Near IOBP Area	23.01.2023	OCPL/ NL/EMIL/28/01/23

29.	Sample 29	Near Main Gate Area	25.01.2023	OCPL/ NL/EMIL/29/01/23
30.	Sample 30	Near Back Gate Area	25.01.2023	OCPL/ NL/EMIL/30/01/23
31.	Sample 31	Near Palate Plant Area	25.01.2023	OCPL/ NL/EMIL/31/01/23
32.	Sample 32	Near IOBP Area	25.01.2023	OCPL/ NL/EMIL/32/01/23
33.	Sample 33	Near Main Gate Area	30.01.2023	OCPL/ NL/EMIL/33/01/23
34.	Sample 34	Near Back Gate Area	30.01.2023	OCPL/ NL/EMIL/34/01/23
35.	Sample 35	Near Palate Plant Area	30.01.2023	OCPL/ NL/EMIL/35/01/23
36.	Sample 36	Near IOBP Area	30.01.2023	OCPL/ NL/EMIL/36/01/23

Date of Monitoring: 02.01.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	55.6	60.5	62.2	56	28.4
2	Near Back Gate Area	50.6	60	60.8	52.2	23
3	Near Palate Plant Area	44	61.5	58.4	42	30
4	Near IOBP Area	38.2	56.7	34.8	48.6	22.8
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 04.01.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	58	64.2	58.4	40.6	36.4
2	Near Back Gate Area	46.2	66	54.8	44	32.5
3	Near Palate Plant Area	51.4	60.5	57	42.6	31.4
4	Near IOBP Area	46	36.8	32.4	35.8	30.2
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 09.01.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	54.4	68.6	62	44.2	28.8
2	Near Back Gate Area	44	54.6	56.4	48.9	30.2
3	Near Palate Plant Area	50.6	54.4	52.3	44.8	30
4	Near IOBP Area	48.9	32.8	44	39.8	29.4
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 11.01.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	57.4	68.4	60.6	54	35.5
2	Near Back Gate Area	52	54.6	50.4	48.7	27.9
3	Near Palate Plant Area	58.6	52.5	48.6	37	39
4	Near IOBP Area	56.3	50.4	52	54.8	36.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 16.01.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	54.2	68.2	65.4	45.6	39
2	Near Back Gate Area	48	39.6	46.2	40.6	22
3	Near Palate Plant Area	46.2	44.5	55	37.9	32.5
4	Near IOBP Area	40	50	49	38	38.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 18.01.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	40.2	62	54	36	25.9
2	Near Back Gate Area	44	48.7	51.8	38.4	28
3	Near Palate Plant Area	42.6	62	56	37.9	38.4
4	Near IOBP Area	50	60.4	58.7	40.6	32
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 23.01.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	60	58.8	60.2	50.2	40.6
2	Near Back Gate Area	48.8	50.6	40.8	38	36.2
3	Near Palate Plant Area	55	56.8	62.6	42	31.4
4	Near IOBP Area	57.6	52.2	48	44.8	38.4
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 25.01.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	42.2	56	61	58.4	33.6
2	Near Back Gate Area	34	54.8	48	44.2	25.4
3	Near Palate Plant Area	48.6	56.8	48.2	50.6	34
4	Near IOBP Area	52.4	58	44	45	27.4
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 30.01.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	60.8	64.4	54.8	48	32.2
2	Near Back Gate Area	41	47.8	52	38.9	26
3	Near Palate Plant Area	62.4	60.4	68.8	62.5	31
4	Near IOBP Area	50.4	58	40.8	56	34.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

SURFACE WATER ANALYSIS FOR THE MONTH OF JANUARY – 2023

SUMMARY SHEET OF SAMPLING (SURFACE WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	BAITARANI RIVER (DHANURJAYPUR)	09- JANUARY - 2023	OCPL/SW/01/01/23
2.	Sample 02	BAITARANI RIVER (NEAR PLANT AREA)	09- JANUARY - 2023	OCPL/SW/02/01/23
3.	Sample 03	RESERVOUR POND INSIDE PLANT	09- JANUARY - 2023	OCPL/SW/03/01/23
4.	Sample 04	DALKI NALA NEAR PLANT	09- JANUARY - 2023	OCPL/SW/04/01/23
5.	Sample 05	NADIGUTH	09- JANUARY - 2023	OCPL/SW/05/01/23

Location: BAITARANI RIVER (DHANURJAYPUR)

Lab Sample Code: OCPL/SW/01/01/23		**Report No.- OCPL/EMIL/01/01/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**BAITARANI RIVER (DHANURJAYPUR)**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- JANUARY - 2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- JANUARY - 2023
Sample type	Surface Water	Date of Analysis	10- JANUARY - 2023
Required parameters	As described in W/O	Date of Issue of report	18- JANUARY - 2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	24.8
4	pH	-	6.9
5	Total Suspended Solids	mg/L	72
6	Total Dissolved Solid	mg/L	769
7	Biochemical Oxygen Demand at 27°C	mg/L	6.4
8	Chemical Oxygen Demand	mg/L	1.1
9	Total Residual Chlorine	mg/L	0.62
10	Alkalinity	mg/L	86.2
11	Calcium	mg/L	42.2
12	Magnesium	mg/L	21.4
13	Total Hardness as CaCO3	mg/L	38.4
14	Electrical Conductivity	µs/cm	118
15	Turbidity	NTU	12.6

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	0.02
20	Zinc as Zn	µg/L	0.28
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	14.4
23	Nitrate	mg/L	1.26
24	Sodium as Na	mg/L	2.46
25	Potassium as K	mg/L	1.8
26	Sulfate	mg/L	1.24
27	Nitrate as NO_3	mg/L	2.28
28	Total Silica as SiO_2	mg/L	4.2
29	Total dissolved Solid	mg/L	769

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: BAITARANI RIVER (NEAR PLANT AREA)

Lab Sample Code: OCPL/SW/02/01/23		**Report No.- OCPL/EMIL/02/01/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**BAITARANI RIVER (NEAR PLANT AREA)**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- JANUARY - 2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- JANUARY - 2023
Sample type	Surface Water	Date of Analysis	10- JANUARY - 2023
Required parameters	As described in W/O	Date of Issue of report	18- JANUARY - 2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	24.6
4	pH	-	6.7
5	Total Suspended Solids	mg/L	46
6	Total Dissolved Solid	mg/L	782
7	Biochemical Oxygen Demand at 27°C	mg/L	4.9
8	Chemical Oxygen Demand	mg/L	1.1
9	Total Residual Chlorine	mg/L	0.6
10	Alkalinity	mg/L	24.6
11	Calcium	mg/L	26.4
12	Magnesium	mg/L	38.6
13	Total Hardness as CaCO3	mg/L	32.4
14	Electrical Conductivity	µs/cm	64

15	Turbidity	NTU	34.5
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	1.04
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	16.4
23	Nitrate	mg/L	4.6
24	Sodium as Na	mg/L	2.2
25	Potassium as K	mg/L	0.8
26	Sulfate	mg/L	<0.01
27	Nitrate as NO_3	mg/L	4.2
28	Total Silica as SiO_2	mg/L	3.6
29	Total dissolved Solid	mg/L	782

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: RESERVOUR POND INSIDE PLANT PREMISES

Lab Sample Code: OCPL/SW/03/01/23		**Report No.- OCPL/EMIL/03/01/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**RESERVOUR POND INSIDE PLANT PREMISES**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- JANUARY - 2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- JANUARY - 2023
Sample type	Surface Water	Date of Analysis	10- JANUARY - 2023
Required parameters	As described in W/O	Date of Issue of report	18- JANUARY - 2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.6
2	Odour	-	Agreeable
3	Temperature	°C	25.1
4	pH	-	6.6
5	Total Suspended Solids	mg/L	132
6	Total Dissolved Solid	mg/L	988
7	Biochemical Oxygen Demand at 27°C	mg/L	9.6
8	Chemical Oxygen Demand	mg/L	6.1
9	Total Residual Chlorine	mg/L	4.8
10	Alkalinity	mg/L	81.6
11	Calcium	mg/L	52
12	Magnesium	mg/L	48.4
13	Total Hardness as CaCO3	mg/L	155

14	Electrical Conductivity	µs/cm	169.6
15	Turbidity	NTU	54.6
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	0.06
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	<0.05
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	34.2
23	Nitrate	mg/L	4.8
24	Sodium as Na	mg/L	34.4
25	Potassium as K	mg/L	6.6
26	Sulfate	mg/L	3.8
27	Nitrate as NO_3	mg/L	4.8
28	Total Silica as SiO_2	mg/L	18.4
29	Total dissolved Solid	mg/L	988

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: DALKI NALA, NEAR PLANT

Lab Sample Code: OCPL/SW/04/01/23		**Report No.- OCPL/EMIL/04/01/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**DALKI NALA, NEAR PLANT**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- JANUARY - 2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- JANUARY - 2023
Sample type	Surface Water	Date of Analysis	10- JANUARY - 2023
Required parameters	As described in W/O	Date of Issue of report	18- JANUARY - 2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	23.8
4	pH	-	7.1
5	Total Suspended Solids	mg/L	35.4
6	Total Dissolved Solid	mg/L	682
7	Biochemical Oxygen Demand at 27°C	mg/L	3.6
8	Chemical Oxygen Demand	mg/L	1.8
9	Total Residual Chlorine	mg/L	0.12
10	Alkalinity	mg/L	36.2
11	Calcium	mg/L	21.8
12	Magnesium	mg/L	30
13	Total Hardness as CaCO3	mg/L	32.4

