

ADITYA BIRLA



Ref. No. A/ 494 /2024-25

Dated-01.12.2024

(By e-mail)

To

The Director,  
Ministry of Environment, Forests & Climate Change  
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Sub: Submission of half-yearly EC compliance status for the period April-2024 to September-2024 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 26<sup>th</sup> 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 April-2024 to September-2024.

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](mailto:roez.bsr-mef@nic.in)  
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## **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:** April-2024 to September-2024

<b>Sl. No.</b>	<b>Conditions</b>	<b>Compliance</b>
<b>Specific conditions</b>		
(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.	<p>Consent to Establish obtained from OSPCB vide letter no-22029/Ind-II-NOC-4812 dated on 24.12.2010 and the latest Consent to Operate is obtained from OSPCB vide letter no-4828/IND-I-CON-6459 dated 31.03.2024 with validity up to 31.03.2025.</p> <p>The conditions stipulated in the Consent order issued from SPCB, Odisha are being implemented effectively.</p>
(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.	<p>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.</p> <p>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.</p> <p>Hence, the probability of natural water resources are getting affected by spill water is zero.</p>

Sl. No.	Conditions	Compliance
(iii)	The project proponent shall carry out conditioning of the ore with water to mitigate fugitive dust emission.	<p>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.</p> <p>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.</p> <p>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.</p>
(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.	<p>The dust control measures at haulage roads, approach road to material stack yard and loading &amp; 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 conveyor 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.</p> <p>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 <b>Annexure - A.</b></p>

Sl. No.	Conditions	Compliance
(vii)	<p>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 &amp; Forests and its Regional Office located at Bhubaneswar on six monthly basis.</p>	<p>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.</p> <p>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.</p> <p>The compliance reports are being submitted to the MoEF Regional Office, BBSR and MoEF &amp;CC, New Delhi on six monthly basis.</p>
(viii)	<p>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</p>	<p>Retaining wall (150mtr Length, 200mm width &amp; 2mtr height), catch drains/garland drain (60mtr Length, 500mm width &amp; 500mm depth), with Siltation pond (2mtr Length, 2mtr width &amp; 2.5mtr depth), has been constructed around the earmarked reject dump/tailing cake disposal area to collect the runoff water during rain.</p> <p>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.</p> <p>No water is discharged outside the plant premises.</p> <p>One Rain Water Harvesting structure having holding capacity of 212250 m<sup>3</sup> 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.</p>

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	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.	<p>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.</p> <p>Based on the predominant wind direction, one AAQ monitoring location has been established within 500m of the project site in Nediguth Village.</p>
(x)	The tailing pond/slime pond shall be lined with impervious lining.	<p>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 &amp; Filter Press.</p> <p>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.</p>
(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 <b>Annexure- A.</b>

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(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	<p>Concentrated thickener &amp; 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.</p> <p>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.</p> <p>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.</p>
(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.	<p>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.</p> <p>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.</p>
(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 <sup>3</sup> 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
	<p>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.</p>	<p>The reservoir is serving the dual purpose of storage as well as augmentation of ground water potential through recharge.</p> <p>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 &amp; quality are being monitored in and around the plant premises on quarterly basis and the results are being submitted to the Regional Office, MoEF&amp;CC, Bhubaneswar and MoEFCC, New Delhi, Regional Director, CGWB, Bhubaneswar and Member Secretary, Central Ground Water Authority, New Delhi.</p>
(xviii)	<p>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.</p>	<p>Dept. of Water Resources, Govt. of Odisha allocated 0.305cusec of surface water from the river Baitarani for meeting the requirement of process water.</p> <p>Requisite NOC obtained; renewal applied.</p>
(xix)	<p>Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.</p>	<p>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.</p> <p>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.</p> <p>One number of rain water harvesting structure having capacity of 212250 m<sup>3</sup> has been constructed. During rainy season, surface runoff of the plant area is channelized &amp; collected in the reservoir for use in plant operation.</p>

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.	<p>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.</p> <p>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.</p>
(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.	<p>The dust control measures at mineral stack yard and loading &amp; 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.</p> <p>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.</p> <p>ESP is operational at Indurating Furnace area and Bag Filter arrangement have been made at proportionating Building to control the fugitive dust emission.</p> <p>Periodical maintenance of the Pollution Control Equipments are being undertaken in-house for their smooth operation.</p>

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(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 .	<p>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.</p> <p>All the process water is being recycled to the process through Concentrate thickener so construction of ETP is not needed.</p> <p>The waste water (i.e. Slime Water) generated from the beneficiation process is being recycled to the process completely for re-use.</p>
(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.	<p>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.</p> <p>Periodical health Check-up is being organised in the nearby villages through mobile Health Care Unit supported with doctors &amp; paramedics.</p>
(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.	<p>Health Surveillance Programme in frequent interval for all the employees and workers are being carried out and records are being maintained.</p> <p>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.</p>
(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.

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(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.
(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 <sub>10</sub> ), NO <sub>x</sub> in the ambient air within the impact zone shall be monitored periodically. Further, quality of discharged water shall also be monitored [TDS, DO, PH and Total Suspended Solids (TSS)]. The	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.  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

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	<p>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 <a href="http://www.envfor.nic.in">www.envfor.nic.in</a> shall also be referred in this regard for its compliance.</p>	<p>premises. However, the surface water quality monitoring is being carried out at 5 locations including the reservoir pond within the plant premise.</p> <p>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 <a href="http://www.esselmining.com/sustainability/environmental_reports.html">http://www.esselmining.com/sustainability/environmental_reports.html</a> and are updated periodically. All the environmental monitoring reports are being displayed electronically at the Main Gate of the Plant.</p>
<b>General Conditions</b>		
(i)	<p>No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.</p>	<p>Approval will be sought from MoEF&amp;CC before any expansion / modification of the plant.</p>
(ii)	<p>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<sub>10</sub>), NO<sub>x</sub> 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.</p>	<p>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.</p>
(iii)	<p>Data on ambient air quality RSPM (Particulate matter with size less than 10 micron i.e., PM<sub>10</sub>), &amp; NO<sub>x</sub> 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.</p>	<p>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.</p>
(iv)	<p>Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in</p>	<p>All the Plant machineries have been designed as per Industrial specification to control the noise level within the limit.</p>

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	operations of HEMM, etc. shall be provided with ear plugs / muffs.	<p>Adequate measures are being taken to limit the noise level within the prescribed limit given by statutory authorities.</p> <p>Ear plugs and Ear muffs are being provided to the workers and employees engaged in operations of HEMM and high noise generating machines / locations.</p>
(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.	<p>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.</p> <p>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.</p> <p>No water is discharged outside the plant premises.</p> <p>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.</p>

Sl. No.	Conditions	Compliance
(vi)	<p>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.</p>	<p>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 &amp; employees working in these area.</p> <p>The HR &amp; Safety Department is made responsible to create awareness &amp; provide necessary training to the workers and employees with adequate safety appliances for maintaining occupational health and safety in the workplace.</p> <p>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.</p>
(vii)	<p>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.</p>	<p>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.</p>
(viii)	<p>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.</p>	<p>The Consent to Establish from the State Pollution Board, Bhubaneswar was granted on 24/12/2010.</p> <p>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.</p> <p>Consent to Operate has been obtained on dated 01.05.2013 and subsequently renewed on dated 31.03.2024 valid till 31.03.2025.</p>
(ix)	<p>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.</p>	<p>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.</p> <p>The entire environmental pollution control infrastructure has already been installed.</p>

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.	<p>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.</p> <p>The status of compliance of the environmental clearance conditions, including results of monitored data are being uploaded in our company's website (<a href="http://esselmining.com/sustainability/environmental_reports.html">http://esselmining.com/sustainability/environmental_reports.html</a>) and are updated periodically.</p> <p>However, one LED type electronic display board has been installed in front of the main gate in public domain for display of monitored data.</p>
(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.	<p>The copy of the environmental Clearance letter was submitted in the office Basantpur GP.</p> <p>The clearance letter has also been put on the website of the Company.</p>
(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 31 <sup>st</sup> 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 31 <sup>st</sup> 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 <a href="http://envfor.nic.in">http://envfor.nic.in</a> 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

# ENVIRONMENTAL MONITORING REPORT

April 2024

M/S ESSEL MINING &  
INDUSTRIES LTD.



AT-BASANTPUR,  
TEHSIL- JHUMPURA, KEONJHAR, ODISHA

## Contents

<b>Ambient Air Quality Monitoring:</b> .....	3
<b>Noise Quality Monitoring:</b> .....	7
<b>Surface Water Monitoring:</b> .....	10
<b>Ground Water Monitoring:</b> .....	13
<b>Ground Water Level Monitoring:</b> .....	17
<b>Stack Monitoring:</b> .....	19

**AMBIENT AIR QUALITY MONITORING  
REPORT FOR  
THE MONTH OF APRIL -2024**

**Ambient Air Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- i Near ECR-1
- ii Near Canteen
- iii Near Admin Building
- iv Nadiguth Village

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near ECR-1	1/4/2024	19	Near Admin Building	15/4/2024
2	Near Canteen	1/4/2024	20	Nedigutha Village	16/4/2024
3	Near Admin Building	1/4/2024	21	Near ECR-1	19/4/2024
4	Nedigutha Village	2/4/2024	22	Near Canteen	19/4/2024
5	Near ECR-1	5/4/2024	23	Near Admin Building	19/4/2024
6	Near Canteen	5/4/2024	24	Nedigutha Village	20/4/2024
7	Near Admin Building	5/4/2024	25	Near ECR-1	22/4/2024
8	Nedigutha Village	6/4/2024	26	Near Canteen	22/4/2024
9	Near ECR-1	8/4/2024	27	Near Admin Building	22/4/2024
10	Near Canteen	8/4/2024	28	Nedigutha Village	23/4/2024
11	Near Admin Building	8/4/2024	29	Near ECR-1	26/4/2024
12	Nedigutha Village	9/4/2024	30	Near Canteen	26/4/2024
13	Near ECR-1	12/4/2024	31	Near Admin Building	26/4/2024
14	Near Canteen	12/4/2024	32	Nedigutha Village	27/4/2024
15	Near Admin Building	12/4/2024	33	Near ECR-1	29/4/2024
16	Nedigutha Village	13/4/2024	34	Near Canteen	29/4/2024
17	Near ECR-1	15/4/2024	35	Near Admin Building	29/4/2024
18	Near Canteen	15/4/2024	36	Nedigutha Village	30/4/2024

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Parameters	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	PM10	PM2.5	Ozone(O <sub>3</sub> ) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> )	Benzene (C <sub>6</sub> H <sub>6</sub> )	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m <sup>3</sup> )	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near ECR-1</b>												
Limit (µg/M <sup>3</sup> )	80	80	100	60	180	1	2000	400	5 (Annual)	1 (Annual)	6 (Annual)	20 (Annual)
01.04.2024	25.6	22.6	68.9	52.3	ND	ND	158.2	15.3	ND	ND	ND	ND
05.04.2024	33.2	22.5	68	55.3	ND	ND	155.2	14.9	ND	ND	ND	ND
08.04.2024	25.2	21.8	65.2	58.2	ND	ND	158.7	15.7	ND	ND	ND	ND
12.04.2024	26.7	23.2	67.3	48.9	ND	ND	155.6	15.1	ND	ND	ND	ND
15.04.2024	26.8	22.3	65	51.3	ND	ND	159.1	15.5	ND	ND	ND	ND
19.04.2024	29.3	21.3	63.8	52.6	ND	ND	164.2	14.6	ND	ND	ND	ND
22.04.2024	32.6	25.6	67.3	55.4	ND	ND	158.3	16.3	ND	ND	ND	ND
26.04.2024	29.5	22.1	65.3	58.2	ND	ND	155.5	14.8	ND	ND	ND	ND
29.04.2024	23.1	21.8	62.3	49.2	ND	ND	156.4	15.3	ND	ND	ND	ND
Avg. Con.	28	22.58	65.9	53.49	ND	ND	157.91	15.28	ND	ND	ND	ND
<b>Location: Near Canteen</b>												
01.04.2024	28.6	21.3	67.3	48.9	ND	ND	155.6	15.1	ND	ND	ND	ND
05.04.2024	25.6	22.6	65	51.3	ND	ND	159.1	15.5	ND	ND	ND	ND
08.04.2024	29.3	22.8	63.8	52.6	ND	ND	164.2	14.6	ND	ND	ND	ND
12.04.2024	31.2	23.5	67.3	55.4	ND	ND	158.3	16.3	ND	ND	ND	ND
15.04.2024	25.8	21.9	68.9	58.2	ND	ND	158.2	14.8	ND	ND	ND	ND
19.04.2024	33.2	22.6	68	52.3	ND	ND	155.2	15.3	ND	ND	ND	ND
22.04.2024	30.5	22.4	65.2	55.3	ND	ND	158.7	14.9	ND	ND	ND	ND
26.04.2024	29.6	23.5	67.3	58.2	ND	ND	155.6	15.7	ND	ND	ND	ND
29.04.2024	29.1	23.6	65	48.9	ND	ND	156.3	15.1	ND	ND	ND	ND
Avg. Con.	29.21	22.69	66.42	53.46	ND	ND	157.91	15.26	ND	ND	ND	ND

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Parameters	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	PM10	PM2.5	Ozone(O <sub>3</sub> ) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> )	Benzene (C <sub>6</sub> H <sub>6</sub> )	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m <sup>3</sup> )	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near Admin Building</b>												
01.04.2024	29.3	22.8	63.8	51.3	ND	ND	158.3	14.6	ND	ND	ND	ND
05.04.2024	31.2	23.5	67.3	52.6	ND	ND	158.2	16.3	ND	ND	ND	ND
08.04.2024	25.8	21.9	68.9	55.4	ND	ND	155.2	14.8	ND	ND	ND	ND
12.04.2024	33.2	22.6	68	58.2	ND	ND	158.7	15.3	ND	ND	ND	ND
15.04.2024	30.5	22.4	65.2	52.3	ND	ND	155.6	14.9	ND	ND	ND	ND
19.04.2024	29.6	21.3	65	48.9	ND	ND	155.6	15.3	ND	ND	ND	ND
22.04.2024	28.6	22.6	63.8	51.3	ND	ND	159.1	14.9	ND	ND	ND	ND
26.04.2024	25.6	22.8	67.3	52.6	ND	ND	164.2	15.7	ND	ND	ND	ND
29.04.2024	29.3	23.5	65.3	55.4	ND	ND	158.3	14.5	ND	ND	ND	ND
Avg. Con.	29.2	22.6	66.1	53.1	ND	ND	158.1	15.1	ND	ND	ND	ND
<b>Location: Nadiguth Village</b>												
02.04.2024	22.6	21.9	68.9	55.4	ND	ND	158.7	16.3	ND	ND	ND	ND
06.04.2024	23.5	22.6	68	58.2	ND	ND	155.6	14.8	ND	ND	ND	ND
09.04.2024	23.4	22.4	65.2	52.3	ND	ND	155.6	14.6	ND	ND	ND	ND
13.04.2024	22.2	21.3	65	48.9	ND	ND	159.1	16.3	ND	ND	ND	ND
16.04.2024	24.5	22.6	63.8	51.3	ND	ND	158.3	15.8	ND	ND	ND	ND
20.04.2024	23.9	22.8	65.2	52.6	ND	ND	158.2	15.3	ND	ND	ND	ND
23.04.2024	22.6	23.5	65	58.2	ND	ND	155.2	14.9	ND	ND	ND	ND
27.04.2024	23.5	21.9	63.8	52.1	ND	ND	158.7	15.1	ND	ND	ND	ND
30.04.2024	24.1	22.6	67.3	48.7	ND	ND	155.3	14.6	ND	ND	ND	ND
Avg. Con.	23.4	22.4	65.8	53.1	ND	ND	157.2	15.3	ND	ND	ND	ND

# **NOISE QUALITY MONITORING REPORT**

## **FOR**

### **THE MONTH OF APRIL -2024**

**Noise Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Near Main Gate Area
- b. Near Back Gate Area
- c. Near Pellet Plant Area
- d. Near IOBP Area

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near Main Gate Area	1/4/2024	19	Near Pellet Plant Area	15/4/2024
2	Near Back Gate Area	1/4/2024	20	Near IOBP Area	15/4/2024
3	Near Pellet Plant Area	1/4/2024	21	Near Main Gate Area	19/4/2024
4	Near IOBP Area	1/4/2024	22	Near Back Gate Area	19/4/2024
5	Near Main Gate Area	5/4/2024	23	Near Pellet Plant Area	19/4/2024
6	Near Back Gate Area	5/4/2024	24	Near IOBP Area	19/4/2024
7	Near Pellet Plant Area	5/4/2024	25	Near Main Gate Area	22/4/2024
8	Near IOBP Area	5/4/2024	26	Near Back Gate Area	22/4/2024
9	Near Main Gate Area	8/4/2024	27	Near Pellet Plant Area	22/4/2024
10	Near Back Gate Area	8/4/2024	28	Near IOBP Area	22/4/2024
11	Near Pellet Plant Area	8/4/2024	29	Near Main Gate Area	26/4/2024
12	Near IOBP Area	8/4/2024	30	Near Back Gate Area	26/4/2024
13	Near Main Gate Area	12/4/2024	31	Near Pellet Plant Area	26/4/2024
14	Near Back Gate Area	12/4/2024	32	Near IOBP Area	26/4/2024
15	Near Pellet Plant Area	12/4/2024	33	Near Main Gate Area	29/4/2024
16	Near IOBP Area	12/4/2024	34	Near Back Gate Area	29/4/2024
17	Near Main Gate Area	15/4/2024	35	Near Pellet Plant Area	29/4/2024
18	Near Back Gate Area	15/4/2024	36	Near IOBP Area	29/4/2024

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	01.04.2024					05.04.2024				
	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)
<b>Limit (in dB(A))Leq</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>
Near Main Gate Area	51.3	58.2	52.1	50.3	35.6	49.3	59.2	55.3	48.2	33.2
Near Back Gate Area	48.6	60.2	51.3	45.6	33.2	47.2	61.2	54.2	45.2	31.2
Near Pellet Plant Area	52.6	55.8	50.3	48.5	35.7	51.6	55.3	51.2	44.3	29.5
Near IOBP Area	50.2	56.3	53.2	44.6	33.5	55.2	57.2	50.9	44.2	33.5
	08.04.2024					12.04.2024				
Near Main Gate Area	55.3	62.5	53.2	48.9	33.2	53.2	58.1	55.2	48.5	35.6
Near Back Gate Area	51.2	60.2	50.4	44.6	31.6	55.6	55.9	48.5	44.6	33.2
Near Pellet Plant Area	49.5	60.4	49.6	49.2	38.2	54.3	54.9	51.3	49.5	30.5
Near IOBP Area	55.3	55.9	53.5	45.2	35.2	55.8	55.2	49.7	48.2	29.5
	15.04.2024					19.04.2024				
Near Main Gate Area	59.3	61.5	55.3	45.9	28.9	55.8	61.5	55.8	42.5	29.6
Near Back Gate Area	55.2	62.3	52.9	44.6	32.5	55.2	60.2	52.6	44.9	32.5
Near Pellet Plant Area	54.9	60.3	50.8	48.5	33.6	55.6	55.3	48.9	45.9	35.6
Near IOBP Area	58.2	55.9	45.8	45.2	33.2	50.3	59.2	45.8	44.8	33.2
	22.04.2024					26.04.2024				
Near Main Gate Area	51.2	62.5	48.5	45.6	32.5	55.2	62.5	59.6	48.6	29.5
Near Back Gate Area	49.5	60.2	51.3	48.5	33.2	53.6	66.5	54.7	45.3	33.5
Near Pellet Plant Area	52.9	62.3	55.2	44.6	31.6	52.3	65.3	55.2	44.2	31.2
Near IOBP Area	50.8	60.3	54.9	48.5	32.8	54.8	60.3	51.9	45.9	30.9
	29.04.2024									
Near Main Gate Area	55.2	62.5	55.3	48.6	32.5					
Near Back Gate Area	53.2	59.8	52.9	44.5	33.5					
Near Pellet Plant Area	51.9	64.5	54.9	41.9	33.1					
Near IOBP Area	50.8	62.8	55.8	48.5	30.2					

