

Ref No. VAB/ENV/2023-24/29

Date: 28/11/2023

To,
The Director,
Ministry of Environment and Forest,
Regional Office (Southern Zone), Kendriya Sadan,
4th Floor, 17th Main Road, 2nd Block, Koramangala,
Bengaluru, Karnataka- 560034

Subject:

Submission of 4th six-monthly compliance report to the conditions of Environment Clearance [File No: IA-J-11011/946/2007-IA.II(I)] for M/s Vedanta Limited (Formerly Sesa Goa Ltd.)

Reference:

1. File No: IA-J-11011/946/2007-IA.II(I) dated 24/01/2022
2. Amendment in Environment Clearance from MOEF vide letter dated 14th March, 2022


Respected Sir,

With respect to above references, please find enclosed herewith: 4th six-monthly compliance report to Environment Clearance File No: IA-J-11011/946/2007-IA.II(I) dated 24/01/2022 for the period **April' 2023 to September' 2023** for M/s Vedanta Limited (Formerly Sesa Goa Ltd.).

Project Name: Up-Gradation of Blast Furnaces (BF) to enhance the production capacity of BF-1 & 2 from 2,92,000 TPA to 3,50,000 TPA, BF-3 from 5,40,000 TPA to 6,50,000 TPA, setting up of additional oxygen plant, installation of ductile iron pipe plant of 3,00,000 TPA capacity, 4 additional met coke ovens, setting up of Fe-Si plant of 5,000 TPA capacity at Amona and Navelim villages, Bicholim taluka, North Goa district, Goa. The annexures are enclosed along with the compliance status report.

Thanking you.

Yours faithfully

For Vedanta Limited- Value Added Business

Saptesh Sardesai
CEO- Value Added Business and Cement

Cc: (i) Member Secretary of GSPCB and (ii) Member Secretary of CPCB (SZO)

VEDANTA LIMITED

Sesa Goa Iron Ore: Seemdhur, JHEDM Complex, Patna, Punjab, India - 803 002, India
T: +91 (0)812 2400000 | Website: www.sesagoa.com

Registered Office: Vedanta Limited, 11th Floor, 'C' wing, Unit 105, Corporate Avenue, And Projects, Chakala, Andheri (East), Mumbai 400093, Maharashtra, India
CIN: E132095100905PLC290304

Compliance Report to

Environmental Clearance File No: IA-J-11011/946/2007-IA.II(I)

(Period: April'2023 to September'2023)

Project Name: Up-Gradation of Blast Furnaces (BF) to enhance the production capacity of BF-1 & 2 from 2,92,000 TPA to 3,50,000 TPA, BF-3 from 5,40,000 TPA to 6,50,000 TPA, setting up of additional oxygen plant, installation of ductile iron pipe plant of 3,00,000 TPA capacity, 4 additional met coke ovens, setting up of Fe-Si plant of 5,000 TPA capacity at Amona and Navelim villages, Bicholim taluka, North Goa district, Goa.

Sr. no.	Conditions of EC	Compliance status as of 30 th September 2023
A. Specific Conditions		
i.	The project proponent shall abide by all orders and judicial pronouncements, made from time to time in case no. 47 of 2013 before the Hon'ble National Green Tribunal, Case No. 881/2017 in Hon'ble High Court of Goa; Case No. 24/2015 before the Hon'ble District Court, Mapusa.	Noted.
ii.	Green Belt shall be developed in 54 hectares of land (33.5 % of total land) with tree density of 2500 trees per ha by 31/12/2022 all along the periphery of the project site. This shall include gap filling which shall be done in existing green belt developed area wherever tree density is less than 2500 trees per ha. This shall include green belt development within the site with a width of 25 meters towards the Amona village and Navelim village located a distance of 0.32 km and 0.05km from the project site respectively.	Green Belt has been developed within 54 hectares (33.5% of total land) with density of 2,500 plants per hectare This year, during the monsoon season, i.e., from June to September 2023, total 1140 numbers of plants of different species like Neem, Ashoka, Mhagony, Jamun were planted to carry out gap filling in green belt area. Green belt is also developed both towards Amona, Navelim village. In addition, wind shields have been installed along the project boundary towards these villages. Annexure I : Photographs of plantation
iii.	The recommendations of the approved Site-Specific Conservation Plan / Wildlife Management Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six-monthly compliance report to the concerned Regional Office of the MoEF&CC.	Approved wildlife management plan of 5 years received from the State Forest Department, Govt. of Goa and the implementation of the same is in progress. In first phase of implementation of wildlife management plan, 25 nos. of trap cameras Sponsorships towards Bird Festival and Wildlife Week celebration have been provided to State Forest Department. Annexure II: Communications with the State Forest Department.

iv.	<p>The project proponent shall comply with the following points by on (or) before 31/05/2022 as committed below by the proponent, failing which, GSPCB shall initiate legal action against the proponent under the relevant provision of the Environment (Protection) Act, 1986. Further, compliance status in this regard shall be submitted to the concerned Regional Office of the MoEF&CC along with the six-monthly compliance report.</p> <p>a. 6.38 km internal plant road shall be black topped or concreted by April 2022.</p>	<p>Complied Black topping/concreting of 6.38km of internal road is completed. Photographs of black topping/concreting of internal roads were shared with 2nd EC compliance report.</p>
	<p>b. All the stored slag shall be disposed of by May 2022 and the covered storage shed for slag shall be put in place by 31st May, 2022.</p>	<p>Complied All the existing stored slag has been disposed to cement industries. Presently there is no stacking of slag at the unit except for day-to-day generation.</p>
	<p>c. There are 18 sites of archaeological importance in the study area. Requisite NOC from the concerned competent authority shall be obtained by the proponent and submitted to the Ministry on (or) before 31/05/2022.</p>	<p>Complied. NOC from concerned competent authority obtained, dated 14th July, 2022.</p>
	<p>d. Wind Shield for control of graphite particle emissions shall be provided by March 2022.</p>	<p>Complied 260 meters of additional wind shield installed at the project boundary towards Amona village as per timeline. Photographs of the same were shared along with the 2nd Six monthly EC compliance report.</p>
v.	<p>Ductile Iron (DI) plant shall have the following provisions:</p> <p>a. Wet scrubbers for Volatile Organic Compounds in annealing furnace.</p> <p>b. Bag filter for Zn coating and Mg converter area.</p> <p>c. Wet scrubbers in paint and bitumen coating area.</p> <p>d. Bag Filter in Cement lining area.</p> <p>e. PTFE dipped bags shall be used in the plant.</p> <p>f. PM emissions from BF in Zinc coating area shall be 5 mg/Nm³.</p> <p>g. ETP with recycling facility shall be included. All scrubber effluent shall be treated in ETP.</p>	<p>Noted and shall be ensured during project phase of ductile iron pipe plant as part of detailed Engineering.</p>
vi.	<p>Parking area for trucks/dumpers shall be provided within the plant. No truck/dumper shall be parked outside the plant premises.</p>	<p>Complied. Parking area for trucks/dumpers is provided inside the plant premises. No company truck/ dumper is parked outside the plant premises.</p>
vii.	<p>Project proponent shall conserve wetlands located in the vicinity of the project site (Amona – 0.3km in Northern direction and Navelim – 0.6 km in Northern direction) by developing green belt development all along the boundary of the wet land.</p>	<p>During the monsoon season 2023, i.e., from June to September 2023, total 2942 nos. of plantation was carried out for green belt development all along the boundary of the wet land.</p>

viii.	Solid waste utilization ● Maximum 90 days of slag storage area shall be permitted inside the plant.	Complied Slag is disposed continuously and is not allowed to be stored for more than 90 days.
	● PP shall recycle/reuse 100 % solid waste generated in the plant.	Complied All the solid waste is recycled/ reused except oil-soaked cotton waste and bio medical waste which are incinerated in the coke ovens.
	● Used refractories shall be recycled as far as possible.	Complied Used refractories are recycled or reused in road construction purpose.
ix.	Sinter Plant shall be equipped with sinter cooler waste recovery system to generate process steam or power.	Complied Sinter cooler waste recovery system is already available at sinter plant.
x.	BF3 shall be equipped with stove waste heat recovery, cast house and stock house ventilation system, slag granulation facility, Dry Gas Cleaning Plant. Top Recovery Turbine shall be installed during next revamping of BF3. BF1 & 2 shall be equipped with stove waste heat recovery, cast house and stock house ventilation system and slag granulation facility. Dry Gas Cleaning Plant shall be installed during next revamping of BF1 and BF2.	Blast furnace 3 is already equipped with stove waste heat recovery, cast house and stock house ventilation system, slag granulation facility and dry gas cleaning plant. Top Recovery Turbine installation shall be taken up during revamping. Blast Furnace 1 and Blast Furnace 2 are equipped with stove waste heat recovery, cast house and stock house ventilation system and slag granulation facility.
xi.	Performance test shall be conducted on all pollution control systems every year and report shall be submitted to Regional Office of the MoEF&CC.	Complied. Performance tests of the air pollution control systems was done in 2023 and reports submitted to GSPCB and regional office of MOEFF&CC. Annexure III- Performance test reports.
xii.	Submerged Arc Furnace shall be of closed type with 4th hole extraction system.	Noted.This condition is not applicable to our existing plant. The same will be applicable when we commission the Fesi plant which is a part of the expansion project and installation of Fesi plant is in progress.
xiii.	Particulate matter emissions from stacks shall be less than 30 mg/Nm ³ . Necessary retrofitting work shall be carried out in Air Pollution Control Devices (APCDs) of old plant to reduce PM emissions to less than 30 mg/Nm ³ within two years from the date of EC.	As a part of expansion project, new baghouse has been provided for Blast Furnace 1. The picture of the baghouse was shared with 3 rd EC compliance report. The PM emissions from the process stacks of blast furnaces 1, 2 and 3 are maintained below 30 mg/Nm ³ .
xiv.	AAQ at Mosque and Siddhartha Caves archaeological sites shall be monitored once in a month as per the CPCB norms.	Complied Ambient air monitoring is being done once a month at the Mosque and Siddhartha Caves archaeological sites at Tar Surla and the reports are submitted monthly to Goa State Pollution Control Board. Attaching Annexure-IV: Ambient air monitoring reports of archaeological sites from April 2023 to September 2023.

	02 manual ambient air quality monitoring stations within the plant shall be replaced with one CAAQMS in addition to the 03 CAAQMS presently installed.	Complied One new CAAQMS has been installed at the location identified by Goa State Pollution Control Board team. Annexure V: Picture of new CAAQMS
	Manual monitoring as done presently shall be continued and Benzo Amino Pyrene (BaP) shall be monitored manually as per CPCB norms.	Complied Benzo Amino Pyrene (BaP) is being monitored monthly and reports are being submitted monthly to GSPCB. Attaching Annexure VI. BaP monitoring data from April'2023 to September '2023.
	One manual air quality monitoring station shall be established towards Amona and Navelim villages and ambient air quality monitored as per CPCB norms.	Complied One AAQMS has been installed towards Amona village and one AAQMS towards Navelim village. The ambient air quality monitoring at these two locations is done as per CPCB norms. Annexure-VII: AAQMS reports of Amona and Navelim village from April'23 to September'23
xv.	Water requirement for the plant shall be met from Mandovi River and Valvonti river. Ground water abstraction is not permitted.	No ground water is used for process. Water from Mandovi and Valvonti river is used for operation purposes for which required permissions have been obtained.
xvi.	All internal and connecting roads to the Highway shall be black topped/ concreted with suitable load in term of Million Standard Axle (MSA) as per IRC guidelines.	The internal roads and connecting roads to the highway have been black topped.
xvii.	Water being used for cooling purposes in Waste Heat Recovery Power Plant (WHRPP) is the saline water drawn from Mandovi river (backwater). The blow down of cooling towers shall be discharged back to the saline backwaters as per the approval of the GSPCB. Project proponent shall periodically monitor the riverine water quality and report shall be submitted along with the six-monthly compliance report to the concerned Regional Office of the MoEF&CC.	Riverine water quality is being monitored and reports are submitted to GSPCB every month. Attaching Annexure VIII: Riverine water quality reports from April'23 to September'23.
xviii.	Secondary emission generated during charging, tapping of metal, slag tapping may be controlled by providing canopy hoods at proper elevation connected to air pollution control device without interfering with the production process.	The Dust Extraction Systems (DES) have been provided for coal charging and baghouses with hoods have been provided for tapping of metal. New baghouse has been installed for Blast Furnace 1.
xix.	Additional Filter beds, arrester wall shall be provided along the storm water drainage for settlement of suspended particles and to prevent siltation.	Additional filter beds and arrestor walls are provided in the storm drains and these storm drains are desilted every year before monsoon.
xx.	The recommendations contained in the storm water management plan shall be strictly adhered with. The implementation report shall be furnished along with the six-monthly compliance report to the concerned Regional Office of the MoEF&CC.	The storm water management plan has been prepared and implemented. Desilting of all the settling ponds and drains has been done.
B. General conditions		
I	Statutory compliance:	

i.	The Environment Clearance (EC) granted to the project/ activity is strictly under the provisions of the EIA Notification, 2006 and its amendments issued from time to time. It does not tantamount/ construe to approvals/ consent/ permissions etc., required to be obtained or standards/conditions to be followed under any other Acts/Rules/Subordinate legislations, etc., as may be applicable to the project.	Noted.
II	Air quality monitoring and preservation:	
i.	The project proponent shall install 24x7 continuous emission monitoring system at process stacks to monitor stack emission with respect to standards prescribed in Environment (Protection) Rules 1986 as amended from time to time. The CEMS shall be connected to SPCB and CPCB online servers and calibrate these systems from time to time according to equipment supplier specification through labs recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories.	Complied Continuous Emission Monitoring System (CEMS) have been installed at the process stacks and are connected to Goa State Pollution Control Board (GSPCB) and Central Pollution Control Board (CPCB). Calibration of CEMS is done regularly.
ii.	The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through laboratories recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories.	Complied We are monitoring fugitive emissions at our loading/unloading areas, raw material storage areas and internal roads quarterly through MOEFCC approved laboratory. Attaching here with reports Annexure IX: Fugitive dust emission reports from April'2023 to September'2023.
iii.	Sampling facilities at process stacks and at quenching towers shall be provided as per CPCB guidelines for manual monitoring of emissions.	Complied All process stacks have been provided with sampling facility. Quenching tower is not a source of process emissions and are provided with grit arresters.
iv.	Appropriate Air Pollution Control (APC) system shall be provided for all the dust generating points including fugitive dust from all vulnerable sources, so as to comply prescribed stack emission and fugitive emission standards.	Complied Baghouses, Electrostatic Precipitators (ESPs), Dust Extracting Systems (DESSs), rain guns, fog cannons, windshields, road sweeping machines are present to control air pollution.
v.	The project proponent shall provide leakage detection and mechanized bag cleaning facilities for better maintenance of bags.	Complied Differential pressure measurement is available across bags to detect leakage. Compressed Air puffing arrangement is available for mechanized cleaning.
vi.	Sufficient number of mobile or stationery vacuum cleaners shall be provided to clean plant roads, shop floors, roofs, regularly.	Complied For road cleaning, road sweeping machines are deployed. Shop floor and roofs are cleaned regularly.
vii.	Recycle and reuse iron ore fines, coal and coke fines, lime fines and such other fines collected in the pollution control devices and vacuum cleaning devices in the process after briquetting/ agglomeration.	Complied All the iron ore fines, coal and coke fines, lime fines and such other fines are reused in the sinter plant to produce sinter.