14	Electrical Conductivity	µs/cm	86.4
15	Turbidity	NTU	21.4
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.02
20	Zinc as Zn	µg/L	1.02
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	21.6
23	Nitrate	mg/L	14.8
24	Sodium as Na	mg/L	7.4
25	Potassium as K	mg/L	4.6
26	Sulfate	mg/L	6.2
27	Nitrate as NO_3	mg/L	6.6
28	Total Silica as SiO_2	mg/L	8.42
29	Total dissolved Solid	mg/L	682

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: NADIGUTH

Lab Sample Code: OCPL/SW/05/01/23		**Report No.- OCPL/EMIL/05/01/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**NADIGUTH**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- JANUARY - 2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- JANUARY - 2023
Sample type	Surface Water	Date of Analysis	10- JANUARY - 2023
Required parameters	As described in W/O	Date of Issue of report	18- JANUARY - 2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	25.2
4	pH	-	7.1
5	Total Suspended Solids	mg/L	44.8
6	Total Dissolved Solid	mg/L	656
7	Biochemical Oxygen Demand at 27°C	mg/L	3.2
8	Chemical Oxygen Demand	mg/L	1.4
9	Total Residual Chlorine	mg/L	0.42
10	Alkalinity	mg/L	34.2
11	Calcium	mg/L	31.8
12	Magnesium	mg/L	34
13	Total Hardness as CaCO3	mg/L	36.2
14	Electrical Conductivity	µs/cm	78.8

15	Turbidity	NTU	26.2
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	0.06
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	12.8
23	Nitrate	mg/L	1.6
24	Sodium as Na	mg/L	1.04
25	Potassium as K	mg/L	2.86
26	Sulfate	mg/L	1.88
27	Nitrate as NO_3	mg/L	2.6
28	Total Silica as SiO_2	mg/L	2.2
29	Total dissolved Solid	mg/L	656

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

GROUND WATER MONITORING REPORT

SUMMARY SHEET OF SAMPLING (GROUND WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	MALDA VILLAGE	11- JANUARY - 2023	OCPL/GW/01/01/23
2.	Sample 02	NEDIGUTH	11- JANUARY - 2023	OCPL/GW/02/01/23
3.	Sample 03	TALA SAHI	11- JANUARY - 2023	OCPL/GW/03/01/23
4.	Sample 04	PLANT- 1 (Near Canteen)	11- JANUARY - 2023	OCPL/GW/04/01/23
5.	Sample 05	PLANT- 2 (SLIME POND)	11- JANUARY - 2023	OCPL/GW/05/01/23

ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALA SAHI	PLANT- 1 (Near Canteen)	PLANT- 2 (SLIME POND)		
1	Colour	Pt-Co	1.1	0.8	1.1	1.0	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	24.6	23.8	24.8	25.4	25.2		
4	pH	-	7.1	6.9	7.1	7.1	6.8	6.5- 8.5	No relaxation
5	Total Hardness (as $CaCO_3$)	mg/L	40.6	38.5	43	64.2	52.4	300	600
6	Calcium	mg/L	12.4	11.6	14	18.2	16.2	75	200
7	Magnesium	mg/L	1.14	1.62	2.8	4.4	4.2	30	No relaxation
8	Chloride	mg/L	9.6	11	12.4	28.6	21.4	250	1000
9	Alkalinity	mg/L	8.4	9.8	11.6	24.2	18	200	600
10	Electrical Conductivity	µs/cm	68.6	75.4	86	95.4	90.6	--	--
11	Arsenic as As	µg/L	ND	ND	ND	ND	0.01	10	No relaxation
12	Lead as Pb	µg/L	ND	ND	ND	ND	0.01	10	No relaxation

13	Cadmium as Cd	µg/L	ND	ND	ND	ND	ND	3.0	No relaxation
14	Total Chromium as Cr	µg/L	ND	ND	ND	ND	0.02	50	No relaxation
15	Zinc as Zn	µg/L	48.2	36	41.4	68.8	82.6	5000	No relaxation
16	Fluoride as F	mg/L	ND	ND	ND	ND	ND	1.0	1.9
17	Iron as Fe	µg/L	14.8	12	11.4	20.2	34	300	1000
18	Nitrate	mg/L	0.02	0.1	0.02	0.11	0.08	45	100
19	Sodium as Na	mg/L	0.02	0.04	0.2	1.4	1.32	150	No relaxation
20	Potassium as K	mg/L	ND	ND	ND	ND	0.02	12	No relaxation
21	Sulfate	mg/L	ND	ND	ND	ND	0.02	200	400
22	Total Silica as SiO_2	mg/L	ND	ND	0.04	0.06	0.2	--	--
23	Total suspended Solid	mg/L	0.2	0.22	1.3	1.24	0.4	--	--
24	Total dissolved Solid	mg/L	32.4	38.5	32	48	42.4	250	2000
25	Turbidity	NTU	0.2	0.42	0.26	0.18	0.12	5	10

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

REPORT ON GROUND WATER LEVEL ANALYSISFOR THE MONTH OF JANUARY – 2023

SUMMARY SHEET OF MONITORING:

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
6.	Sample 01	MALDA VILLAGE	22- JANUARY - 2023	OCPL/GWL/01/01/23
7.	Sample 02	NEDIGUTH	22- JANUARY - 2023	OCPL/GWL/02/01/23
8.	Sample 03	TALA SAHI	22- JANUARY - 2023	OCPL/GWL/03/01/23
9.	Sample 04	PLANT- 1 (Near Canteen)	22- JANUARY - 2023	OCPL/GWL/04/01/23
10.	Sample 05	PLANT- 2 (SLIME POND)	22- JANUARY - 2023	OCPL/GWL/05/01/23

MONITORING RESULT

Sl No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	MALDA VILLAGE	Dugwell	0.8	8.2	7.28	--
2	NEDIGUTH	Dugwell	1.2	9.5	7.63	--
3	TALA SAHI	Dugwell	1.0	8.6	8.29	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	62	13.66	--
5	PLANT- 2 (SLIME POND)	Bore-well	0.1	60	46.74	--

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

3/9/2023

Monthly Report on Environmental Monitoring

FOR M/S ESSEL MINING & INDUSTRIES LTD

M/S ESSEL MINING & INDUSTRIES LTD.
VILL- BASANTPUR, PO-DUBUNA, TEHSIL-JHUMPURA, KEONJHAR

Contents

AMBIENT AIR MONITORING DATA 3
LOCATION AND WEEKLY MONITORING SCHEDULE 3
SUMMARY SHEET OF SAMPLING 3
LOCATION: Near Filter Cake Storage Yard 5
LOCATION: Near Crushing Plant 6
LOCATION: Near Raw Material Stack Yard 7
LOCATION: Nedigutha Village 1
NOISE LEVEL MONITORING RESULT (In DbA) 2
LOCATION AND WEEKLY MONITORING SCHEDULE 2
SUMMARY SHEET OF SAMPLING 2
Date of Monitoring: 02.02.2023 3
Date of Monitoring: 04.02.2023 4
Date of Monitoring: 09.02.2023 5
Date of Monitoring: 11.02.2023 6
Date of Monitoring: 16.02.2023 7
Date of Monitoring: 18.02.2023 8
Date of Monitoring: 23.02.2023 9
Date of Monitoring: 25.02.2023 10
SURFACE WATER ANALYSIS 11
SUMMARY SHEET OF SAMPLING (SURFACE WATER): 11
Location: BAITARANI RIVER (DHANURJAYPUR) 12
Location: BAITARANI RIVER (NEAR PLANT AREA) 14
Location: RESERVOUR POND INSIDE PLANT PREMISES 16
Location: DALKI NALA, NEAR PLANT 18
Location: NADIGUTH 20
GROUND WATER MONITORING REPORT 22
SUMMARY SHEET OF SAMPLING (GROUND WATER): 22
ANALYSIS RESULT 22
REPORT ON GROUND WATER LEVEL ANALYSIS 24
SUMMARY SHEET OF MONITORING: 24
MONITORING RESULT 24

AMBIENT AIR MONITORING DATA

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√			√		
Near Crushing Plant		√			√		
Near Raw Material Stack Yard		√			√		
Nadiguth Village			√			√	

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	02.02.2023	OCPL/ AAQ/EMIL/01/02/23
2.	Sample 02	Near Crushing Plant	02.02.2023	OCPL/ AAQ/EMIL/02/02/23
3.	Sample 03	Near Raw Material Stack Yard	02.02.2023	OCPL/ AAQ/EMIL/03/02/23
4.	Sample 04	Nedigutha Village	03.02.2023	OCPL/ AAQ/EMIL/04/02/23
5.	Sample 05	Near Filter cake storage yard	05.02.2023	OCPL/ AAQ/EMIL/05/02/23
6.	Sample 06	Near Crushing Plant	05.02.2023	OCPL/ AAQ/EMIL/06/02/23
7.	Sample 07	Near Raw Material Stack Yard	05.02.2023	OCPL/ AAQ/EMIL/07/02/23
8.	Sample 08	Nedigutha Village	06.02.2023	OCPL/ AAQ/EMIL/08/02/23
9.	Sample 09	Near Filter cake storage yard	09.02.2023	OCPL/ AAQ/EMIL/09/02/23
10.	Sample 10	Near Crushing Plant	09.02.2023	OCPL/ AAQ/EMIL/10/02/23
11.	Sample 11	Near Raw Material Stack Yard	09.02.2023	OCPL/ AAQ/EMIL/11/02/23
12.	Sample 12	Nedigutha Village	10.02.2023	OCPL/ AAQ/EMIL/12/02/23
13.	Sample 13	Near Filter cake storage yard	12.02.2023	OCPL/ AAQ/EMIL/13/02/23
14.	Sample 14	Near Crushing Plant	12.02.2023	OCPL/ AAQ/EMIL/14/02/23
15.	Sample 15	Near Raw Material Stack Yard	12.02.2023	OCPL/ AAQ/EMIL/15/02/23
16.	Sample 16	Nedigutha Village	13.02.2023	OCPL/ AAQ/EMIL/16/02/23