# **SURFACE WATER ANALYSIS REPORT**

## **FOR**

### **THE MONTH OF APRIL -2024**

**Surface Water Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Baitarani River (Dhanurjaypur)
- b. Baitarani River (Near Plant Area)
- c. Reservoir Pond (Inside Plant)
- d. Dalki Nala Near Plant
- e. Nadiguth Village

Frequency of sampling - Once a month

Number of samples - 5

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling
1	Baitarani River (Dhanurjaypur)	08.04.2024
2	Baitarani River (Near Plant Area)	08.04.2024
3	Reservoir Pond (Inside Plant)	08.04.2024
4	Dalki Nala Near Plant	08.04.2024
5	Nadiguth Village	08.04.2024

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Sl. No.	Parameter	Baitarani River (Dhanurjaypur)	Baitarani River (Near Plant Area)	Reservoir Pond (Inside Plant)	Dalki Nala Near Plant	Nadiguth Village
1.	Colour (Pt-Co)	<1	<1	<1	<1	<1
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Temperature (°C)	35.8	36.5	34.5	38.2	36.8
4.	pH	7.1	7.2	7.2	7.1	7.2
5.	Total Suspended Solids (mg/L)	15.6	19.5	25.8	14.9	18.6
6.	Total Dissolved Solid (mg/L)	582	671	612	554	649
7.	Biochemical Oxygen Demand at 27°C(mg/L)	5.2	4.2	6.8	3.8	3.1
8.	Chemical Oxygen Demand(mg/L)	1.08	1.16	4.2	1.5	1.4
9.	Total Residual Chlorine(mg/L)	0.46	0.38	2.4	0.52	0.8
10.	Alkalinity(mg/L)	68.2	44.2	62.6	38.5	41.8
11.	Calcium(mg/L)	44.2	32.6	46.5	29.4	31.6
12.	Magnesium(mg/L)	35.2	29.8	42.6	38.4	36.6
13.	Total Hardness as CaCO <sub>3</sub> (mg/L)	38	36.2	82.4	30.4	32.1
14.	Electrical Conductivity (µs/cm)	92.4	60.2	124.6	86.8	106.2
15.	Turbidity (NTU)	14.8	18.4	47.6	28	21.4
16.	Arsenic as As (µg/L)	ND	ND	ND	ND	ND
17.	Lead as Pb (µg/L)	ND	ND	ND	ND	ND
18.	Cadmium as Cd (µg/L)	ND	ND	0.14	ND	ND
19.	Total Chromium as Cr (µg/L)	ND	ND	<0.02	ND	ND
20.	Zinc as Zn (µg/L)	0.02	0.14	<0.05	0.26	0.04
21.	Fluoride as F (mg/L)	ND	ND	ND	ND	ND
22.	Iron as Fe (mg/L)	9.2	11.4	34.4	7.5	8.2
23.	Nitrate (mg/L)	1.04	3.12	5.62	2.44	2.64
24.	Sodium as Na (mg/L)	1.32	2.14	14.6	2.08	1.42
25.	Potassium as K (mg/L)	1.4	0.68	4.65	2.04	1.35
26.	Sulfate (mg/L)	1.12	<0.01	4.08	3.9	0.04
27.	Nitrate as NO <sub>3</sub> (mg/L)	2.1	2.4	4.8	2.86	1.84
28.	Total Silica as SiO <sub>2</sub> (mg/L)	4.2	2.5	9.6	1.8	1.06

**GROUND WATER ANALYSIS REPORT**  
**FOR**  
**THE MONTH OF APRIL -2024**

**Ground Water Monitoring:**

**GROUND WATER MONITORING REPORT SUMMARY SHEET OF SAMPLING (GROUNDWATER):**

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample01	MALDAVILLAGE	10- April -2024	OCPL/GW/01/04/24
2.	Sample02	NEDIGUTH	10- April -2024	OCPL/GW/02/04/24
3.	Sample03	TALASAHI	10- April -2024	OCPL/GW/03/04/24
4.	Sample04	PLANT-1(Near Canteen)	10- April -2024	OCPL/GW/04/04/24
5.	Sample05	PLANT-2(SLIMEPOND)	10- April -2024	OCPL/GW/05/04/24

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

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALASAHI	PLANT- 1 (Near Canteen)	PLANT-2 (SLIMEPOND)		
1	Colour	Pt-Co	1.0	1.0	1.2	1.2	1.1		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	28.1	28.8	28.2	27.7	28.2		
4	pH	-	6.7	7.0	7.1	6.8	7.2	6.5-8.5	No relaxation
5	Total Hardness (as CaCO3)	mg/L	62.1	58	55.3	58	58.6	300	600

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6	Calcium	mg/L	8.8	8.1	11.3	12.0	8.8	75	200
7	Magnesium	mg/L	1.3	3	3.8	3	1.5	30	No relaxation
8	Chloride	mg/L	15	15.3	15.8	14.2	18.3	250	1000
9	Alkalinity	mg/L	18.3	16.1	18.3	10.4	19.1	200	600
10	Electrical Conductivity	µs/cm	75.2	63.3	65	69.1	78.3	--	--
11	Arsenic as As	µg/L	0.03	ND	0.03	ND	0.05	10	No relaxation
12	Lead as Pb	µg/L	ND	0.37	0.31	0.24	ND	10	No relaxation
13	Cadmium as Cd	µg/L	ND	ND	ND	0.05	0.05	3.0	No relaxation
14	Total Chromium as Cr	µg/L	0.2	ND	0.05	0.05	0.04	50	No relaxation
15	Zinc as Zn	µg/L	92.3	93.2	77.2	77.3	98.1	5000	No relaxation
16	Fluoride as F	mg/L	ND	0.02	ND	0.02	ND	1.0	1.9
17	Iron as Fe	µg/L	15.5	15.7	25.6	35.6	35.3	300	1000
18	Nitrate	mg/L	1.5	1.4	1.0	1.0	1.1	45	100

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19	Sodium as Na	mg/L	2.5	3	3.8	4.2	5	150	No relaxation
20	Potassium as K	mg/L	ND	0.1	0.1	0.1	0.1	12	No relaxation
21	Sulfate	mg/L	ND	ND	0.05	0.05	0.4	200	400
22	Total Silica as SiO <sub>2</sub>	mg/L	0.5	ND	0.6	ND	0.7	--	--
23	Total suspended Solid	mg/L	0.11	1.1	1.13	0.25	1.3	--	--
24	Total dissolved Solid	mg/L	85.3	75.7	72.1	95.2	88.7	250	2000
25	Turbidity	NTU	0.4	0.4	0.5	0.7	0.5	5	10

# **GROUND WATER LEVEL ANALYSIS REPORT FOR THE MONTH OF APRIL -2024**

## Ground Water Level Monitoring:

### SUMMARY SHEET OF MONITORING:

Sl No	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1	Sample01	MALDA VILLAGE	12- April -2024	OCPL/GWL/01/04/24
2	Sample02	NEDIGUTH	12- April -2024	OCPL/GWL/02/04/24
3	Sample03	TALASAH	12- April -2024	OCPL/GWL/03/04/24
4	Sample04	PLANT-1(Near Canteen)	12- April -2024	OCPL/GWL/04/04/24
5	Sample05	PLANT-2(SLIMEPOND)	12- April -2024	OCPL/GWL/05/04/24

### 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	Dug well	0.83	8.12	9.3	--
2	NEDIGUTH	Dug well	1.22	9.44	10.3	--
3	TALASAH	Dug well	1.0	8.6	10.1	--
4	PLANT-1(Near Canteen)	Bore-well	0.1	65	15.5	--
5	PLANT-2(SLIME POND)	Bore-well	0.1	61	42.2	--

Sampling By: Mr. Hrusikesh Das

**STACK MONITORING REPORT**  
**FOR**  
**THE MONTH OF APRIL – 2024**

### Stack Monitoring:

Number of Stack – 04

Name Sampling Locations:

- a. DGStack-1
- b. DGStack-2
- c. Stack-1(Pellet Plant Process Stack)
- d. Stack-2(Pellet Plant Dedusting Stack)

Frequency of sampling - Once a month

Number of samples - 4

### SUMMARY SHEET OF SAMPLING:

Sample Nos.	Location	Date of Sampling
1	DG Stack-1	08.04.2024
2	DG Stack-2	08.04.2024
3	Stack-1(Pellet Plant Process Stack)	09.04.2024
4	Stack-2(Pellet Plant Dedusting Stack)	09.04.2024

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	DG Stack-1	DG Stack-2	Pellet Plant Process Stack	Pellet Plant Dedusting Stack	
<b>A. General information about Stack</b>					
1	Stack connected to	DG-1	DG-2	Pellet plant process stack	Pellet plant de-dusting stack
2	Emission due to	Burning of Diesel	Burning of Diesel	Burning of furnace oil	Electricity
3	Material of construction of stack	MS	MS	MS	MS
4	Shape of Stack	Circular	Circular	Circular	Circular
5	Serial no.	N15E226771	N15H319963	--	--
6	Boiler/Furnace/DG/Kiln Capacity	1250KVA	1250KVA	--	--
<b>B. Physical characteristics of stack</b>					
1	Height of the Stack from Ground level	9 m	9 m	80 m	60 m
2	Diameter of the stack at sampling point	400 mm	400 mm	--	--
3	Height of the Sampling Point from Ground level	7 m	7 m	--	--
4	Type	HCKI634Z1	HCKI634Z1	--	--
<b>C. Analysis/Characteristic of Stack</b>					
1	Fuel used	LDO	LDO	FO	FO
2	Fuel Consumption	NA	NA	NA	NA

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**D. Results of Sampling & Analysis of Gaseous Emission**

	Parameters	DG Stack-1	DG Stack-2		Parameters	Pellet Plant Process Stack	Pellet Plant Dedusting Stack	Limit
1	Temperature of Emission(°C) <i>Method - IS11255(PartIII),2008RA2018</i>	75	82.8	--	Temperature of Emission(oC)	95.3	94.3	--
2	Barometric pressure (mm of Hg) <i>Method - USEPAPart2- 25/09/1996</i>	284	325	--	Emission (M3/Hr.)	7165	6560	--
3	Velocity of gas(m/sec.) <i>Method - IS11255(PartIII),2008RA2018</i>	12.5	35	--	Velocity (NM3/Hr)	35678	36482	--
4	Quantity of Gas Flow (Nm <sup>3</sup> /hr) <i>Method - IS11255(PartIII),2008RA2018</i>	655	1625	--	PM Concentration Mg/nm3 PM10	135	142	150
5	Concentration of Moisture (%) <i>Method - USEPA(Part-4)</i>	<2.0	<2.0	--	PM Concentration Mg/nm3 PM2.5	130	129	150
6	Concentration of Oxygen (%v/v) <i>Method - IS13270:1992, Ref:2009</i>	8.2	8.3	--	--	--	--	--
7	Concentration of Carbon Monoxide (mg/Nm <sup>3</sup> ) <i>Method - IS13270:1992, Ref:2009</i>	22.3	26.2	--	Carbon monoxide (CO) Mg/nm3	<0.2	<0.2	1
8	Concentration of Carbon Dioxide(%v/v) <i>Method - IS13270:1992, Ref:2009</i>	6.5	12.3	--	Carbon dioxide (CO2) %v/v	8.2	7.8	--
9	Concentration of Sulphur Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(PartII),1985RA2014</i>	125	166	600	Concentration of Sulphur Dioxide(mg/Nm3)	188	176	--
10	Concentration of Nitrogen Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(Part7),2005RA2017</i>	72.2	75.2	300	Concentration of Nitrogen Dioxide (mg/Nm3)	85	79	--
11	Concentration of Particulate Matters (mg/Nm3) <i>Method - IS11255(PartI):1985, RA2014</i>	34.5	35.3	50	--	--	--	--

# ENVIRONMENTAL MONITORING REPORT

May 2024

M/S ESSEL MINING &  
INDUSTRIES LTD.



AT-BASANTPUR,  
TEHSIL- JHUMPURA, KEONJHAR, ODISHA

## Contents

<b>Ambient Air Quality Monitoring:</b> .....	3
<b>Noise Quality Monitoring:</b> .....	7
<b>Surface Water Monitoring:</b> .....	10
<b>Ground Water Monitoring:</b> .....	13
<b>Ground Water Level Monitoring:</b> .....	17
<b>Stack Monitoring:</b> .....	19

**AMBIENT AIR QUALITY MONITORING  
REPORT FOR  
THE MONTH OF MAY -2024**

**Ambient Air Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- i Near ECR-1
- ii Near Canteen
- iii Near Admin Building
- iv Nadiguth Village

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near ECR-1	1/5/2024	19	Near Admin Building	15/5/2024
2	Near Canteen	1/5/2024	20	Nedigutha Village	16/5/2024
3	Near Admin Building	1/5/2024	21	Near ECR-1	19/5/2024
4	Nedigutha Village	2/5/2024	22	Near Canteen	19/5/2024
5	Near ECR-1	5/5/2024	23	Near Admin Building	19/5/2024
6	Near Canteen	5/5/2024	24	Nedigutha Village	20/5/2024
7	Near Admin Building	5/5/2024	25	Near ECR-1	22/5/2024
8	Nedigutha Village	6/5/2024	26	Near Canteen	22/5/2024
9	Near ECR-1	8/5/2024	27	Near Admin Building	22/5/2024
10	Near Canteen	8/5/2024	28	Nedigutha Village	23/5/2024
11	Near Admin Building	8/5/2024	29	Near ECR-1	26/5/2024
12	Nedigutha Village	9/5/2024	30	Near Canteen	26/5/2024
13	Near ECR-1	12/5/2024	31	Near Admin Building	26/5/2024
14	Near Canteen	12/5/2024	32	Nedigutha Village	27/5/2024
15	Near Admin Building	12/5/2024	33	Near ECR-1	29/5/2024
16	Nedigutha Village	13/5/2024	34	Near Canteen	29/5/2024
17	Near ECR-1	15/5/2024	35	Near Admin Building	29/5/2024
18	Near Canteen	15/5/2024	36	Nedigutha Village	30/5/2024

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Parameters	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	PM10	PM2.5	Ozone(O <sub>3</sub> ) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> )	Benzene (C <sub>6</sub> H <sub>6</sub> )	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m <sup>3</sup> )	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near ECR-1</b>												
Limit (µg/M <sup>3</sup> )	80	80	100	60	180	1	2000	400	5 (Annual)	1 (Annual)	6 (Annual)	20 (Annual)
01.05.2024	25.2	23.2	63.2	52.3	ND	ND	158.7	14.6	ND	ND	ND	ND
05.05.2024	29.3	22.3	67.3	55.3	ND	ND	155.6	16.3	ND	ND	ND	ND
08.05.2024	25.2	21.2	65.3	58.2	ND	ND	159.1	14.2	ND	ND	ND	ND
12.05.2024	29.3	23.2	67.3	48.9	ND	ND	155.6	14.6	ND	ND	ND	ND
15.05.2024	32.6	22.3	65	51.3	ND	ND	159.1	15.5	ND	ND	ND	ND
19.05.2024	29.5	21.3	63.2	52.6	ND	ND	164.2	14.6	ND	ND	ND	ND
22.05.2024	25.2	23.2	67.3	55.2	ND	ND	158.3	16.3	ND	ND	ND	ND
26.05.2024	29.3	22.3	65.3	58.2	ND	ND	155.5	14.2	ND	ND	ND	ND
29.05.2024	23.1	21.2	62.3	49.2	ND	ND	156.2	15.3	ND	ND	ND	ND
<b>Location: Near Canteen</b>												
01.05.2024	28.6	21.3	65.2	52.6	ND	ND	155.6	16.3	ND	ND	ND	ND
05.05.2024	25.6	22.6	67.3	55.2	ND	ND	158.2	14.2	ND	ND	ND	ND
08.05.2024	29.3	22.2	65	58.2	ND	ND	155.2	15.3	ND	ND	ND	ND
12.05.2024	31.2	23.5	67.2	52.3	ND	ND	158.7	16.3	ND	ND	ND	ND
15.05.2024	25.2	21.9	67.3	58.2	ND	ND	158.2	14.2	ND	ND	ND	ND
19.05.2024	33.2	22.6	68	52.3	ND	ND	155.2	15.3	ND	ND	ND	ND
22.05.2024	30.5	22.2	65.2	55.3	ND	ND	158.7	14.9	ND	ND	ND	ND
26.05.2024	29.6	23.5	67.3	58.2	ND	ND	155.6	15.7	ND	ND	ND	ND
29.05.2024	29.1	23.6	65	48.9	ND	ND	156.3	15.1	ND	ND	ND	ND