viii.	The project proponent use leak proof trucks/dumpers carrying coal and other raw materials and cover them with tarpaulin.	Raw material carrying trucks are always ensured for tarpaulin covering.
ix.	Facilities for spillage collection shall be provided for coal and coke on wharf of coke oven batteries (Chain conveyors, land based industrial vacuum cleaning facility).	Wharf of coke is enclosed with parapet wall on two sides. Feed end is connected to settling pond whereas discharge end on conveyor feeding to screening plant. Coke from wharf is directly taken on conveyor lined with side skirting. There is no possibility of any spillage.
x.	Land-based APC system shall be installed to control coke pushing emissions.	Hoods lined with pyro-block modules are provided on hot coke car for control of emissions.
xi.	Monitor CO, HC and O2 in flue gases of the coke oven battery to detect combustion efficiency and cross leakages in the combustion chamber.	Our coke oven batteries are non-recovery type working under negative pressure, hence, there is no Coke Oven Flue Gas (COFG) leakages from coke oven process.
xii.	Wind shelter fence and chemical spraying shall be provided on the raw material stock piles.	Windshield has been provided at the boundary of the plant. There are rain guns provided in the raw material yard for sprinkling of water to prevent generation of fugitive dust.
xiii.	Design the ventilation system for adequate air changes as per prevailing norms for all tunnels, motor houses, Oil Cellars.	Tunnels are not present at our plant. For motor houses and oil storage rooms, proper ventilation system has been provided.
III	Water quality monitoring and preservation	
i	The project proponent shall install 24x7 continuous effluent monitoring system with respect to standards prescribed in Environment (Protection) Rules 1986 vide G.S.R 277 (E) dated 31st March 2012 (Integrated iron & Steel); G.S.R 414 (E) dated 30th May 2008 (Sponge Iron) as amended from time to time; S.O. 3305 (E) dated 7th December 2015 (Thermal Power Plants) as amended from time to time and connected to SPCB and CPCB online servers and calibrate these system from time to time according to equipment supplier specification through labs recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories.	Continuous Effluent Monitoring Systems are present at our plant and are connected to GSPCB and CPCB.
ii.	The project proponent shall monitor regularly ground water quality at least twice a year (pre- and post-monsoon) at sufficient numbers of piezometers/sampling wells in the plant and adjacent areas through labs recognized under Environment (Protection) Act, 1986 and NABL accredited laboratories.	Ground water quality is monitored twice a year, pre-monsoon, and post-monsoon. Ground water quality monitoring was done in the surrounding villages i.e. Amona, Navelim and Maina in the month of May'23(premonsoon) and November 2023 as a part of post monsoon ground water study. Annexure X: Pre and Post monsoon groundwater quality analysis.

iii.	The project proponent shall provide the ETP for coke oven to meet the standards prescribed in G.S.R 277 (E) dated 31st March 2012 (Integrated iron & Steel); G.S.R 414 (E) dated 30th May 2008 (Sponge Iron) as amended from time to time; S.O. 3305 (E) dated 7th December 2015 (Thermal Power Plants) as amended from time to time as amended from time to time;	Our coke oven batteries are non-recovery type coke ovens where entire water used for coke quenching is recycled back to process after passing through settling ponds.
iv.	Sewage Treatment Plant shall be provided for treatment of domestic wastewater to meet the prescribed standards.	We have three Sewage Treatment Plants (STPs) for current operations for treatment of domestic wastewater. The new STP construction work is in progress.
v.	Garland drains and collection pits shall be provided for each stock pile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run off.	Garland drains and catch ponds have been made along the stock piles to prevent water pollution during rainy season.
vi.	Tyre washing facilities shall be provided at the entrance of the plant gates.	Wheel washing system is installed at the entrance of our plant.
vii.	Water meters shall be provided at the inlet to all unit processes in the steel plants.	Water meters have been installed at the inlet of all the processes.
IV	Noise monitoring and prevention	
i.	Noise pollution shall be monitored as per the prescribed Noise Pollution (Regulation and Control) Rules, 2000 and report in this regard shall be submitted to Regional Officer of the Ministry as a part of six-monthly compliance report.	Complied Noise pollution is monitored once every three months. Attaching Annexure XI : Noise monitoring reports of May'2023 and August'2023.
V	Energy Conservation measures:	
i.	Use torpedo ladle for hot metal transfer as far as possible. If ladles not used, provide covers for open top ladles.	In current operations, metal is getting covered with insulation compound and hot metal is not transferred to longer distances, and it is poured into the pig casting machine. Hence, torpedo ladle is not required.
ii.	Restrict Gas flaring to < 1%.	Gas flaring restricted to <1% shall be implemented, except for during any power plant shutdown. Flaring data is also tracked on daily basis so that any issue arising will be tracked and rectified immediately.
iii.	Provide solar power generation on roof tops of buildings, for solar light system for all common areas, street lights, parking around project area and maintain the same regularly;	Solar power generation system of 100 KW is under process to be set up at rooftops of admin building and parking areas.
iv.	Provide LED lights in their offices and residential areas.	Noted. LED lights are provided.
v.	Ensure installation of regenerative/recuperative type burners on all reheating furnaces.	Reheating furnaces are not present at our plant as of now, hence, regenerative type burners are not required to be installed.

VI	Waste management													
i.	Oil Collection pits shall be provided in oil cellars to collect and reuse/recycle spilled oil. Oil collection trays shall be provided under coils on saddles in cold rolled coil storage area.	Oil collection pits have been provided in oil storage rooms to collect and reuse/recycle spilled oil.												
ii.	Kitchen waste shall be composted or converted to biogas for further use.	Kitchen waste is treated in a composting unit and is recycled for further use.												
VII	Green Belt													
i.	The project proponent shall prepare GHG emissions inventory for the plant and shall submit the programme for reduction of the same including carbon sequestration by trees.	<div>GHG emissions inventory is prepared for the plant. The list of programs for reduction of GHG emissions is as follows:</div> <table><tr><th>Sl.</th><th>Description</th></tr><tr><td>1</td><td>Setting up 100 KW solar power plant at admin building and parking areas of Met Coke Division (MCD)</td></tr><tr><td>2</td><td>Setting up EV charging station outside VAB for employees & community</td></tr><tr><td>3</td><td>Carrying out energy audit at VAB and preparing action plan for implementation</td></tr><tr><td>4</td><td>Taking trial of Biodiesel in MCD, and basis the performance results, further usage plan to be decided-oven heating</td></tr><tr><td>5</td><td>Carrying out annual plantation program in surrounding villages.</td></tr></table>	Sl.	Description	1	Setting up 100 KW solar power plant at admin building and parking areas of Met Coke Division (MCD)	2	Setting up EV charging station outside VAB for employees & community	3	Carrying out energy audit at VAB and preparing action plan for implementation	4	Taking trial of Biodiesel in MCD, and basis the performance results, further usage plan to be decided-oven heating	5	Carrying out annual plantation program in surrounding villages.
Sl.	Description													
1	Setting up 100 KW solar power plant at admin building and parking areas of Met Coke Division (MCD)													
2	Setting up EV charging station outside VAB for employees & community													
3	Carrying out energy audit at VAB and preparing action plan for implementation													
4	Taking trial of Biodiesel in MCD, and basis the performance results, further usage plan to be decided-oven heating													
5	Carrying out annual plantation program in surrounding villages.													
VII I	Public hearing and Human health issues													
i.	Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.	Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan is implemented.												
ii.	ii. The project proponent shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide Personal Protection Equipment (PPE) as per the norms.	Heat Stress study is part of our hygiene study which is conducted once every two years. Recently we have carried out a heat stress study in the month of September’23. Annexure XII: QNEA report												
iii.	iii. Occupational health surveillance of the workers shall be done on a regular basis and records maintained.	Occupational health surveillance is done annually.												
IX	Environment Management													

i.	The project proponent shall comply with the provisions contained in this Ministry's OM vide F.No. 22-65/2017-IA.III dated 30/09/2020.	Noted.
ii.	The company shall have a well laid down environmental policy duly approve by the Board of Directors. The environmental policy should prescribe for standard operating procedures to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental / forest / wildlife norms / conditions. The company shall have defined system of reporting infringements / deviation / violation of the environmental / forest / wildlife norms / conditions and / or shareholders / stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six-monthly report.	The company has a Health, Safety and Environment policy in place. We are ISO 14000:2015 certified (Environment Management System). Also, there is a system in place for tracking and reporting of all the statutory compliances.
iii.	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly to the head of the organization.	Separate Environment cell exists both at project as well as head quarter. Separate budget is allocated towards environmental measures at site.
X	Miscellaneous	
i.	The project proponent shall make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the District or State, of which one shall be in the vernacular language within seven days and in addition this shall also be displayed in the project proponent's website permanently.	Complied. Advertisement regarding grant of EC has been published on 30th January 2022 in two local newspapers: Bhaangarbhuin, in Konkani language and The Goan in English language. Copies of newspaper advertisement were sent with the 1st compliance report for period of October'2021 to March'2022. Environmental Clearance has also been displayed on company's website https://sesagoaironore.com/ under Sustainability section.
ii.	The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.	Complied. Copies of environmental clearance were submitted to local bodies including Panchayats and Municipal councils.
iii.	The project proponent shall upload the status of compliance of the stipulated environment clearance conditions, including results of monitored data on their website and update the same on half-yearly basis.	Complied. Six-monthly EC Compliance status report is submitted to MoEF&CC, CPCB & GSPCB. The same is uploaded on company's website https://sesagoaironore.com/ under Sustainability section.
iv.	The project proponent shall monitor the criteria pollutants level namely; PM10, SO2, NOx (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects and display the same at a convenient location for disclosure to the public and put on the website of the company.	Complied. Ambient air monitoring and stack emission monitoring is done at the plant site and the results are being displayed continuously on the digital display boards installed at our gates.

v.	The project proponent shall submit six-monthly reports on the status of the compliance of the stipulated environmental conditions on the website of the ministry of Environment, Forest and Climate Change at environment clearance portal.	Complied. Six-monthly EC Compliance status report is submitted to MoEF&CC, CPCB & GSPCB.
vi.	The project proponent shall submit the environmental statement for each financial year in Form-V to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently and put on the website of the company	Complied. Yearly Environmental Statement in Form-V is submitted to the Goa State Pollution Control Board as prescribed under the Environmental (Protection) Rules, 1986 and is uploaded on company's website https://sesagoaironore.com/ under Sustainability section.
vii.	The project proponent shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities, commencing the land development work and start of production operation by the project.	Noted and compliance assured.
viii.	The project proponent shall abide by all the commitments and recommendations made in the EIA/EMP report, commitment made during Public Hearing and also that during their presentation to the Expert Appraisal Committee.	Noted and compliance assured.
ix.	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment, Forests and Climate Change (MoEF&CC).	Noted and compliance assured.
x.	Concealing factual data or submission of false/fabricated data may result in revocation of this environmental clearance and attract action under the provisions of Environment (Protection) Act, 1986.	Noted
xi.	The Ministry may revoke or suspend the clearance, if implementation of any of the above conditions is not satisfactory.	Noted
xii.	The Ministry reserves the right to stipulate additional conditions if found necessary. The Company in a time bound manner shall implement these conditions.	Noted
xiii.	The Regional Office of this Ministry 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.	Noted. Full co-operation will be extended.
xiv.	Any appeal against this EC shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.	Noted

Annexure I
Photographs of plantation

Photograph of plantation



ANNEXURE II

Communications with the State Forest Department.

Ref No. VAB/ENV/2022-23/42

Date: 27/12/2022

To,

The Office of The Deputy Conservator of Forests,
Wildlife and EcoTourism (North) Division
1st Lift, 4th Floor, Junta House,
Panaji-403 001 Goa

Sub: - Wildlife Conservation Plan for obtaining Environmental Clearance

Reference:

1. Letter no. 1-576/WL&ET(N)/2022-2023/661 dated 02/06/2022 received by us on 15/06/2022.

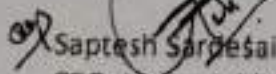
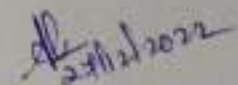
Respected sir,

With respect to the letter received from your good office vide Letter no. 1-576/WL&ET(N)/2022-2023/661 dated 02/06/2022 received by us on 15/06/2022, we are handing over 10 nos of trap cameras w.r.t to compliance Sr.No.4 of providing trap cameras to analyse the movement of wild animals.

Thanking you

Yours faithfully

For Vedanta Limited- Value Added Business


Saptesh Sardesai
CEO- Value Added Business
Despatch Clerk
O/o The Dy. Conservator of Forests
Wildlife & Eco-Tourism (North)
Panaji - Goa

VEDANTA LIMITED

Sesa Goa Iron Ore Sales Office, 20 EDC Complex, Panaji, Panaji, Goa - 403 001, India.
T : 91 9822 246060 | Website: www.sesagoinvestors.com

Registered Office

Vedanta Limited, 1st Floor, "C" wing, 1st 101 Corporate Avenue, Andri Projects, Chhatrapati Shivaji Maharaj, Mumbai - 400093, Maharashtra, India
CIN: L32209MH1965PL1291394



GOVERNMENT OF GOA
OFFICE OF THE DEPUTY CONSERVATOR OF FORESTS
WILDLIFE & ECO- TOURISM (NORTH) DIVISION
1ST LIFT, 4TH FLOOR, JUNTA HOUSE,
PANAJI - 403 001 (GOA)

Phone: 0832-2229701/ E mail: dcfwlnorth-forest.goa@nic.in

No.1-576/WL&ET(N)/2022-23

Dated:27/12/2022

RECEIPT

Received 10 nos. of trap cameras alongwith Safety Cases, 32 GB Memory Card & Duracell Batteries under Wildlife Conservation Plan for obtaining Environmental Clearance to analyse the movement of wild animals from Vedanta Limited, Sesa Goa Iron Ore : Sesa Ghor, 20 EDC Complex, Patto Panaji vide letter no.VAB/ENV/2022-23/42 dated 27/12/2022.


(Anand S. Jadhav)

Dy. Conservator of Forests
Wildlife & Eco-Tourism (N)



GOVERNMENT OF GOA
OFFICE OF THE DEPUTY CONSERVATOR OF FORESTS
WILDLIFE & ECO- TOURISM (NORTH) DIVISION
1ST LIFT, 4TH FLOOR, JUNTA HOUSE,
PANAJI - 403 001 (GOA)


Phone: 0832-2229701/ E mail: dcfwlnorth-forest.goa@nic.in

No.1-576/WL&ET(N)/2022-23

Dated:10/02/2023

RECEIPT

Received 15 nos. of trap cameras alongwith Safety Cases, 32 GB Memory Cards & Duracell Batteries and assistance for celebration of Wildlife Week "2023 under Wildlife Conservation Plan from Vedanta Limited, Sesa Goa.