17.	Sample 17	Near Filter cake storage yard	16.02.2023	OCPL/ AAQ/EMIL/17/02/23
18.	Sample 18	Near Crushing Plant	16.02.2023	OCPL/ AAQ/EMIL/18/02/23
19.	Sample 19	Near Raw Material Stack Yard	16.02.2023	OCPL/ AAQ/EMIL/19/02/23
20.	Sample 20	Nedigutha Village	17.02.2023	OCPL/ AAQ/EMIL/20/02/23
21.	Sample 21	Near Filter cake storage yard	19.02.2023	OCPL/ AAQ/EMIL/21/02/23
22.	Sample 22	Near Crushing Plant	19.02.2023	OCPL/ AAQ/EMIL/22/02/23
23.	Sample 23	Near Raw Material Stack Yard	19.02.2023	OCPL/ AAQ/EMIL/23/02/23
24.	Sample 24	Nedigutha Village	20.02.2023	OCPL/ AAQ/EMIL/24/02/23
25.	Sample 25	Near Filter cake storage yard	23.02.2023	OCPL/ AAQ/EMIL/25/02/23
26.	Sample 26	Near Crushing Plant	23.02.2023	OCPL/ AAQ/EMIL/26/02/23
27.	Sample 27	Near Raw Material Stack Yard	23.02.2023	OCPL/ AAQ/EMIL/27/02/23
28.	Sample 28	Nedigutha Village	24.02.2023	OCPL/ AAQ/EMIL/28/02/23
29.	Sample 29	Near Filter cake storage yard	26.02.2023	OCPL/ AAQ/EMIL/29/02/23
30.	Sample 30	Near Crushing Plant	26.02.2023	OCPL/ AAQ/EMIL/30/02/23
31.	Sample 31	Near Raw Material Stack Yard	26.02.2023	OCPL/ AAQ/EMIL/31/02/23
32.	Sample 32	Nedigutha Village	27.02.2023	OCPL/ AAQ/EMIL/32/02/23

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit ($\mu g/M^3$)	Date								
		02.02.23	05.02.23	09.02.23	12.02.23	16.02.23	19.02.23	23.02.23	26.02.23	Avg
PM_{10}	100	87.3	84	82.8	84.4	81.8	84.4	88.6	86	84.9
$PM_{2.5}$	60	54.8	56.2	56.2	54.4	54.8	52.4	56.2	56.3	55.2
Sulphur Dioxide (SO_2)	80	32.4	34.2	34	35.6	32.8	32.5	29.6	30.6	32.7
Oxide of Nitrogen (NO_2)	80	25.2	25.8	25	24.8	30.4	31.2	28.6	28.8	27.5
Lead (Pb)	1	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	168.4	168.3	169.5	166.8	169.9	172.3	175.5	169.6	170.0
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia (NH_3)	400	34.2	35.2	38.6	38.1	36.4	34.8	36.5	36	36.2
Benzene(C6H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel (Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Crushing Plant

Parameters	Limit ($\mu g/M^3$)	DATE								
		02.02.23	05.02.23	09.02.23	12.02.23	16.02.23	19.02.23	23.02.23	26.02.23	Avg
PM_{10}	100	85.6	84.8	86.2	86	88.6	84.9	86.8	85.6	86.1
$PM_{2.5}$	60	54.2	56.6	58.4	56.6	55.5	58.5	54.3	56.2	56.3
Sulphur Dioxide (SO_2)	80	37.9	38.2	37	40.4	42	42.8	44.2	39.3	40.2
Oxide of Nitrogen (NO_2)	80	32.8	35.2	37.6	40.5	38.5	40	41.2	40.8	38.3
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	185.8	185	188.4	184	184.6	182.4	180.3	182.4	184.1
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia (NH_3)	400	34.4	32.3	34.2	34.8	38.2	34.8	36.6	32.3	34.7
Benzene(C_6H_6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel (Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550

Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Raw Material Stack Yard

Parameters	Limit ($\mu g/M^3$)	DATE								
		02.02.23	05.02.23	09.02.23	12.02.23	16.02.23	19.02.23	23.02.23	26.02.23	Avg
PM_{10}	100	87.4	88.3	87.5	84.8	89.2	84.5	86.8	85.7	86.8
$PM_{2.5}$	60	55.2	54.3	56.4	59.4	58	58.5	55.2	56.3	56.7
Sulphur Dioxide (SO_2)	80	26.3	26.2	28.4	27.6	28.8	28.4	30.2	31.3	28.4
Oxide of Nitrogen (NO_2)	80	25.6	25	25.2	26.6	28.2	28.8	26.3	26.4	26.5
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	164.5	164	162.8	166.8	168	162.4	164.3	166.4	164.9
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	28.3	28.6	26.8	29.5	34.4	36.6	34.4	36.2	31.9
Benzene(C6H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable

Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550

Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Nedigutha Village

Parameters	Limit ($\mu g/M^3$)	DATE								
		03.02.23	06.02.23	10.02.23	13.02.23	17.02.23	20.02.23	24.02.23	27.02.23	Avg
PM_{10}	100	45.3	44	46.5	45.3	44.4	46.2	46	45.2	45.4
$PM_{2.5}$	60	41	46.2	42.8	40.2	41.5	42.3	42.5	42.3	42.4
Sulphur Dioxide (SO_2)	80	18.2	18.3	19.2	20.1	19.5	20.6	18.3	18.4	19.1
Oxide of Nitrogen (NO_2)	80	17.2	16.3	18.8	16.2	18	18.2	15.4	18.7	17.4
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	145.2	147.3	142	140.8	144.8	145.3	144	142.7	144.0
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	12.3	14.2	14.3	12	12.8	14.4	14.3	12.5	13.4
Benzene(C_6H_6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550
Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

NOISE LEVEL MONITORING RESULT (In DbA)

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Main Gate Area		√		√			
Near Back Gate Area		√		√			
Near Palate Plant Area		√		√			
Near IOBP Area		√		√			

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Main Gate Area	02.02.2023	OCPL/ NL/EMIL/02/02/23
2.	Sample 02	Near Back Gate Area	02.02.2023	OCPL/ NL/EMIL/02/02/23
3.	Sample 03	Near Palate Plant Area	02.02.2023	OCPL/ NL/EMIL/03/02/23
4.	Sample 04	Near IOBP Area	02.02.2023	OCPL/ NL/EMIL/04/02/23
5.	Sample 05	Near Main Gate Area	04.02.2023	OCPL/ NL/EMIL/05/02/23
6.	Sample 06	Near Back Gate Area	04.02.2023	OCPL/ NL/EMIL/06/02/23
7.	Sample 07	Near Palate Plant Area	04.02.2023	OCPL/ NL/EMIL/07/02/23
8.	Sample 08	Near IOBP Area	04.02.2023	OCPL/ NL/EMIL/08/02/23
9.	Sample 09	Near Main Gate Area	09.02.2023	OCPL/ NL/EMIL/09/02/23
10.	Sample 10	Near Back Gate Area	09.02.2023	OCPL/ NL/EMIL/10/02/23
11.	Sample 11	Near Palate Plant Area	09.02.2023	OCPL/ NL/EMIL/11/02/23
12.	Sample 12	Near IOBP Area	09.02.2023	OCPL/ NL/EMIL/12/02/23
13.	Sample 13	Near Main Gate Area	11.02.2023	OCPL/ NL/EMIL/13/02/23
14.	Sample 14	Near Back Gate Area	11.02.2023	OCPL/ NL/EMIL/14/02/23
15.	Sample 15	Near Palate Plant Area	11.02.2023	OCPL/ NL/EMIL/15/02/23
16.	Sample 16	Near IOBP Area	11.02.2023	OCPL/ NL/EMIL/16/02/23
17.	Sample 17	Near Main Gate Area	16.02.2023	OCPL/ NL/EMIL/17/02/23
18.	Sample 18	Near Back Gate Area	16.02.2023	OCPL/ NL/EMIL/18/02/23
19.	Sample 19	Near Palate Plant Area	16.02.2023	OCPL/ NL/EMIL/19/02/23
20.	Sample 20	Near IOBP Area	16.02.2023	OCPL/ NL/EMIL/20/02/23
21.	Sample 21	Near Main Gate Area	17.02.2023	OCPL/ NL/EMIL/21/02/23
22.	Sample 22	Near Back Gate Area	17.02.2023	OCPL/ NL/EMIL/22/02/23
23.	Sample 23	Near Palate Plant Area	17.02.2023	OCPL/ NL/EMIL/23/02/23
24.	Sample 24	Near IOBP Area	17.02.2023	OCPL/ NL/EMIL/24/02/23
25.	Sample 25	Near Main Gate Area	23.02.2023	OCPL/ NL/EMIL/25/02/23
26.	Sample 26	Near Back Gate Area	23.02.2023	OCPL/ NL/EMIL/26/02/23
27.	Sample 27	Near Palate Plant Area	23.02.2023	OCPL/ NL/EMIL/27/02/23
28.	Sample 28	Near IOBP Area	23.02.2023	OCPL/ NL/EMIL/28/02/23
29.	Sample 29	Near Main Gate Area	25.02.2023	OCPL/ NL/EMIL/29/02/23
30.	Sample 30	Near Back Gate Area	25.02.2023	OCPL/ NL/EMIL/30/02/23
31.	Sample 31	Near Palate Plant Area	25.02.2023	OCPL/ NL/EMIL/31/02/23
32.	Sample 32	Near IOBP Area	25.02.2023	OCPL/ NL/EMIL/32/02/23