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Parameters	Sulphur Dioxide (SO2)	Nitrogen Dioxide (NO2)	PM10	PM2.5	Ozone(O3) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m3	Ammonia (NH3)	Benzene (C6 H6)	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m3)	Arsenic (As) (ng/m3)	Nickel (Ni) (ng/m3)
<b>Location: Near Admin Building</b>												
01.05.2024	30.5	22.2	65.2	52.3	ND	ND	155.6	14.9	ND	ND	ND	ND
05.05.2024	29.6	23.5	65	48.9	ND	ND	155.6	15.3	ND	ND	ND	ND
08.05.2024	28.6	21.9	63.2	55.2	ND	ND	159.1	14.2	ND	ND	ND	ND
12.05.2024	33.2	22.6	68	58.2	ND	ND	158.7	15.3	ND	ND	ND	ND
15.05.2024	30.5	22.2	65.2	52.3	ND	ND	155.6	14.9	ND	ND	ND	ND
19.05.2024	29.6	21.3	65	48.9	ND	ND	155.6	15.3	ND	ND	ND	ND
22.05.2024	28.6	22.2	63.2	51.3	ND	ND	159.1	14.9	ND	ND	ND	ND
26.05.2024	25.6	23.5	67.3	52.3	ND	ND	164.2	15.7	ND	ND	ND	ND
29.05.2024	29.3	21.9	65.3	48.9	ND	ND	158.3	14.5	ND	ND	ND	ND
<b>Location: Nadiguth Village</b>												
02.05.2024	24.5	22.2	63.2	55.2	ND	ND	155.6	16.3	ND	ND	ND	ND
06.05.2024	23.9	22.2	65.2	58.2	ND	ND	159.1	14.2	ND	ND	ND	ND
09.05.2024	22.6	21.3	66	52.3	ND	ND	158.3	14.6	ND	ND	ND	ND
13.05.2024	23.5	22.6	65	48.9	ND	ND	158.2	16.3	ND	ND	ND	ND
16.05.2024	24.5	22.9	63.2	51.3	ND	ND	155.6	15.2	ND	ND	ND	ND
20.05.2024	23.9	21.3	65.2	52.6	ND	ND	159.1	15.3	ND	ND	ND	ND
23.05.2024	22.6	22.6	66	58.2	ND	ND	155.2	14.9	ND	ND	ND	ND
27.05.2024	24.5	22.2	62.2	52.1	ND	ND	158.7	15.1	ND	ND	ND	ND
30.05.2024	23.9	22.2	67.3	48.7	ND	ND	155.3	14.6	ND	ND	ND	ND

# **NOISE QUALITY MONITORING REPORT**

## **FOR**

### **THE MONTH OF MAY -2024**

**Noise Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Near Main Gate Area
- b. Near Back Gate Area
- c. Near Pellet Plant Area
- d. Near IOBP Area

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near Main Gate Area	1/5/2024	19	Near Pellet Plant Area	15/5/2024
2	Near Back Gate Area	1/5/2024	20	Near IOBP Area	15/5/2024
3	Near Pellet Plant Area	1/5/2024	21	Near Main Gate Area	19/5/2024
4	Near IOBP Area	1/5/2024	22	Near Back Gate Area	19/5/2024
5	Near Main Gate Area	5/5/2024	23	Near Pellet Plant Area	19/5/2024
6	Near Back Gate Area	5/5/2024	24	Near IOBP Area	19/5/2024
7	Near Pellet Plant Area	5/5/2024	25	Near Main Gate Area	22/5/2024
8	Near IOBP Area	5/5/2024	26	Near Back Gate Area	22/5/2024
9	Near Main Gate Area	8/5/2024	27	Near Pellet Plant Area	22/5/2024
10	Near Back Gate Area	8/5/2024	28	Near IOBP Area	22/5/2024
11	Near Pellet Plant Area	8/5/2024	29	Near Main Gate Area	26/5/2024
12	Near IOBP Area	8/5/2024	30	Near Back Gate Area	26/5/2024
13	Near Main Gate Area	12/5/2024	31	Near Pellet Plant Area	26/5/2024
14	Near Back Gate Area	12/5/2024	32	Near IOBP Area	26/5/2024
15	Near Pellet Plant Area	12/5/2024	33	Near Main Gate Area	29/5/2024
16	Near IOBP Area	12/5/2024	34	Near Back Gate Area	29/5/2024
17	Near Main Gate Area	15/5/2024	35	Near Pellet Plant Area	29/5/2024
18	Near Back Gate Area	15/5/2024	36	Near IOBP Area	29/5/2024

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	01.05.2024					05.05.2024				
	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)
<b>Limit (in dB(A))Leq</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>
<b>Near Main Gate Area</b>	50.3	55.2	52.2	52.3	35.7	49.3	59.2	55.3	48.2	33.2
<b>Near Back Gate Area</b>	48.2	60.2	51.3	45.6	33.2	47.2	61.2	54.2	45.2	31.2
<b>Near Pellet Plant Area</b>	52.6	59.2	50.3	48.2	36.7	51.6	55.3	51.2	44.3	29.5
<b>Near IOBP Area</b>	50.3	56.3	53.2	44.6	33.5	55.2	57.2	50.9	44.2	33.5
	<b>08.05.2024</b>					<b>12.05.2024</b>				
<b>Near Main Gate Area</b>	55.3	62.5	53.2	48.9	33.2	53.2	58.1	55.2	48.5	35.6
<b>Near Back Gate Area</b>	51.2	60.2	50.2	44.6	31.6	55.6	55.9	48.5	44.6	33.2
<b>Near Pellet Plant Area</b>	49.5	60.2	49.6	49.2	38.2	54.3	54.9	51.3	49.5	30.5
<b>Near IOBP Area</b>	55.3	55.9	53.5	45.2	35.2	55.2	55.2	49.7	48.2	29.5
	<b>15.05.2024</b>					<b>19.05.2024</b>				
<b>Near Main Gate Area</b>	59.3	61.5	55.3	45.9	28.9	55.2	61.5	55.2	42.5	29.6
<b>Near Back Gate Area</b>	55.2	62.3	52.9	44.6	32.5	55.2	60.2	52.6	44.9	32.5
<b>Near Pellet Plant Area</b>	54.9	60.3	50.2	48.5	33.6	55.6	55.3	48.9	45.9	35.6
<b>Near IOBP Area</b>	58.2	55.9	45.2	45.2	33.2	50.3	59.2	45.2	44.2	33.2
	<b>22.05.2024</b>					<b>26.05.2024</b>				
<b>Near Main Gate Area</b>	51.2	62.5	48.5	45.6	32.5	55.2	62.5	59.6	48.6	29.5
<b>Near Back Gate Area</b>	49.5	60.2	51.3	48.5	33.2	53.6	66.5	54.7	45.3	33.5
<b>Near Pellet Plant Area</b>	52.9	62.3	55.2	44.6	31.6	52.3	65.3	55.2	44.2	31.2
<b>Near IOBP Area</b>	50.2	60.3	54.9	48.5	32.2	54.2	60.3	51.9	45.9	30.9
	<b>29.05.2024</b>									
<b>Near Main Gate Area</b>	55.2	62.5	55.3	48.6	32.5					
<b>Near Back Gate Area</b>	53.2	59.2	52.9	44.5	33.5					
<b>Near Pellet Plant Area</b>	51.9	64.5	54.9	41.9	33.1					
<b>Near IOBP Area</b>	50.2	62.2	55.2	48.5	30.2					

**SURFACE WATER ANALYSIS REPORT**  
**FOR**  
**THE MONTH OF MAY -2024**

**Surface Water Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Baitarani River (Dhanurjaypur)
- b. Baitarani River (Near Plant Area)
- c. Reservoir Pond (Inside Plant)
- d. Dalki Nala Near Plant
- e. Nadiguth Village

Frequency of sampling - Once a month

Number of samples - 5

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling
1	Baitarani River (Dhanurjaypur)	08.05.2024
2	Baitarani River (Near Plant Area)	08.05.2024
3	Reservoir Pond (Inside Plant)	08.05.2024
4	Dalki Nala Near Plant	08.05.2024
5	Nadiguth Village	08.05.2024

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Sl. No.	Parameter	Baitarani River (Dhanurjaypur)	Baitarani River (Near Plant Area)	Reservoir Pond (Inside Plant)	Dalki Nala Near Plant	Nadiguth Village
1.	Colour (Pt-Co)	<1	<1	<1	<1	<1
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Temperature (°C)	35.2	35.5	34.5	37.2	36.2
4.	pH	7	7.2	7	7.1	7.2
5.	Total Suspended Solids (mg/L)	15.6	19.5	25.2	14.9	18.6
6.	Total Dissolved Solid (mg/L)	580	650	610	654	549
7.	Biochemical Oxygen Demand at 27°C(mg/L)	5.1	4.8	6.2	3.2	3
8.	Chemical Oxygen Demand(mg/L)	1.08	1.16	4.2	1.5	1.2
9.	Total Residual Chlorine(mg/L)	0.26	0.38	2.2	0.52	0.2
10.	Alkalinity(mg/L)	68.2	44.2	62.6	38.5	41.2
11.	Calcium(mg/L)	44.2	32.6	46.5	29.2	31.6
12.	Magnesium(mg/L)	35.2	29.2	42.6	38.2	36.6
13.	Total Hardness as CaCO <sub>3</sub> (mg/L)	38	36.2	82.2	30.2	32.1
14.	Electrical Conductivity (µs/cm)	92.2	60.2	124.6	86.2	106.2
15.	Turbidity (NTU)	14.2	18.2	47.6	28	21.2
16.	Arsenic as As (µg/L)	ND	ND	ND	ND	ND
17.	Lead as Pb (µg/L)	ND	ND	ND	ND	ND
18.	Cadmium as Cd (µg/L)	ND	ND	0.14	ND	ND
19.	Total Chromium as Cr (µg/L)	ND	ND	<0.02	ND	ND
20.	Zinc as Zn (µg/L)	0.02	0.14	<0.05	0.26	0.04
21.	Fluoride as F (mg/L)	ND	ND	ND	ND	ND
22.	Iron as Fe (mg/L)	9.2	11.2	34.2	7.5	8.2
23.	Nitrate (mg/L)	1.04	3.12	5.62	2.24	2.64
24.	Sodium as Na (mg/L)	1.32	2.14	14.6	2.08	1.22
25.	Potassium as K (mg/L)	1.2	0.68	4.65	2.04	1.35
26.	Sulfate (mg/L)	1.12	<0.01	4.08	3.9	0.04
27.	Nitrate as NO <sub>3</sub> (mg/L)	2.1	2.2	4.2	2.26	1.24
28.	Total Silica as SiO <sub>2</sub> (mg/L)	4.2	2.5	9.6	1.2	1.06

**GROUND WATER ANALYSIS REPORT**  
**FOR**  
**THE MONTH OF MAY -2024**

**Ground Water Monitoring:**

**GROUND WATER MONITORING REPORT SUMMARY SHEET OF SAMPLING (GROUNDWATER):**

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample01	MALDAVILLAGE	10- May -2024	OCPL/GW/01/05/24
2.	Sample02	NEDIGUTH	10- May -2024	OCPL/GW/02/05/24
3.	Sample03	TALASAH	10- May -2024	OCPL/GW/03/05/24
4.	Sample04	PLANT-1(Near Canteen)	10- May -2024	OCPL/GW/04/05/24
5.	Sample05	PLANT-2(SLIMEPOND)	10- May -2024	OCPL/GW/05/05/24

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

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALASAH	PLANT- 1 (Near Canteen)	PLANT-2 (SLIMEPOND)		
1	Colour	Pt-Co	1.0	1.0	1.2	1.2	1.1		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	28.1	28.2	28.2	27.7	28.2		
4	pH	-	6.7	7.0	7.1	6.2	7.2	6.5-8.5	No relaxation
5	Total Hardness (as CaCO <sub>3</sub> )	mg/L	62.1	58	55.3	58	58.6	300	600

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6	Calcium	mg/L	8.2	8.1	11.3	12.0	8.2	75	200
7	Magnesium	mg/L	1.3	3	3.2	3	1.5	30	No relaxation
8	Chloride	mg/L	15	15.3	15.2	14.2	18.3	250	1000
9	Alkalinity	mg/L	18.3	16.1	18.3	10.2	19.1	200	600
10	Electrical Conductivity	µs/cm	75.2	63.3	65	69.1	78.3	--	--
11	Arsenic as As	µg/L	0.03	ND	0.03	ND	0.05	10	No relaxation
12	Lead as Pb	µg/L	ND	0.37	0.31	0.24	ND	10	No relaxation
13	Cadmium as Cd	µg/L	ND	ND	ND	0.05	0.05	3.0	No relaxation
14	Total Chromium as Cr	µg/L	0.2	ND	0.05	0.05	0.04	50	No relaxation
15	Zinc as Zn	µg/L	92.3	93.2	77.2	77.3	98.1	5000	No relaxation
16	Fluoride as F	mg/L	ND	0.02	ND	0.02	ND	1.0	1.9
17	Iron as Fe	µg/L	15.5	15.7	25.6	35.6	35.3	300	1000
18	Nitrate	mg/L	1.5	1.2	1.0	1.0	1.1	45	100

19	Sodium as Na	mg/L	2.5	3	3.2	4.2	5	150	No relaxation
20	Potassium as K	mg/L	ND	0.1	0.1	0.1	0.1	12	No relaxation
21	Sulfate	mg/L	ND	ND	0.05	0.05	0.2	200	400
22	Total Silica as SiO <sub>2</sub>	mg/L	0.5	ND	0.6	ND	0.7	--	--
23	Total suspended Solid	mg/L	0.11	1.1	1.13	0.25	1.3	--	--
24	Total dissolved Solid	mg/L	85.3	75.7	72.1	95.2	88.7	250	2000
25	Turbidity	NTU	0.2	0.2	0.5	0.7	0.5	5	10

# **GROUND WATER LEVEL ANALYSIS REPORT FOR THE MONTH OF MAY -2024**

## Ground Water Level Monitoring:

### SUMMARY SHEET OF MONITORING:

Sl No	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1	Sample01	MALDA VILLAGE	12- May -2024	OCPL/GWL/01/05/24
2	Sample02	NEDIGUTH	12- May -2024	OCPL/GWL/02/05/24
3	Sample03	TALASAH	12- May -2024	OCPL/GWL/03/05/24
4	Sample04	PLANT-1(Near Canteen)	12- May -2024	OCPL/GWL/04/05/24
5	Sample05	PLANT-2(SLIMEPOND)	12- May -2024	OCPL/GWL/05/05/24

### 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	Dug well	0.2	8.12	9.3	--
2	NEDIGUTH	Dug well	1.22	9.24	10.1	--
3	TALASAH	Dug well	1.0	8.7	10.1	--
4	PLANT-1(Near Canteen)	Bore-well	0.1	65	12.1	--
5	PLANT-2(SLIME POND)	Bore-well	0.1	60	41.2	--

Sampling By: Mr. Hrusikesh Das

**STACK MONITORING REPORT**  
**FOR**  
**THE MONTH OF MAY – 2024**

**Stack Monitoring:**

Number of Stack – 04

Name Sampling Locations:

- a. DGStack-1
- b. DGStack-2
- c. Stack-1(Pellet Plant Process Stack)
- d. Stack-2(Pellet Plant Dedusting Stack)

Frequency of sampling - Once a month

Number of samples - 4

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling
1	DG Stack-1	08.05.2024
2	DG Stack-2	08.05.2024
3	Stack-1(Pellet Plant Process Stack)	09.05.2024
4	Stack-2(Pellet Plant Dedusting Stack)	09.05.2024

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	DG Stack-1	DG Stack-2	Pellet Plant Process Stack	Pellet Plant Dedusting Stack	
<b>A. General information about Stack</b>					
1	Stack connected to	DG-1	DG-2	Pellet plant process stack	Pellet plant de-dusting stack
2	Emission due to	Burning of Diesel	Burning of Diesel	Burning of furnace oil	Electricity
3	Material of construction of stack	MS	MS	MS	MS
4	Shape of Stack	Circular	Circular	Circular	Circular
5	Serial no.	N15E226771	N15H319963	--	--
6	Boiler/Furnace/DG/Kiln Capacity	1250KVA	1250KVA	--	--
<b>B. Physical characteristics of stack</b>					
1	Height of the Stack from Ground level	9 m	9 m	80 m	60 m
2	Diameter of the stack at sampling point	400 mm	400 mm	--	--
3	Height of the Sampling Point from Ground level	7 m	7 m	--	--
4	Type	HCKI634Z1	HCKI634Z1	--	--
<b>C. Analysis/Characteristic of Stack</b>					
1	Fuel used	LDO	LDO	FO	FO
2	Fuel Consumption	NA	NA	NA	NA

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<b>D. Results of Sampling &amp; Analysis of Gaseous Emission</b>								
	<b>Parameters</b>	<b>DG Stack-1</b>	<b>DG Stack-2</b>		<b>Parameters</b>	<b>Pellet Plant Process Stack</b>	<b>Pellet Plant Dedusting Stack</b>	<b>Limit</b>
1	Temperature of Emission(°C) <i>Method - IS11255(PartIII),2008RA2018</i>	74.8	84.3	--	Temperature of Emission(oC)	95.3	94.3	--
2	Barometric pressure (mm of Hg) <i>Method - USEPA Part2- 25/09/1996</i>	280	332	--	Emission (M3/Hr.)	7256	6563	--
3	Velocity of gas(m/sec.) <i>Method - IS11255(PartIII),2008RA2018</i>	11.5	34	--	Velocity (NM3/Hr)	35677	36480	--
4	Quantity of Gas Flow (Nm <sup>3</sup> /hr) <i>Method - IS11255(PartIII),2008RA2018</i>	654	1645	--	PM Concentration Mg/nm3 PM10	132	140	150
5	Concentration of Moisture (%) <i>Method - USEPA(Part-4)</i>	<2.0	<2.0	--	PM Concentration Mg/nm3 PM2.5	135	122	150
6	Concentration of Oxygen (%v/v) <i>Method - IS13270:1992, Ref:2009</i>	8.1	8.3	--	--	--	--	--
7	Concentration of Carbon Monoxide (mg/Nm <sup>3</sup> ) <i>Method - IS13270:1992, Ref:2009</i>	22.3	25.4	--	Carbon monoxide (CO) Mg/nm3	<0.2	<0.2	1
8	Concentration of Carbon Dioxide(%v/v) <i>Method - IS13270:1992, Ref:2009</i>	6.5	12	--	Carbon dioxide (CO2) %v/v	8.1	7.2	--
9	Concentration of Sulphur Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(PartII),1985RA2014</i>	128	165	600	Concentration of Sulphur Dioxide(mg/Nm3)	183	186	--
10	Concentration of Nitrogen Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(Part7),2005RA2017</i>	72.4	75	300	Concentration of Nitrogen Dioxide (mg/Nm3)	84	82	--
11	Concentration of Particulate Matters (mg/Nm3) <i>Method - IS11255(PartI):1985, RA2014</i>	34	35.2	50	--	--	--	--

# ENVIRONMENTAL MONITORING REPORT

June 2024

M/S ESSEL MINING &  
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AT-BASANTPUR,  
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## Contents

<b>Ambient Air Quality Monitoring:</b> .....	3
<b>Noise Quality Monitoring:</b> .....	7
<b>Surface Water Monitoring:</b> .....	10
<b>Ground Water Monitoring:</b> .....	13
<b>Ground Water Level Monitoring:</b> .....	17
<b>Stack Monitoring:</b> .....	19

**AMBIENT AIR QUALITY MONITORING  
REPORT FOR  
THE MONTH OF JUNE -2024**

**Ambient Air Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- i Near ECR-1
- ii Near Canteen
- iii Near Admin Building
- iv Nadiguth Village