(Anand S. Jadhav)

Dy. Conservator of Forests
Wildlife & Eco-Tourism (N)

Letter No: VAB/ENV/23-24/23

Date:18/10/2023

To,

The Deputy Conservator of Forest – Wild Life North
Wildlife and EcoTourism (North) Division
1st Lift, 4th Floor, Junta House,
Panaji-403 001 Goa

Sub: - Implementation of approved Wildlife Conservation Plan

Reference:

1. Your letter numbered 1-576/WL&ET(N)/2022-2023/1131 dated 04/07/2023

Respected Sir,

We are sharing herewith the final proposal for rescue van with detail specification for your approval.

1. Vehicle Offer :

<u>S.No.</u>	<u>Details</u>	<u>Value in Rupees</u>
1.	SML ISUZU Cabin Chassis Prestige 4WD on 3365 Wheel Base With Power Steering BS VI	19,64,844.00
2.	GST @ 28%	5,50,156.00
Total		25,15,000.00

Terms and Conditions :

1. TCS @ 1% extra on above offered price.
2. Price is valid till 30th July 2023.
3. 100% payment advance along with Purchase Order.
4. Delivery 2 to 4 weeks from date of confirm order.
5. Other conditions as mentioned in the product catalogue.

VEDANTA LIMITED

Sesa Goa Iron Ore Sesa Ghor, 20 EDR Complex, Patto, Panaji, Goa - 403 001, India
T : +91 9822 246060 - Website: www.sesagoanironore.com

Regional Office: Vedanta Limited, 1st Floor, "C" wing, Unit 103, Corporate Avenue, And Projects, Chokali, Andheri (East), Mumbai 400093, Maharashtra, India

CIN: L17269MH1965PE C291394

18/10/2023
Despatch Clerk
O/o The Dy. Conservator of Forests
Wildlife & Eco-Tourism (North)
Panaji - Goa

2. Vehicle Fabrication Charges

S.No.	Details	Value in Rupees
1.	<p>Fabrication of "Animal Rescue Vehicle" similar to the existing vehicles supplied by the SML-ISUZU Limited to "VAN VIHAR" Bhopal the past with additional improvements.</p> <p>Features :</p> <ul style="list-style-type: none"> a. Animal Cabin area with improved insulation for better cooling. b. Overhead Luggage carrier with equipment box. c. Ladder for easy access to top of the cabin. d. Foldable seats for 4 persons with steel frame and improved cushioning. e. Stainless Steel Wash basin with Tap. f. Overhead Water tank of 60 Litre capacity. g. Refrigerator for medicine supplies and Ice packs. h. Stainless Steel Counter Top with cupboard for supplies and equipment. i. Water Spray nozzle for humidity control inside cabin. j. 1.5 Ton Air conditioner unit for extra cooling inside the cabin. k. Positive locking of cage on floor to avoid jumping of cage during movements. l. Extra strengthening with 6 angle sections for the floor of cabin. m. One tower bolt in the tool box with Emergency gate. n. Fully automatic Cage retrieval mechanism along with automatic door closing. o. Top mounted rear CCTV Camera with display unit near driver. p. Flood light facility for rear loading door. 	17,26,000.00
2.	GST @ 18%	3,10,680.00
Total		20,36,680.00

Terms and Conditions :

1. Delivery of completed vehicle as per above specs shall be 8-12 weeks from date of receipt of 4WD Cabin Chassis.
2. TCS @ 1 % extra on above price.
3. 50% payment advance along with Purchase Order.
4. Balance payment after delivery and sign off of fully fabricated vehicle.
5. Delivery charges of Rs. 45,000/- at site in Goa.
6. Offer valid for 60 days from date of quotation.
7. Colour scheme to be finalized at the time of delivery.
8. Promotion signages shall be in the form of Stickers and payable at actuals.
9. **After receipt of clear purchase order, we shall submit detail drawings with a 3D presentation for better understanding of the user within a week.**

VEDANTA LIMITED

Sesa Goa Iron Ore, Sesa Ghrit, 20 EDC Complex, Patto, Panaji, Goa - 403 001, India
T : +91 8832 240000 | Website: www.sesagoanironore.com

Registered Office: Vedanta Limited, 1st Floor, "C" wing, Unit 103, Corporate Avenue, And Projects, Chakala, Andheri (East), Mumbai 400093, Maharashtra, India.

CIN: L13299MH1965PLC291594

10. We expect an official sign off from the concern user in presence of your representatives for positive acceptance of the vehicle.
11. Vehicle RTO and Insurance charges extra at actuals.

Total Price of the Rescue vehicle

Rs. 45,51,680.00

3. CAGE Fabrication Charges

Cage specifications and price	
Details	Price
Cage Specifications : 1. 7'4" (L) X 3'2" (B) X 3'7" (H) 2. Floor 2 mm MS Chequered Plate 3. Side Sheet 1.6 mm 4. Two Ventilator and one sliding door. 5. MS Bars of 16 mm 6. Industry quality Hard PVC Wheels.	Rs. 1,35,000.00
GST @ 18 %	Rs. 24,300.00
Total Price	Rs. 1,59,300.00
Total price for rescue van, vehicle fabrication and cage fabrication	Rs. 4710980

Request your good office to please confirm on the specification provided above in order to process the offer.

Thanking you,

Yours faithfully,
For Vedanta Limited


Saptesh Sardesai
CEO Value Added Business & Sesa Cement
Vedanta Ltd

VEDANTA LIMITED

Sesa Goa Iron Ore, Sesa Ghor, 20 FDC Complex, Patto, Porvor, Goa - 407 004, India
T: +91 832 240660 | Website: www.sesagoironore.com

Registered Office: Vedanta Limited, 1st Floor, "C" wing, Unit 105, Corporate Avenue, And Projects, Chakala, Andheri (East), Mumbai 400093, Maharashtra, India

CIN: L13209MH1965PLC291394



GOVERNMENT OF GOA
OFFICE OF THE DEPUTY CONSERVATOR OF FORESTS
WILDLIFE & ECOTOURISM (NORTH) DIVISION
1ST FLOOR, 4TH FLOOR, JUNTA HOUSE,
PANAJI - 403 001 (GOA)

Phone: 0832-2229701/ Fax: 0832-2422864

E mail: dcfnorth-forest.goa@nic.in

No. 1-576-WL&ET(N)/2023-2024/2820

Dated: - 05 /11/2023

Kartika 12, 1945

To,
The CEO,
Value Added Business & Sesa Cement,
Vedanta Limited,
Sesa Ghor, 20 EDC Complex,
Patto, Panjim-Goa.

Sub: Implementation of approval Wildlife Conservation Plan- reg...


Ref.: No: VAB/ENV/23-24/23 dated. 18/10/2023.

Sir,

With reference to the subject and letter cited above, this is to inform that this office is in agreement to the details of Rescue Van proposed along with specifications mention thereof and the same has been approved.

You are kindly requested to complete the procurement process early basis.

Yours faithfully,


(Anand S. Jadhav, IFS)
Dy. Conservator of Forests
Wildlife & Eco-Tourism (N)
Panaji-Goa.

"ATMANIRBHAR BHARAT"
"SWAYAMPURNA GOA"

ANNEXURE III
Performance test reports

Letter No: VAB/ENV/23-24/ 21

Date: 15/09/2023

To,
The Member Secretary,
Goa State Pollution Control Board,
Opposite to Saligao Seminary,
Pilerne Ind. Estate Bardez, Goa, 403511


Goa State Pollution Control Board
Opp. Saligao Seminary
Saligao Goa 403 511

Sub: Performance evaluation of Air Pollution Control Devices

Reference: - Environmental Clearance-EC22A008GA145461 of M/s Vedanta Limited, under Specific conditions point no.xi

Respected Madam,

With respect to the above-mentioned reference to performance evaluation of Air Pollution Control Devices (APCD) of M/s Vedanta Limited, Value-Added Business, Amona Navelim Goa, we are hereby submitting the Efficiency certificates towards the same. Kindly find them enclosed with this letter.

Thanking you,
Yours faithfully,

For Vedanta Limited - Value Addition Business



Saptesh Sardesai
CEO- Value Addition Business and SESA cement
Vedanta Ltd. Amona, Goa

VEDANTA LIMITED

Value Added Business, Pig Iron Division, Amona, PO Marcela, Goa-403 107
T: +91-832 641 2160 | F: +91-832 238 5255 | Web: www.sesagoanironore.com

Registered Office: Vedanta Limited, 1st Floor, 'C' wing, Unit 103, Corporate Avenue, Atal Projects, Chakala, Andheri (East), Mumbai 400083, Maharashtra, India
CIN: L13209MH1965PLC291394

LIST OF EFFICIENCY CERTIFICATES OF THE AIR POLLUTION CONTROL DEVICES

Sr.No	APCD Connected to the Stack
1	STOCK HOUSE DEDUSTING STACK
2	BATTERY 2 –ST -1
3	BATTERY 2 –ST -2
4	BATTERY 2 –ST -3
5	BF1 BAGHOUSE
6	BF2 BAGHOUSE
7	BF3 CAST HOUSE
8	CSP 1 BAGHOUSE
9	SCREENING DEDUSTING
10	PROPORTIONING DEDUSTING
11	FLUX AND FUEL DEDUSTING
12	HEAD END ESP
13	TAIL END ESP
14	LDC BAGHOUSE



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB.: H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525.
Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in

OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/08067	T. R. Date	10/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 24/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	08/08/2023	Analysis Period	08/08/2023 To 10/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	Stock House Dedusting Stack	
Date of Sample collection	08/08/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	2.8	2.8
Height From Ground Level [Meter]	---	30.0
Shape	Round	Round
Temperature of flue gas [°C]	55	52
Average flue gas velocity [m/s]	8.40	4.50
Average volume of flue gas discharged [m ³ /hr]	243193.61	588542.30
Average volume of flue gas discharged [Nm ³ /hr]	216995.74	534453.38

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	308.92	8.63	97.21	IS 11255(Part I)

End

For GADARKLAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

CHECKED BY

Note :

1. The results relate only to the samples tested
2. Test Report shall not be reproduced except in full, without written approval of the laboratory.
3. Samples will be preserved for a period 15 days from the delivery of Test Report.
4. Test Results relate only to the conditions prevailing at the time of sampling
5. Customer complaint register is available at laboratory.



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

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Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in

OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/7.8/01

Test Report No.	GA/E/23/08001	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	01/08/2023	Analysis Period	01/08/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	Battery 2 St 01	
Date of Sample collection	01/08/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	0.904	0.80
Shape	Round	Round
Temperature of flue gas [°C]	45	44
Average flue gas velocity [m/s]	13.38	13.29
Average volume of flue gas discharged [m ³ /hr]	30927.13	24043.65
Average volume of flue gas discharged [Nm ³ /hr]	28885.43	22529.56

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	545.91	4.87	99.11	IS 11255(Part I)

End

For GADARK LAB PVT. LTD.


AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]


CHECKED BY

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4. Test Results relate only to the conditions prevailing at the time of sampling
5. Customer complaint register is available at laboratory.
6. Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	Stack Kit No. 4419	06/03/2023	06/03/2024
2	Digital Electronic Balance – Sr. No. GL/IN/Bal-02	29/06/2023	28/06/2024
3	Gas Chromatograph – Model CERES 600 Sr. No. 6137/0713	17/01/2023	16/01/2024
4	Digital Spectrophotometer Model – EQ 826, ID No. GL/EQ/UV1	Inhouse Calibration	



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

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Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in

OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/08002	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	01/08/2023	Analysis Period	01/08/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

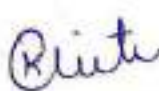
Stack Attached to	Battery 2 St 02	
Date of Sample collection	01/08/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	1.02	1.1
Shape	Round	Round
Temperature of flue gas [°C]	38	37
Average flue gas velocity [m/s]	13.83	11.04
Average volume of flue gas discharged [m ³ /hr]	40680.04	37786.08
Average volume of flue gas discharged [Nm ³ /hr]	38853.71	36206.09

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	702.56	8.80	99.03	IS 11255(Part I)

End

For GADARK LAB PVT. LTD.


AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]


CHECKED BY

Note :

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5. Customer complaint register is available at laboratory.
6. Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	Stack Kit No. 4419	06/03/2023	06/03/2024
2	Digital Electronic Balance – Sr. No. GL/IN/Bal-02	29/06/2023	28/06/2024
3	Gas Chromatograph – Model CERES 800 Sr. No. 6137/0713	17/01/2023	16/01/2024
4	Digital Spectrophotometer Model – EQ 826, ID No. GL/EQ/UV1	Inhouse Calibration	



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB.: H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525.
Tel.: (02362) 223519 • E-mail: info@gadark.in • Website: www.gadark.in

OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 - +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/08010	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	02/08/2023	Analysis Period	02/08/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	Battery 2 St 03	
Date of Sample collection	02/08/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	0.78	0.81
Shape	Round	Round
Temperature of flue gas [°C]	38	38
Average flue gas velocity [m/s]	16.35	13.14
Average volume of flue gas discharged [m ³ /hr]	28133.22	24366.80
Average volume of flue gas discharged [Nm ³ /hr]	26670.18	23272.85

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	726.34	6.94	99.04	IS 11255(Part I)

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

CHECKED BY

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4. Test Results relate only to the conditions prevailing at the time of sampling
5. Customer complaint register is available at laboratory.
6. Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	Stack Kit No. 4419	06/03/2023	06/03/2024
2	Digital Electronic Balance – Sr. No. GL/IN/Bal-02	29/06/2023	28/06/2024
3	Gas Chromatograph – Model CERES 800 Sr. No. 6137/0713	17/01/2023	16/01/2024
4	Digital Spectrophotometer Model – EQ 828, ID No. GL/EQ/UV1	Inhouse Calibration	



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB.: H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525.

Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in

OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.

Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/08178	T. R. Date	22/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	19/08/2023	Analysis Period	19/08/2023 To 22/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	BF 1 Baghouse	
Date of Sample collection	19/08/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	1.65	1.65
Height From Ground Level [Meter]	---	---
Shape	Round	Round
Temperature of flue gas [°C]	49	47
Average flue gas velocity [m/s]	13.18	10.40
Average volume of flue gas discharged [m ³ /hr]	101455.27	80092.72
Average volume of flue gas discharged [Nm ³ /hr]	92396.63	73632.12

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	980.23	8.65	99.12	IS 11255(Part I)

End

For GADARKLAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

CHECKED BY

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3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Test Results relate only to the conditions prevailing at the time of sampling.
5. Customer complaint register is available at laboratory.



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB.: H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525.

Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in

OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.