Date of Monitoring: 02.02.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	58.6	62.5	61.2	56	26.2
2	Near Back Gate Area	51.6	60.3	61.8	52.3	25
3	Near Palate Plant Area	45	65.5	58.4	42.3	35.3
4	Near IOBP Area	45.2	56.3	55.8	49.6	25.8
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 04.02.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	58.3	65.2	58.5	47.6	34.4
2	Near Back Gate Area	47.2	67.3	54.8	44.3	32.7
3	Near Palate Plant Area	55.4	61.5	57.3	45.6	32.4
4	Near IOBP Area	46.3	36.8	32.5	35.7	35.2
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 09.02.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	54.7	65.6	62.3	47.2	29.8
2	Near Back Gate Area	44.6	55.6	57.4	47.9	30.2
3	Near Palate Plant Area	49.6	56.4	52.3	44.5	30.3
4	Near IOBP Area	47.9	32.8	44.3	39.8	29.4
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 11.02.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	62.4	68.5	60.6	54.3	38.5
2	Near Back Gate Area	52.3	59.6	50.7	49.7	33.9
3	Near Palate Plant Area	58.6	55.2	48.2	37.6	39.3
4	Near IOBP Area	57.3	50.4	52	55.8	36.8
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 16.02.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	52.3	59.6	50.7	49.7	33.9
2	Near Back Gate Area	48.3	39.6	46.2	40.6	22.3
3	Near Palate Plant Area	46.2	44.5	55	37.9	32.7
4	Near IOBP Area	40.2	50	49	38.6	38
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 18.02.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	62.4	68.7	60.6	54.3	38.5
2	Near Back Gate Area	52.3	59.6	50.7	49.2	33.9
3	Near Palate Plant Area	42.6	62	56	37.9	38.4
4	Near IOBP Area	50.3	60.4	58.7	40.6	32.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 23.02.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	60.3	58.8	60	50.2	41
2	Near Back Gate Area	48.8	50.6	40.8	38	36.2
3	Near Palate Plant Area	55.3	56.8	62.6	42.3	36.2
4	Near IOBP Area	57.6	52.2	48	44.8	38.4
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 25.02.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	42.2	56	61.3	58.4	33
2	Near Back Gate Area	62.4	68.5	60.6	54.3	38.5
3	Near Palate Plant Area	52.3	59.6	50.7	49.7	33.9
4	Near IOBP Area	52.4	58	44.6	45	29
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

SURFACE WATER ANALYSIS

SUMMARY SHEET OF SAMPLING (SURFACE WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	BAITARANI RIVER (DHANURJAYPUR)	09- 02 -2023	OCPL/SW/01/02/23
2.	Sample 02	BAITARANI RIVER (NEAR PLANT AREA)	09- 02 -2023	OCPL/SW/02/02/23
3.	Sample 03	RESERVOUR POND INSIDE PLANT	09- 02 -2023	OCPL/SW/03/02/23
4.	Sample 04	DALKI NALA NEAR PLANT	09- 02 -2023	OCPL/SW/04/02/23
5.	Sample 05	NADIGUTH	09- 02 -2023	OCPL/SW/05/02/23

Location: BAITARANI RIVER (DHANURJAYPUR)

Lab Sample Code: OCPL/SW/01/02/23		**Report No.- OCPL/EMIL/01/02/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**BAITARANI RIVER (DHANURJAYPUR)**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- 02 -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- 02 -2023
Sample type	Surface Water	Date of Analysis	10- 02 -2023
Required parameters	As described in W/O	Date of Issue of report	18- 02 -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	24.9
4	pH	-	6.9
5	Total Suspended Solids	mg/L	72.1
6	Total Dissolved Solid	mg/L	769
7	Biochemical Oxygen Demand at 27°C	mg/L	6.4
8	Chemical Oxygen Demand	mg/L	1.1
9	Total Residual Chlorine	mg/L	0.62
10	Alkalinity	mg/L	86.2
11	Calcium	mg/L	42.3
12	Magnesium	mg/L	21.4
13	Total Hardness as CaCO3	mg/L	38.1
14	Electrical Conductivity	µs/cm	118.3
15	Turbidity	NTU	12
16	Arsenic as As	µg/L	ND

17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	0.02
20	Zinc as Zn	µg/L	0.28
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	14.4
23	Nitrate	mg/L	1.26
24	Sodium as Na	mg/L	2.46
25	Potassium as K	mg/L	1.8
26	Sulfate	mg/L	1.24
27	Nitrate as NO_3	mg/L	2.3
28	Total Silica as SiO_2	mg/L	4.2
29	Total dissolved Solid	mg/L	756

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: BAITARANI RIVER (NEAR PLANT AREA)

Lab Sample Code: OCPL/SW/02/02/23		**Report No.- OCPL/EMIL/02/02/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**BAITARANI RIVER (NEAR PLANT AREA)**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- 02 -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- 02 -2023
Sample type	Surface Water	Date of Analysis	10- 02 -2023
Required parameters	As described in W/O	Date of Issue of report	18- 02 -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	24
4	pH	-	6.7
5	Total Suspended Solids	mg/L	46.3
6	Total Dissolved Solid	mg/L	798
7	Biochemical Oxygen Demand at 27°C	mg/L	4.9
8	Chemical Oxygen Demand	mg/L	1.1
9	Total Residual Chlorine	mg/L	0.6
10	Alkalinity	mg/L	24
11	Calcium	mg/L	26.4
12	Magnesium	mg/L	38
13	Total Hardness as CaCO3	mg/L	32.4
14	Electrical Conductivity	µs/cm	64.3
15	Turbidity	NTU	34.5

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	1.04
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	16.4
23	Nitrate	mg/L	4.6
24	Sodium as Na	mg/L	2.2
25	Potassium as K	mg/L	0.8
26	Sulfate	mg/L	<0.01
27	Nitrate as NO_3	mg/L	4.2
28	Total Silica as SiO_2	mg/L	3.6
29	Total dissolved Solid	mg/L	789

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: RESERVOUR POND INSIDE PLANT PREMISES

Lab Sample Code: OCPL/SW/03/02/23		**Report No.- OCPL/EMIL/03/02/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**RESERVOUR POND INSIDE PLANT PREMISES**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- 02 -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- 02 -2023
Sample type	Surface Water	Date of Analysis	10- 02 -2023
Required parameters	As described in W/O	Date of Issue of report	18- 02 -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.5
2	Odour	-	Agreeable
3	Temperature	°C	25.1
4	pH	-	6.64
5	Total Suspended Solids	mg/L	132
6	Total Dissolved Solid	mg/L	898
7	Biochemical Oxygen Demand at 27°C	mg/L	9.6
8	Chemical Oxygen Demand	mg/L	6
9	Total Residual Chlorine	mg/L	4.8
10	Alkalinity	mg/L	81.6
11	Calcium	mg/L	52
12	Magnesium	mg/L	48
13	Total Hardness as CaCO3	mg/L	155.3
14	Electrical Conductivity	µs/cm	169.6

15	Turbidity	NTU	54.6
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	0.06
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	<0.05
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	34.2
23	Nitrate	mg/L	4.8
24	Sodium as Na	mg/L	36
25	Potassium as K	mg/L	6.6
26	Sulfate	mg/L	3.8
27	Nitrate as NO_3	mg/L	4.82
28	Total Silica as SiO_2	mg/L	18
29	Total dissolved Solid	mg/L	869

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: DALKI NALA, NEAR PLANT

Lab Sample Code: OCPL/SW/04/02/23		**Report No.- OCPL/EMIL/04/02/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**DALKI NALA, NEAR PLANT**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- 02 -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- 02 -2023
Sample type	Surface Water	Date of Analysis	10- 02 -2023
Required parameters	As described in W/O	Date of Issue of report	18- 02 -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.6
2	Odour	-	Agreeable
3	Temperature	°C	23.8
4	pH	-	7
5	Total Suspended Solids	mg/L	35.4
6	Total Dissolved Solid	mg/L	785
7	Biochemical Oxygen Demand at 27°C	mg/L	3.6
8	Chemical Oxygen Demand	mg/L	1.8
9	Total Residual Chlorine	mg/L	0.12
10	Alkalinity	mg/L	36
11	Calcium	mg/L	21.8
12	Magnesium	mg/L	30.3
13	Total Hardness as CaCO3	mg/L	32.4
14	Electrical Conductivity	µs/cm	86.4
15	Turbidity	NTU	21.4

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.02
20	Zinc as Zn	µg/L	1.02
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	21.6
23	Nitrate	mg/L	14.8
24	Sodium as Na	mg/L	7.4
25	Potassium as K	mg/L	4.6
26	Sulfate	mg/L	6.2
27	Nitrate as NO_3	mg/L	6.1
28	Total Silica as SiO_2	mg/L	8.4
29	Total dissolved Solid	mg/L	859