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near ECR-1	1/6/2024	19	Near Admin Building	15/6/2024
2	Near Canteen	1/6/2024	20	Nedigutha Village	16/6/2024
3	Near Admin Building	1/6/2024	21	Near ECR-1	19/6/2024
4	Nedigutha Village	2/6/2024	22	Near Canteen	19/6/2024
5	Near ECR-1	5/6/2024	23	Near Admin Building	19/6/2024
6	Near Canteen	5/6/2024	24	Nedigutha Village	20/6/2024
7	Near Admin Building	5/6/2024	25	Near ECR-1	22/6/2024
8	Nedigutha Village	6/6/2024	26	Near Canteen	22/6/2024
9	Near ECR-1	8/6/2024	27	Near Admin Building	22/6/2024
10	Near Canteen	8/6/2024	28	Nedigutha Village	23/6/2024
11	Near Admin Building	8/6/2024	29	Near ECR-1	26/6/2024
12	Nedigutha Village	9/6/2024	30	Near Canteen	26/6/2024
13	Near ECR-1	12/6/2024	31	Near Admin Building	26/6/2024
14	Near Canteen	12/6/2024	32	Nedigutha Village	27/6/2024
15	Near Admin Building	12/6/2024	33	Near ECR-1	29/6/2024
16	Nedigutha Village	13/6/2024	34	Near Canteen	29/6/2024
17	Near ECR-1	15/6/2024	35	Near Admin Building	29/6/2024
18	Near Canteen	15/6/2024	36	Nedigutha Village	30/6/2024

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Parameters	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	PM10	PM2.5	Ozone(O <sub>3</sub> ) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> )	Benzene (C <sub>6</sub> H <sub>6</sub> )	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m <sup>3</sup> )	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near ECR-1</b>												
Limit (µg/M <sup>3</sup> )	80	80	100	60	180	1	2000	400	5 (Annual)	1 (Annual)	6 (Annual)	20 (Annual)
01.06.2024	25.7	23.7	63.7	52.6	ND	ND	158.7	14.6	ND	ND	ND	ND
05.06.2024	29.6	22.6	67.6	55.6	ND	ND	155.6	16.6	ND	ND	ND	ND
08.06.2024	25.7	21.7	65.6	58.7	ND	ND	159.1	14.7	ND	ND	ND	ND
12.06.2024	29.6	23.7	67.6	48.9	ND	ND	155.6	14.6	ND	ND	ND	ND
15.06.2024	32.6	22.6	65	51.6	ND	ND	159.1	15.5	ND	ND	ND	ND
19.06.2024	29.5	21.6	63.7	52.6	ND	ND	164.7	14.6	ND	ND	ND	ND
22.06.2024	25.7	23.7	67.6	55.7	ND	ND	158.6	16.6	ND	ND	ND	ND
26.06.2024	29.6	22.6	65.6	58.7	ND	ND	155.5	14.7	ND	ND	ND	ND
29.06.2024	23.1	21.7	62.6	49.7	ND	ND	156.7	15.6	ND	ND	ND	ND
<b>Location: Near Canteen</b>												
01.06.2024	28.6	21.6	65.7	52.6	ND	ND	155.6	16.6	ND	ND	ND	ND
05.06.2024	25.6	22.6	67.6	55.7	ND	ND	158.7	14.7	ND	ND	ND	ND
08.06.2024	29.6	22.7	65	58.7	ND	ND	155.7	15.6	ND	ND	ND	ND
12.06.2024	31.7	23.5	67.7	52.6	ND	ND	158.7	16.6	ND	ND	ND	ND
15.06.2024	25.7	21.9	67.6	58.7	ND	ND	158.7	14.7	ND	ND	ND	ND
19.06.2024	33.7	22.6	68	52.6	ND	ND	155.7	15.6	ND	ND	ND	ND
22.06.2024	30.5	22.7	65.7	55.6	ND	ND	158.7	14.9	ND	ND	ND	ND
26.06.2024	29.6	23.5	67.6	58.7	ND	ND	155.6	15.7	ND	ND	ND	ND
29.06.2024	29.1	23.6	65	48.9	ND	ND	156.6	15.1	ND	ND	ND	ND

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Parameters	Sulphur Dioxide (SO2)	Nitrogen Dioxide (NO2)	PM10	PM2.5	Ozone(O3) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m3	Ammonia (NH3)	Benzene (C6 H6)	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m3)	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near Admin Building</b>												
01.06.2024	30.5	22.7	65.7	52.6	ND	ND	155.6	14.9	ND	ND	ND	ND
05.06.2024	29.6	23.5	65	48.9	ND	ND	155.6	15.6	ND	ND	ND	ND
08.06.2024	28.6	21.9	63.7	55.7	ND	ND	159.1	14.7	ND	ND	ND	ND
12.06.2024	33.7	22.6	68	58.7	ND	ND	158.7	15.6	ND	ND	ND	ND
15.06.2024	30.5	22.7	65.7	52.6	ND	ND	155.6	14.9	ND	ND	ND	ND
19.06.2024	29.6	21.6	65	48.9	ND	ND	155.6	15.6	ND	ND	ND	ND
22.06.2024	28.6	22.7	63.7	51.6	ND	ND	159.1	14.9	ND	ND	ND	ND
26.06.2024	25.6	23.5	67.6	52.6	ND	ND	164.7	15.7	ND	ND	ND	ND
29.06.2024	29.6	21.9	65.6	48.9	ND	ND	158.6	14.5	ND	ND	ND	ND
<b>Location: Nadiguth Village</b>												
02.06.2024	24.5	22.7	63.7	55.7	ND	ND	155.6	16.6	ND	ND	ND	ND
06.06.2024	23.9	22.7	65.7	58.7	ND	ND	159.1	14.7	ND	ND	ND	ND
09.06.2024	22.6	21.6	66	52.6	ND	ND	158.6	14.6	ND	ND	ND	ND
13.06.2024	23.5	22.6	65	48.9	ND	ND	158.7	16.6	ND	ND	ND	ND
16.06.2024	24.5	22.9	63.7	51.6	ND	ND	155.6	15.7	ND	ND	ND	ND
20.06.2024	23.9	21.6	65.7	52.6	ND	ND	159.1	15.6	ND	ND	ND	ND
23.06.2024	22.6	22.6	66	58.7	ND	ND	155.7	14.9	ND	ND	ND	ND
27.06.2024	24.5	22.7	62.7	52.1	ND	ND	158.7	15.1	ND	ND	ND	ND
30.06.2024	23.9	22.7	67.6	48.7	ND	ND	155.6	14.6	ND	ND	ND	ND

# **NOISE QUALITY MONITORING REPORT**

## **FOR**

### **THE MONTH OF JUNE -2024**

**Noise Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Near Main Gate Area
- b. Near Back Gate Area
- c. Near Pellet Plant Area
- d. Near IOBP Area

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near Main Gate Area	1/6/2024	19	Near Pellet Plant Area	15/6/2024
2	Near Back Gate Area	1/6/2024	20	Near IOBP Area	15/6/2024
3	Near Pellet Plant Area	1/6/2024	21	Near Main Gate Area	19/6/2024
4	Near IOBP Area	1/6/2024	22	Near Back Gate Area	19/6/2024
5	Near Main Gate Area	5/6/2024	23	Near Pellet Plant Area	19/6/2024
6	Near Back Gate Area	5/6/2024	24	Near IOBP Area	19/6/2024
7	Near Pellet Plant Area	5/6/2024	25	Near Main Gate Area	22/6/2024
8	Near IOBP Area	5/6/2024	26	Near Back Gate Area	22/6/2024
9	Near Main Gate Area	8/6/2024	27	Near Pellet Plant Area	22/6/2024
10	Near Back Gate Area	8/6/2024	28	Near IOBP Area	22/6/2024
11	Near Pellet Plant Area	8/6/2024	29	Near Main Gate Area	26/6/2024
12	Near IOBP Area	8/6/2024	30	Near Back Gate Area	26/6/2024
13	Near Main Gate Area	12/6/2024	31	Near Pellet Plant Area	26/6/2024
14	Near Back Gate Area	12/6/2024	32	Near IOBP Area	26/6/2024
15	Near Pellet Plant Area	12/6/2024	33	Near Main Gate Area	29/6/2024
16	Near IOBP Area	12/6/2024	34	Near Back Gate Area	29/6/2024
17	Near Main Gate Area	15/6/2024	35	Near Pellet Plant Area	29/6/2024
18	Near Back Gate Area	15/6/2024	36	Near IOBP Area	29/6/2024

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	01.06.2024					05.06.2024				
	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)
<b>Limit (in dB(A))Leq</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>
<b>Near Main Gate Area</b>	50.6	55.7	52.7	52.6	35.7	49.6	59.7	55.6	48.7	33.7
<b>Near Back Gate Area</b>	48.7	60.7	51.6	45.6	33.7	47.7	61.7	54.7	45.7	31.7
<b>Near Pellet Plant Area</b>	52.6	59.7	50.6	48.7	36.7	51.6	55.6	51.7	44.6	29.5
<b>Near IOBP Area</b>	50.6	56.6	53.7	44.6	33.5	55.7	57.7	50.9	44.7	33.5
	<b>08.06.2024</b>					<b>12.06.2024</b>				
<b>Near Main Gate Area</b>	55.6	62.5	53.7	48.9	33.7	53.7	58.1	55.7	48.5	35.6
<b>Near Back Gate Area</b>	51.7	60.7	50.7	44.6	31.6	55.6	55.9	48.5	44.6	33.7
<b>Near Pellet Plant Area</b>	49.5	60.7	49.6	49.7	38.7	54.6	54.9	51.6	49.5	30.5
<b>Near IOBP Area</b>	55.6	55.9	53.5	45.7	35.7	55.7	55.7	49.7	48.7	29.5
	<b>15.06.2024</b>					<b>19.06.2024</b>				
<b>Near Main Gate Area</b>	59.6	61.5	55.6	45.9	28.9	55.7	61.5	55.7	42.5	29.6
<b>Near Back Gate Area</b>	55.7	62.6	52.9	44.6	32.5	55.7	60.7	52.6	44.9	32.5
<b>Near Pellet Plant Area</b>	54.9	60.6	50.7	48.5	33.6	55.6	55.6	48.9	45.9	35.6
<b>Near IOBP Area</b>	58.7	55.9	45.7	45.7	33.7	50.6	59.7	45.7	44.7	33.7
	<b>22.06.2024</b>					<b>26.06.2024</b>				
<b>Near Main Gate Area</b>	51.7	62.5	48.5	45.6	32.5	55.7	62.5	59.6	48.6	29.5
<b>Near Back Gate Area</b>	49.5	60.7	51.6	48.5	33.7	53.6	66.5	54.7	45.6	33.5
<b>Near Pellet Plant Area</b>	52.9	62.6	55.7	44.6	31.6	52.6	65.6	55.7	44.7	31.7
<b>Near IOBP Area</b>	50.7	60.6	54.9	48.5	32.7	54.7	60.6	51.9	45.9	30.9
	<b>29.06.2024</b>									
<b>Near Main Gate Area</b>	55.7	62.5	55.6	48.6	32.5					
<b>Near Back Gate Area</b>	53.7	59.7	52.9	44.5	33.5					
<b>Near Pellet Plant Area</b>	51.9	64.5	54.9	41.9	33.1					
<b>Near IOBP Area</b>	50.7	62.7	55.7	48.5	30.7					

**SURFACE WATER ANALYSIS REPORT**  
**FOR**  
**THE MONTH OF JUNE -2024**

**Surface Water Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Baitarani River (Dhanurjaypur)
- b. Baitarani River (Near Plant Area)
- c. Reservoir Pond (Inside Plant)
- d. Dalki Nala Near Plant
- e. Nadiguth Village

Frequency of sampling - Once a month

Number of samples - 5

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling
1	Baitarani River (Dhanurjaypur)	08.06.2024
2	Baitarani River (Near Plant Area)	08.06.2024
3	Reservoir Pond (Inside Plant)	08.06.2024
4	Dalki Nala Near Plant	08.06.2024
5	Nadiguth Village	08.06.2024

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Sl. No.	Parameter	Baitarani River (Dhanurjaypur)	Baitarani River (Near Plant Area)	Reservoir Pond (Inside Plant)	Dalki Nala Near Plant	Nadiguth Village
1.	Colour (Pt-Co)	<1	<1	<1	<1	<1
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Temperature (°C)	35	35.8	34	37.2	36
4.	pH	7	7.7	7	7.1	7.7
5.	Total Suspended Solids (mg/L)	15.6	19.5	25.7	14.9	18.6
6.	Total Dissolved Solid (mg/L)	580	650	610	654	549
7.	Biochemical Oxygen Demand at 27°C(mg/L)	5.1	4.8	6.7	3.7	3
8.	Chemical Oxygen Demand(mg/L)	1.08	1.16	4.7	1.5	1.7
9.	Total Residual Chlorine(mg/L)	0.76	0.68	2.7	0.52	0.7
10.	Alkalinity(mg/L)	68.7	44.7	62.6	38.5	41.7
11.	Calcium(mg/L)	44.7	32.6	46.5	29.7	31.6
12.	Magnesium(mg/L)	35.7	29.7	42.6	38.7	36.6
13.	Total Hardness as CaCO <sub>3</sub> (mg/L)	38	36.7	82.7	30.7	32.1
14.	Electrical Conductivity (µs/cm)	92.7	60.7	124.6	86.7	106.7
15.	Turbidity (NTU)	14.7	18.7	47.6	28	21.7
16.	Arsenic as As (µg/L)	ND	ND	ND	ND	ND
17.	Lead as Pb (µg/L)	ND	ND	ND	ND	ND
18.	Cadmium as Cd (µg/L)	ND	ND	0.14	ND	ND
19.	Total Chromium as Cr (µg/L)	ND	ND	<0.02	ND	ND
20.	Zinc as Zn (µg/L)	0.02	0.14	<0.05	0.76	0.04
21.	Fluoride as F (mg/L)	ND	ND	ND	ND	ND
22.	Iron as Fe (mg/L)	9.7	11.7	34.7	7.5	8.7
23.	Nitrate (mg/L)	1.04	3.12	5.62	2.74	2.64
24.	Sodium as Na (mg/L)	1.62	2.14	14.6	2.08	1.72
25.	Potassium as K (mg/L)	1.7	0.68	4.65	2.04	1.65
26.	Sulfate (mg/L)	1.12	<0.01	4.08	3.9	0.04
27.	Nitrate as NO <sub>3</sub> (mg/L)	2.1	2.7	4.7	2.76	1.74
28.	Total Silica as SiO <sub>2</sub> (mg/L)	4.7	2.5	9.6	1.7	1.06

**GROUND WATER ANALYSIS REPORT**  
**FOR**  
**THE MONTH OF JUNE -2024**

**Ground Water Monitoring:**

**GROUND WATER MONITORING REPORT SUMMARY SHEET OF SAMPLING (GROUNDWATER):**

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample01	MALDAVILLAGE	10- June -2024	OCPL/GW/01/06/24
2.	Sample02	NEDIGUTH	10- June -2024	OCPL/GW/02/06/24
3.	Sample03	TALASAHI	10- June -2024	OCPL/GW/03/06/24
4.	Sample04	PLANT-1(Near Canteen)	10- June -2024	OCPL/GW/04/06/24
5.	Sample05	PLANT-2(SLIMEPOND)	10- June -2024	OCPL/GW/05/06/24

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

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALASAHI	PLANT- 1 (Near Canteen)	PLANT-2 (SLIMEPOND)		
1	Colour	Pt-Co	1.0	1.0	1.7	1.7	1.1		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	28.1	28.7	28.7	27.7	28.7		
4	pH	-	6.7	7.0	7.1	6.7	7.7	6.5-8.5	No relaxation
5	Total Hardness (as CaCO <sub>3</sub> )	mg/L	62.1	58	55.6	58	58.6	300	600

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6	Calcium	mg/L	8.7	8.1	11.6	12.0	8.7	75	200
7	Magnesium	mg/L	1.6	3	3.7	3	1.5	30	No relaxation
8	Chloride	mg/L	15	15.6	15.7	14.7	18.6	250	1000
9	Alkalinity	mg/L	18.6	16.1	18.6	10.7	19.1	200	600
10	Electrical Conductivity	µs/cm	75.7	63.6	65	69.1	78.6	--	--
11	Arsenic as As	µg/L	0.03	ND	0.03	ND	0.05	10	No relaxation
12	Lead as Pb	µg/L	ND	0.67	0.61	0.74	ND	10	No relaxation
13	Cadmium as Cd	µg/L	ND	ND	ND	0.05	0.05	3.0	No relaxation
14	Total Chromium as Cr	µg/L	0.7	ND	0.05	0.05	0.04	50	No relaxation
15	Zinc as Zn	µg/L	92.6	93.7	77.7	77.6	98.1	5000	No relaxation
16	Fluoride as F	mg/L	ND	0.02	ND	0.02	ND	1.0	1.9
17	Iron as Fe	µg/L	15.5	15.7	25.6	35.6	35.6	300	1000
18	Nitrate	mg/L	1.5	1.7	1.0	1.0	1.1	45	100

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19	Sodium as Na	mg/L	2.5	3	3.7	4.7	5	150	No relaxation
20	Potassium as K	mg/L	ND	0.1	0.1	0.1	0.1	12	No relaxation
21	Sulfate	mg/L	ND	ND	0.05	0.05	0.7	200	400
22	Total Silica as SiO <sub>2</sub>	mg/L	0.5	ND	0.6	ND	0.7	--	--
23	Total suspended Solid	mg/L	0.11	1.1	1.13	0.75	1.6	--	--
24	Total dissolved Solid	mg/L	85.6	75.7	72.1	95.7	88.7	250	2000
25	Turbidity	NTU	0.7	0.7	0.5	0.7	0.5	5	10

# **GROUND WATER LEVEL ANALYSIS REPORT FOR THE MONTH OF JUNE -2024**

## Ground Water Level Monitoring:

### SUMMARY SHEET OF MONITORING:

Sl No	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1	Sample01	MALDA VILLAGE	12- June -2024	OCPL/GWL/01/06/24
2	Sample02	NEDIGUTH	12- June -2024	OCPL/GWL/02/06/24
3	Sample03	TALASAH	12- June -2024	OCPL/GWL/03/06/24
4	Sample04	PLANT-1(Near Canteen)	12- June -2024	OCPL/GWL/04/06/24
5	Sample05	PLANT-2(SLIMEPOND)	12- June -2024	OCPL/GWL/05/06/24

### 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	Dug well	0.7	9.1	9.6	--
2	NEDIGUTH	Dug well	1.72	9.5	10	--
3	TALASAH	Dug well	1.0	8.7	9.8	--
4	PLANT-1(Near Canteen)	Bore-well	0.1	62	11.1	--
5	PLANT-2(SLIME POND)	Bore-well	0.1	60	44.7	--

Sampling By: Mr. Hrusikesh Das

**STACK MONITORING REPORT**  
**FOR**  
**THE MONTH OF JUNE – 2024**

**Stack Monitoring:**

Number of Stack – 04

Name Sampling Locations:

- a. DGStack-1
- b. DGStack-2
- c. Stack-1(Pellet Plant Process Stack)
- d. Stack-2(Pellet Plant Dedusting Stack)