Tel.: (022) 2577 7069 / 2577 7070 / 2065 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/07209	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	25/07/2023	Analysis Period	25/07/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	BF 2 Baghouse	
Date of Sample collection	25/07/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	1.83	2.0
Height From Ground Level [Meter]	---	30
Shape	Round	Round
Temperature of flue gas [°C]	50	46
Average flue gas velocity [m/s]	14.09	12.06
Average volume of flue gas discharged [m ³ /hr]	133452.95	136382.97
Average volume of flue gas discharged [Nm ³ /hr]	122331.11	126993.35

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	467.81	4.37	99.06	IS 11255(Part I)

End

For GADARKLAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

CHECKED BY

Note :

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TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/08059	T. R. Date	10/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 24/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	08/08/2023	Analysis Period	08/08/2023 To 10/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	Cast House	
Date of Sample collection	08/08/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	2.8	2.8
Height From Ground Level [Meter]	---	30.0
Shape	Round	Round
Temperature of flue gas [°C]	52	49
Average flue gas velocity [m/s]	8.28	8.15
Average volume of flue gas discharged [m ³ /hr]	239833.91	1066045.25
Average volume of flue gas discharged [Nm ³ /hr]	220825.98	977091.59

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	331.50	12.63	96.19	IS 11255(Part I)

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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TEST REPORT

Doc.No.: GLPL/QF/7.8/02

Test Report No.	GA/E/23/07235	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref./Date	Ref. dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	25/07/2023	Analysis Period	25/07/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	CSP 1	
Date of Sample collection	02/08/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	1.25	1.25
Height From Ground Level [Meter]	--	16.5
Shape	Round	Round
Temperature of flue gas [°C]	50	47
Average flue gas velocity [m/s]	14.48	14.39
Average volume of flue gas discharged [m ³ /hr]	63986.37	63265.35
Average volume of flue gas discharged [Nm ³ /hr]	58092.81	58182.11

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	327.95	5.85	98.22	IS 11255(Part I)

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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5. Customer complaint register is available at laboratory.
6. Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	Stack Kit No. 4419	06/03/2023	06/03/2024
2	Digital Electronic Balance – Sr. No. GL/IN/Bal-02	29/06/2023	28/06/2024
3	Gas Chromatograph – Model CERES 600 Sr. No. 6137/0713	17/01/2023	16/01/2024
4	Digital Spectrophotometer Model – EQ 826, ID No. GL/EQ/UV1	Inhouse Calibration	



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TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/07227	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 29/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	29/07/2023	Analysis Period	29/07/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	Screening De-dusting	
Date of Sample collection	29/07/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	2.5	2.5
Height From Ground Level [Meter]	---	30.0
Shape	Round	Round
Temperature of flue gas [°C]	113	108
Average flue gas velocity [m/s]	6.11	6.07
Average volume of flue gas discharged [m ³ /hr]	45346.61	107291.09
Average volume of flue gas discharged [Nm ³ /hr]	34895.47	83377.71

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	244.39	9.53	96.10	IS 11255(Part I)

End

For GADARKLAB PVT. LTD.

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TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/08008	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	02/08/2023	Analysis Period	02/08/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	Proportioning De-dusting	
Date of Sample collection	02/08/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	2.5	2.5
Height From Ground Level [Meter]	---	30.0
Shape	Round	Round
Temperature of flue gas [°C]	65	62
Average flue gas velocity [m/s]	9.98	9.86
Average volume of flue gas discharged [m ³ /hr]	176334.58	174264.15
Average volume of flue gas discharged [Nm ³ /hr]	154964.52	154019.07

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	325.76	11.31	96.53	IS 11255(Part I)

End

For GADARK LAB PVT. LTD.


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TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/08006	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 02/08/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	02/08/2023	Analysis Period	02/08/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	Flux & Fuel De - dusting	
Date of Sample collection	02/08/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	1.62	1.62
Height From Ground Level [Meter]	---	30.0
Shape	Round	Round
Temperature of flue gas [°C]	58	54
Average flue gas velocity [m/s]	7.11	7.07
Average volume of flue gas discharged [m ³ /hr]	52747.78	52428.09
Average volume of flue gas discharged [Nm ³ /hr]	47183.20	47624.21

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	355.09	10.07	97.16	IS 11255(Part I)

End

For GADARKLAB PVT. LTD.

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TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/07223	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	29/07/2023	Analysis Period	29/07/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	Head End ESP	
Date of Sample collection	29/07/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	3.2	6.8
Height From Ground Level [Meter]	---	100.0
Shape	Round	Round
Temperature of flue gas [°C]	157	154
Average flue gas velocity [m/s]	11.30	11.50
Average volume of flue gas discharged [m ³ /hr]	327120.63	1503977.24
Average volume of flue gas discharged [Nm ³ /hr]	224250.14	1036946.02

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	542.69	20.15	96.29	IS 11255(Part I)

End

For GADARKLAB PVT. LTD.

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TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/EI/23/07225	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	29/07/2023	Analysis Period	29/07/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	Tail End ESP	
Date of Sample collection	29/07/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	2.7	2.7
Height From Ground Level [Meter]	—	30.0
Shape	Round	Round
Temperature of flue gas [°C]	112	108
Average flue gas velocity [m/s]	7.28	7.13
Average volume of flue gas discharged [m ³ /hr]	210798.31	931879.83
Average volume of flue gas discharged [Nm ³ /hr]	161388.56	722290.33

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	979.24	31.64	96.77	IS 11255(Part I)

End

For GADARK LAB PVT. LTD.

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[KAILAS V. CHITALKAR]

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TEST REPORT

Doc.No : GLPL/QF/7.8/02

Test Report No.	GA/E/23/07210	T. R. Date	05/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (SINTER PLANT) AMONA, NAVELIM, BICHOLIM - GOA.		
Letter Ref.	As per Dated 25/07/2023		
Sampling Done By	GLPL	Page No.	1 of 1
Sample Received on	28/07/2023	Analysis Period	28/07/2023 To 05/08/2023

SAMPLING DETAILS - STACK EMISSION

Stack Attached to	LDC Baghouse	
Date of Sample collection	28/07/2023	
Sample Details	Inlet	Outlet
Stack Diameter [Meter]	1.35	1.4
Shape	Round	Round
Temperature of flue gas [°C]	49	44
Average flue gas velocity [m/s]	4.24	4.04
Average volume of flue gas discharged [m ³ /hr]	21847.72	22414.92
Average volume of flue gas discharged [Nm ³ /hr]	20153.11	21003.39

ANALYSIS REPORT:

Parameters	Unit	Results		Operating Efficiency %	Methods
		Inlet	Outlet		
TPM / SPM	mg/Nm ³	218.61	8.42	96.15	IS 11255(Part I)

End

For GADARKLAB PVT. LTD.


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[KAILAS V. CHITALKAR]


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ANNEXURE IV

**Ambient air monitoring reports of Archaeological sites from
April'2023 to September'2023.**

Ambient Air Quality monitoring data of archaeological site 1: Near Siddhartha Caves, Surla:

Parameters	Unit	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
PM 10	µg/m3	43.16	44.36	42.18	37.89	36.59	36.01
PM 2.5	µg/m3	18.94	19.04	17.69	17.65	17.58	16.98
SO2	µg/m3	9.12	9.16	8.96	8.86	8.83	8.90
NO2	µg/m3	13.66	13.71	13.42	13.45	13.37	12.93
CO	mg/m3	0.22*	0.22*	0.21*	0.22*	0.22*	0.22*
Lead	µg/m3	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ozone	µg/m3	< 20.0*	< 20.0*	< 20.0*	< 20.0*	< 20.0*	< 20.0*
Ammonia	µg/m3	< 14.0	< 14.0	< 14.0	< 14.0	< 14.0	< 14.0
Benzene	µg/m3	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Benzo Pyrene	ng/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Arsenic	ng/m3	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Nickel	ng/m3	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0

*Hourly Value

Ambient Air Quality monitoring data of archaeological site 2: Near Mosque, Surla:

Parameters	Unit	Apr-23	May-23	Jun-23	Jul-23	Aug-23	Sep-23
PM 10	µg/m3	39.53	39.69	38.12	38.24	35.81	35.98
PM 2.5	µg/m3	17.66	18.21	17.24	18.43	17.63	18.06
SO2	µg/m3	9.32	9.38	8.85	9.16	9.24	8.92
NO2	µg/m3	14.78	14.86	14.24	14.75	14.68	14.86
CO	mg/m3	0.22*	0.22*	0.20*	0.22*	0.22*	0.22*
Lead	µg/m3	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Ozone	µg/m3	< 20.0*	< 20.0*	< 20.0*	< 20.0*	< 20.0*	< 20.0*
Ammonia	µg/m3	< 14.0	< 14.0	< 14.0	< 14.0	< 14.0	< 14.0
Benzene	µg/m3	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14	< 0.14
Benzo Pyrene	ng/m3	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Arsenic	ng/m3	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7	< 0.7
Nickel	ng/m3	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0	< 6.0

*Hourly Value

ANNEXURE V
New CAAQMS at DNG gate



New CAAQMS installed

ANNEXURE VI

BaP monitoring data from April'2023 to September'2023.

Benzo Amino Pyrene (BaP) monitoring data**April'23 to September'23**

Date	1. Near Amona gate	2. Opp. BSNL exchange	3. Near Dispatch gate	4. Compound wall towards Navelim	5. Near Sateri temple	6. Compound wall towards Maina
03-04-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
06-04-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
10-04-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
13-04-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
17-04-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
20-04-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
24-04-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
27-04-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
02-05-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
05-05-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
08-05-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
11-05-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
15-05-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
18-05-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
22-05-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
25-05-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
29-05-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
01-06-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
05-06-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
08-06-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
12-06-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
15-06-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
19-06-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
22-06-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
26-06-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
29-06-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
03-07-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
06-07-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
10-07-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
13-07-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
17-07-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
20-07-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
24-07-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
27-07-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
31-07-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
03-08-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
07-08-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
10-08-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
14-08-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
17-08-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
21-08-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

Benzo Amino Pyrene (BaP) monitoring data

April'23 to September'23

24-08-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
28-08-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
31-08-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
04-09-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
07-09-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
11-09-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
14-09-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
18-09-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
21-09-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
25-09-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
28-09-2023	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

ANNEXURE VII

**AAQMS reports of Amona and Navelim village from April'23
to September'23**

AAQMS location 1: Amona village (April'23-September'23)

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5(ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
03-04-2023	55.72	27.73	9.23	17.65
06-04-2023	50.34	24.61	9.54	17.82
10-04-2023	60.83	29.1	9.62	17.54
13-04-2023	54.51	27.02	9.51	17.32
17-04-2023	49.63	25.41	9.45	18.16
20-04-2023	53.76	26.78	9.21	17.24
24-04-2023	51.89	25.33	9.42	17.66
27-04-2023	62.38	31.17	9.54	17.81
02-05-2023	60.54	29.81	9.33	17.85
05-05-2023	57.53	28.13	9.28	17.61
08-05-2023	53.89	25.67	9.18	17.54
11-05-2023	58.32	28.76	9.39	17.79
15-05-2023	62.14	30.44	10.05	17.91
18-05-2023	53.74	27.69	8.76	17.5
22-05-2023	59.03	28.94	9.45	17.67
25-05-2023	56.82	28.26	9.21	17.53
29-05-2023	57.31	27.83	9.36	17.64
01-06-2023	58.42	29.01	9.79	17.93
05-06-2023	55.61	27.76	9.71	17.83
08-06-2023	59.77	29.42	9.56	17.72
12-06-2023	53.61	26.39	9.62	17.44
15-06-2023	55.59	27.64	9.25	17.19
19-06-2023	57.34	28.19	9.17	17.22
22-06-2023	60.22	30.22	8.9	17.13
26-06-2023	53.48	26.74	8.72	17.56
29-06-2023	48.16	24.96	8.51	17.66
03-07-2023	47.32	24.89	9.24	17.41
06-07-2023	43.66	24.12	9.07	17.32
10-07-2023	41.89	20.79	8.69	17.1
13-07-2023	45.21	22.65	8.55	17.26
17-07-2023	45.62	23.14	8.42	17.11
20-07-2023	43.54	22.09	8.26	16.64
24-07-2023	37.85	19.55	8.12	16.28
27-07-2023	40.57	20.66	8.38	16.41
31-07-2023	42.46	21.38	8.27	16.53
03-08-2023	47.96	23.82	8.89	17.06
07-08-2023	50.34	25.27	9.07	17.21
10-08-2023	42.27	21.58	8.64	16.65

14-08-2023	45.66	22.69	8.73	16.7
17-08-2023	49.01	24.92	8.78	17.03
21-08-2023	43.86	22.09	8.62	16.64
24-08-2023	45.61	22.65	8.71	16.71
28-08-2023	46.28	23.74	8.69	16.75
31-08-2023	51.37	25.66	9.12	17.29
04-09-2023	52.79	26.42	9.12	17.38
07-09-2023	50.17	24.88	8.75	16.93
11-09-2023	49.21	23.56	9.22	15.97
14-09-2023	50.31	24.81	8.23	18.02
18-09-2023	51.46	26.54	9.31	17.51
21-09-2023	51.64	25.12	8.36	16.64
25-09-2023	50.78	24.33	8.03	15.84
28-09-2023	49.33	23.21	7.98	15.73
NAAQS daily limits	100 (ug/m3)	60 (ug/m3)	80 (ug/m3)	80 (ug/m3)

AAQMS location 2: Navelim village (April'23-September'23)

Date	Particular Matter PM 10 (ug/m3)	Particular Matter PM 2.5(ug/m3)	Sulphur Dioxide (SO2) (ug/m3)	Nitrogen Dioxide (NOx) (ug/m3)
03-04-2023	54.26	27.12	9.39	17.48
06-04-2023	51.89	25.65	9.48	17.8
10-04-2023	62.5	31.07	9.73	17.31
13-04-2023	58.33	28.31	9.78	17.69
17-04-2023	55.68	24.63	9.62	17.94
20-04-2023	52.14	25.59	9.29	17.31
24-04-2023	48.9	25.11	9.38	17.77
27-04-2023	61.35	30.89	9.47	17.62
02-05-2023	60.75	29.57	9.63	17.69
05-05-2023	56.94	28.34	9.84	17.79
08-05-2023	55.37	27.18	9.34	17.85
11-05-2023	58.96	28.62	9.15	17.38
15-05-2023	61.62	30.79	9.59	17.67
18-05-2023	57.29	28.51	9.75	17.44
22-05-2023	55.84	27.62	9.83	17.67
25-05-2023	57.31	28.43	9.51	17.6

29-05-2023	58.98	29.44	9.79	17.64
01-06-2023	60.17	28.62	9.68	17.63
05-06-2023	54.78	27.43	9.76	17.96
08-06-2023	58.16	27.84	9.43	17.67
12-06-2023	56.24	26.33	9.61	17.56
15-06-2023	59.15	27.27	9.18	17.22
19-06-2023	57.81	28.33	9.35	17.45
22-06-2023	59.46	29.45	8.85	17.35
26-06-2023	54.33	26.45	8.56	17.29
29-06-2023	50.94	25.36	8.22	17.7
03-07-2023	46.24	22.84	9.15	17.44
06-07-2023	43.72	22.69	8.95	17.21
10-07-2023	42.33	21.47	8.77	17.36
13-07-2023	47.29	23.22	8.39	17.13
17-07-2023	43.64	22.54	8.36	17.33
20-07-2023	41.58	21.22	8.19	16.45
24-07-2023	39.46	19.77	8.07	16.51
27-07-2023	43.27	20.89	8.45	16.62
31-07-2023	40.18	21.03	8.14	16.43
03-08-2023	46.81	23.65	8.69	16.88
07-08-2023	51.32	25.13	9.14	17.18
10-08-2023	43.17	22.53	8.66	16.62
14-08-2023	46.91	22.61	8.77	16.72
17-08-2023	50.12	25.24	8.65	17.11
21-08-2023	44.19	22.59	8.42	16.6
24-08-2023	46.95	23.84	8.65	16.68
28-08-2023	44.86	22.16	8.6	16.71
31-08-2023	52.23	25.36	9.11	17.22
04-09-2023	50.63	25.73	9.07	17.48
07-09-2023	47.85	23.16	8.64	16.83
11-09-2023	46.52	22.15	7.98	16.49
14-09-2023	51.44	26.15	9.26	17.44
18-09-2023	49.23	24.47	8.82	18.3
21-09-2023	48.75	24.96	8.69	17.6
25-09-2023	50.1	49.12	7.8	16.11
28-09-2023	51.62	26.44	8.65	17.21
NAAQS daily limits	100 (ug/m3)	60 (ug/m3)	80 (ug/m3)	80 (ug/m3)

ANNEXURE VIII

**Riverine water quality reports from April'23 to
September'23.**



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

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OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/04086	T.R. Date:	18/04/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT - I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 14/04/2023		
Lab Reference No.	GW/E/23/04086	Page No.	1 of 1
Sampling Done On	14/04/2023	Sample Received on	14/04/2023
Sample Collected By	GLPL	Analysis Period	14/04/2023 To 18/04/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

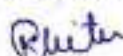
ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.04	6.5 - 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.2	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.8	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	94	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW - II Waters

End

For GADARK LAB PVT. LTD.


AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]


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Note:

1. Results relate only to the sample/s tested, only in case of samples submitted by customer & not drawn by GLPL.
2. Test certificate shall not be reproduced except in full, without written approval of the laboratory.
3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Customer complaint register is available at laboratory.
5. Calibration details of the equipment's used in monitoring and / or analysis is back side of analysis report

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/04087	T.R. Date:	18/04/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 14/04/2023		
Lab Reference No.	GW/E/23/04087	Page No.	1 of 1
Sampling Done On	14/04/2023	Sample Received on	14/04/2023
Sample Collected By	GLPL	Analysis Period	14/04/2023 To 18/04/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.07	6.5 – 8.5	APHA (23 rd Edition) 4500 H*
Dissolved Oxygen	mg/ltr	4.3	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.5	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.3	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B

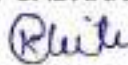
BACTERIOLOGICAL TEST :

Fecal Coliform	Org/100 ml	94	<100.0	APHA (23 rd Edition) 9221 E
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*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

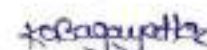
End

For GADARK LAB PVT. LTD.


AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

Note:

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3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Customer complaint register is available at laboratory.
5. Calibration details of the equipment's used in monitoring and / or analysis is back side of analysis report


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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sl. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/04121	T.R. Date:	02/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 28/04/2023		
Lab Reference No.	GW/E/23/04121	Page No.	1 of 1
Sampling Done On	28/04/2023	Sample Received on	28/04/2023
Sample Collected By	GLPL	Analysis Period	28/04/2023 To 02/05/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.04	6.5 – 8.5	APHA (23 rd Edition) 4500 H*
Dissolved Oxygen	mg/ltr	4.1	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	5.9	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.2	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	94	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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Note:

1. Results relate only to the sample/s tested, only in case of samples submitted by customer & not drawn by GLPL.
2. Test certificate shall not be reproduced except in full, without written approval of the laboratory.
3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Customer complaint register is available at laboratory.
5. Calibration details of the equipment's used in monitoring and / or analysis is back side of analysis report

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/04122	T.R. Date:	02/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 28/04/2023		
Lab Reference No.	GW/E/23/04122	Page No.	1 of 1
Sampling Done On	28/04/2023	Sample Received on	28/04/2023
Sample Collected By	GLPL	Analysis Period	28/04/2023 To 02/05/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

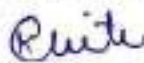
ANALYSIS REPORTS:


Parameters	Units	Test Result	*Limits	Methods
pH	---	7.06	6.5 – 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.2	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	5.4	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.1	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.


AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]


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Note:

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3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Customer complaint register is available at laboratory.
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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB.: H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525.

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Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/05067	T.R. Date:	15/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 11/05/2023		
Lab Reference No.	GW/E/23/05067	Page No.	1 of 1
Sampling Done On	11/05/2023	Sample Received on	11/05/2023
Sample Collected By	GLPL	Analysis Period	11/05/2023 To 15/05/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.10	6.5 – 8.5	APHA (23 rd Edition) 4500 H*
Dissolved Oxygen	mg/ltr	4.5	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	7.0	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.8	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.9	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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Note:

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3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Customer complaint register is available at laboratory.
5. Calibration details of the equipment's used in monitoring and / or analysis is back side of analysis report

Recognised by Ministry of Environment, Forest and CC, Government of India, vide Gazette Notification No. 3221, dated 24th August 2021, valid upto 15th October 2023, ISO 9001 : 2015 Certified & ISO 45001 : 2018 Certified.

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/05068	T.R. Date:	15/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 11/05/2023		
Lab Reference No.	GW/E/23/05068	Page No.	1 of 1
Sampling Done On	11/05/2023	Sample Received on	11/05/2023
Sample Collected By	GLPL	Analysis Period	11/05/2023 To 15/05/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.08	6.5 – 8.5	APHA (23 rd Edition) 4500 H*
Dissolved Oxygen	mg/ltr	4.6	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.8	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.7	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.9	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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5. Calibration details of the equipment's used in monitoring and / or analysis is back side of analysis report

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/05176	T.R. Date:	01/06/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT - I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 27/05/2023		
Lab Reference No.	GW/E/23/05176	Page No.	1 of 1
Sampling Done On	27/05/2023	Sample Received on	27/05/2023
Sample Collected By	GLPL	Analysis Period	27/05/2023 To 01/06/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.09	6.5 - 8.5	APHA (23 rd Edition) 4500 H*
Dissolved Oxygen	mg/ltr	4.5	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.1	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.6	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.9	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	94	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW - II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/05177	T.R. Date:	01/06/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 27/05/2023		
Lab Reference No.	GW/E/23/05177	Page No.	1 of 1
Sampling Done On	27/05/2023	Sample Received on	27/05/2023
Sample Collected By	GLPL	Analysis Period	27/05/2023 To 01/06/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	—	7.11	6.5 – 8.5	APHA (23 rd Edition) 4500 H*
Dissolved Oxygen	mg/ltr	4.4	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	5.6	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.5	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.9	—	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	84	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/06176	T.R. Date:	17/06/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT - I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 13/06/2023		
Lab Reference No.	GW/E/23/06176	Page No.	1 of 1
Sampling Done On	13/06/2023	Sample Received on	13/06/2023
Sample Collected By	GLPL	Analysis Period	13/06/2023 To 17/06/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.16	6.5 - 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.8	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.7	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.6	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	63	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/

AS per Class SW - II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/06177	T.R. Date:	17/06/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT - I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 13/06/2023		
Lab Reference No.	GW/E/23/06177	Page No.	1 of 1
Sampling Done On	13/06/2023	Sample Received on	13/06/2023
Sample Collected By	GLPL	Analysis Period	13/06/2023 To 17/06/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point), 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.11	6.5 - 8.5	APHA (23 rd Edition) 4500 H*
Dissolved Oxygen	mg/ltr	4.9	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.5	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	63	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW - II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/06228	T.R. Date:	27/06/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT - I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 23/06/2023		
Lab Reference No.	GW/E/23/06228	Page No.	1 of 1
Sampling Done On	23/06/2023	Sample Received on	23/06/2023
Sample Collected By	GLPL	Analysis Period	23/06/2023 To 27/06/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

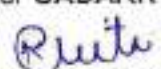
ANALYSIS REPORTS:

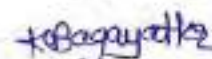
Parameters	Units	Test Result	*Limits	Methods
pH	---	7.12	6.5 - 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.7	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.8	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.8	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	63	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW - II Waters

End

For GADARK LAB PVT. LTD.


AUTHORISED SIGNATORY
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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/06229	T.R. Date:	27/06/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT - I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 23/06/2023		
Lab Reference No.	GW/E/23/06229	Page No.	1 of 1
Sampling Done On	23/06/2023	Sample Received on	23/06/2023
Sample Collected By	GLPL	Analysis Period	23/06/2023 To 27/06/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.09	6.5 - 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.6	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.0	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.6	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	63	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/

AS per Class SW - II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	01/07/2022	30/06/2023
4	BOD Incubator	01/07/2022	30/06/2023
5	Lab Incubator	01/07/2022	30/06/2023
6	Autoclave	01/07/2022	30/06/2023



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Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/07079	T.R. Date:	17/07/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 13/07/2023		
Lab Reference No.	GW/E/23/07079	Page No.	1 of 1
Sampling Done On	13/07/2023	Sample Received on	13/07/2023
Sample Collected By	GLPL	Analysis Period	13/07/2023 To 17/07/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.12	6.5 – 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.6	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	7.0	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.8	<3.0	IS 3025 (Part 44): 1993
Temperature	°C	27.6	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST:				
Fecal Coliform	Org/100 ml	63	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/07080	T.R. Date:	17/07/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 13/07/2023		
Lab Reference No.	GW/E/23/07080	Page No.	1 of 1
Sampling Done On	13/07/2023	Sample Received on	13/07/2023
Sample Collected By	GLPL	Analysis Period	13/07/2023 To 17/07/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point), 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.06	6.5 – 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.8	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.9	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.6	<3.0	IS 3025 (Part 44): 1993
Temperature	°C	27.6	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	63	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[SACHIN B. GAONKAR]

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/07111	T.R. Date:	28/07/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 24/07/2023		
Lab Reference No.	GW/E/23/07111	Page No.	1 of 1
Sampling Done On	24/07/2023	Sample Received on	24/07/2023
Sample Collected By	GLPL	Analysis Period	24/07/2023 To 28/07/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point), 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.20	6.5 – 8.5	APHA (24th Edition) 4500 H*
Dissolved Oxygen	mg/ltr	4.9	>4.0	APHA (24th Edition) 4500 O C
Turbidity	NTU	7.2	<30.0	APHA (24th Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.7	<3.0	IS 3025 (Part 44) : 2023
Temperature	°C	27.7	---	APHA (24th Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	58	<100.0	APHA (24th Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/ as per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/07112	T.R. Date:	28/07/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 24/07/2023		
Lab Reference No.	GW/E/23/07112	Page No.	1 of 1
Sampling Done On	24/07/2023	Sample Received on	24/07/2023
Sample Collected By	GLPL	Analysis Period	24/07/2023 To 28/07/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.14	6.5 – 8.5	APHA (24th Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.8	>4.0	APHA (24th Edition) 4500 O C
Turbidity	NTU	6.8	<30.0	APHA (24th Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	<3.0	IS 3025 (Part 44) : 2023
Temperature	°C	27.7	---	APHA (24th Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	58	<100.0	APHA (24th Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/ as per Class SW – II Waters
End

For GADARK LAB PVT. LTD.

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[SACHIN B. GAONKAR]

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/08047	T.R. Date:	18/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT - I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 14/08/2023		
Lab Reference No.	GW/E/23/08047	Page No.	1 of 1
Sampling Done On	14/08/2023	Sample Received on	14/08/2023
Sample Collected By	GLPL	Analysis Period	14/08/2023 To 18/08/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.23	6.5 - 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.2	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.8	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	<3.0	IS 3025 (Part 44): 1993
Temperature	°C	27.7	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST:				
Fecal Coliform	Org/100 ml	58	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/

AS per Class SW - II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/08048	T.R. Date:	18/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT - I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 14/08/2023		
Lab Reference No.	GW/E/23/08048	Page No.	1 of 1
Sampling Done On	14/08/2023	Sample Received on	14/08/2023
Sample Collected By	GLPL	Analysis Period	14/08/2023 To 18/08/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point), 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.10	6.5 - 8.5	APHA (23 rd Edition) 4500 H*
Dissolved Oxygen	mg/ltr	4.4	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.5	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.2	<3.0	IS 3025 (Part 44): 1993
Temperature	°C	27.7	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	58	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW - II Waters

End

For GADARK LAB PVT. LTD.

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[KAILAS V. CHITALKAR]

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/08262	T.R. Date:	28/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 24/08/2023		
Lab Reference No.	GW/E/23/08262	Page No.	1 of 1
Sampling Done On	24/08/2023	Sample Received on	24/08/2023
Sample Collected By	GLPL	Analysis Period	24/08/2023 To 28/08/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point), 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.18	6.5 – 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.7	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	7.0	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.8	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.6	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	46	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024



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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/08263	T.R. Date:	28/08/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 24/08/2023		
Lab Reference No.	GW/E/23/08263	Page No.	1 of 1
Sampling Done On	24/08/2023	Sample Received on	24/08/2023
Sample Collected By	GLPL	Analysis Period	24/08/2023 To 28/08/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	—	7.12	6.5 – 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.6	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.6	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.6	<3.0	IS 3025 (Part 44) : 1993
Temperature	°C	27.6	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	46	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/

AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

Ruth

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

K. Chitalkar
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Note:

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2. Test certificate shall not be reproduced except in full, without written approval of the laboratory.
3. Samples will be preserved for a period 15 days from the delivery of Test Certificate.
4. Customer complaint register is available at laboratory.
5. Calibration details of the equipment's used in monitoring and / or analysis is back side of analysis report

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

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OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.

Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/09091	T.R. Date:	15/09/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NAVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 11/09/2023		
Lab Reference No.	GW/E/23/09091	Page No.	1 of 1
Sampling Done On	11/09/2023	Sample Received on	11/09/2023
Sample Collected By	GLPL	Analysis Period	11/09/2023 To 15/09/2023
Sample Description	River upstream sample (100 mtrs. upstream from discharge point) , 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.18	6.5 – 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.4	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.5	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.7	<3.0	IS 3025 (Part 44): 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST:				
Fecal Coliform	Org/100 ml	43	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/
AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024



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OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.

Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/09092	T.R. Date:	15/09/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT – I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 11/09/2023		
Lab Reference No.	GW/E/23/09092	Page No.	1 of 1
Sampling Done On	11/09/2023	Sample Received on	11/09/2023
Sample Collected By	GLPL	Analysis Period	11/09/2023 To 15/09/2023
Sample Description	River downstream sample (100 mtrs. downstream from discharge point), 2000 ml in plastic bottle & 100 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	*Limits	Methods
pH	---	7.08	6.5 – 8.5	APHA (23 rd Edition) 4500 H ⁺
Dissolved Oxygen	mg/ltr	4.6	>4.0	APHA (23 rd Edition) 4500 O C
Turbidity	NTU	6.0	<30.0	APHA (23 rd Edition) 2130 B
BOD 3 days 27°C	mg/ltr	2.4	<3.0	IS 3025 (Part 44): 1993
Temperature	°C	27.8	---	APHA (23 rd Edition) 2550 B
BACTERIOLOGICAL TEST :				
Fecal Coliform	Org/100 ml	43	<100.0	APHA (23 rd Edition) 9221 E

*Limits: GSPCB Consent No. 5/416/95-PCB/CI-5196/

AS per Class SW – II Waters

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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Note:

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Recognised by Ministry of Environment, Forest and CC, Government of India, vide Gazette Notification No. 3221, dated 24th August 2021, valid upto 15th October 2023. ISO 9001 : 2015 Certified & ISO 45001 : 2018 Certified.