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: NADIGUTH

Lab Sample Code: OCPL/SW/05/02/23		**Report No.- OCPL/EMIL/05/02/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**NADIGUTH**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	09- 02 -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	10- 02 -2023
Sample type	Surface Water	Date of Analysis	10- 02 -2023
Required parameters	As described in W/O	Date of Issue of report	18- 02 -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.2
2	Odour	-	Agreeable
3	Temperature	°C	25.3
4	pH	-	7.2
5	Total Suspended Solids	mg/L	44.8
6	Total Dissolved Solid	mg/L	721
7	Biochemical Oxygen Demand at 27°C	mg/L	3.2
8	Chemical Oxygen Demand	mg/L	1.4
9	Total Residual Chlorine	mg/L	0.42
10	Alkalinity	mg/L	34.2
11	Calcium	mg/L	31.8
12	Magnesium	mg/L	34
13	Total Hardness as CaCO3	mg/L	36.2
14	Electrical Conductivity	µs/cm	78
15	Turbidity	NTU	26.2

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	0.06
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	12.8
23	Nitrate	mg/L	1
24	Sodium as Na	mg/L	1.04
25	Potassium as K	mg/L	2.86
26	Sulfate	mg/L	1.86
27	Nitrate as NO_3	mg/L	2.6
28	Total Silica as SiO_2	mg/L	2.6
29	Total dissolved Solid	mg/L	754

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

GROUND WATER MONITORING REPORT

SUMMARY SHEET OF SAMPLING (GROUND WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	MALDA VILLAGE	11- 02 -2023	OCPL/GW/01/02/23
2.	Sample 02	NEDIGUTH	11- 02 -2023	OCPL/GW/02/02/23
3.	Sample 03	TALA SAHI	11- 02 -2023	OCPL/GW/03/02/23
4.	Sample 04	PLANT- 1 (Near Canteen)	11- 02 -2023	OCPL/GW/04/02/23
5.	Sample 05	PLANT- 2 (SLIME POND)	11- 02 -2023	OCPL/GW/05/02/23

ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALA SAHI	PLANT- 1 (Near Canteen)	PLANT- 2 (SLIME POND)		
1	Colour	Pt-Co	1.1	0.8	1.1	1.0	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	24.62	23.8	24.8	25.4	25.2		
4	pH	-	7.1	6.93	7.1	7.1	6.7	6.5- 8.5	No relaxation
5	Total Hardness (as $CaCO_3$)	mg/L	40.6	38.5	43	64.2	52.4	300	600
6	Calcium	mg/L	12.4	11.6	14.3	18.2	16.2	75	200
7	Magnesium	mg/L	1.14	1.62	2.8	4.4	4.2	30	No relaxation
8	Chloride	mg/L	9.6	11	12.4	28.6	21.4	250	1000
9	Alkalinity	mg/L	8.4	9.8	11.6	24.2	18	200	600
10	Electrical Conductivity	µs/cm	68.6	75.45	86	95.4	90.61	--	--
11	Arsenic as As	µg/L	ND	ND	ND	ND	0.01	10	No relaxation
12	Lead as Pb	µg/L	ND	ND	ND	ND	0.01	10	No relaxation
13	Cadmium as Cd	µg/L	ND	ND	ND	ND	ND	3.0	No relaxation
14	Total Chromium as Cr	µg/L	ND	ND	ND	ND	0.02	50	No relaxation

15	Zinc as Zn	µg/L	48.2	36	41.4	68.8	82.6	5000	No relaxation
16	Fluoride as F	mg/L	ND	ND	ND	ND	ND	1.0	1.9
17	Iron as Fe	µg/L	14.8	12.3	11.4	20.2	34	300	1000
18	Nitrate	mg/L	0.02	0.1	0.02	0.11	0.08	45	100
19	Sodium as Na	mg/L	0.02	0.03	0.2	1.4	1.32	150	No relaxation
20	Potassium as K	mg/L	ND	ND	ND	ND	0.02	12	No relaxation
21	Sulfate	mg/L	ND	ND	ND	ND	0.02	200	400
22	Total Silica as SiO_2	mg/L	ND	ND	0.04	0.06	0.2	--	--
23	Total suspended Solid	mg/L	0.2	0.22	1.3	1.24	0.4	--	--
24	Total dissolved Solid	mg/L	32.4	38.5	32	48	42.4	250	2000
25	Turbidity	NTU	0.2	0.4	0.36	0.18	0.1	5	10

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

REPORT ON GROUND WATER LEVEL ANALYSIS

SUMMARY SHEET OF MONITORING:

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
6.	Sample 01	MALDA VILLAGE	22- 02 -2023	OCPL/GWL/01/02/23
7.	Sample 02	NEDIGUTH	22- 02 -2023	OCPL/GWL/02/02/23
8.	Sample 03	TALA SAHI	22- 02 -2023	OCPL/GWL/03/02/23
9.	Sample 04	PLANT- 1 (Near Canteen)	22- 02 -2023	OCPL/GWL/04/02/23
10.	Sample 05	PLANT- 2 (SLIME POND)	22- 02 -2023	OCPL/GWL/05/02/23

MONITORING RESULT

Sl No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	MALDA VILLAGE	Dugwell	0.85	8.1	7.29	--
2	NEDIGUTH	Dugwell	1.22	9.2	7.55	--
3	TALA SAHI	Dugwell	1.1	8.6	8.2	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	63	13.66	--
5	PLANT- 2 (SLIME POND)	Bore-well	0.1	60.1	46.5	--

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

3/31/2023

Monthly Report on Environmental Monitoring

FOR M/S ESSEL MINING & INDUSTRIES LTD

M/S ESSEL MINING & INDUSTRIES LTD.
VILL- BASANTPUR, PO-DUBUNA, TEHSIL-JHUMPURA, KEONJHAR

Contents

AMBIENT AIR MONITORING DATA 3
LOCATION AND WEEKLY MONITORING SCHEDULE 3
SUMMARY SHEET OF SAMPLING 3
LOCATION: Near Filter Cake Storage Yard 5
LOCATION: Near Crushing Plant 6
LOCATION: Near Raw Material Stack Yard 7
LOCATION: Nadigutha Village 7
NOISE LEVEL MONITORING RESULT IN dBA 9
LOCATION AND WEEKLY MONITORING SCHEDULE 9
SUMMARY SHEET OF SAMPLING 9
Date of Monitoring: 04.03.2023 11
Date of Monitoring: 08.03.2023 12
Date of Monitoring: 11.03.2023 13
Date of Monitoring: 15.03.2023 14
Date of Monitoring: 18.03.2023 15
Date of Monitoring: 22.03.2023 16
Date of Monitoring: 25.03.2023 17
Date of Monitoring: 29.03.2023 18
Date of Monitoring: 31.03.2023 19
SURFACE WATER ANALYSIS FOR THE MONTH OF MARCH – 2023 20
SUMMARY SHEET OF SAMPLING (SURFACE WATER): 20
Location: Baitarani River (Dhanurjaypur) 21
Location: Baitarani River (near Plant) 23
Location: RESERVOUR POND INSIDE PLANT PREMISES 25
Location: DALKI NALA, NEAR PLANT 27
Location: NADIGUTH 29
GROUND WATER MONITORING REPORT 31
SUMMARY SHEET OF SAMPLING (GROUND WATER): 31
ANALYSIS RESULT 31
REPORT ON GROUND WATER LEVEL ANALYSIS FOR THE MONTH OF MARCH – 2023 33
SUMMARY SHEET OF MONITORING: 33
MONITORING RESULT 33

AMBIENT AIR MONITORING DATA

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Filter Cake Storage Yard		√				√	
Near Crushing Plant		√				√	
Near Raw Material Stack Yard		√				√	
Nadiguth Village			√		√		

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Filter cake storage yard	03.03.2023	OCPL/ AAQ/EMIL/01/03/23
2.	Sample 02	Near Crushing Plant	03.03.2023	OCPL/ AAQ/EMIL/02/03/23
3.	Sample 03	Near Raw Material Stack Yard	03.03.2023	OCPL/ AAQ/EMIL/03/03/23
4.	Sample 04	Nedigutha Village	02.03.2023	OCPL/ AAQ/EMIL/04/03/23
5.	Sample 05	Near Filter cake storage yard	06.03.2023	OCPL/ AAQ/EMIL/05/03/23
6.	Sample 06	Near Crushing Plant	06.03.2023	OCPL/ AAQ/EMIL/06/03/23
7.	Sample 07	Near Raw Material Stack Yard	06.03.2023	OCPL/ AAQ/EMIL/07/03/23
8.	Sample 08	Nedigutha Village	07.03.2023	OCPL/ AAQ/EMIL/08/03/23
9.	Sample 09	Near Filter cake storage yard	08.03.2023	OCPL/ AAQ/EMIL/09/03/23
10.	Sample 10	Near Crushing Plant	08.03.2023	OCPL/ AAQ/EMIL/10/03/23
11.	Sample 11	Near Raw Material Stack Yard	08.03.2023	OCPL/ AAQ/EMIL/11/03/23
12.	Sample 12	Nedigutha Village	09.03.2023	OCPL/ AAQ/EMIL/12/03/23
13.	Sample 13	Near Filter cake storage yard	10.03.2023	OCPL/ AAQ/EMIL/13/03/23
14.	Sample 14	Near Crushing Plant	10.03.2023	OCPL/ AAQ/EMIL/14/03/23
15.	Sample 15	Near Raw Material Stack Yard	10.03.2023	OCPL/ AAQ/EMIL/15/03/23
16.	Sample 16	Nedigutha Village	14.03.2023	OCPL/ AAQ/EMIL/16/03/23
17.	Sample 17	Near Filter cake storage	13.03.2023	OCPL/