Frequency of sampling - Once a month

Number of samples - 4

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling
1	DG Stack-1	08.06.2024
2	DG Stack-2	08.06.2024
3	Stack-1(Pellet Plant Process Stack)	09.06.2024
4	Stack-2(Pellet Plant Dedusting Stack)	09.06.2024

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	DG Stack-1	DG Stack-2	Pellet Plant Process Stack	Pellet Plant Dedusting Stack	
<b>A. General information about Stack</b>					
1	Stack connected to	DG-1	DG-2	Pellet plant process stack	Pellet plant de-dusting stack
2	Emission due to	Burning of Diesel	Burning of Diesel	Burning of furnace oil	Electricity
3	Material of construction of stack	MS	MS	MS	MS
4	Shape of Stack	Circular	Circular	Circular	Circular
5	Serial no.	N15E226771	N15H319963	--	--
6	Boiler/Furnace/DG/Kiln Capacity	1250KVA	1250KVA	--	--
<b>B. Physical characteristics of stack</b>					
1	Height of the Stack from Ground level	9 m	9 m	80 m	60 m
2	Diameter of the stack at sampling point	400 mm	400 mm	--	--
3	Height of the Sampling Point from Ground level	7 m	7 m	--	--
4	Type	HCKI634Z1	HCKI634Z1	--	--
<b>C. Analysis/Characteristic of Stack</b>					
1	Fuel used	LDO	LDO	FO	FO
2	Fuel Consumption	NA	NA	NA	NA

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<b>D. Results of Sampling &amp; Analysis of Gaseous Emission</b>								
	<b>Parameters</b>	<b>DG Stack-1</b>	<b>DG Stack-2</b>		<b>Parameters</b>	<b>Pellet Plant Process Stack</b>	<b>Pellet Plant Dedusting Stack</b>	<b>Limit</b>
1	Temperature of Emission(°C) <i>Method - IS11255(PartIII),2008RA2018</i>	74.4	84.5	--	Temperature of Emission(oC)	95.2	94.4	--
2	Barometric pressure (mm of Hg) <i>Method - USEPA Part2- 25/09/1996</i>	280	332	--	Emission (M3/Hr.)	7250	6553	--
3	Velocity of gas(m/sec.) <i>Method - IS11255(PartIII),2008RA2018</i>	11.5	34	--	Velocity (NM3/Hr)	35672	36490	--
4	Quantity of Gas Flow (Nm <sup>3</sup> /hr) <i>Method - IS11255(PartIII),2008RA2018</i>	652	1675	--	PM Concentration Mg/nm3 PM10	131	140	150
5	Concentration of Moisture (%) <i>Method - USEPA(Part-4)</i>	<2.0	<2.0	--	PM Concentration Mg/nm3 PM2.5	133	128	150
6	Concentration of Oxygen (%v/v) <i>Method - IS13270:1992, Ref:2009</i>	8.1	8.6	--	--	--	--	--
7	Concentration of Carbon Monoxide (mg/Nm <sup>3</sup> ) <i>Method - IS13270:1992, Ref:2009</i>	22.4	25.4	--	Carbon monoxide (CO) Mg/nm3	<0.7	<0.7	1
8	Concentration of Carbon Dioxide(%v/v) <i>Method - IS13270:1992, Ref:2009</i>	6.5	12.8	--	Carbon dioxide (CO2) %v/v	8	7.7	--
9	Concentration of Sulphur Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(PartII),1985RA2014</i>	122	161	600	Concentration of Sulphur Dioxide(mg/Nm3)	184	182	--
10	Concentration of Nitrogen Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(Part7),2005RA2017</i>	72.4	75.9	300	Concentration of Nitrogen Dioxide (mg/Nm3)	81	82	--
11	Concentration of Particulate Matters (mg/Nm3) <i>Method - IS11255(PartI):1985, RA2014</i>	34.2	35.7	50	--	--	--	--

# ENVIRONMENTAL MONITORING REPORT

July 2024

M/S ESSEL MINING &  
INDUSTRIES LTD.



AT-BASANTPUR,  
TEHSIL- JHUMPURA, KEONJHAR, ODISHA

## Contents

<b>Ambient Air Quality Monitoring:</b> .....	3
<b>Noise Quality Monitoring:</b> .....	7
<b>Surface Water Monitoring:</b> .....	10
<b>Ground Water Monitoring:</b> .....	13
<b>Ground Water Level Monitoring:</b> .....	17
<b>Stack Monitoring:</b> .....	19

**AMBIENT AIR QUALITY MONITORING  
REPORT FOR  
THE MONTH OF JULY -2024**

**Ambient Air Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- i Near ECR-1
- ii Near Canteen
- iii Near Admin Building
- iv Nadiguth Village

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near ECR-1	1/7/2024	19	Near Admin Building	15/7/2024
2	Near Canteen	1/7/2024	20	Nedigutha Village	16/7/2024
3	Near Admin Building	1/7/2024	21	Near ECR-1	19/7/2024
4	Nedigutha Village	2/7/2024	22	Near Canteen	19/7/2024
5	Near ECR-1	5/7/2024	23	Near Admin Building	19/7/2024
6	Near Canteen	5/7/2024	24	Nedigutha Village	20/7/2024
7	Near Admin Building	5/7/2024	25	Near ECR-1	22/7/2024
8	Nedigutha Village	6/7/2024	26	Near Canteen	22/7/2024
9	Near ECR-1	8/7/2024	27	Near Admin Building	22/7/2024
10	Near Canteen	8/7/2024	28	Nedigutha Village	23/7/2024
11	Near Admin Building	8/7/2024	29	Near ECR-1	26/7/2024
12	Nedigutha Village	9/7/2024	30	Near Canteen	26/7/2024
13	Near ECR-1	12/7/2024	31	Near Admin Building	26/7/2024
14	Near Canteen	12/7/2024	32	Nedigutha Village	27/7/2024
15	Near Admin Building	12/7/2024	33	Near ECR-1	29/7/2024
16	Nedigutha Village	13/7/2024	34	Near Canteen	29/7/2024
17	Near ECR-1	15/7/2024	35	Near Admin Building	29/7/2024
18	Near Canteen	15/7/2024	36	Nedigutha Village	30/7/2024

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Parameters	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	PM10	PM2.5	Ozone(O <sub>3</sub> ) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> )	Benzene (C <sub>6</sub> H <sub>6</sub> )	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m <sup>3</sup> )	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near ECR-1</b>												
Limit (µg/M <sup>3</sup> )	80	80	100	60	180	1	2000	400	5 (Annual)	1 (Annual)	6 (Annual)	20 (Annual)
01.07.2024	25.5	23.5	63.5	52.1	ND	ND	158.5	14.1	ND	ND	ND	ND
05.07.2024	29.1	22.1	67.1	55.1	ND	ND	155.1	16.1	ND	ND	ND	ND
08.07.2024	25.5	21.5	65.1	58.5	ND	ND	159.1	14.5	ND	ND	ND	ND
12.07.2024	29.1	23.5	67.1	48.9	ND	ND	155.1	14.1	ND	ND	ND	ND
15.07.2024	32.1	22.1	65	51.1	ND	ND	159.1	15.5	ND	ND	ND	ND
19.07.2024	29.5	21.1	63.5	52.1	ND	ND	164.5	14.1	ND	ND	ND	ND
22.07.2024	25.5	23.5	67.1	55.5	ND	ND	158.1	16.1	ND	ND	ND	ND
26.07.2024	29.1	22.1	65.1	58.5	ND	ND	155.5	14.5	ND	ND	ND	ND
29.07.2024	23.1	21.5	62.1	49.5	ND	ND	156.5	15.1	ND	ND	ND	ND
<b>Location: Near Canteen</b>												
01.07.2024	28.1	21.1	65.5	52.1	ND	ND	155.1	16.1	ND	ND	ND	ND
05.07.2024	25.1	22.1	67.1	55.5	ND	ND	158.5	14.5	ND	ND	ND	ND
08.07.2024	29.1	22.5	65	58.5	ND	ND	155.5	15.1	ND	ND	ND	ND
12.07.2024	31.5	23.5	67.5	52.1	ND	ND	158.5	16.1	ND	ND	ND	ND
15.07.2024	25.5	21.9	67.1	58.5	ND	ND	158.5	14.5	ND	ND	ND	ND
19.07.2024	33.5	22.1	68	52.1	ND	ND	155.5	15.1	ND	ND	ND	ND
22.07.2024	30.5	22.5	65.5	55.1	ND	ND	158.5	14.9	ND	ND	ND	ND
26.07.2024	29.1	23.5	67.1	58.5	ND	ND	155.1	15.5	ND	ND	ND	ND
29.07.2024	29.1	23.1	65	48.9	ND	ND	156.1	15.1	ND	ND	ND	ND

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Parameters	Sulphur Dioxide (SO2)	Nitrogen Dioxide (NO2)	PM10	PM2.5	Ozone(O3) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m3	Ammonia (NH3)	Benzene (C6 H6)	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m3)	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near Admin Building</b>												
01.07.2024	30.5	22.5	65.5	52.1	ND	ND	155.1	14.9	ND	ND	ND	ND
05.07.2024	29.1	23.5	65	48.9	ND	ND	155.1	15.1	ND	ND	ND	ND
08.07.2024	28.1	21.9	63.5	55.5	ND	ND	159.1	14.5	ND	ND	ND	ND
12.07.2024	33.5	22.1	68	58.5	ND	ND	158.5	15.1	ND	ND	ND	ND
15.07.2024	30.5	22.5	65.5	52.1	ND	ND	155.1	14.9	ND	ND	ND	ND
19.07.2024	29.1	21.1	65	48.9	ND	ND	155.1	15.1	ND	ND	ND	ND
22.07.2024	28.1	22.5	63.5	51.1	ND	ND	159.1	14.9	ND	ND	ND	ND
26.07.2024	25.1	23.5	67.1	52.1	ND	ND	164.5	15.5	ND	ND	ND	ND
29.07.2024	29.1	21.9	65.1	48.9	ND	ND	158.1	14.5	ND	ND	ND	ND
<b>Location: Nadiguth Village</b>												
02.07.2024	24.5	22.5	63.5	55.5	ND	ND	155.1	16.1	ND	ND	ND	ND
06.07.2024	23.9	22.5	65.5	58.5	ND	ND	159.1	14.5	ND	ND	ND	ND
09.07.2024	22.1	21.1	66	52.1	ND	ND	158.1	14.1	ND	ND	ND	ND
13.07.2024	23.5	22.1	65	48.9	ND	ND	158.5	16.1	ND	ND	ND	ND
16.07.2024	24.5	22.9	63.5	51.1	ND	ND	155.1	15.5	ND	ND	ND	ND
20.07.2024	23.9	21.1	65.5	52.1	ND	ND	159.1	15.1	ND	ND	ND	ND
23.07.2024	22.1	22.1	66	58.5	ND	ND	155.5	14.9	ND	ND	ND	ND
27.07.2024	24.5	22.5	62.5	52.1	ND	ND	158.5	15.1	ND	ND	ND	ND
30.07.2024	23.9	22.5	67.1	48.5	ND	ND	155.1	14.1	ND	ND	ND	ND

# **NOISE QUALITY MONITORING REPORT**

## **FOR**

### **THE MONTH OF JULY-2024**

**Noise Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Near Main Gate Area
- b. Near Back Gate Area
- c. Near Pellet Plant Area
- d. Near IOBP Area

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near Main Gate Area	1/7/2024	19	Near Pellet Plant Area	15/7/2024
2	Near Back Gate Area	1/7/2024	20	Near IOBP Area	15/7/2024
3	Near Pellet Plant Area	1/7/2024	21	Near Main Gate Area	19/7/2024
4	Near IOBP Area	1/7/2024	22	Near Back Gate Area	19/7/2024
5	Near Main Gate Area	5/7/2024	23	Near Pellet Plant Area	19/7/2024
6	Near Back Gate Area	5/7/2024	24	Near IOBP Area	19/7/2024
7	Near Pellet Plant Area	5/7/2024	25	Near Main Gate Area	22/7/2024
8	Near IOBP Area	5/7/2024	26	Near Back Gate Area	22/7/2024
9	Near Main Gate Area	8/7/2024	27	Near Pellet Plant Area	22/7/2024
10	Near Back Gate Area	8/7/2024	28	Near IOBP Area	22/7/2024
11	Near Pellet Plant Area	8/7/2024	29	Near Main Gate Area	26/7/2024
12	Near IOBP Area	8/7/2024	30	Near Back Gate Area	26/7/2024
13	Near Main Gate Area	12/7/2024	31	Near Pellet Plant Area	26/7/2024
14	Near Back Gate Area	12/7/2024	32	Near IOBP Area	26/7/2024
15	Near Pellet Plant Area	12/7/2024	33	Near Main Gate Area	29/7/2024
16	Near IOBP Area	12/7/2024	34	Near Back Gate Area	29/7/2024
17	Near Main Gate Area	15/7/2024	35	Near Pellet Plant Area	29/7/2024
18	Near Back Gate Area	15/7/2024	36	Near IOBP Area	29/7/2024

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	01.07.2024					05.07.2024				
	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)
<b>Limit (in dB(A))Leq</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>
Near Main Gate Area	50.1	55.5	52.5	52.1	35.5	49.1	59.5	55.1	48.5	33.5
Near Back Gate Area	48.5	60.5	51.1	45.1	33.5	47.5	61.5	54.5	45.5	31.5
Near Pellet Plant Area	52.1	59.5	50.1	48.5	36.5	51.1	55.1	51.5	44.1	29.5
Near IOBP Area	50.1	56.1	53.5	44.1	33.5	55.5	57.5	50.9	44.5	33.5
	<b>08.07.2024</b>					<b>12.07.2024</b>				
Near Main Gate Area	55.1	62.5	53.5	48.9	33.5	53.5	58.1	55.5	48.5	35.1
Near Back Gate Area	51.5	60.5	50.5	44.1	31.1	55.1	55.9	48.5	44.1	33.5
Near Pellet Plant Area	49.5	60.5	49.1	49.5	38.5	54.1	54.9	51.1	49.5	30.5
Near IOBP Area	55.1	55.9	53.5	45.5	35.5	55.5	55.5	49.5	48.5	29.5
	<b>15.07.2024</b>					<b>19.07.2024</b>				
Near Main Gate Area	59.1	61.5	55.1	45.9	28.9	55.5	61.5	55.5	42.5	29.1
Near Back Gate Area	55.5	62.1	52.9	44.1	32.5	55.5	60.5	52.1	44.9	32.5
Near Pellet Plant Area	54.9	60.1	50.5	48.5	33.1	55.1	55.1	48.9	45.9	35.1
Near IOBP Area	58.5	55.9	45.5	45.5	33.5	50.1	59.5	45.5	44.5	33.5
	<b>22.07.2024</b>					<b>26.07.2024</b>				
Near Main Gate Area	51.5	62.5	48.5	45.1	32.5	55.5	62.5	59.1	48.1	29.5
Near Back Gate Area	49.5	60.5	51.1	48.5	33.5	53.1	66.5	54.5	45.1	33.5
Near Pellet Plant Area	52.9	62.1	55.5	44.1	31.1	52.1	65.1	55.5	44.5	31.5
Near IOBP Area	50.5	60.1	54.9	48.5	32.5	54.5	60.1	51.9	45.9	30.9
	<b>29.07.2024</b>									
Near Main Gate Area	55.5	62.5	55.1	48.1	32.5					
Near Back Gate Area	53.5	59.5	52.9	44.5	33.5					
Near Pellet Plant Area	51.9	64.5	54.9	41.9	33.1					
Near IOBP Area	50.5	62.5	55.5	48.5	30.5					

# **SURFACE WATER ANALYSIS REPORT**

## **FOR**

### **THE MONTH OF JULY -2024**

**Surface Water Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Baitarani River (Dhanurjaypur)
- b. Baitarani River (Near Plant Area)
- c. Reservoir Pond (Inside Plant)
- d. Dalki Nala Near Plant
- e. Nadiguth Village

Frequency of sampling - Once a month

Number of samples - 5

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling
1	Baitarani River (Dhanurjaypur)	08.07.2024
2	Baitarani River (Near Plant Area)	08.07.2024
3	Reservoir Pond (Inside Plant)	08.07.2024
4	Dalki Nala Near Plant	08.07.2024
5	Nadiguth Village	08.07.2024

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Sl. No.	Parameter	Baitarani River (Dhanurjaypur)	Baitarani River (Near Plant Area)	Reservoir Pond (Inside Plant)	Dalki Nala Near Plant	Nadiguth Village
1.	Colour (Pt-Co)	<1	<1	<1	<1	<1
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Temperature (°C)	35.2	35.8	34.3	37.2	36.07
4.	pH	7.1	7.4	7.2	7.1	7.2
5.	Total Suspended Solids (mg/L)	18.1	19.5	25.5	14.9	18.1
6.	Total Dissolved Solid (mg/L)	587	650	612	651	555
7.	Biochemical Oxygen Demand at 27°C(mg/L)	5.1	4.8	6.5	3.5	3
8.	Chemical Oxygen Demand(mg/L)	1.08	1.16	4.5	1.5	1.5
9.	Total Residual Chlorine(mg/L)	0.56	0.18	2.5	0.52	0.5
10.	Alkalinity(mg/L)	68.2	44.5	62.1	38.5	41.5
11.	Calcium(mg/L)	44.5	32.1	46.5	29.5	31.1
12.	Magnesium(mg/L)	35.5	29.5	42.1	38.5	36.1
13.	Total Hardness as CaCO <sub>3</sub> (mg/L)	38	36.5	82.5	30.5	32.1
14.	Electrical Conductivity (µs/cm)	92.5	60.5	124.1	86.5	106.5
15.	Turbidity (NTU)	14.5	18.5	47.1	28	21.5
16.	Arsenic as As (µg/L)	ND	ND	ND	ND	ND
17.	Lead as Pb (µg/L)	ND	ND	ND	ND	ND
18.	Cadmium as Cd (µg/L)	ND	ND	0.14	ND	ND
19.	Total Chromium as Cr (µg/L)	ND	ND	<0.02	ND	ND
20.	Zinc as Zn (µg/L)	0.02	0.14	<0.05	0.56	0.04
21.	Fluoride as F (mg/L)	ND	ND	ND	ND	ND
22.	Iron as Fe (mg/L)	9.5	11.5	34.5	7.5	8.5
23.	Nitrate (mg/L)	1.04	3.12	5.12	2.54	2.14
24.	Sodium as Na (mg/L)	1.12	2.14	14.1	2.08	1.52
25.	Potassium as K (mg/L)	1.5	0.18	4.15	2.04	1.15
26.	Sulfate (mg/L)	1.12	<0.01	4.08	3.9	0.04
27.	Nitrate as NO <sub>3</sub> (mg/L)	2.1	2.5	4.5	2.56	1.54
28.	Total Silica as SiO <sub>2</sub> (mg/L)	4.5	2.5	9.1	1.5	1.06