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING AND ANALYSIS

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	pH Meter	Inhouse Calibration Daily	
2	Turbidity Meter	Inhouse Calibration Daily	
3	Analytical Weighing Balance	29/06/2023	28/06/2024
4	BOD Incubator	29/06/2023	28/06/2024
5	Lab Incubator	29/06/2023	28/06/2024
6	Autoclave	29/06/2023	28/06/2024

ANNEXURE IX
Fugitive dust emission reports



|| Shreeji ||



SHREEJI AQUA TREATMENT PVT. LTD.

Innovative Environmental Solutions Under One Roof

Phone: 218, Shreeji Complex, Nakra Nagar, Pimpri, Pune: 411 018
Head Office: Plot No. 1, Shreeji Ind. Park 1, Vadodara Savli, Landagura, 391 375 Dist. Vadodra
Lab: 184, Shreeji Service Bldg. Plot No. 33, Purna Nagar, Chikhali, Pune: 411 019
Customer Care No.: +919225247365
Web: www.shreejiqa.com Email: info@shreejiqa.com

An ISO 9001:2015
Certified Company
ISO 45001:2018


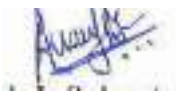
Laboratory Recognized by Ministry of Environment, Forest & Climate Change, Govt. of India & NABL Valid Up to 07/04/2024.

TEST REPORT						
Lab Inward No. : SL/23-24/08/MWZ/74k			Date of Sampling : 18-19/08/2023			
Client Name : M/s. VEDANTA LTD.(PIG IRON EXPANSION PLANT). SURVEY NO.61/1,61/3,62 63/0,120/1.177 (PART)205,206,207, VILLAGE NAVELIM ,BICHOLIM-GOA.			Start of analysis : 19/08/2023			
			End of Analysis : 23/08/2023			
			Report Date : 23/08/2023			
			Sample Drawn By : SATPL Representative on 18-19/08/2023			
Order / Reference: TRF Dated 19/08/2023						
Monitoring For : FUGITIVE EMISSION MONITORING						
Sampling Procedure : As per respective NIOSH/IS Guidelines						
Limits : As per The Environmental (Protection) Rules1986-(Third Amendment),2012						
Sampling Location : <i>Pig Iron Yard</i>						
Lateral Distance : 5 meter			Duration : 24Hrs.			
Receptor Height : 3 meter			Time : 11:00 am to 11:00 am			
Ambient Temperature (°C): 26.6			Relative Humidity(%) : 92			
RESULTS						
Sr.	Parameters	Results	Limits	Unit	Reference Method	Remark
1	Sulphur Dioxide (SO ₂)	30.10	<200	µg/m ³	IS5182(Part-2);R2018	Complies
2	Oxides of Nitrogen (NO ₂)	27.60	<150	µg/m ³	IS5182(Part-6);R2018	Complies
3	Respirable Suspended Particulate Matter (RSPM)PM ₁₀	332.0	<2000	µg/m ³	IS5182(Part-23);R 2017	Complies
Note: NA- Not Applicable.						
REMARK: Reference to above mentioned monitoring report all the parameters are within the limits.						
Disclaimer: <i>'Information is supplied by customers represented in italic font'</i>						
-----End of Test Report-----						
Authorized Signatory			Authorized Signatory			
						
Ms. Pooja Tapale (Quality Manager)			Dr. Archana Waykole (Technical Manager)			

The results relate to sample tested.



Laboratory Recognized by Ministry of Environment, Forest & Climate Change, Govt. of India & NABL Valid Up to 07/04/2024.



TEST REPORT						
Lab Inward No. : SL/23-24/08/MWZ/74L			Date of Sampling : 18-19/08/2023			
Client Name : M/s. VEDANTA LTD.(MET COKE DIVISON) (WASTE HEAT RECOVERY POWER PLANT-I) SURVEY NO.205,206,207,31/1.177 PART 177,44,43/1,43/2,& 42/1 & 74, SURVEY NO.207(PART) OF NAVELIM VILLAGE AND SURVEY NO.43/1,44/4 & 44/5 OF AMONA VILLAGE,BICHOLIM- GOA			Start of analysis : 19/08/2023			
			End of Analysis : 23/08/2023			
			Report Date : 23/08/2023			
			Sample Drawn By : SATPL Representative on 18-19/08/2023			
Order / Reference: TRF Dated 19/08/2023						
Monitoring For : FUGITIVE EMISSION MONITORING						
Sampling Procedure : As per respective NIOSH/IS Guidelines						
Limits : As per The Environmental (Protection) Rules1986-(Third Amendment),2012						
Sampling Location : <i>Raw Material Storage Yard</i>						
Lateral Distance : 5 meter			Duration : 24 Hrs.			
Receptor Height : 3 meter			Time : 11:10 am to 11:10 am			
Ambient Temperature (°C): 26.6			Relative Humidity(%) : 92			
RESULTS						
Sr.	Parameters	Results	Limits	Unit	Reference Method	Remark
1	Sulphur Dioxide (SO ₂)	31.76	<200	µg/m ³	IS5182(Part-2);R2018	Complies
2	Oxides of Nitrogen (NO ₂)	25.87	<150	µg/m ³	IS5182(Part-6);R2018	Complies
3	Respirable Suspended Particulate Matter (RSPM)PM ₁₀	468.12	<2000	µg/m ³	IS5182(Part-23);R 2017	Complies
Note: NA- Not Applicable.						
REMARK: Reference to above mentioned monitoring report all the parameters are within the limits.						
Disclaimer: 'Information is supplied by customers represented in italic font'						
-----End of Test Report-----						
Authorized Signatory			Authorized Signatory			
						
Ms. Pooja Tapale (Quality Manager)			Dr. Archana Waykole (Technical Manager)			

The results relate to sample tested.

Page 1 of 1



Laboratory Recognized by Ministry of Environment, Forest & Climate Change, Govt. of India & NABL Valid Up to 07/04/2024.

TEST REPORT						
Lab Inward No. : SL/23-24/08/MWZ/74M			Date of Sampling : 18-19/08/2023			
Client Name : M/s. VEDANTA LTD.(PIG IRON EXPANSION PLANT). SURVEY NO.61/1,61/3,62,63/0,120/1.177(PART)205,206,207, VILLAGE NAVELIM,BICHOLIM-GOA.			Start of analysis : 19/08/2023			
			End of Analysis : 23/08/2023			
			Report Date : 23/08/2023			
			Sample Drawn By : SATPL Representative on 18-19/08/2023			
Order / Reference: TRF Dated 19/08/2023						
Monitoring For : FUGITIVE EMISSION MONITORING						
Sampling Procedure : As per respective NIOSH/IS Guidelines						
Limits : As per The Environmental (Protection) Rules1986-(Third Amendment),2012						
Sampling Location : <i>Internal Transportation Road</i>						
Lateral Distance : 5 meter			Duration : 24 Hrs.			
Receptor Height : 3 meter			Time : 11:20 am to 11:20 am			
Ambient Temperature (°C): 26.6			Relative Humidity(%) : 92			
RESULTS						
Sr.	Parameters	Results	Limits	Unit	Reference Method	Remark
1	Sulphur Dioxide (SO ₂)	32.20	<200	µg/m ³	IS5182(Part-2);R2018	Complies
2	Oxides of Nitrogen (NO ₂)	29.70	<150	µg/m ³	IS5182(Part-6);R2018	Complies
3	Respirable Suspended Particulate Matter (RSPM)PM ₁₀	349.75	<2000	µg/m ³	IS5182(Part-23);R 2017	Complies
Note: NA- Not Applicable.						
REMARK: Reference to above mentioned monitoring report all the parameters are within the limits.						
Disclaimer: 'Information is supplied by customers represented in italic font'						
-----End of Test Report-----						
Authorized Signatory			Authorized Signatory			
						
Ms. Pooja Tapale (Quality Manager)			Dr. Archana Waykole (Technical Manager)			

The results relate to sample tested.



|| Shreeji ||

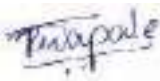
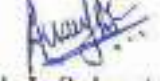
SHREEJI AQUA TREATMENT PVT. LTD.

Innovative Environmental Solutions Under One Roof

Phone: 218, Shreeji Complex, Nakra Nagar, Pimpri, Pune-411 018
Vedanta: Plot No. 1, Shreeji Park 1, Vedanta Savli, Landagura, 391 375 Dist. Vadodra
Lab: 164, Shreeji Service Bldg. Plot No. 55, Purna Nagar, Chikhali, Pune-411 019
Customer Care No.: +919225247365
Web: www.shreejiqa.com Email: info@shreejiqa.com

An ISO 9001:2015
Certified Company
ISO 45001:2018

Laboratory Recognized by Ministry of Environment, Forest & Climate Change, Govt. of India & NABL Valid Up to 07/04/2024.

TEST REPORT						
Lab Inward No. : SL/23-24/08/MWZ/74N			Date of Sampling : 18-19/08/2023			
Client Name : M/s. VEDANTA LTD.(PIG IRON EXPANSION PLANT). SURVEY NO.61/1,61/3,62, 63/0,120/1.177 (PART)205,206,207, VILLAGE NAVELIM ,BICHOLIM-GOA.			Start of analysis : 19/08/2023			
			End of Analysis : 23/08/2023			
			Report Date : 23/08/2023			
			Sample Drawn By : SATPL Representative on 18-19/08/2023			
Order / Reference: TRF Dated 19/08/2023						
Monitoring For : FUGITIVE EMISSION MONITORING						
Sampling Procedure : As per respective NIOSH/IS Guidelines						
Limits : As per The Environmental (Protection) Rules1986-(Third Amendment),2012						
Sampling Location : Loading & Unloading at Jetty						
Lateral Distance : 5 meter			Duration : 24 Hrs.			
Receptor Height : 3 meter			Time : 11:30 am to 11:30 am			
Ambient Temperature (°C): 26.6			Relative Humidity(%) : 92			
RESULTS						
Sr.	Parameters	Results	Limits	Unit	Reference Method	Remark
1	Sulphur Dioxide (SO ₂)	29.13	<200	µg/m ³	ISS182(Part-2);R2018	Complies
2	Oxides of Nitrogen (NO ₂)	24.14	<150	µg/m ³	ISS182(Part-6);R2018	Complies
3	Respirable Suspended Particulate Matter (RSPM)PM ₁₀	305.61	<2000	µg/m ³	ISS182(Part-23);R 2017	Complies
Note: NA- Not Applicable.						
REMARK: Reference to above mentioned monitoring report all the parameters are within the limits.						
Disclaimer: 'Information is supplied by customers represented in italic font'						
-----End of Test Report-----						
Authorized Signatory			Authorized Signatory			
						
Ms. Pooja Tapale (Quality Manager)			Dr. Archana Waykole (Technical Manager)			

The results relate to sample tested.

Page 1 of 1



GADARK LAB PVT. LTD.

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Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/5.10/01

Test Report No.	GA/E/23/05221	T. R. Date	07/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED. (PIG IRON EXPANSION PLANT). SURVEY NO. 61/1,61/3,62,63/0,120/1,177 (PART)205,206,207, VILLAGE NAVELIM, BICHOLIM - GOA.		
Letter Ref / Date .	As per Dated 04/05/2023.		
Sampling Done By	GLPL	GLPL	GLPL
Sample Received on	04/05/2023	04/05/2023	04/05/2023

SAMPLING DETAILS - FUGITIVE EMISSIONS MONITORING :-

Sampling Location	Pig Iron Yard
Date of Sampling	04/05/2023
Duration of Sampling [Hrs]	24
Ambient Temperature [°C]	29.0
Relative Humidity [%]	66

ANALYSIS REPORT :-

PM ₁₀	µg/m ³	889	2000	NAAQMS/36/2012-2013 Volume 1
SO ₂	µg/m ³	38	200	IS 5182 (Part II) 2012
NO ₂	µg/m ³	39	150	IS 5182 (Part VI) 2012
CO (8 Hours)	µg/m ³	3136	5000	IS 5182 (Part X) 1999
Lead	µg/m ³	< 0.01	2	NAAQMS/36/2012-2013 Volume 1

Limits* - As per The Environment (Protection) Rules 1986 - (Third Amendment), 2012 .
End

For GADARKLAB PVT. LTD.


AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]


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Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/5.10/01

Test Report No.	GA/E/23/05220	T. R. Date	07/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED (MET COKE DIVISION) (WASTE HEAT RECOVERY POWER PLANT - I) SURVEY NO. 205,206,207, 31/1, PART OF 177,44,43/1,43/2, & 42/1 & 74, SURVEY NO. 207 (PART) OF NVELIM VILLAGE AND SURVEY NO. 43/1, 44/4 & 44/5 OF AMONA VILLAGE, BICHOLIM - GOA.		
Letter Ref / Date .	As per Dated 04/05/2023		
Sampling Done By	GLPL	GLPL	GLPL
Sample Received on	04/05/2023	04/05/2023	04/05/2023

SAMPLING DETAILS - FUGITIVE EMISSIONS MONITORING :-

Sampling Location	Raw Material Storage Yard
Date of Sampling	04/05/2023
Duration of Sampling [Hrs]	24
Ambient Temperature [°C]	29.0
Relative Humidity [%]	66

ANALYSIS REPORT :-

Parameters	Unit	Results	Limits*	Methods
PM ₁₀	µg/m ³	952	2000	NAAQMS/36/2012-2013 Volume 1
SO ₂	µg/m ³	34	200	IS 5182 (Part II) 2012
NO ₂	µg/m ³	34	150	IS 5182 (Part VI) 2012
CO (8 Hours)	µg/m ³	2651	5000	IS 5182 (Part X) 1999
Lead	µg/m ³	< 0.01	2	NAAQMS/36/2012-2013 Volume 1

Limits* - As per The Environment (Protection) Rules 1986 - (Third Amendment), 2012.

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel.: (022) 2577 7069 / 2577 7070 / 2685 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/5.10/01

Test Report No.	GA/E/23/05222	T. R. Date	07/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED. (PIG IRON EXPANSION PLANT). SURVEY NO. 61/1,61/3,62,63/0,120/1,177 (PART)205,206,207, VILLAGE NAVELIM, BICHOLIM - GOA.		
Letter Ref / Date .	As per Dated 04/05/2023		
Sampling Done By	GLPL	GLPL	GLPL
Sample Received on	04/05/2023	04/05/2023	04/05/2023

SAMPLING DETAILS - FUGITIVE EMISSIONS MONITORING :-

Sampling Location	Internal Transportation Road
Date of Sampling	04/05/2023
Duration of Sampling [Hrs]	24
Ambient Temperature [°C]	29.0
Relative Humidity [%]	66

ANALYSIS REPORT :-

PM ₁₀	µg/m ³	892	2000	NAAQMS/36/2012-2013 Volume 1
SO ₂	µg/m ³	37	200	IS 5182 (Part II) 2012
NO ₂	µg/m ³	39	150	IS 5182 (Part VI) 2012
CO (8 Hours)	µg/m ³	3213	5000	IS 5182 (Part X) 1999
Lead	µg/m ³	< 0.01	2	NAAQMS/36/2012-2013 Volume 1

Limits* - As per The Environment (Protection) Rules 1986 - (Third Amendment), 2012 .