		yard		AAQ/EMIL/17/03/23
18.	Sample 18	Near Crushing Plant	13.03.2023	OCPL/ AAQ/EMIL/18/03/23
19.	Sample 19	Near Raw Material Stack Yard	13.03.2023	OCPL/ AAQ/EMIL/19/03/23
20.	Sample 20	Nedigutha Village	16.03.2023	OCPL/ AAQ/EMIL/20/03/23
21.	Sample 21	Near Filter cake storage yard	15.03.2023	OCPL/ AAQ/EMIL/21/03/23
22.	Sample 22	Near Crushing Plant	15.03.2023	OCPL/ AAQ/EMIL/22/03/23
23.	Sample 23	Near Raw Material Stack Yard	15.03.2023	OCPL/ AAQ/EMIL/23/03/23
24.	Sample 24	Nedigutha Village	21.03.2023	OCPL/ AAQ/EMIL/24/03/23
25.	Sample 25	Near Filter cake storage yard	17.03.2023	OCPL/ AAQ/EMIL/25/03/23
26.	Sample 26	Near Crushing Plant	17.03.2023	OCPL/ AAQ/EMIL/26/03/23
27.	Sample 27	Near Raw Material Stack Yard	17.03.2023	OCPL/ AAQ/EMIL/27/03/23
28.	Sample 28	Nedigutha Village	23.03.2023	OCPL/ AAQ/EMIL/28/03/23
29.	Sample 29	Near Filter cake storage yard	20.03.2023	OCPL/ AAQ/EMIL/29/03/23
30.	Sample 30	Near Crushing Plant	20.03.2023	OCPL/ AAQ/EMIL/30/03/23
31.	Sample 31	Near Raw Material Stack Yard	20.03.2023	OCPL/ AAQ/EMIL/31/03/23
32.	Sample 32	Nedigutha Village	28.03.2023	OCPL/ AAQ/EMIL/32/03/23
33.	Sample 33	Near Filter cake storage yard	22.03.2023	OCPL/ AAQ/EMIL/33/03/23
34.	Sample 34	Near Crushing Plant	22.03.2023	OCPL/ AAQ/EMIL/34/03/23
35.	Sample 35	Near Raw Material Stack Yard	22.03.2023	OCPL/ AAQ/EMIL/35/03/23
36.	Sample 36	Nedigutha Village	30.03.2023	OCPL/ AAQ/EMIL/36/03/23

LOCATION: Near Filter Cake Storage Yard

Parameters	Limit (µg/M^3)	Date									
		03.03.23	06.03.23	08.03.23	10.03.23	13.03.23	15.03.23	17.03.23	20.03.23	22.03.23	Avg
PM_{10}	100	88.8	86	84.9	88	86.2	90.6	88.2	88.6	92.6	88.21
$PM_{2.5}$	60	57.4	58.8	59.2	59	58.6	52.4	58	54.8	56.4	52.17
Sulphur Dioxide (SO_2)	80	36.2	34.8	35	38.4	38	36.8	38.4	34.6	38.6	36.75
Oxide of Nitrogen (NO_2)	80	27.4	28	28.8	36.6	31.5	32.4	30.6	32	34.2	31.27
Lead (Pb)	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO) (8 Hrs)	2000	172.4	172	174.8	170.6	171	176.8	177.4	175.8	174.6	173.93
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia (NH_3)	400	35.8	36.4	38	38.2	36.8	36.4	37.2	35.9	38	36.96
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel (Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550
Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Crushing Plant

Parameters	Limit (µg/ M^3)	DATE									
		03.03.23	06.03.23	08.03.23	10.03.23	13.03.23	15.03.23	17.03.23	20.03.23	22.03.23	Avg
PM_{10}	100	86.2	84	84.4	86.8	88.6	84.5	86.8	84.8	88.2	86.03
$PM_{2.5}$	60	55.8	56	59.2	58	56.8	58.5	56.4	56.2	54.9	56.97
Sulphur Dioxide (SO_2)	80	41.6	40.2	38.9	42	40.8	42.8	44	41.9	46.2	42.04
Oxide of Nitrogen (NO_2)	80	38.2	36.4	38.8	42.8	40	41.9	42.6	41.8	44.2	40.74
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	184.8	188	188.4	186.6	185.4	182.4	182.4	186.6	188.2	185.8
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	34.2	36.6	35.4	36.9	36.2	35.8	35.6	34.5	36	35.68
Benzene(C6 H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 & Envirotech- APM -550
Measurement of PM_{10}& $PM_{2.5}$, SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Near Raw Material Stack Yard

Parameters	Limit ($\mu g/M^3$)	DATE									
		03.03.23	06.03.23	08.03.23	10.03.23	13.03.23	15.03.23	17.03.23	20.03.23	22.03.23	Avg
PM_{10}	100	88.2	86.8	88.6	88.9	90.2	84.6	92.8	92.6	94.2	89.65
$PM_{2.5}$	60	60	52.8	58	54.2	54.8	55.2	55.4	58	56.4	54.33
Sulphur Dioxide (SO_2)	80	24.8	28	26.2	28.6	28.8	30.2	27.9	32	32.4	28.76
Oxide of Nitrogen (NO_2)	80	25.8	26	28.4	27.5	28.2	30.4	28	27.8	29	27.9
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	164.6	168	162.4	170.5	172	174.8	169.6	166.4	168	168.4
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	32.8	34	36.2	34.8	34	35.6	36.9	34	38.8	35.23
Benzene(C6H6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 & Environtech- APM -550
Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, & CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

LOCATION: Nedigutha Village

Parameters	Limit (µg/M^3)	DATE									
		02.03.23	07.03.23	09.03.23	14.03.23	16.03.23	21.03.23	23.03.23	28.03.23	30.03.23	Avg
PM_{10}	100	42.2	44.5	45.2	46.4	46.6	45.5	44.2	44	45.8	44.93
$PM_{2.5}$	60	42.4	44	43.2	44.6	42.5	42.4	42.5	42.8	42	42.93
Sulphur Dioxide (SO_2)	80	18.4	15.9	20.4	20.4	21.6	18.5	18	17.2	16.5	18.54
Oxide of Nitrogen (NO_2)	80	17	17.9	18.2	18	17.6	17.5	16.8	17.9	18.8	17.74
Lead (Pb)	1.0	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Carbon Monoxide (CO)(8 Hrs)	2000	145.6	146.8	144.4	142.8	144.8	146	140.4	142.6	141.2	143.84
Ozone(O3)	180	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Ammonia(NH_3)	400	12.8	12.6	14	14.4	14.8	16	12.2	11.6	12	13.37
Benzene(C_6H_6)	05	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Benzo(a) Pyrene (BaP) Particulate phase only(ng/m3)	01	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Arsenic (As) (ng/m3)	06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Nickel(Ni) (ng/m3)	20	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

*ND: Not Detectable
Name of the calibrated Instrument: RDS – BL – 460 &Environtech- APM -550
Measurement of PM_{10}& $PM_{2.5,}$ SO_2, NO_2, &CO has been done as per the IS Code IS: 5182 Part IV, II, VI, X& XVII respectively

NOISE LEVEL MONITORING RESULT (In DbA) FOR THE MONTH OF MARCH

LOCATION AND WEEKLY MONITORING SCHEDULE

Location	SUN	MON	TUE	WED	THU	FRI	SAT
Near Main Gate Area				√			√
Near Back Gate Area				√			√
Near Palate Plant Area				√			√
Near IOBP Area				√			√

SUMMARY SHEET OF SAMPLING

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	Near Main Gate Area	04.03.2023	OCPL/ NL/EMIL/01/03/23
2.	Sample 02	Near Back Gate Area	04.03.2023	OCPL/ NL/EMIL/02/03/23
3.	Sample 03	Near Palate Plant Area	04.03.2023	OCPL/ NL/EMIL/03/03/23
4.	Sample 04	Near IOBP Area	04.03.2023	OCPL/ NL/EMIL/04/03/23
5.	Sample 05	Near Main Gate Area	08.03.2023	OCPL/ NL/EMIL/05/03/23
6.	Sample 06	Near Back Gate Area	08.03.2023	OCPL/ NL/EMIL/06/03/23
7.	Sample 07	Near Palate Plant Area	08.03.2023	OCPL/ NL/EMIL/07/03/23
8.	Sample 08	Near IOBP Area	08.03.2023	OCPL/ NL/EMIL/08/03/23
9.	Sample 09	Near Main Gate Area	11.03.2023	OCPL/ NL/EMIL/09/03/23
10.	Sample 10	Near Back Gate Area	11.03.2023	OCPL/ NL/EMIL/10/03/23
11.	Sample 11	Near Palate Plant Area	11.03.2023	OCPL/ NL/EMIL/11/03/23
12.	Sample 12	Near IOBP Area	11.03.2023	OCPL/ NL/EMIL/12/03/23
13.	Sample 13	Near Main Gate Area	15.03.2023	OCPL/ NL/EMIL/13/03/23
14.	Sample 14	Near Back Gate Area	15.03.2023	OCPL/ NL/EMIL/14/03/23
15.	Sample 15	Near Palate Plant Area	15.03.2023	OCPL/ NL/EMIL/15/03/23
16.	Sample 16	Near IOBP Area	15.03.2023	OCPL/ NL/EMIL/16/03/23
17.	Sample 17	Near Main Gate Area	18.03.2023	OCPL/ NL/EMIL/17/03/23
18.	Sample 18	Near Back Gate Area	18.03.2023	OCPL/ NL/EMIL/18/03/23
19.	Sample 19	Near Palate Plant Area	18.03.2023	OCPL/ NL/EMIL/19/03/23
20.	Sample 20	Near IOBP Area	18.03.2023	OCPL/ NL/EMIL/20/03/23
21.	Sample 21	Near Main Gate Area	22.03.2023	OCPL/ NL/EMIL/21/03/23
22.	Sample 22	Near Back Gate Area	22.03.2023	OCPL/ NL/EMIL/22/03/23
23.	Sample 23	Near Palate Plant Area	22.03.2023	OCPL/ NL/EMIL/23/03/23
24.	Sample 24	Near IOBP Area	22.03.2023	OCPL/ NL/EMIL/24/03/23
25.	Sample 25	Near Main Gate Area	25.03.2023	OCPL/ NL/EMIL/25/03/23
26.	Sample 26	Near Back Gate Area	25.03.2023	OCPL/ NL/EMIL/26/03/23
27.	Sample 27	Near Palate Plant Area	25.03.2023	OCPL/ NL/EMIL/27/03/23
28.	Sample 28	Near IOBP Area	25.03.2023	OCPL/ NL/EMIL/28/03/23