**GROUND WATER ANALYSIS REPORT**  
**FOR**  
**THE MONTH OF JULY -2024**

**Ground Water Monitoring:**

**GROUND WATER MONITORING REPORT SUMMARY SHEET OF SAMPLING (GROUNDWATER):**

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample01	MALDAVILLAGE	10- July -2024	OCPL/GW/01/07/24
2.	Sample02	NEDIGUTH	10- July -2024	OCPL/GW/02/07/24
3.	Sample03	TALASAHI	10- July -2024	OCPL/GW/03/07/24
4.	Sample04	PLANT-1(Near Canteen)	10- July -2024	OCPL/GW/04/07/24
5.	Sample05	PLANT-2(SLIMEPOND)	10- July -2024	OCPL/GW/05/07/24

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

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALASAHI	PLANT- 1 (Near Canteen)	PLANT-2 (SLIMEPOND)		
1	Colour	Pt-Co	1.0	1.0	1.3	1.2	1.1		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	28.1	28.5	28.5	27.5	28.5		
4	pH	-	6.5	7.0	7.1	6.5	7.5	6.5-8.5	No relaxation
5	Total Hardness (as CaCO3)	mg/L	62.1	58	55.1	58	58.1	300	600

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6	Calcium	mg/L	8.5	8.1	11.1	12.0	8.5	75	200
7	Magnesium	mg/L	1.1	3	3.5	3	1.5	30	No relaxation
8	Chloride	mg/L	15	15.1	15.5	14.5	18.1	250	1000
9	Alkalinity	mg/L	18.1	16.1	18.1	10.5	19.1	200	600
10	Electrical Conductivity	µs/cm	75.5	63.1	65	69.1	78.1	--	--
11	Arsenic as As	µg/L	0.03	ND	0.03	ND	0.05	10	No relaxation
12	Lead as Pb	µg/L	ND	0.17	0.11	0.54	ND	10	No relaxation
13	Cadmium as Cd	µg/L	ND	ND	ND	0.05	0.05	3.0	No relaxation
14	Total Chromium as Cr	µg/L	0.5	ND	0.05	0.05	0.04	50	No relaxation
15	Zinc as Zn	µg/L	92.1	93.5	77.5	77.1	98.1	5000	No relaxation
16	Fluoride as F	mg/L	ND	0.02	ND	0.02	ND	1.0	1.9
17	Iron as Fe	µg/L	15.5	15.5	25.1	35.1	35.1	300	1000
18	Nitrate	mg/L	1.5	1.5	1.0	1.0	1.1	45	100



# **GROUND WATER LEVEL ANALYSIS REPORT FOR THE MONTH OF JULY -2024**

## Ground Water Level Monitoring:

### SUMMARY SHEET OF MONITORING:

Sl No	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1	Sample01	MALDA VILLAGE	12- July -2024	OCPL/GWL/01/07/24
2	Sample02	NEDIGUTH	12- July -2024	OCPL/GWL/02/07/24
3	Sample03	TALASAH	12- July -2024	OCPL/GWL/03/07/24
4	Sample04	PLANT-1(Near Canteen)	12- July -2024	OCPL/GWL/04/07/24
5	Sample05	PLANT-2(SLIMEPOND)	12- July -2024	OCPL/GWL/05/07/24

### 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	Dug well	0.5	9	9.4	--
2	NEDIGUTH	Dug well	1.52	9.2	11.5	--
3	TALASAH	Dug well	1.0	8.5	9.4	--
4	PLANT-1(Near Canteen)	Bore-well	0.1	65	15.1	--
5	PLANT-2(SLIME POND)	Bore-well	0.1	61.5	44.5	--

Sampling By: Mr. Hrusikesh Das

**STACK MONITORING REPORT**  
**FOR**  
**THE MONTH OF JULY – 2024**

### Stack Monitoring:

Number of Stack – 04

Name Sampling Locations:

- a. DGStack-1
- b. DGStack-2
- c. Stack-1(Pellet Plant Process Stack)
- d. Stack-2(Pellet Plant Dedusting Stack)

Frequency of sampling - Once a month

Number of samples - 4

### SUMMARY SHEET OF SAMPLING:

Sample Nos.	Location	Date of Sampling
1	DG Stack-1	08.07.2024
2	DG Stack-2	08.07.2024
3	Stack-1(Pellet Plant Process Stack)	09.07.2024
4	Stack-2(Pellet Plant Dedusting Stack)	09.07.2024

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	DG Stack-1	DG Stack-2	Pellet Plant Process Stack	Pellet Plant Dedusting Stack	
<b>A. General information about Stack</b>					
1	Stack connected to	DG-1	DG-2	Pellet plant process stack	Pellet plant de-dusting stack
2	Emission due to	Burning of Diesel	Burning of Diesel	Burning of furnace oil	Electricity
3	Material of construction of stack	MS	MS	MS	MS
4	Shape of Stack	Circular	Circular	Circular	Circular
5	Serial no.	N15E226771	N15H319963	--	--
6	Boiler/Furnace/DG/Kiln Capacity	1250KVA	1250KVA	--	--
<b>B. Physical characteristics of stack</b>					
1	Height of the Stack from Ground level	9 m	9 m	80 m	60 m
2	Diameter of the stack at sampling point	400 mm	400 mm	--	--
3	Height of the Sampling Point from Ground level	7 m	7 m	--	--
4	Type	HCKI634Z1	HCKI634Z1	--	--
<b>C. Analysis/Characteristic of Stack</b>					
1	Fuel used	LDO	LDO	FO	FO
2	Fuel Consumption	NA	NA	NA	NA

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<b>D. Results of Sampling &amp; Analysis of Gaseous Emission</b>								
	<b>Parameters</b>	<b>DG Stack-1</b>	<b>DG Stack-2</b>		<b>Parameters</b>	<b>Pellet Plant Process Stack</b>	<b>Pellet Plant Dedusting Stack</b>	<b>Limit</b>
1	Temperature of Emission(°C) <i>Method - IS11255(PartIII),2008RA2018</i>	75.4	80.9	--	Temperature of Emission(oC)	95.2	94.4	--
2	Barometric pressure (mm of Hg) <i>Method - USEPA Part2- 25/09/1996</i>	265	329	--	Emission (M3/Hr.)	7252	6557	--
3	Velocity of gas(m/sec.) <i>Method - IS11255(PartIII),2008RA2018</i>	11.3	34.2	--	Velocity (NM3/Hr)	35602	36456	--
4	Quantity of Gas Flow (Nm <sup>3</sup> /hr) <i>Method - IS11255(PartIII),2008RA2018</i>	650	1670	--	PM Concentration Mg/nm3 PM10	131	141	150
5	Concentration of Moisture (%) <i>Method - USEPA(Part-4)</i>	<2.0	<2.0	--	PM Concentration Mg/nm3 PM2.5	130	122	150
6	Concentration of Oxygen (%v/v) <i>Method - IS13270:1992, Ref:2009</i>	8.1	8.1	--	--	--	--	--
7	Concentration of Carbon Monoxide (mg/Nm <sup>3</sup> ) <i>Method - IS13270:1992, Ref:2009</i>	22.4	25.4	--	Carbon monoxide (CO) Mg/nm3	<0.5	<0.5	1
8	Concentration of Carbon Dioxide(%v/v) <i>Method - IS13270:1992, Ref:2009</i>	6.0	12.8	--	Carbon dioxide (CO2) %v/v	8	7.5	--
9	Concentration of Sulphur Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(PartII),1985RA2014</i>	122	160	600	Concentration of Sulphur Dioxide(mg/Nm3)	185	182	--
10	Concentration of Nitrogen Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(Part7),2005RA2017</i>	72.0	75.9	300	Concentration of Nitrogen Dioxide (mg/Nm3)	82	81	--
11	Concentration of Particulate Matters (mg/Nm3) <i>Method - IS11255(PartI):1985, RA2014</i>	34.2	35.0	50	--	--	--	--

# ENVIRONMENTAL MONITORING REPORT

August 2024

M/S ESSEL MINING &  
INDUSTRIES LTD.



AT-BASANTPUR,  
TEHSIL- JHUMPURA, KEONJHAR, ODISHA

## Contents

<b>Ambient Air Quality Monitoring:</b> .....	3
<b>Noise Quality Monitoring:</b> .....	7
<b>Surface Water Monitoring:</b> .....	10
<b>Ground Water Monitoring:</b> .....	13
<b>Ground Water Level Monitoring:</b> .....	17
<b>Stack Monitoring:</b> .....	19

**AMBIENT AIR QUALITY MONITORING  
REPORT FOR  
THE MONTH OF AUGUST -2024**

**Ambient Air Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- i Near ECR-1
- ii Near Canteen
- iii Near Admin Building
- iv Nadiguth Village

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near ECR-1	1/8/2024	19	Near Admin Building	15/8/2024
2	Near Canteen	1/8/2024	20	Nedigutha Village	16/8/2024
3	Near Admin Building	1/8/2024	21	Near ECR-1	19/8/2024
4	Nedigutha Village	2/8/2024	22	Near Canteen	19/8/2024
5	Near ECR-1	5/8/2024	23	Near Admin Building	19/8/2024
6	Near Canteen	5/8/2024	24	Nedigutha Village	20/8/2024
7	Near Admin Building	5/8/2024	25	Near ECR-1	22/8/2024
8	Nedigutha Village	6/8/2024	26	Near Canteen	22/8/2024
9	Near ECR-1	8/8/2024	27	Near Admin Building	22/8/2024
10	Near Canteen	8/8/2024	28	Nedigutha Village	23/8/2024
11	Near Admin Building	8/8/2024	29	Near ECR-1	26/8/2024
12	Nedigutha Village	9/8/2024	30	Near Canteen	26/8/2024
13	Near ECR-1	12/8/2024	31	Near Admin Building	26/8/2024
14	Near Canteen	12/8/2024	32	Nedigutha Village	27/8/2024
15	Near Admin Building	12/8/2024	33	Near ECR-1	29/8/2024
16	Nedigutha Village	13/8/2024	34	Near Canteen	29/8/2024
17	Near ECR-1	15/8/2024	35	Near Admin Building	29/8/2024
18	Near Canteen	15/8/2024	36	Nedigutha Village	30/8/2024

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 CIN: U74140OR2015PTC019233, GSTIN: 21AACCO1891Q1Z4

Chandrasekharpur,  
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Parameters	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	PM10	PM2.5	Ozone(O <sub>3</sub> ) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> )	Benzene (C <sub>6</sub> H <sub>6</sub> )	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m <sup>3</sup> )	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near ECR-1</b>												
Limit (µg/M <sup>3</sup> )	80	80	100	60	180	1	2000	400	5 (Annual)	1 (Annual)	6 (Annual)	20 (Annual)
01.08.2024	25.59	24.07	63.54	52.84	ND	ND	158.66	14.71	ND	ND	ND	ND
05.08.2024	28.32	25.38	67.28	55.21	ND	ND	155.69	16.89	ND	ND	ND	ND
08.08.2024	26.05	21.54	66.00	59.41	ND	ND	159.40	15.40	ND	ND	ND	ND
12.08.2024	29.83	23.89	68.12	49.43	ND	ND	156.17	15.10	ND	ND	ND	ND
15.08.2024	32.76	26.05	65.57	52.19	ND	ND	159.71	16.40	ND	ND	ND	ND
19.08.2024	30.03	21.43	64.40	52.52	ND	ND	165.48	14.80	ND	ND	ND	ND
22.08.2024	25.95	23.89	67.61	55.94	ND	ND	158.76	17.09	ND	ND	ND	ND
26.08.2024	30.03	25.50	65.48	58.74	ND	ND	156.05	14.53	ND	ND	ND	ND
29.08.2024	23.94	21.98	62.47	50.05	ND	ND	157.07	15.57	ND	ND	ND	ND
<b>Location: Near Canteen</b>												
01.08.2024	28.47	21.75	65.56	53.15	ND	ND	156.09	17.21	ND	ND	ND	ND
05.08.2024	25.85	26.29	67.78	55.65	ND	ND	159.20	14.61	ND	ND	ND	ND
08.08.2024	29.81	25.85	65.38	58.61	ND	ND	155.96	15.78	ND	ND	ND	ND
12.08.2024	32.08	23.52	67.58	52.37	ND	ND	158.87	16.31	ND	ND	ND	ND
15.08.2024	25.65	22.83	68.34	58.93	ND	ND	158.98	15.41	ND	ND	ND	ND
19.08.2024	34.32	25.55	68.69	53.05	ND	ND	156.22	15.66	ND	ND	ND	ND
22.08.2024	30.92	23.42	65.91	56.11	ND	ND	159.07	15.20	ND	ND	ND	ND
26.08.2024	30.28	24.29	67.76	59.00	ND	ND	156.35	16.33	ND	ND	ND	ND
29.08.2024	29.78	23.59	65.27	49.60	ND	ND	157.34	15.68	ND	ND	ND	ND

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Parameters	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	PM10	PM2.5	Ozone(O <sub>3</sub> ) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> )	Benzene (C <sub>6</sub> H <sub>6</sub> )	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m <sup>3</sup> )	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near Admin Building</b>												
01.08.2024	30.51	23.20	65.83	53.11	ND	ND	155.55	15.70	ND	ND	ND	ND
05.08.2024	29.53	24.35	65.60	49.02	ND	ND	156.45	16.10	ND	ND	ND	ND
08.08.2024	29.65	22.41	63.60	55.66	ND	ND	160.39	14.60	ND	ND	ND	ND
12.08.2024	34.50	23.34	68.64	58.53	ND	ND	158.65	16.04	ND	ND	ND	ND
15.08.2024	30.66	23.01	66.47	53.47	ND	ND	156.20	15.01	ND	ND	ND	ND
19.08.2024	29.86	22.47	65.55	49.26	ND	ND	155.89	16.48	ND	ND	ND	ND
22.08.2024	29.68	22.51	63.60	52.76	ND	ND	160.30	15.40	ND	ND	ND	ND
26.08.2024	26.32	24.39	68.10	52.97	ND	ND	164.83	15.95	ND	ND	ND	ND
29.08.2024	30.26	22.86	66.61	49.05	ND	ND	159.50	14.71	ND	ND	ND	ND
<b>Location: Nadiguth Village</b>												
02.08.2024	25.11	22.79	64.13	55.62	ND	ND	156.34	17.42	ND	ND	ND	ND
06.08.2024	24.36	22.53	66.31	59.16	ND	ND	160.59	15.41	ND	ND	ND	ND
09.08.2024	23.45	21.85	66.87	53.31	ND	ND	158.88	15.43	ND	ND	ND	ND
13.08.2024	23.74	22.92	65.42	49.68	ND	ND	158.72	17.40	ND	ND	ND	ND
16.08.2024	24.69	23.68	63.61	52.46	ND	ND	156.69	16.25	ND	ND	ND	ND
20.08.2024	24.89	22.56	66.35	53.15	ND	ND	160.24	15.51	ND	ND	ND	ND
23.08.2024	22.93	22.92	66.88	59.17	ND	ND	156.03	15.60	ND	ND	ND	ND
27.08.2024	24.73	22.86	63.35	52.20	ND	ND	159.43	16.04	ND	ND	ND	ND
30.08.2024	24.74	23.47	67.46	49.10	ND	ND	155.91	15.00	ND	ND	ND	ND

# **NOISE QUALITY MONITORING REPORT**

## **FOR**

### **THE MONTH OF AUGUST -2024**

**Noise Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Near Main Gate Area
- b. Near Back Gate Area
- c. Near Pellet Plant Area
- d. Near IOBP Area

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near Main Gate Area	1/8/2024	19	Near Pellet Plant Area	15/8/2024
2	Near Back Gate Area	1/8/2024	20	Near IOBP Area	15/8/2024
3	Near Pellet Plant Area	1/8/2024	21	Near Main Gate Area	19/8/2024
4	Near IOBP Area	1/8/2024	22	Near Back Gate Area	19/8/2024
5	Near Main Gate Area	5/8/2024	23	Near Pellet Plant Area	19/8/2024
6	Near Back Gate Area	5/8/2024	24	Near IOBP Area	19/8/2024
7	Near Pellet Plant Area	5/8/2024	25	Near Main Gate Area	22/8/2024
8	Near IOBP Area	5/8/2024	26	Near Back Gate Area	22/8/2024
9	Near Main Gate Area	8/8/2024	27	Near Pellet Plant Area	22/8/2024
10	Near Back Gate Area	8/8/2024	28	Near IOBP Area	22/8/2024
11	Near Pellet Plant Area	8/8/2024	29	Near Main Gate Area	26/8/2024
12	Near IOBP Area	8/8/2024	30	Near Back Gate Area	26/8/2024
13	Near Main Gate Area	12/8/2024	31	Near Pellet Plant Area	26/8/2024
14	Near Back Gate Area	12/8/2024	32	Near IOBP Area	26/8/2024
15	Near Pellet Plant Area	12/8/2024	33	Near Main Gate Area	29/8/2024
16	Near IOBP Area	12/8/2024	34	Near Back Gate Area	29/8/2024
17	Near Main Gate Area	15/8/2024	35	Near Pellet Plant Area	29/8/2024
18	Near Back Gate Area	15/8/2024	36	Near IOBP Area	29/8/2024

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	01.08.2024					05.08.2024				
	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)
<b>Limit (in dB(A))Leq</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>
Near Main Gate Area	50.91	55.75	53.05	53.15	36.07	49.37	60.16	55.48	49.04	34.17
Near Back Gate Area	49.30	61.08	51.51	45.22	34.47	48.22	61.66	55.14	45.67	32.29
Near Pellet Plant Area	52.97	59.92	50.89	49.42	36.61	51.37	55.52	52.08	44.58	30.07
Near IOBP Area	50.56	56.93	54.49	45.32	33.80	56.14	58.03	51.78	44.61	34.23
	<b>08.08.2024</b>					<b>12.08.2024</b>				
Near Main Gate Area	55.76	62.62	54.36	49.69	33.73	53.71	59.01	55.79	49.24	35.80
Near Back Gate Area	52.05	60.86	50.81	45.23	31.82	55.79	56.69	48.74	45.20	33.51
Near Pellet Plant Area	49.99	61.30	49.54	50.01	39.44	54.64	55.00	51.90	49.67	30.89
Near IOBP Area	55.99	56.65	53.68	45.96	36.08	56.20	56.43	50.41	49.28	30.35
	<b>15.08.2024</b>					<b>19.08.2024</b>				
Near Main Gate Area	60.06	61.74	56.14	46.57	29.35	55.51	62.00	55.65	43.47	29.94
Near Back Gate Area	56.08	63.36	53.45	44.96	32.56	55.67	60.72	53.01	45.64	33.04
Near Pellet Plant Area	55.27	60.65	50.94	48.80	34.12	55.87	56.54	49.58	46.05	36.16
Near IOBP Area	58.60	56.75	45.87	46.43	33.98	50.68	59.51	46.26	44.68	33.72
	<b>22.08.2024</b>					<b>26.08.2024</b>				
Near Main Gate Area	52.13	62.72	49.36	46.36	33.40	55.57	62.96	59.74	48.84	29.64
Near Back Gate Area	49.99	60.92	52.22	48.75	33.61	54.29	66.77	55.26	46.50	33.51
Near Pellet Plant Area	53.40	63.46	55.70	45.44	32.21	53.00	66.19	55.54	45.39	31.50
Near IOBP Area	51.29	60.80	55.18	48.52	33.30	55.09	60.79	52.30	46.42	31.47
	<b>29.08.2024</b>									
Near Main Gate Area	55.97	62.52	55.48	48.95	33.41					
Near Back Gate Area	53.91	60.23	53.31	45.30	34.24					
Near Pellet Plant Area	52.84	65.27	55.50	42.54	33.79					
Near IOBP Area	51.28	63.24	55.96	49.33	30.81					