End

For GADARKLAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

CHECKED BY

Note :

1. The results relate only to the samples tested
2. Test Report shall not be reproduced except in full, without written approval of the laboratory.
3. Samples will be preserved for a period 15 days from the delivery of Test Report.
4. Test Results relate only to the conditions prevailing at the time of sampling
5. Customer complaint register is available at laboratory.



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB.: H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525.
Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in

OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.
Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/5.10/01

Test Report No.	GA/E/23/05223	T. R. Date	07/06/2023
Customer Name and Address	M/s. VEDANTA LIMITED. (PIG IRON EXPANSION PLANT). SURVEY NO. 61/1,61/3,62,63/0,120/1,177 (PART)205,206,207, VILLAGE NAVELIM, BICHOLIM - GOA.		
Letter Ref / Date .	As per Dated 04/05/2023		
Sampling Done By	GLPL	GLPL	GLPL
Sample Received on	04/05/2023	04/05/2023	04/05/2023

SAMPLING DETAILS - FUGITIVE EMISSIONS MONITORING :-

Sampling Location	Loading & Unloading at Jetty
Date of Sampling	04/05/2023
Duration of Sampling [Hrs]	24
Ambient Temperature [°C]	29.0
Relative Humidity [%]	66

ANALYSIS REPORT :-

PM ₁₀	µg/m ³	826	2000	NAAQMS/36/2012-2013 Volume 1
SO ₂	µg/m ³	34	200	IS 5182 (Part II) 2012
NO ₂	µg/m ³	37	150	IS 5182 (Part VI) 2012
CO (8 Hours)	µg/m ³	3083	5000	IS 5182 (Part X) 1999
Lead	µg/m ³	< 0.01	2	NAAQMS/36/2012-2013 Volume 1

Limits* - As per The Environment (Protection) Rules1986 - (Third Amendment),2012 .
End

For GADARKLAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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Note :

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ANNEXURE X

Pre and Post monsoon groundwater quality analysis.



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TEST REPORT

Doc. No: GLPL/QF/5.10/01

Test Report No.	GW/E/23/05181	T.R. Date	31/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED (PIG IRON PLANT) SURVEY NO. 30 (PART)41,42/1,27 (PART) AMONA, P.O. MARCELA, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 27/05/2023		
Lab Reference No.	GW/E/23/05181	Page No.	1 of 1
Sampling Done On	27/05/2023	Sample Received	27/05/2023
Sample Collected By	GLPL	Analysis Period	27/05/2023 To 31/05/2023
Sample Description	Maina - Digamber Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	Specification Range as per IS 10500 - 2012		Methods (APHA 23rd Edition)
			Requirement Acceptable Limit	Permissible Limit in the Absence of Alternate Source	
Colour (Pt. Scale)	Hazen unit	< 1.0	5.0 Max.	15.0 Max.	APHA 2120 B
Turbidity	NTU	0.26	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	7.12	6.5 - 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	μ S/cm	130	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	38	200.0 Max.	800.0 Max.	APHA 2340 C
Chlorides	mg/ltr	13.01	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	2.45	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E
Total Dissolved Solids	mg/ltr	90	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	0.15	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	25.01	Not Specified		APHA 3500 Ca B
Dissolved Iron	mg/ltr	<0.001	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	12.99	Not Specified		APHA 3111 B
Manganese	mg/ltr	< 0.001	0.10 Max.	0.30 Max.	APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	7	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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TEST REPORT

Doc. No: GLPL/QF/5.10/01

Test Report No.	GW/E/23/05182	T.R. Date	31/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED (PIG IRON PLANT) SURVEY NO. 30 (PART)41,42/1,27 (PART) AMONA, P.O. MARCELA, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 27/05/2023		
Lab Reference No.	GW/E/23/05182	Page No.	1 of 1
Sampling Done On	27/05/2023	Sample Received	27/05/2023
Sample Collected By	GLPL	Analysis Period	27/05/2023 To 31/05/2023
Sample Description	Navelim - Sanjay Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	Specification Range as per IS 10500 - 2012		Methods (APHA 23rd Edition)
			Requirement Acceptable Limit	Permissible Limit in the Absence of Alternate Source	
Colour (Pt. Scale)	Hazen unit	< 1.0	5.0 Max.	15.0 Max.	APHA 2120 B
Turbidity	NTU	0.25	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	7.08	6.5 - 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	$\mu\text{S}/\text{cm}$	155	Not Specified		APHA 2510 B
Total Hardness as CaCO_3	mg/ltr	42	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	14.51	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	3.80	200.0 Max.	400.0 Max.	APHA 4500 SO_4^{2-} E
Total Dissolved Solids	mg/ltr	100	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	1.25	45.0 Max.	No Relaxation	APHA 4500 NO_3 B
Calcium Hardness	mg/ltr	28.01	Not Specified		APHA 3500 Ca B
Dissolved Iron	mg/ltr	<0.001	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	13.99	Not Specified		APHA 3111 B
Manganese	mg/ltr	< 0.001	0.10 Max.	0.30 Max.	APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	8	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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TEST REPORT

Doc. No: GLPL/QF/5.10/01

Test Report No.	GW/E/23/05183	T.R. Date	31/05/2023
Customer Name and Address	M/s. VEDANTA LIMITED (PIG IRON PLANT) SURVEY NO. 30 (PART)41,42/1,27 (PART) AMONA, P.O. MARCELA, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 27/05/2023		
Lab Reference No.	GW/E/23/05183	Page No.	1 of 1
Sampling Done On	27/05/2023	Sample Received	27/05/2023
Sample Collected By	GLPL	Analysis Period	27/05/2023 To 31/05/2023
Sample Description	Amona - Sandesh Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	Specification Range as per IS 10500 - 2012		Methods (APHA 23rd Edition)
			Requirement Acceptable Limit	Permissible Limit in the Absence of Alternate Source	
Colour (Pt. Scale)	Hazen unit	< 1.0	5.0 Max.	15.0 Max.	APHA 2120 B
Turbidity	NTU	0.22	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	7.07	6.5 - 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	μ S/cm	156	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	52	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	18.01	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	4.20	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E
Total Dissolved Solids	mg/ltr	102	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	1.10	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	32.01	Not Specified		APHA 3500 Ca B
Dissolved Iron	mg/ltr	<0.001	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	19.99	30.0 Max.	100.0 Max.	APHA 3111 B
Manganese	mg/ltr	< 0.001	Not Specified		APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	5	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/11027	T.R. Date	21/11/2023
Customer Name and Address	M/s. VEDANTA LIMITED (PIG IRON PLANT) SURVEY NO. 30 (PART)41,42/1,27 (PART) AMONA, P.O. MARCELA, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 16/11/2023		
Lab Reference No.	GW/E/23/11027	Page No.	1 of 1
Sampling Done On	16/11/2023	Sample Received	16/11/2023
Sample Collected By	Mr. Shirishkumar Rane	Analysis Period	16/11/2023 To 21/11/2023
Sample Description	Maina - Digamber Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	Specification Range as per IS 10500 - 2012		Methods (APHA 23rd Edition)
			Requirement Acceptable Limit	Permissible Limit in the Absence of Alternate Source	
Colour (Pt. Scale)	Hazen unit	< 1.0	5.0 Max.	15.0 Max.	APHA 2120 B
Turbidity	NTU	0.24	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	7.19	6.5 – 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	µS/cm	146	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	42	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	14.52	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	2.90	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E
Total Dissolved Solids	mg/ltr	96	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	0.18	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	27.02	Not Specified		APHA 3500 Ca B
Dissolved Iron	mg/ltr	<0.001	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	14.98	Not Specified		APHA 3111 B
Manganese	mg/ltr	< 0.001	0.10 Max.	0.30 Max.	APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	10	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/11028	T.R. Date	21/11/2023
Customer Name and Address	M/s. VEDANTA LIMITED (PIG IRON PLANT) SURVEY NO. 30 (PART)41,42/1,27 (PART) AMONA, P.O. MARCELA, BICHOLIM - GOA.		
Letter Ref/Date	As per Dated 16/11/2023		
Lab Reference No.	GW/E/23/11028	Page No.	1 of 1
Sampling Done On	16/11/2023	Sample Received	16/11/2023
Sample Collected By	Mr. Shirishkumar Rane	Analysis Period	16/11/2023 To 21/11/2023
Sample Description	Navelim - Sanjay Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	Specification Range as per IS 10500 - 2012		Methods (APHA 23rd Edition)
			Requirement Acceptable Limit	Permissible Limit in the Absence of Alternate Source	
Colour (Pt. Scale)	Hazen unit	< 1.0	5.0 Max.	15.0 Max.	APHA 2120 B
Turbidity	NTU	0.26	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	7.04	6.5 - 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	µS/cm	165	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	44	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	15.52	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	3.45	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E
Total Dissolved Solids	mg/ltr	108	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	1.10	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	29.01	Not Specified		APHA 3500 Ca B
Dissolved Iron	mg/ltr	<0.001	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	14.99	Not Specified		APHA 3111 B
Manganese	mg/ltr	< 0.001	0.10 Max.	0.30 Max.	APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	9	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.

Blue

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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Kailas V. Chitalkar
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Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc. No: GLPL/QF/7.8/01

Test Report No.	GW/E/23/11029	T.R. Date	21/11/2023
Customer Name and Address	M/s. VEDANTA LIMITED (PIG IRON PLANT) SURVEY NO. 30 (PART)41,42/1,27 (PART) AMONA, P.O. MARCELA, BICHOLIM – GOA.		
Letter Ref/Date	As per Dated 16/11/2023		
Lab Reference No.	GW/E/23/11029	Page No.	1 of 1
Sampling Done On	16/11/2023	Sample Received	16/11/2023
Sample Collected By	Mr. Shirishkumar Rane	Analysis Period	16/11/2023 To 21/11/2023
Sample Description	Amona – Sandesh Naik Well Water, 3 lit in plastic bottle & 1000 ml in glass bottle.		

ANALYSIS REPORTS:

Parameters	Units	Test Result	Specification Range as per IS 10500 - 2012		Methods (APHA 23rd Edition)
			Requirement Acceptable Limit	Permissible Limit in the Absence of Alternate Source	
Colour (Pt. Scale)	Hazen unit	< 1.0	5.0 Max.	15.0 Max.	APHA 2120 B
Turbidity	NTU	0.21	1.0 Max.	5.0 Max.	APHA 2130 B
pH	---	7.10	6.5 – 8.5	No Relaxation	APHA 4500 H ⁺ B
Electrical Conductivity	µS/cm	153	Not Specified		APHA 2510 B
Total Hardness as CaCO ₃	mg/ltr	50	200.0 Max.	600.0 Max.	APHA 2340 C
Chlorides	mg/ltr	19.02	250.0 Max.	1000.0 Max.	APHA 4500 Cl ⁻ B
Sulphate	mg/ltr	4.40	200.0 Max.	400.0 Max.	APHA 4500 SO ₄ ²⁻ E
Total Dissolved Solids	mg/ltr	100	500.0 Max.	2000.0 Max.	APHA 2540 C
Nitrate	mg/ltr	1.21	45.0 Max.	No Relaxation	APHA 4500 NO ₃ B
Calcium Hardness	mg/ltr	33.01	Not Specified		APHA 3500 Ca B
Dissolved Iron	mg/ltr	<0.001	1.0 Max.	No Relaxation	APHA 3111 B
Magnesium Hardness	mg/ltr	16.99	30.0 Max.	100.0 Max.	APHA 3111 B
Manganese	mg/ltr	< 0.001	Not Specified		APHA 3111 B
COD	mg/ltr	<4.00	Not Specified		APHA 5220 - B
BOD 3 days 27°C	mg/ltr	<1.00	Not Specified		IS 3025 (Part 44) : 1993
Phosphates	mg/ltr	<0.001	Not Specified		APHA 4500 P D
Total Suspended Solids	mg/ltr	8	Not Specified		APHA 2540 D
Oil & Grease	mg/ltr	<0.1	Not Specified		APHA 5520 B

End

For GADARK LAB PVT. LTD.

Kailas V. Chitalkar

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

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K. Bagayath

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ANNEXURE XI
Noise monitoring reports



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB.: H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 416 525,
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Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 + 91 9321312367

TEST REPORT

Doc.No : GLPL/QF/5.10/01

Test Certificate No.	GA/E/23/05098	T. C. Date	03/06/2023
Customer Name and Address	M/s. VEDANTA LIMITED IRON AND COKE PLANTS, AMONA AND NAVELIM, BICHOLIM - GOA.		
Letter Ref / Date .	As per Dated 31/05/2023		
Measurement Done By	GLPL	Page No.	1 of 1

NOISE LEVEL MEASUREMENT :

Date of Measurement	31/05/2023
---------------------	------------

Sr. No.	LOCATION	NOISE LEVEL dB (A) Leq	
		DAY TIME AVG.	NIGHT TIME AVG.
01	Near Amona Gate	64.2	59.8
02	Opp. BSNL Exchange	58.4	52.4
03	Near Dispatch Gate	61.5	55.3
04	Near Satteri Temple	54.3	44.4
05	Compound Wall Towards Navelim	62.7	51.6
06	Compound Wall Towards Maina	62.7	52.2

Noise Limits as per Schedule III of "The Environment (Protection) Rules, 1986" are as follows:

Area Code	Category of Area	Limits in dB(A) Leq	
		Day Time	Night Time
(A)	Industrial Area	75	70
(B)	Commercial Area	65	55
(C)	Residential Area	55	45
(D)	Silence Zone	50	40

End

For GADARK LAB PVT. LTD.

AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]

Note :

1. The results relate only to the samples tested
2. Test certificate shall not be reproduced except in full, without written approval of the laboratory.
3. Test Results relate only to the conditions prevailing at the time of sampling
4. Customer complaint register is available at laboratory.
5. Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.

CHECKED BY

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	Sound Level Meter Sr. No. 2426112	20/10/2022	19/10/2023



GADARK LAB PVT. LTD.

INDUSTRIAL ANALYSTS & CONSULTANTS

LAB.: H-54, Additional M.I.D.C. Kudal, Taluka - Kudal, District - Sindhudurg - 418 525.

Tel. : (02362) 223519 • E-mail : info@gadark.in • Website : www.gadark.in

OFF.: 15, Hindustan Kohinoor Industrial Complex, L.B.S. Marg, Vikhroli (West), Mumbai - 83.