29.	Sample 29	Near Main Gate Area	29.03.2023	OCPL/ NL/EMIL/29/03/23
30.	Sample 30	Near Back Gate Area	29.03.2023	OCPL/ NL/EMIL/30/03/23
31.	Sample 31	Near Palate Plant Area	29.03.2023	OCPL/ NL/EMIL/31/03/23
32.	Sample 32	Near IOBP Area	29.03.2023	OCPL/ NL/EMIL/32/03/23
33.	Sample 33	Near Main Gate Area	31.03.2023	OCPL/ NL/EMIL/33/03/23
34.	Sample 34	Near Back Gate Area	31.03.2023	OCPL/ NL/EMIL/34/03/23
35.	Sample 35	Near Palate Plant Area	31.03.2023	OCPL/ NL/EMIL/35/03/23
36.	Sample 36	Near IOBP Area	31.03.2023	OCPL/ NL/EMIL/36/03/23

Date of Monitoring: 04.03.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	57.6	60.5	62.8	56.2	25
2	Near Back Gate Area	50.8	62	60.8	52.2	23.4
3	Near Palate Plant Area	44.4	61.5	58.4	42	34
4	Near IOBP Area	32	56.7	34.8	48.6	24
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 08.03.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	58.6	65	52.4	38	32.5
2	Near Back Gate Area	46.8	66	54.8	44.9	32.5
3	Near Palate Plant Area	56.2	62.4	57.8	42.6	28.6
4	Near IOBP Area	45.8	36.8	35	36	30.5
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 11.03.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	55.4	62.8	64.6	45	27
2	Near Back Gate Area	44.8	54.6	56.4	48.9	20.5
3	Near Palate Plant Area	48.7	53.4	52.3	46.2	27.5
4	Near IOBP Area	45.6	32.8	44.8	39.8	21.4
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 15.03.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	55.9	66	64.8	44.6	32
2	Near Back Gate Area	56.4	54.6	54.5	48.7	27.3
3	Near Palate Plant Area	50.6	52.5	51.2	37.8	32
4	Near IOBP Area	51.8	52	52	55.9	28.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 18.03.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	55.8	64	68.2	50.6	34
2	Near Back Gate Area	46.4	39.2	48	40.8	20.6
3	Near Palate Plant Area	40.6	40.7	55.6	37.6	36.4
4	Near IOBP Area	38.3	48.7	46.8	38	35
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 22.03.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	42.3	62.8	58.8	38.5	27.7
2	Near Back Gate Area	44.9	48.7	51.8	38.5	30.5
3	Near Palate Plant Area	46.6	62.4	56.2	37.9	40.4
4	Near IOBP Area	48.8	64.8	58.7	42.6	44.8
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 25.03.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	61.4	60.8	62	54.2	38
2	Near Back Gate Area	46.2	52	42	38	38
3	Near Palate Plant Area	50.6	58.8	62.6	42	34.5
4	Near IOBP Area	55	52.6	41.4	44.9	36.3
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 29.03.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	44.3	62.4	58.6	61.2	36
2	Near Back Gate Area	38	50.4	48.5	44.2	28
3	Near Palate Plant Area	52.6	54	46.2	50.6	34.4
4	Near IOBP Area	57.5	56.2	42.5	45.2	29.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

Date of Monitoring: 31.03.2023

S.L No	Station	Day 6.00-7.00am	Day 10.00-11.00am	Day 3.00-4.00pm	Evening 6.00-7.00 pm	Night 10.00-11.00 pm
1	Near Main Gate Area	63.5	66	52.9	48.2	30.7
2	Near Back Gate Area	41.8	45.2	38.2	35	31.5
3	Near Palate Plant Area	64.6	65.8	68.8	62.2	24.8
4	Near IOBP Area	52.4	58.9	38.9	46.5	34.6
5	**Ambient Noise Standard**	**Day Time (in dB(A)) Leq**			**Night Time (in dB(A)) Leq**	
i	Industrial	75.0			70.0	

Instrument used: Larson Devis

SURFACE WATER ANALYSIS FOR THE MONTH OF MARCH – 2023

SUMMARY SHEET OF SAMPLING (SURFACE WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	BAITARANI RIVER (DHANURJAYPUR)	05- MARCH - 2023	OCPL/SW/01/03/23
2.	Sample 02	BAITARANI RIVER (NEAR PLANT AREA)	05- MARCH - 2023	OCPL/SW/02/03/23
3.	Sample 03	RESERVOUR POND INSIDE PLANT	05- MARCH - 2023	OCPL/SW/03/03/23
4.	Sample 04	DALKI NALA NEAR PLANT	05- MARCH - 2023	OCPL/SW/04/03/23
5.	Sample 05	NADIGUTH	05- MARCH - 2023	OCPL/SW/05/03/23

Location: BAITARANI RIVER (DHANURJAYPUR)

Lab Sample Code: OCPL/SW/01/03/23		**Report No.- OCPL/EMIL/01/03/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**BAITARANI RIVER (DHANURJAYPUR)**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- MARCH -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- MARCH -2023
Sample type	Surface Water	Date of Analysis	06- MARCH -2023
Required parameters	As described in W/O	Date of Issue of report	14- MARCH -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	<1
2	Odour	-	Agreeable
3	Temperature	°C	24.9
4	pH	-	6.9
5	Total Suspended Solids	mg/L	70.6
6	Total Dissolved Solid	mg/L	741
7	Biochemical Oxygen Demand at 27°C	mg/L	6.2
8	Chemical Oxygen Demand	mg/L	1.1
9	Total Residual Chlorine	mg/L	0.52
10	Alkalinity	mg/L	84.6
11	Calcium	mg/L	44
12	Magnesium	mg/L	36.2
13	Total Hardness as CaCO3	mg/L	46.6
14	Electrical Conductivity	µs/cm	136
15	Turbidity	NTU	12.2
16	Arsenic as As	µg/L	ND

17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	0.02
20	Zinc as Zn	µg/L	0.24
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	11.5
23	Nitrate	mg/L	1.04
24	Sodium as Na	mg/L	1.8
25	Potassium as K	mg/L	1.62
26	Sulfate	mg/L	1.06
27	Nitrate as NO_3	mg/L	2.5
28	Total Silica as SiO_2	mg/L	4.6
29	Total dissolved Solid	mg/L	741

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: BAITARANI RIVER (NEAR PLANT AREA)

Lab Sample Code: OCPL/SW/02/03/23		**Report No.- OCPL/EMIL/02/03/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**BAITARANI RIVER (NEAR PLANT AREA)**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- MARCH -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- MARCH -2023
Sample type	Surface Water	Date of Analysis	06- MARCH -2023
Required parameters	As described in W/O	Date of Issue of report	14- MARCH -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	25.1
4	pH	-	6.8
5	Total Suspended Solids	mg/L	43.2
6	Total Dissolved Solid	mg/L	764
7	Biochemical Oxygen Demand at 27°C	mg/L	4.2
8	Chemical Oxygen Demand	mg/L	1.4
9	Total Residual Chlorine	mg/L	0.28
10	Alkalinity	mg/L	21.6
11	Calcium	mg/L	20.2
12	Magnesium	mg/L	34.6
13	Total Hardness as CaCO3	mg/L	32.8
14	Electrical Conductivity	µs/cm	58.6
15	Turbidity	NTU	36.6

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.05
20	Zinc as Zn	µg/L	1.2
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	15.2
23	Nitrate	mg/L	4.8
24	Sodium as Na	mg/L	2.06
25	Potassium as K	mg/L	0.4
26	Sulfate	mg/L	<0.01
27	Nitrate as NO_3	mg/L	4.1
28	Total Silica as SiO_2	mg/L	2.8
29	Total dissolved Solid	mg/L	764

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: RESERVOUR POND INSIDE PLANT PREMISES