# **SURFACE WATER ANALYSIS REPORT**

## **FOR**

### **THE MONTH OF AUGUST -2024**

**Surface Water Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Baitarani River (Dhanurjaypur)
- b. Baitarani River (Near Plant Area)
- c. Reservoir Pond (Inside Plant)
- d. Dalki Nala Near Plant
- e. Nadiguth Village

Frequency of sampling - Once a month

Number of samples - 5

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling
1	Baitarani River (Dhanurjaypur)	08.08.2024
2	Baitarani River (Near Plant Area)	08.08.2024
3	Reservoir Pond (Inside Plant)	08.08.2024
4	Dalki Nala Near Plant	08.08.2024
5	Nadiguth Village	08.08.2024

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Sl. No.	Parameter	Baitarani River (Dhanurjaypur)	Baitarani River (Near Plant Area)	Reservoir Pond (Inside Plant)	Dalki Nala Near Plant	Nadiguth Village
1.	Colour (Pt-Co)	<1	<1	<1	<1	<1
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Temperature (°C)	35.44	35.90	35.15	38.02	36.93
4.	pH	7.26	7.92	7.62	7.48	7.50
5.	Total Suspended Solids (mg/L)	18.83	20.18	26.23	15.22	18.34
6.	Total Dissolved Solid (mg/L)	587.53	650.16	612.05	651.70	555.90
7.	Biochemical Oxygen Demand at 27°C(mg/L)	5.92	5.25	7.35	4.18	3.28
8.	Chemical Oxygen Demand(mg/L)	1.19	1.58	5.46	1.68	2.01
9.	Total Residual Chlorine(mg/L)	1.18	0.93	2.97	0.58	1.40
10.	Alkalinity(mg/L)	68.27	44.84	63.09	39.45	42.26
11.	Calcium(mg/L)	45.47	32.58	46.91	29.86	31.28
12.	Magnesium(mg/L)	36.42	30.46	43.08	38.97	36.70
13.	Total Hardness as CaCO <sub>3</sub> (mg/L)	38.99	37.37	82.69	30.92	32.15
14.	Electrical Conductivity (µs/cm)	92.63	61.35	124.69	87.13	107.23
15.	Turbidity (NTU)	14.64	18.77	47.95	28.06	22.17
16.	Arsenic as As (µg/L)	ND	ND	ND	ND	ND
17.	Lead as Pb (µg/L)	ND	ND	ND	ND	ND
18.	Cadmium as Cd (µg/L)	ND	ND	ND	ND	ND
19.	Total Chromium as Cr (µg/L)	ND	ND	ND	ND	ND
20.	Zinc as Zn (µg/L)	0.01	0.15	0.01	0.55	0.03
21.	Fluoride as F (mg/L)	ND	ND	ND	ND	ND
22.	Iron as Fe (mg/L)	10.16	12.48	34.73	8.01	9.42
23.	Nitrate (mg/L)	1.96	3.25	5.69	3.04	2.17
24.	Sodium as Na (mg/L)	1.87	2.14	14.54	2.77	1.96
25.	Potassium as K (mg/L)	2.24	0.24	4.65	2.22	1.60
26.	Sulfate (mg/L)	1.71	2.05	4.14	4.08	0.26
27.	Nitrate as NO <sub>3</sub> (mg/L)	2.31	3.42	5.27	2.98	1.99
28.	Total Silica as SiO <sub>2</sub> (mg/L)	4.88	3.29	9.52	1.97	1.84

**GROUND WATER ANALYSIS REPORT**  
**FOR**  
**THE MONTH OF AUGUST -2024**

**Ground Water Monitoring:**

**GROUND WATER MONITORING REPORT SUMMARY SHEET OF SAMPLING (GROUNDWATER):**

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample01	MALDAVILLAGE	10- August-2024	OCPL/GW/01/08/24
2.	Sample02	NEDIGUTH	10- August-2024	OCPL/GW/02/08/24
3.	Sample03	TALASAHI	10- August-2024	OCPL/GW/03/08/24
4.	Sample04	PLANT-1(Near Canteen)	10- August-2024	OCPL/GW/04/08/24
5.	Sample05	PLANT-2(SLIMEPOND)	10- August-2024	OCPL/GW/05/08/24

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

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALASAHI	PLANT- 1 (Near Canteen)	PLANT-2 (SLIMEPOND)		
1	Colour	Pt-Co	1.1	1.0	1.2	1.2	1.1		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	28.3	28.5	28.2	27.5	28.1		
4	pH	-	6.5	7.1	7.1	6.5	7.2	6.5-8.5	No relaxation
5	Total Hardness (as CaCO3)	mg/L	62.3	60.5	60.2	58	62	300	600

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6	Calcium	mg/L	8.2	8.1	11.2	12.3	8.4	75	200
7	Magnesium	mg/L	1.1	3.1	3.3	3.2	1.5	30	No relaxation
8	Chloride	mg/L	15.2	15.1	15.2	14.8	18.2	250	1000
9	Alkalinity	mg/L	18.1	16.2	18.3	10.6	18.1	200	600
10	Electrical Conductivity	µs/cm	75.7	65.1	63.5	62.3	75.1	--	--
11	Arsenic as As	µg/L	0.03	ND	0.04	ND	0.03	10	No relaxation
12	Lead as Pb	µg/L	ND	0.1	0.11	0.5	ND	10	No relaxation
13	Cadmium as Cd	µg/L	ND	ND	ND	0.05	0.05	3.0	No relaxation
14	Total Chromium as Cr	µg/L	0.5	ND	0.05	0.05	0.04	50	No relaxation
15	Zinc as Zn	µg/L	92	93.1	77.5	77	98.1	5000	No relaxation
16	Fluoride as F	mg/L	ND	0.02	ND	0.02	ND	1.0	1.9
17	Iron as Fe	µg/L	15	15.3	25.3	35.1	35	300	1000
18	Nitrate	mg/L	1.2	1.5	1.2	1.0	1.0	45	100

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19	Sodium as Na	mg/L	2.8	3	3.2	4.5	5	150	No relaxation
20	Potassium as K	mg/L	ND	0.12	0.1	0.1	0.1	12	No relaxation
21	Sulfate	mg/L	ND	ND	0.05	0.05	0.5	200	400
22	Total Silica as SiO <sub>2</sub>	mg/L	0.5	ND	0.1	ND	0.5	--	--
23	Total suspended Solid	mg/L	0.13	1.1	1.13	0.55	1.1	--	--
24	Total dissolved Solid	mg/L	85.1	78.5	72.2	95.5	88	250	2000
25	Turbidity	NTU	0.5	0.5	0.5	0.5	0.5	5	10

# **GROUND WATER LEVEL ANALYSIS REPORT FOR THE MONTH OF AUGUST -2024**

## Ground Water Level Monitoring:

### SUMMARY SHEET OF MONITORING:

Sl No	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1	Sample01	MALDA VILLAGE	12- August -2024	OCPL/GWL/01/08/24
2	Sample02	NEDIGUTH	12- August -2024	OCPL/GWL/02/08/24
3	Sample03	TALASAH	12- August -2024	OCPL/GWL/03/08/24
4	Sample04	PLANT-1(Near Canteen)	12- August -2024	OCPL/GWL/04/08/24
5	Sample05	PLANT-2(SLIMEPOND)	12- August -2024	OCPL/GWL/05/08/24

### 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	Dug well	0.5	9	9.1	--
2	NEDIGUTH	Dug well	1.52	9.2	10.2	--
3	TALASAH	Dug well	1.0	8.5	9.1	--
4	PLANT-1(Near Canteen)	Bore-well	0.1	65	12.1	--
5	PLANT-2(SLIME POND)	Bore-well	0.1	61.5	38.2	--

Sampling By: Mr. Hrusikesh Das

**STACK MONITORING REPORT**  
**FOR**  
**THE MONTH OF AUGUST- 2024**

### Stack Monitoring:

Number of Stack – 04

Name Sampling Locations:

- a. DGStack-1
- b. DGStack-2
- c. Stack-1(Pellet Plant Process Stack)
- d. Stack-2(Pellet Plant Dedusting Stack)

Frequency of sampling - Once a month

Number of samples - 4

### SUMMARY SHEET OF SAMPLING:

Sample Nos.	Location	Date of Sampling
1	DG Stack-1	08.08.2024
2	DG Stack-2	08.08.2024
3	Stack-1(Pellet Plant Process Stack)	09.08.2024
4	Stack-2(Pellet Plant Dedusting Stack)	09.08.2024

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	DG Stack-1	DG Stack-2	Pellet Plant Process Stack	Pellet Plant Dedusting Stack	
<b>A. General information about Stack</b>					
1	Stack connected to	DG-1	DG-2	Pellet plant process stack	Pellet plant de-dusting stack
2	Emission due to	Burning of Diesel	Burning of Diesel	Burning of furnace oil	Electricity
3	Material of construction of stack	MS	MS	MS	MS
4	Shape of Stack	Circular	Circular	Circular	Circular
5	Serial no.	N15E226771	N15H319963	--	--
6	Boiler/Furnace/DG/Kiln Capacity	1250KVA	1250KVA	--	--
<b>B. Physical characteristics of stack</b>					
1	Height of the Stack from Ground level	9 m	9 m	80 m	60 m
2	Diameter of the stack at sampling point	400 mm	400 mm	--	--
3	Height of the Sampling Point from Ground level	7 m	7 m	--	--
4	Type	HCKI634Z1	HCKI634Z1	--	--
<b>C. Analysis/Characteristic of Stack</b>					
1	Fuel used	LDO	LDO	FO	FO
2	Fuel Consumption	NA	NA	NA	NA

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<b>D. Results of Sampling &amp; Analysis of Gaseous Emission</b>								
	<b>Parameters</b>	<b>DG Stack-1</b>	<b>DG Stack-2</b>		<b>Parameters</b>	<b>Pellet Plant Process Stack</b>	<b>Pellet Plant Dedusting Stack</b>	<b>Limit</b>
1	Temperature of Emission(°C) <i>Method - IS11255(PartIII),2008RA2018</i>	75.3	80.5	--	Temperature of Emission(oC)	95.1	94.5	--
2	Barometric pressure (mm of Hg) <i>Method - USEPAPart2- 25/09/1996</i>	267	332	--	Emission (M3/Hr.)	7255	6555	--
3	Velocity of gas(m/sec.) <i>Method - IS11255(PartIII),2008RA2018</i>	11.4	33.5	--	Velocity (NM3/Hr)	35600	36458	--
4	Quantity of Gas Flow (Nm <sup>3</sup> /hr) <i>Method - IS11255(PartIII),2008RA2018</i>	655	1675	--	PM Concentration Mg/nm3 PM10	133	140	150
5	Concentration of Moisture (%) <i>Method - USEPA(Part-4)</i>	<2.0	<2.0	--	PM Concentration Mg/nm3 PM2.5	132	125	150
6	Concentration of Oxygen (%v/v) <i>Method - IS13270:1992, Ref:2009</i>	8.2	8.1	--	--	--	--	--
7	Concentration of Carbon Monoxide (mg/Nm <sup>3</sup> ) <i>Method - IS13270:1992, Ref:2009</i>	22.2	24.1	--	Carbon monoxide (CO) Mg/nm3	<0.5	<0.5	1
8	Concentration of Carbon Dioxide(%v/v) <i>Method - IS13270:1992, Ref:2009</i>	6.0	12.6	--	Carbon dioxide (CO2) %v/v	8.2	7.3	--
9	Concentration of Sulphur Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(PartII),1985RA2014</i>	123	158	600	Concentration of Sulphur Dioxide(mg/Nm3)	185	180	--
10	Concentration of Nitrogen Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(Part7),2005RA2017</i>	72.0	75.5	300	Concentration of Nitrogen Dioxide (mg/Nm3)	80	83	--
11	Concentration of Particulate Matters (mg/Nm3) <i>Method - IS11255(PartI):1985, RA2014</i>	32.7	35.0	50	--	--	--	--

# ENVIRONMENTAL MONITORING REPORT

September 2024

M/S ESSEL MINING &  
INDUSTRIES LTD.



AT-BASANTPUR,  
TEHSIL- JHUMPURA, KEONJHAR, ODISHA

## Contents

<b>Ambient Air Quality Monitoring:</b> .....	3
<b>Noise Quality Monitoring:</b> .....	7
<b>Surface Water Monitoring:</b> .....	10
<b>Ground Water Monitoring:</b> .....	13
<b>Ground Water Level Monitoring:</b> .....	17
<b>Stack Monitoring:</b> .....	19

**AMBIENT AIR QUALITY MONITORING  
REPORT FOR  
THE MONTH OF SEPTEMBER -2024**

**Ambient Air Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- i Near ECR-1
- ii Near Canteen
- iii Near Admin Building
- iv Nadiguth Village

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near ECR-1	1/9/2024	19	Near Admin Building	15/9/2024
2	Near Canteen	1/9/2024	20	Nedigutha Village	16/9/2024
3	Near Admin Building	1/9/2024	21	Near ECR-1	19/9/2024
4	Nedigutha Village	2/9/2024	22	Near Canteen	19/9/2024
5	Near ECR-1	5/9/2024	23	Near Admin Building	19/9/2024
6	Near Canteen	5/9/2024	24	Nedigutha Village	20/9/2024
7	Near Admin Building	5/9/2024	25	Near ECR-1	22/9/2024
8	Nedigutha Village	6/9/2024	26	Near Canteen	22/9/2024
9	Near ECR-1	8/9/2024	27	Near Admin Building	22/9/2024
10	Near Canteen	8/9/2024	28	Nedigutha Village	23/9/2024
11	Near Admin Building	8/9/2024	29	Near ECR-1	26/9/2024
12	Nedigutha Village	9/9/2024	30	Near Canteen	26/9/2024
13	Near ECR-1	12/9/2024	31	Near Admin Building	26/9/2024
14	Near Canteen	12/9/2024	32	Nedigutha Village	27/9/2024
15	Near Admin Building	12/9/2024	33	Near ECR-1	29/9/2024
16	Nedigutha Village	13/9/2024	34	Near Canteen	29/9/2024
17	Near ECR-1	15/9/2024	35	Near Admin Building	29/9/2024
18	Near Canteen	15/9/2024	36	Nedigutha Village	30/9/2024

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Parameters	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	PM10	PM2.5	Ozone(O <sub>3</sub> ) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> )	Benzene (C <sub>6</sub> H <sub>6</sub> )	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m <sup>3</sup> )	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near ECR-1</b>												
Limit (µg/M <sup>3</sup> )	80	80	100	60	180	1	2000	400	5 (Annual)	1 (Annual)	6 (Annual)	20 (Annual)
01.09.2024	25.95	24.93	64.14	53.80	ND	ND	158.93	15.09	ND	ND	ND	ND
05.09.2024	29.18	26.31	67.80	55.66	ND	ND	156.45	17.12	ND	ND	ND	ND
08.09.2024	27.03	21.82	66.40	59.54	ND	ND	160.25	15.56	ND	ND	ND	ND
12.09.2024	30.47	23.93	68.86	50.24	ND	ND	156.76	15.98	ND	ND	ND	ND
15.09.2024	33.42	26.20	65.83	53.06	ND	ND	160.46	16.40	ND	ND	ND	ND
19.09.2024	30.15	22.19	64.91	52.98	ND	ND	166.43	15.60	ND	ND	ND	ND
22.09.2024	26.04	24.42	67.94	56.42	ND	ND	159.47	17.09	ND	ND	ND	ND
26.09.2024	30.44	26.03	66.04	59.15	ND	ND	156.56	14.94	ND	ND	ND	ND
29.09.2024	24.28	22.13	63.08	50.37	ND	ND	157.31	15.68	ND	ND	ND	ND
<b>Location: Near Canteen</b>												
01.09.2024	29.13	22.45	65.83	54.00	ND	ND	156.58	17.37	ND	ND	ND	ND
05.09.2024	26.09	26.87	67.96	55.92	ND	ND	159.48	15.36	ND	ND	ND	ND
08.09.2024	30.24	26.46	66.25	58.84	ND	ND	156.89	16.08	ND	ND	ND	ND
12.09.2024	32.75	23.97	67.59	52.63	ND	ND	159.33	16.64	ND	ND	ND	ND
15.09.2024	26.51	23.02	68.82	59.06	ND	ND	159.52	15.94	ND	ND	ND	ND
19.09.2024	34.62	25.67	69.06	54.02	ND	ND	156.50	16.21	ND	ND	ND	ND
22.09.2024	31.63	23.75	65.95	56.58	ND	ND	159.22	15.26	ND	ND	ND	ND
26.09.2024	30.80	25.01	67.86	59.95	ND	ND	156.94	17.26	ND	ND	ND	ND
29.09.2024	30.09	24.46	66.21	50.25	ND	ND	157.42	15.90	ND	ND	ND	ND

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Parameters	Sulphur Dioxide (SO <sub>2</sub> )	Nitrogen Dioxide (NO <sub>2</sub> )	PM10	PM2.5	Ozone(O <sub>3</sub> ) (1 Hr)	Lead (Pb)	Carbon Monoxide (CO) (8Hrs) Mg/m <sup>3</sup>	Ammonia (NH <sub>3</sub> )	Benzene (C <sub>6</sub> H <sub>6</sub> )	Benzo(a)Pyrene (BaP) Particulate phase only(ng/m <sup>3</sup> )	Arsenic (As) (ng/m <sup>3</sup> )	Nickel (Ni) (ng/m <sup>3</sup> )
<b>Location: Near Admin Building</b>												
01.09.2024	31.01	23.57	66.70	53.74	ND	ND	156.54	16.59	ND	ND	ND	ND
05.09.2024	30.27	25.34	65.88	49.09	ND	ND	157.45	16.18	ND	ND	ND	ND
08.09.2024	29.90	23.20	64.02	56.13	ND	ND	161.05	15.42	ND	ND	ND	ND
12.09.2024	35.47	24.15	69.24	59.25	ND	ND	158.98	16.93	ND	ND	ND	ND
15.09.2024	31.34	24.00	67.28	54.12	ND	ND	157.05	15.78	ND	ND	ND	ND
19.09.2024	30.31	23.20	66.22	49.42	ND	ND	156.37	16.98	ND	ND	ND	ND
22.09.2024	30.21	23.31	64.37	53.59	ND	ND	160.63	15.96	ND	ND	ND	ND
26.09.2024	26.68	24.43	68.15	53.59	ND	ND	164.85	16.10	ND	ND	ND	ND
29.09.2024	30.33	23.83	66.88	50.04	ND	ND	159.98	15.41	ND	ND	ND	ND
<b>Location: Nadiguth Village</b>												
02.09.2024	25.26	23.54	64.27	55.66	ND	ND	156.60	18.37	ND	ND	ND	ND
06.09.2024	25.06	23.39	67.08	59.81	ND	ND	160.60	16.31	ND	ND	ND	ND
09.09.2024	24.12	21.92	67.37	53.89	ND	ND	159.77	15.48	ND	ND	ND	ND
13.09.2024	24.39	23.00	65.64	49.74	ND	ND	159.65	18.10	ND	ND	ND	ND
16.09.2024	25.00	24.04	64.20	52.86	ND	ND	157.31	17.04	ND	ND	ND	ND
20.09.2024	25.12	22.76	66.74	53.58	ND	ND	160.81	15.70	ND	ND	ND	ND
23.09.2024	23.25	23.20	67.49	60.09	ND	ND	156.82	15.96	ND	ND	ND	ND
27.09.2024	25.47	23.61	63.95	52.96	ND	ND	160.07	16.31	ND	ND	ND	ND
30.09.2024	25.03	23.94	67.69	49.65	ND	ND	156.15	15.34	ND	ND	ND	ND