Tel.: (022) 2577 7069 / 2577 7070 / 2085 0091 • +91 93213 12367

TEST REPORT

Doc.No : GLPL/QF/7.8/04

Test Report No.	GA/E/23/08271	T. R. Date	05/09/2023
Customer Name and Address	M/s. VEDANTA LIMITED IRON AND COKE PLANTS, AMONA AND NAVELIM, BICHOLIM – GOA.		
Letter Ref / Date.	As per Dated 30/08/2023		
Measurement Done By	GLPL	Page No.	1 of 1

NOISE LEVEL MEASUREMENT :

Date of Measurement	30/08/2023
---------------------	------------

Sr. No.	LOCATION	NOISE LEVEL dB (A) Leq	
		DAY TIME AVG.	NIGHT TIME AVG.
01	Near Amona Gate	59.6	49.2
02	Opp. BSNL Exchange	58.2	48.5
03	Near Dispatch Gate	58.8	47.7
04	Near Sateri Temple	54.6	46.1
05	Compound Wall Towards Navelim	59.1	48.6
06	Compound Wall Towards Maina	57.6	47.3

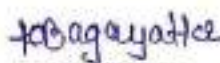
Noise Limits as per Schedule III of "The Environment (Protection) Rules, 1986" are as follows:

Area Code	Category of Area	Limits in dB(A) Leq	
		Day Time	Night Time
(A)	Industrial Area	75	70
(B)	Commercial Area	65	55
(C)	Residential Area	55	45
(D)	Silence Zone	50	40

End

For GADARK LAB PVT. LTD.


AUTHORISED SIGNATORY
[KAILAS V. CHITALKAR]


CHECKED BY

Note :

1. The results relate only to the samples tested
2. Test Report shall not be reproduced except in full, without written approval of the laboratory.
3. Test Results relate only to the conditions prevailing at the time of sampling
4. Customer complaint register is available at laboratory.
5. Calibration details of the equipments used in monitoring and / or analysis is back side of analysis report.

CALIBRATION DETAILS OF EQUIPMENT USED FOR SAMPLING

Sr. No.	Instrument Type	Calibrated On	Calibration Due Date
1	Sound Level Meter Sr. No. 2426112	20/10/2022	19/10/2023

ANNEXURE XII
Industrial Hygiene report

Final Report

Quantitative Exposure Assessment Monitoring

Conducted at

Value Added Business (VAB)- Sesa Goa Iron Ore plant, Goa

Assessment Period: 21st to 23rd September, 2023

Date of Final Report: 23rd November, 2023

Submitted to

Dr. Abel Da Costa

Prepared by

Maulik Shah CIH

E-Mail: Maulik.shah@shahihs.com

Mobile: +91 9033893895

SHAH Industrial Hygiene Solutions

A-103, Elite 18 Square, CG Road,

Near President Hotel, Navrangpura,

Ahmedabad-380009

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3. Results and Observations	4
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Appendices:	
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Appendix 3: Calibration Certificates of IH instruments used during monitoring	8

1. Executive Summary

Whole Body Vibration Monitoring:

Total five whole body vibration samples were collected to check personal whole body vibration parameter. Eight-hour vibration acceleration result of all the samples are within the TLV-TWA as per ACGIH.

Heat Stress Monitoring:

Total Two area heat stress samples were collected to check area heat stress in the area. Result of both the areas heat stress is within TLV as per ACGIH.

Primary suggestions:

Heat stress-Primary suggestions:

- Recommended to continue providing electrolyte/buttermilk etc., to the employees working in those area to avoid heat related illness and to keep them hydrated.
- Recommended to provide training to the employees on “Signs and symptoms of Heat related illness” to get indication about the illness ASAP and can cure it.

Please read this report in conjunction with the following documents:

1. Industrial Hygiene Results Sheet as Appendix 1

2. Methods and Evaluation Criteria

a. whole body vibration sampling methodology

- 2.1 Pre calibrated SV 111- portable whole body vibration machine was used for active monitoring of whole body vibration exposure.
- 2.2 Monitoring plate was kept on the seat of the machine or chair and reading was taken after certain amount of time.

b. Area Heat Stress sampling methodology

- 2.3 SIHS team selected appropriate sensor placement in areas of heat exposure and had kept the meter around 1.2 meter height for 20 minutes to get a stable reading of all the parameters (dry bulb, wet bulb, globe temperatures, and WBGT index).

Whole Body Vibration & Heat Stress Evaluation Criteria

The ACGIH, 2023 established TLVs was used as primary evaluation criteria for comparing exposure monitoring results.

TLVs of physical parameter:

Whole body vibration	0.87 m/s ²
Heat stress	Refer appendix 1

3. Results and activity details

Please refer Appendix 1- Industrial Hygiene Results Sheet to find other monitoring data of the assessment.

Whole body vibration observation

1. **WBV- 01:** An employee was involved in wheel loader operation at the screening area. He was involved in loading, chipping, and hiping. He had completed loading of 16 chipping trucks for 80 minutes and hiping of 16 trucks for 25 minutes. He was also working in the skull yard, pig yard, and slag dryer yard. The skull material was large. His seat was provided with air suspension and seat adjustable system. That seat material was PU foam skid steer. He took a break of thirty minutes for lunch and 15 minutes for tea and breakfast. The road condition was a composite longitudinal slop with a small pit. Health issue: Some time during heavy workload, employee was getting back pain.
2. **WBV- 02:** An employee was involved in wheel loader operation at plant-5 area. He was involved in iron ore dosing, loading, and shifting. During the monitoring, he had completed loading of five to six trucks. He was also involved in the iron ore shifting. His seat condition was good and adjustable. That seat material was PU foam skid steer. He took a break for 30 minutes for lunch and 15 minutes for tea and breakfast. The road condition was sloppy, with vertical and horizontal curves on the road.
3. **WBV- 03:** An employee was involved in a wheel loader operation at the old coke shade area. He was involved in coal feeding into the three feeders for 8 hours. He had completed feeding of four buckets. His seat condition was good and adjustable. That seat material was a PU foam skid steer. He took a break of thirty minutes for lunch and fifteen minutes for tea and breakfast. The road condition was vertical and horizontal curves on the road.
4. **WBV- 04:** An employee was involved in a wheel loader operation at plants 6 and 7 area. He was involved in truck loading and stacking. He was working in coke yard 1, coke yard 2, new coal shade, and briquette plant shade. During the monitoring, he was involved in coke loading at Coke Yard 2, sixteen big trucks, and two small trucks loading at the new coal shade area. His seat was with an air suspension seat with seat adjustment system. That seat material was a PU foam skid steer. He took a break of thirty minutes for lunch and fifteen minutes for tea and breakfast. The road condition was vertical and horizontal curves with few pits on the road.
5. **WBV- 05:** An employee was involved in a wheel loader operation at the dispatch area. He was involved in pig loading into a truck. During the monitoring, he was involved in loading of six to seven trucks for twenty to twenty-five minutes. His seat condition was good and adjustable. That seat material was a PU foam skid steer. He took a break of thirty minutes for lunch and fifteen minutes for tea and breakfast. The road condition was vertical and horizontal curves with few pits on the road.

Heat stress observation:

1. **WBGT -01:** PID-1 location: PCM hot metal handling area. Worker was involved in moulding preparation at ladle. He used to observe material during filling it into the mould. He was also involved in removing the clogged metal near the tap hole with the help of the rod. When he was going near the tap hole that time he was wearing a leather jacket. The furnace was open 4 times in a day. Two workers were there for the ladle but both are working alternately so they are getting proper rest as one worker stay in the cabin when another is working in the

area. High pressurized fan was there and the workers stayed near the fan if there was no work near the tap hole.

2. **WBGT -02:** PID-2 Cast house- Employees were involved in operations at the cast house area. Five full-skilled workers, four semi-skilled workers, and one cast house in-charge were there. Full-skilled workers were involved, like two at the tap hole, two sludge or metal doms, and one at ladle removal. Semi-skilled workers were involved in two sub runner preparations and two sludge preparations. All workers were working alternately as per their operations. The tap-hole worker was wearing a leather jacket during his activity. After opening, the furnace was running continuously for 1.15 hours. After closing, it took 45 minutes for the second cycle of preparation. Only three times opening the furnace in 8 hours. The furnace opens three times in a shift.

4. Recommendations

Area Heat stress Monitoring

- Recommended to continue providing electrolyte/buttermilk etc., to the employees working in those area to avoid heat related illness and to keep them hydrated.
- Recommended to provide training to the employees on “Signs and symptoms of Heat related illness” to get indication about the illness ASAP and can cure it.

5. Abbreviations:

Short form	Full form
ACGIH	American Conference of Governmental Industrial Hygienists
AIHA	American Industrial Hygiene Association
ABIH	American Board of Industrial Hygienist
CIH	Certified Industrial Hygienist
IH	Industrial Hygiene
SIHS	SHAH Industrial Hygiene Solutions
TLV	Threshold Limit Value
TWA	Time Weighted Average

During the assessment, we appreciate the cooperation and support we received from all levels of professionals from Value Added Business (VAB)- Sesa Goa Iron Ore plant, Goa.

Report Prepared By

Maulik Shah CIH

SHAH Industrial Hygiene Solutions, Vadodara

Appendix 1:

Whole body vibration exposure results:

Sr. no.	Date	Department	Activity	Vehicle Number	Employee name	Location	Start time	End time	Duration (Min)	Current Exposure m/s ²	Daily 8 hours exposure m/s ²	ACGIH exposure limit for current exposure	ACGIH exposure limit for daily exposure
1	22/09/2023	Dispatch area PID- 1	Wheel loader operation	Samim Ali	MH09 GF 3742	Screening area	9:25	11:34	2:09	0.357	0.686	1.69	0.87
2	22/09/2023	PID- 1	Wheel loader operation	Shivchandra	GA06 E 0698	Plant- 5	12:25	14:22	1:57	0.319	0.645	1.95	0.87
3	22/09/2023	MCD	Wheel loader operation	Shubhash Kumar	GA06 D 6752	Old coke shade	14:39	16:40	2:01	0.304	0.605	1.72	0.87
4	23/09/2023	PID- 1	Wheel loader operation	Sanjay Prajapati	GA04 E 6524	Plant 6&7	10:15	12:26	2:11	0.331	0.632	1.68	0.87
5	23/09/2023	PID- 2	Wheel loader operation	Sambha Naik	MH14 TCF 500	Dispatch area	15:02	16:45	1:43	0.362	0.778	2.04	0.87

Heat stress exposure results:

Sr. no.	Sample ID	Department	Location	Time	WBGT Meter							
					Globe Temp. T _g (°C)	Wet bulb Temp. T _{wb} (°C)	Dry bulb Temp. T _d (°C)	WBGT i (°C)	RH (°C)	Dew (°C)	Metabolic rate of acclimatized workers and allocation of work in a cycle of work and recovery	ACGIH exposure limit- TLV (°C)
1	WBGT-1	PID-1	PCM hot metal handling area	20	29.9	28.8	29.2	28.6	84	36	Moderate work of tap hole workers (0 to 25%)	31.5
2	WBGT-5	PID-2	Cast house	20	31.0	27.8	30.7	30.4	69	30	Moderate for sludge and metal dom workers (0 to 25%)	31.5

Appendix 2: CIH Certificate

The Board for Global EHS Credentialing® (BGC®)

through its vested authority, hereby confirms that

Maulik Shah

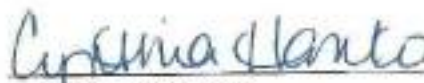
has met all requirements of education, experience, and examination set forth through the BGC's American Board of Industrial Hygiene® (ABIH®) credentialing division for initial certification in the Comprehensive Practice of Industrial Hygiene and is thereby conferred the credential of

Certified Industrial Hygienist® (CIH®)

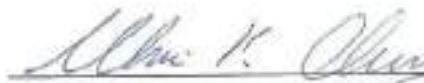
The aforementioned individual is given all rights, privileges, and responsibilities as both a diplomate of the BGC and holder of the CIH credential, provided that the credential is not suspended or revoked, and it is renewed annually. Moreover, the holder must meet all recertification requirements, including the obligation to practice ethically as prescribed by the BGC.



Credential Number: 12177 CP
Award Date: November 4, 2020
Expiration Date: June 1, 2026



Cynthia Hanko, CIH
Chair of the Board of Directors



Ulric K. Chung, MCS, PhD
Chief Executive Officer and Secretary

Appendix 3: Calibration Certificates



TSI INCORPORATED – OCONOMOWOC

1000 Corporate Center Drive Oconomowoc, WI 53086 USA
608.837.4600 FAX: 608.837.4775 • www.tsi.com

ISO 9001
Registered Company

Certificate of Calibration

Certificate Number: 2205040818TPW050005

Model: QuestTemp® 32
S/N: TPW050005

Date Issued: 04-May-2022

On this day of manufacture and calibration, TSI certifies that the above listed product meets or exceeds the performance requirements of the following standard(s):

BS EN 27243(1994), ISO 7243(1988) - Hot environments. Estimation of the heat stress on working man based on the WBGT-index (wet bulb globe temperature)

Test Conditions: Temp: 18-25°C Humidity: 20-80% R.H. Barometric Pressure: 950-1050 mBar

Test Procedure: 8058-750

Subassemblies:

Standard Sensor Bar NA

Reference Standard(s):

Device	Ref Standard Cal Due	Uncertainty - Estimated at 95% Confidence Level (k=2)
Fluke 45	23-Feb-2023	±/- 1.4% AC Voltage, ±/- 0.1% DC Voltage
Fluke 1524 Thermometer	23-Feb-2023	±/- 0.08 Degrees C Temperature

Calibrated By:



Ryan Deen - Assembler

In order to maintain best instrument performance over time and in the event of inspection, audit or litigation, we recommend the instrument be recalibrated annually. Any number of factors may cause the calibration to drift before the recommended interval has expired.
See user manual for more information.

All equipment used in the test and calibration of this instrument is traceable to NIST, and applies only to the unit identified above.
This report must not be reproduced, except in its entirety, without the written approval of TSI, Inc.

058-836 Rev G

Page 1 of 2



TSI INCORPORATED – OCONOMOWOC

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An ISO 9001
Registered Company

EU Declaration of Conformity

Certificate Number: 2205040818TPW050005

Product Line: Area Heat Stress Monitor

Model: QuestTemp® 32

S/N: TPW050006

Directives Covered:

- > EMC / Council Directive 2014/30/EU on Electromagnetic Compatibility
- > Safety / Council Directive 2014/35/EU on Low Voltage Equipment Safety
- > RoHS / Council Directive 2011/65/EU on the restriction and use of certain hazardous substances
- > WEEE / Council Directive 2012/19/EU on waste electrical and electronic equipment

The basis on which conformity is being declared:

EN 61326-1 (2005) Electrical equipment for measurement, control and laboratory use – EMC requirements
Group 1, Class B Equipment (emissions)

EN 61326-1 (2005) Electrical equipment for measurement, control and laboratory use – EMC requirements
Industrial Location Immunity

IEC61010-1 (2010) Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 1: General requirements

CFR:47 (2008) Code of Federal Regulations: Part 15 Subpart B - Radio Frequency Devices - Unintentional Radiators

EN 50581 (2012) Technical documentation for the assessment of electrical and electronic products with respect
to the restriction of hazardous substances

Note: This certification applies to all standard options and accessories supplied with the instrument.

At the end of its life cycle, this product, and any internal power cell, must be sent to a WEEE recycling center, and is marked accordingly.

The technical construction file required by this directive is maintained in Oconomowoc, WI, USA.



Tom Jacobson - Vice President - Engineering, TSI, Inc.