Lab Sample Code: OCPL/SW/03/03/23		**Report No.- OCPL/EMIL/03/03/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**RESERVOUR POND INSIDE PLANT PREMISES**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- MARCH -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- MARCH -2023
Sample type	Surface Water	Date of Analysis	06- MARCH -2023
Required parameters	As described in W/O	Date of Issue of report	14- MARCH -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.5
2	Odour	-	Agreeable
3	Temperature	°C	25.6
4	pH	-	6.6
5	Total Suspended Solids	mg/L	136
6	Total Dissolved Solid	mg/L	932
7	Biochemical Oxygen Demand at 27°C	mg/L	9.6
8	Chemical Oxygen Demand	mg/L	6.4
9	Total Residual Chlorine	mg/L	4.2
10	Alkalinity	mg/L	84.5
11	Calcium	mg/L	56.8
12	Magnesium	mg/L	52.2
13	Total Hardness as CaCO3	mg/L	162.6
14	Electrical Conductivity	µs/cm	208.5

15	Turbidity	NTU	56.6
16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	0.08
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	<0.05
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	42.6
23	Nitrate	mg/L	4.2
24	Sodium as Na	mg/L	32.4
25	Potassium as K	mg/L	6.2
26	Sulfate	mg/L	3.4
27	Nitrate as NO_3	mg/L	4.08
28	Total Silica as SiO_2	mg/L	16.2
29	Total dissolved Solid	mg/L	932

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: DALKI NALA, NEAR PLANT

Lab Sample Code: OCPL/SW/04/03/23		**Report No.- OCPL/EMIL/04/03/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**DALKI NALA, NEAR PLANT**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- MARCH -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- MARCH -2023
Sample type	Surface Water	Date of Analysis	06- MARCH -2023
Required parameters	As described in W/O	Date of Issue of report	14- MARCH -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	24.6
4	pH	-	6.9
5	Total Suspended Solids	mg/L	32.6
6	Total Dissolved Solid	mg/L	638
7	Biochemical Oxygen Demand at 27°C	mg/L	3.4
8	Chemical Oxygen Demand	mg/L	1.6
9	Total Residual Chlorine	mg/L	0.1
10	Alkalinity	mg/L	32.5
11	Calcium	mg/L	20.8
12	Magnesium	mg/L	24.6
13	Total Hardness as CaCO3	mg/L	26.4
14	Electrical Conductivity	µs/cm	108.6
15	Turbidity	NTU	24.8

16	Arsenic as As	µg/L	ND
17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	<0.02
20	Zinc as Zn	µg/L	1.02
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	18.6
23	Nitrate	mg/L	16.2
24	Sodium as Na	mg/L	6.4
25	Potassium as K	mg/L	4.2
26	Sulfate	mg/L	6.8
27	Nitrate as NO_3	mg/L	4.4
28	Total Silica as SiO_2	mg/L	6.88
29	Total dissolved Solid	mg/L	638

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

Location: NADIGUTH

Lab Sample Code: OCPL/SW/05/03/23		**Report No.- OCPL/EMIL/05/03/23**	
Sample description:		Test method	APHA 22nd edition
Sample location	**NADIGUTH**	Sample collected by	OCPL representative
Location	Keonjhar, Odisha	Date of Sampling	05- MARCH -2023
Sample quantity	1no.s X 1 Lit.	Date of sample received	06- MARCH -2023
Sample type	Surface Water	Date of Analysis	06- MARCH -2023
Required parameters	As described in W/O	Date of Issue of report	14- MARCH -2023
EMIL reference	WO No.- 5010/ADMIN/5500000126	Sample condition at receipt	Ok

ANALYSIS RESULT

Sl. No.	**TEST PARAMETER**	**UOM**	**Results**
1	Colour	Pt-Co	1.1
2	Odour	-	Agreeable
3	Temperature	°C	25.6
4	pH	-	7.1
5	Total Suspended Solids	mg/L	42
6	Total Dissolved Solid	mg/L	622
7	Biochemical Oxygen Demand at 27°C	mg/L	3.1
8	Chemical Oxygen Demand	mg/L	1.1
9	Total Residual Chlorine	mg/L	0.4
10	Alkalinity	mg/L	32.4
11	Calcium	mg/L	28.2
12	Magnesium	mg/L	30.5
13	Total Hardness as CaCO3	mg/L	32.8
14	Electrical Conductivity	µs/cm	60.2
15	Turbidity	NTU	21.2
16	Arsenic as As	µg/L	ND

17	Lead as Pb	µg/L	ND
18	Cadmium as Cd	µg/L	ND
19	Total Chromium as Cr	µg/L	ND
20	Zinc as Zn	µg/L	0.02
21	Fluoride as F	mg/L	ND
22	Iron as Fe	mg/L	11.5
23	Nitrate	mg/L	1.4
24	Sodium as Na	mg/L	1.6
25	Potassium as K	mg/L	2.42
26	Sulfate	mg/L	1.6
27	Nitrate as NO_3	mg/L	2.1
28	Total Silica as SiO_2	mg/L	2.08
29	Total dissolved Solid	mg/L	622

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

GROUND WATER MONITORING REPORT

SUMMARY SHEET OF SAMPLING (GROUND WATER):

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample 01	MALDA VILLAGE	12- MARCH - 2023	OCPL/GW/01/03/23
2.	Sample 02	NEDIGUTH	12- MARCH - 2023	OCPL/GW/02/03/23
3.	Sample 03	TALA SAHI	12- MARCH - 2023	OCPL/GW/03/03/23
4.	Sample 04	PLANT- 1 (Near Canteen)	12- MARCH - 2023	OCPL/GW/04/03/23
5.	Sample 05	PLANT- 2 (SLIME POND)	12- MARCH - 2023	OCPL/GW/05/03/23

ANALYSIS RESULT

With drinking water specifications, BIS (As per 10500- 2012 BIS)

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALA SAHI	PLANT- 1 (Near Canteen)	PLANT- 2 (SLIME POND)		
1	Colour	Pt-Co	1.1	0.9	1.0	1.0	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	24.8	24.2	24.6	25.8	25.8		
4	pH	-	7.1	6.9	7.1	6.9	6.8	6.5- 8.5	No relaxation
5	Total Hardness (as $CaCO_3$)	mg/L	40.2	39.6	38.3	58.9	56.4	300	600
6	Calcium	mg/L	14.8	15.4	14.2	16	16.8	75	200
7	Magnesium	mg/L	1.6	1.42	2.1	4.6	4.8	30	No relaxation
8	Chloride	mg/L	11.6	11.8	14.2	18.6	22.5	250	1000
9	Alkalinity	mg/L	7.2	8.46	10.4	18.6	21.2	200	600
10	Electrical Conductivity	µs/cm	58.6	76.2	88.6	86	91.5	--	--
11	Arsenic as As	µg/L	ND	ND	ND	ND	ND	10	No relaxation
12	Lead as Pb	µg/L	ND	ND	ND	ND	ND	10	No relaxation

13	Cadmium as Cd	µg/L	ND	ND	ND	ND	ND	3.0	No relaxation
14	Total Chromium as Cr	µg/L	ND	ND	ND	ND	0.01	50	No relaxation
15	Zinc as Zn	µg/L	52.4	32.8	48	56.6	61.2	5000	No relaxation
16	Fluoride as F	mg/L	ND	ND	ND	ND	ND	1.0	1.9
17	Iron as Fe	µg/L	11.5	8.2	14	21.6	26.8	300	1000
18	Nitrate	mg/L	0.02	0.1	0.02	0.11	0.08	45	100
19	Sodium as Na	mg/L	0.02	0.02	0.2	1.08	1.32	150	No relaxation
20	Potassium as K	mg/L	ND	ND	ND	ND	ND	12	No relaxation
21	Sulfate	mg/L	ND	ND	ND	ND	0.02	200	400
22	Total Silica as SiO_2	mg/L	ND	ND	0.02	ND	0.02	--	--
23	Total suspended Solid	mg/L	0.2	0.22	1.4	1.2	0.4	--	--
24	Total dissolved Solid	mg/L	36.4	42.5	40.6	48.8	44.8	250	2000
25	Turbidity	NTU	0.2	0.22	0.06	0.01	0.02	5	10

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL

REPORT ON GROUND WATER LEVEL ANALYSISFOR THE MONTH OF MARCH – 2023

SUMMARY SHEET OF MONITORING:

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
6.	Sample 01	MALDA VILLAGE	18- MARCH - 2023	OCPL/GWL/01/03/23
7.	Sample 02	NEDIGUTH	18- MARCH - 2023	OCPL/GWL/02/03/23
8.	Sample 03	TALA SAHI	18- MARCH - 2023	OCPL/GWL/03/03/23
9.	Sample 04	PLANT- 1 (Near Canteen)	18- MARCH - 2023	OCPL/GWL/04/03/23
10.	Sample 05	PLANT- 2 (SLIME POND)	18- MARCH - 2023	OCPL/GWL/05/03/23

MONITORING RESULT

Sl No.	Name of the location	Type of well	Dia. (m)	Depth of the well (m)	Depth of the water table BGL (M)	Remarks
1	MALDA VILLAGE	Dugwell	0.8	8.2	7.27	--
2	NEDIGUTH	Dugwell	1.2	9.5	7.61	--
3	TALA SAHI	Dugwell	1.0	8.6	8.27	--
4	PLANT- 1 (Near Canteen)	Bore-well	0.1	62	13.64	--
5	PLANT- 2 (SLIME POND)	Bore-well	0.1	60	46.72	--

Sampling By: Mr. Hrusikesh Das

Tested By: OCPL