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# **NOISE QUALITY MONITORING REPORT**

## **FOR**

### **THE MONTH OF SEPTEMBER -2024**

**Noise Quality Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Near Main Gate Area
- b. Near Back Gate Area
- c. Near Pellet Plant Area
- d. Near IOBP Area

Frequency of sampling – Twice a week

Number of samples – 36

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling	Sample Nos.	Location	Date of Sampling
1	Near Main Gate Area	1/9/2024	19	Near Pellet Plant Area	15/9/2024
2	Near Back Gate Area	1/9/2024	20	Near IOBP Area	15/9/2024
3	Near Pellet Plant Area	1/9/2024	21	Near Main Gate Area	19/9/2024
4	Near IOBP Area	1/9/2024	22	Near Back Gate Area	19/9/2024
5	Near Main Gate Area	5/9/2024	23	Near Pellet Plant Area	19/9/2024
6	Near Back Gate Area	5/9/2024	24	Near IOBP Area	19/9/2024
7	Near Pellet Plant Area	5/9/2024	25	Near Main Gate Area	22/9/2024
8	Near IOBP Area	5/9/2024	26	Near Back Gate Area	22/9/2024
9	Near Main Gate Area	8/9/2024	27	Near Pellet Plant Area	22/9/2024
10	Near Back Gate Area	8/9/2024	28	Near IOBP Area	22/9/2024
11	Near Pellet Plant Area	8/9/2024	29	Near Main Gate Area	26/9/2024
12	Near IOBP Area	8/9/2024	30	Near Back Gate Area	26/9/2024
13	Near Main Gate Area	12/9/2024	31	Near Pellet Plant Area	26/9/2024
14	Near Back Gate Area	12/9/2024	32	Near IOBP Area	26/9/2024
15	Near Pellet Plant Area	12/9/2024	33	Near Main Gate Area	29/9/2024
16	Near IOBP Area	12/9/2024	34	Near Back Gate Area	29/9/2024
17	Near Main Gate Area	15/9/2024	35	Near Pellet Plant Area	29/9/2024
18	Near Back Gate Area	15/9/2024	36	Near IOBP Area	29/9/2024

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	01.09.2024					05.09.2024				
	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)	Day (6.00- 7.00am)	Day (10.00- 11.00am)	Day (3.00- 4.00pm)	Evening (6.00- 7.00pm)	Night (10.00- 11.00am)
<b>Limit (in dB(A))Leq</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>	<b>75</b>	<b>75</b>	<b>75</b>	<b>70</b>	<b>70</b>
<b>Near Main Gate Area</b>	51.16	56.48	53.42	53.37	36.54	50.19	60.20	55.82	49.88	34.98
<b>Near Back Gate Area</b>	49.84	61.32	51.75	46.04	34.82	48.86	62.08	55.45	45.80	33.21
<b>Near Pellet Plant Area</b>	53.20	60.77	51.05	49.71	37.00	51.42	55.54	52.85	44.88	30.37
<b>Near IOBP Area</b>	50.89	57.59	55.03	46.04	34.52	56.79	58.58	52.02	45.31	34.62
	<b>08.09.2024</b>					<b>12.09.2024</b>				
<b>Near Main Gate Area</b>	56.10	63.21	55.26	50.01	34.63	54.00	59.03	55.97	49.48	36.62
<b>Near Back Gate Area</b>	52.96	61.76	51.27	45.24	32.46	56.58	56.89	49.27	45.82	34.00
<b>Near Pellet Plant Area</b>	50.83	62.10	49.54	50.58	39.76	54.88	55.35	51.95	50.23	31.22
<b>Near IOBP Area</b>	56.48	57.10	54.10	46.06	37.02	56.93	56.94	50.50	49.53	30.48
	<b>15.09.2024</b>					<b>19.09.2024</b>				
<b>Near Main Gate Area</b>	60.88	62.41	56.69	47.43	30.00	56.47	62.31	56.49	44.31	30.87
<b>Near Back Gate Area</b>	56.89	63.91	53.54	45.41	33.22	56.28	60.88	53.80	46.09	33.82
<b>Near Pellet Plant Area</b>	55.60	61.29	51.28	49.38	34.44	56.12	57.39	49.99	46.67	36.34
<b>Near IOBP Area</b>	59.19	57.30	46.43	46.89	34.22	51.40	60.16	46.41	45.00	33.86
	<b>22.09.2024</b>					<b>26.09.2024</b>				
<b>Near Main Gate Area</b>	51.93	63.12	49.10	45.65	33.50	55.91	63.23	60.37	48.95	29.54
<b>Near Back Gate Area</b>	50.08	60.69	52.41	48.71	33.97	53.80	67.36	54.74	46.08	34.37
<b>Near Pellet Plant Area</b>	53.65	62.93	55.53	45.21	31.76	52.99	66.08	56.12	45.06	32.22
<b>Near IOBP Area</b>	50.95	60.33	54.96	49.10	32.55	55.46	61.06	52.06	46.09	31.27
	<b>29.09.2024</b>									
<b>Near Main Gate Area</b>	55.56	62.62	55.88	48.94	32.90					
<b>Near Back Gate Area</b>	54.42	59.84	53.03	44.74	34.00					
<b>Near Pellet Plant Area</b>	51.93	65.04	55.68	41.93	33.45					
<b>Near IOBP Area</b>	51.29	63.05	56.02	48.72	31.26					

**SURFACE WATER ANALYSIS REPORT**  
**FOR**  
**THE MONTH OF SEPTEMBER -2024**

**Surface Water Monitoring:**

Number of locations – 04

Name Sampling Locations:

- a. Baitarani River (Dhanurjaypur)
- b. Baitarani River (Near Plant Area)
- c. Reservoir Pond (Inside Plant)
- d. Dalki Nala Near Plant
- e. Nadiguth Village

Frequency of sampling - Once a month

Number of samples - 5

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling
1	Baitarani River (Dhanurjaypur)	08.09.2024
2	Baitarani River (Near Plant Area)	08.09.2024
3	Reservoir Pond (Inside Plant)	08.09.2024
4	Dalki Nala Near Plant	08.09.2024
5	Nadiguth Village	08.09.2024

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Sl. No.	Parameter	Baitarani River (Dhanurjaypur)	Baitarani River (Near Plant Area)	Reservoir Pond (Inside Plant)	Dalki Nala Near Plant	Nadiguth Village
1.	Colour (Pt-Co)	<1	<1	<1	<1	<1
2.	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3.	Temperature (°C)	35.68	36.23	35.21	37.39	36.65
4.	pH	7.43	7.99	7.22	7.17	7.37
5.	Total Suspended Solids (mg/L)	18.48	20.19	25.80	15.56	18.40
6.	Total Dissolved Solid (mg/L)	587.04	650.63	612.67	651.30	555.85
7.	Biochemical Oxygen Demand at 27°C(mg/L)	5.34	5.68	6.57	3.79	3.66
8.	Chemical Oxygen Demand(mg/L)	1.14	1.37	5.24	2.17	1.69
9.	Total Residual Chlorine(mg/L)	1.19	1.07	2.87	1.17	0.74
10.	Alkalinity(mg/L)	68.33	45.30	62.47	38.85	41.79
11.	Calcium(mg/L)	44.70	32.90	47.32	30.37	31.91
12.	Magnesium(mg/L)	35.74	30.03	42.23	39.23	36.69
13.	Total Hardness as CaCO <sub>3</sub> (mg/L)	38.06	37.25	82.82	30.67	32.95
14.	Electrical Conductivity (µs/cm)	93.07	60.81	124.21	87.30	107.02
15.	Turbidity (NTU)	14.95	19.23	47.17	29.00	21.83
16.	Arsenic as As (µg/L)	ND	ND	ND	ND	ND
17.	Lead as Pb (µg/L)	ND	ND	ND	ND	ND
18.	Cadmium as Cd (µg/L)	ND	ND	ND	ND	ND
19.	Total Chromium as Cr (µg/L)	ND	ND	ND	ND	ND
20.	Zinc as Zn (µg/L)	0.01	0.12	0.02	0.51	0.03
21.	Fluoride as F (mg/L)	ND	ND	ND	ND	ND
22.	Iron as Fe (mg/L)	10.06	11.90	34.92	8.16	9.44
23.	Nitrate (mg/L)	1.22	3.59	6.10	2.92	2.32
24.	Sodium as Na (mg/L)	1.68	2.46	14.50	2.38	1.96
25.	Potassium as K (mg/L)	1.52	0.97	4.60	2.23	1.17
26.	Sulfate (mg/L)	1.40	1.22	4.25	4.22	0.85
27.	Nitrate as NO <sub>3</sub> (mg/L)	2.32	3.15	5.35	3.45	2.12
28.	Total Silica as SiO <sub>2</sub> (mg/L)	4.96	2.50	9.37	2.26	1.40

**GROUND WATER ANALYSIS REPORT**  
**FOR**  
**THE MONTH OF SEPTEMBER -2024**

**Ground Water Monitoring:**

**GROUND WATER MONITORING REPORT SUMMARY SHEET OF SAMPLING (GROUNDWATER):**

Sl No.	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1.	Sample01	MALDAVILLAGE	10- September-2024	OCPL/GW/01/09/24
2.	Sample02	NEDIGUTH	10- September-2024	OCPL/GW/02/09/24
3.	Sample03	TALASAH	10- September-2024	OCPL/GW/03/09/24
4.	Sample04	PLANT-1(Near Canteen)	10- September-2024	OCPL/GW/04/09/24
5.	Sample05	PLANT-2(SLIMEPOND)	10- September-2024	OCPL/GW/05/09/24

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

Sl. No.	TEST PARAMETER	UOM	Results					BIS Desirable limit	Permissible limit with the absence of alternate source
			MALDA VILLAGE	NEDIGUTH	TALASAH	PLANT- 1 (Near Canteen)	PLANT-2 (SLIMEPOND)		
1	Colour	Pt-Co	1.0	1.0	1.1	1.1	1.2		
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable		
3	Temperature	°C	28.86	28.87	29.05	28.06	28.86		
4	pH	-	6.5	7.7	7.5	7.4	7.5	6.5-8.5	No relaxation
5	Total Hardness (as CaCO3)	mg/L	62.64	60.95	61.06	58.70	62.99	300	600

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6	Calcium	mg/L	8.3	8.5	11.7	12.5	8.7	75	200
7	Magnesium	mg/L	1.5	3.9	3.9	4.1	1.8	30	No relaxation
8	Chloride	mg/L	15.8	15.4	15.3	15.2	18.3	250	1000
9	Alkalinity	mg/L	19.1	17.0	18.8	11.5	18.2	200	600
10	Electrical Conductivity	µs/cm	76.5	65.1	64.2	62.5	75.5	--	--
11	Arsenic as As	µg/L	0.03	ND	0.03	ND	0.03	10	No relaxation
12	Lead as Pb	µg/L	ND	0.1	0.11	0.5	ND	10	No relaxation
13	Cadmium as Cd	µg/L	ND	ND	ND	0.05	0.05	3.0	No relaxation
14	Total Chromium as Cr	µg/L	0.5	ND	0.05	0.05	0.04	50	No relaxation
15	Zinc as Zn	µg/L	92.2	93.6	77.2	77.3	97.1	5000	No relaxation
16	Fluoride as F	mg/L	ND	0.02	ND	0.02	ND	1.0	1.9
17	Iron as Fe	µg/L	15.3	15.3	25.3	35.1	35	300	1000
18	Nitrate	mg/L	1.2	1.3	1.2	1.0	1.0	45	100

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19	Sodium as Na	mg/L	2.5	3.2	3.1	4.5	5	150	No relaxation
20	Potassium as K	mg/L	ND	0.12	0.1	0.1	0.1	12	No relaxation
21	Sulfate	mg/L	ND	ND	0.05	0.05	0.5	200	400
22	Total Silica as SiO <sub>2</sub>	mg/L	0.5	ND	0.1	ND	0.5	--	--
23	Total suspended Solid	mg/L	0.12	1.13	1.1	0.23	1.1	--	--
24	Total dissolved Solid	mg/L	85	76.5	72	95.5	88	250	2000
25	Turbidity	NTU	0.5	0.5	0.5	0.5	0.5	5	10

# **GROUND WATER LEVEL ANALYSIS REPORT FOR THE MONTH OF SEPTEMBER -2024**

**Ground Water Level Monitoring:**

**SUMMARY SHEET OF MONITORING:**

Sl No	Sample Nos.	Location	Date of Sampling	Lab Sample Code
1	Sample01	MALDA VILLAGE	12- September -2024	OCPL/GWL/01/09/24
2	Sample02	NEDIGUTH	12- September -2024	OCPL/GWL/02/09/24
3	Sample03	TALASAH	12- September -2024	OCPL/GWL/03/09/24
4	Sample04	PLANT-1(Near Canteen)	12- September -2024	OCPL/GWL/04/09/24
5	Sample05	PLANT-2(SLIMEPOND)	12- September -2024	OCPL/GWL/05/09/24

**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	Dug well	0.5	9	9.0	--
2	NEDIGUTH	Dug well	1.52	9.2	9.8	--
3	TALASAH	Dug well	1.0	8.5	8.9	--
4	PLANT-1(Near Canteen)	Bore-well	0.1	65	12.2	--
5	PLANT-2(SLIME POND)	Bore-well	0.1	61.5	38.1	--

Sampling By: Mr. Hrusikesh Das

**STACK MONITORING REPORT**  
**FOR**  
**THE MONTH OF SEPTEMBER – 2024**

**Stack Monitoring:**

Number of Stack – 04

Name Sampling Locations:

- a. DGStack-1
- b. DGStack-2
- c. Stack-1(Pellet Plant Process Stack)
- d. Stack-2(Pellet Plant Dedusting Stack)

Frequency of sampling - Once a month

Number of samples - 4

**SUMMARY SHEET OF SAMPLING:**

Sample Nos.	Location	Date of Sampling
1	DG Stack-1	08.09.2024
2	DG Stack-2	08.09.2024
3	Stack-1(Pellet Plant Process Stack)	09.09.2024
4	Stack-2(Pellet Plant Dedusting Stack)	09.09.2024

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	DG Stack-1	DG Stack-2	Pellet Plant Process Stack	Pellet Plant Dedusting Stack	
<b>A. General information about Stack</b>					
1	Stack connected to	DG-1	DG-2	Pellet plant process stack	Pellet plant de-dusting stack
2	Emission due to	Burning of Diesel	Burning of Diesel	Burning of furnace oil	Electricity
3	Material of construction of stack	MS	MS	MS	MS
4	Shape of Stack	Circular	Circular	Circular	Circular
5	Serial no.	N15E226771	N15H319963	--	--
6	Boiler/Furnace/DG/Kiln Capacity	1250KVA	1250KVA	--	--
<b>B. Physical characteristics of stack</b>					
1	Height of the Stack from Ground level	9 m	9 m	80 m	60 m
2	Diameter of the stack at sampling point	400 mm	400 mm	--	--
3	Height of the Sampling Point from Ground level	7 m	7 m	--	--
4	Type	HCKI634Z1	HCKI634Z1	--	--
<b>C. Analysis/Characteristic of Stack</b>					
1	Fuel used	LDO	LDO	FO	FO
2	Fuel Consumption	NA	NA	NA	NA

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<b>D. Results of Sampling &amp; Analysis of Gaseous Emission</b>								
	<b>Parameters</b>	<b>DG Stack-1</b>	<b>DG Stack-2</b>		<b>Parameters</b>	<b>Pellet Plant Process Stack</b>	<b>Pellet Plant Dedusting Stack</b>	<b>Limit</b>
1	Temperature of Emission(°C) <i>Method - IS11255(PartIII),2008RA2018</i>	78.3	80.2	--	Temperature of Emission(oC)	95.2	94.6	--
2	Barometric pressure (mm of Hg) <i>Method - USEPAPart2- 25/09/1996</i>	262	330	--	Emission (M3/Hr.)	7262	6558	--
3	Velocity of gas(m/sec.) <i>Method - IS11255(PartIII),2008RA2018</i>	11.5	33.6	--	Velocity (NM3/Hr)	35602	36459	--
4	Quantity of Gas Flow (Nm <sup>3</sup> /hr) <i>Method - IS11255(PartIII),2008RA2018</i>	652	1678	--	PM Concentration Mg/nm3 PM10	132	140	150
5	Concentration of Moisture (%) <i>Method - USEPA(Part-4)</i>	<2.0	<2.0	--	PM Concentration Mg/nm3 PM2.5	132	128	150
6	Concentration of Oxygen (%v/v) <i>Method - IS13270:1992, Ref:2009</i>	8.1	8.2	--	--	--	--	--
7	Concentration of Carbon Monoxide (mg/Nm <sup>3</sup> ) <i>Method - IS13270:1992, Ref:2009</i>	22.3	24.2	--	Carbon monoxide (CO) Mg/nm3	<0.5	<0.5	1
8	Concentration of Carbon Dioxide(%v/v) <i>Method - IS13270:1992, Ref:2009</i>	6.0	12.5	--	Carbon dioxide (CO2) %v/v	8.2	7.2	--
9	Concentration of Sulphur Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(PartII),1985RA2014</i>	122	150	600	Concentration of Sulphur Dioxide(mg/Nm3)	185	182	--
10	Concentration of Nitrogen Dioxide(mg/Nm <sup>3</sup> ) <i>Method - IS11255(Part7),2005RA2017</i>	72.3	75.6	300	Concentration of Nitrogen Dioxide (mg/Nm3)	80	81	--
11	Concentration of Particulate Matters (mg/Nm3) <i>Method - IS11255(PartI):1985, RA2014</i>	32.5	35.2	50	--	--	--	--